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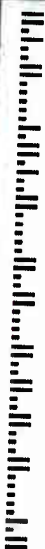
Recording Vocals Advice From Top Engineers

Digital Reverb Tips and Tricks

Wedge Monitor Buyer's Guide

World Radio History

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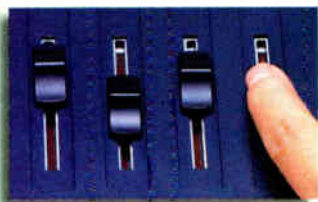


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A Different Slant on Reverb



As a new sports car beckons you to the open road, the Wedge's totally unique desktop design makes creating great reverb a breeze. It's the first reverb that's fun to drive.



Just push the Wedge's edit button and start adjusting your reverb with the four edit sliders. It's easy to get creative with the Wedge's powerful parameters like decay, frequency damping, swirl, early reflection room shape, width, density and diffusion.

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WEDGE™
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If you're on the net, check out the special Wedge page with audio files at www.alesis.com/wedge. For more information on the Wedge Desktop Master Reverb, see your Authorized Alesis Dealer or call 800-5-ALESIS. © Wedge and Impulse Audition are trademarks of Alesis Corporation.

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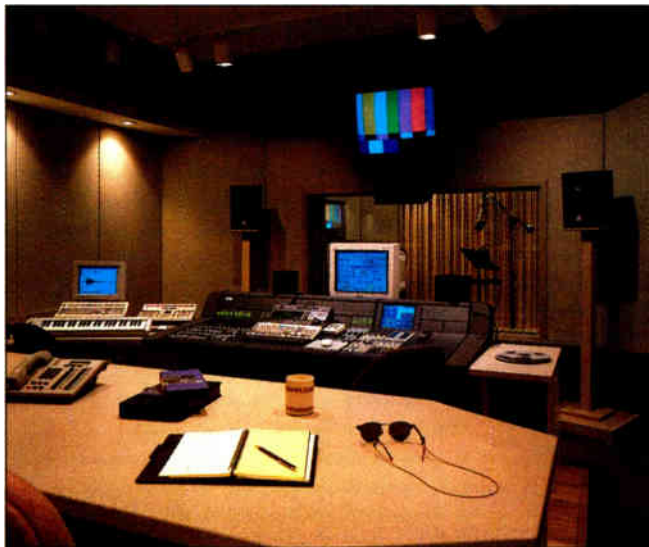
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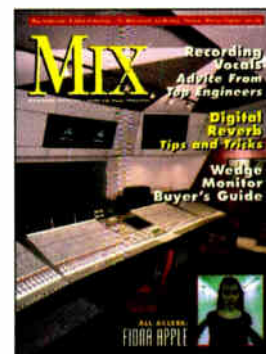


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On the Cover: Teddy Riley's Future Recording Studios in Virginia Beach, Va., designed by studio bau:ton and featuring an 80-input SSL 9000J, opened in 1991. For more on the facility, see page 30. **Photo:** Bob Jones.



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HR824 ACTIVE MONITOR

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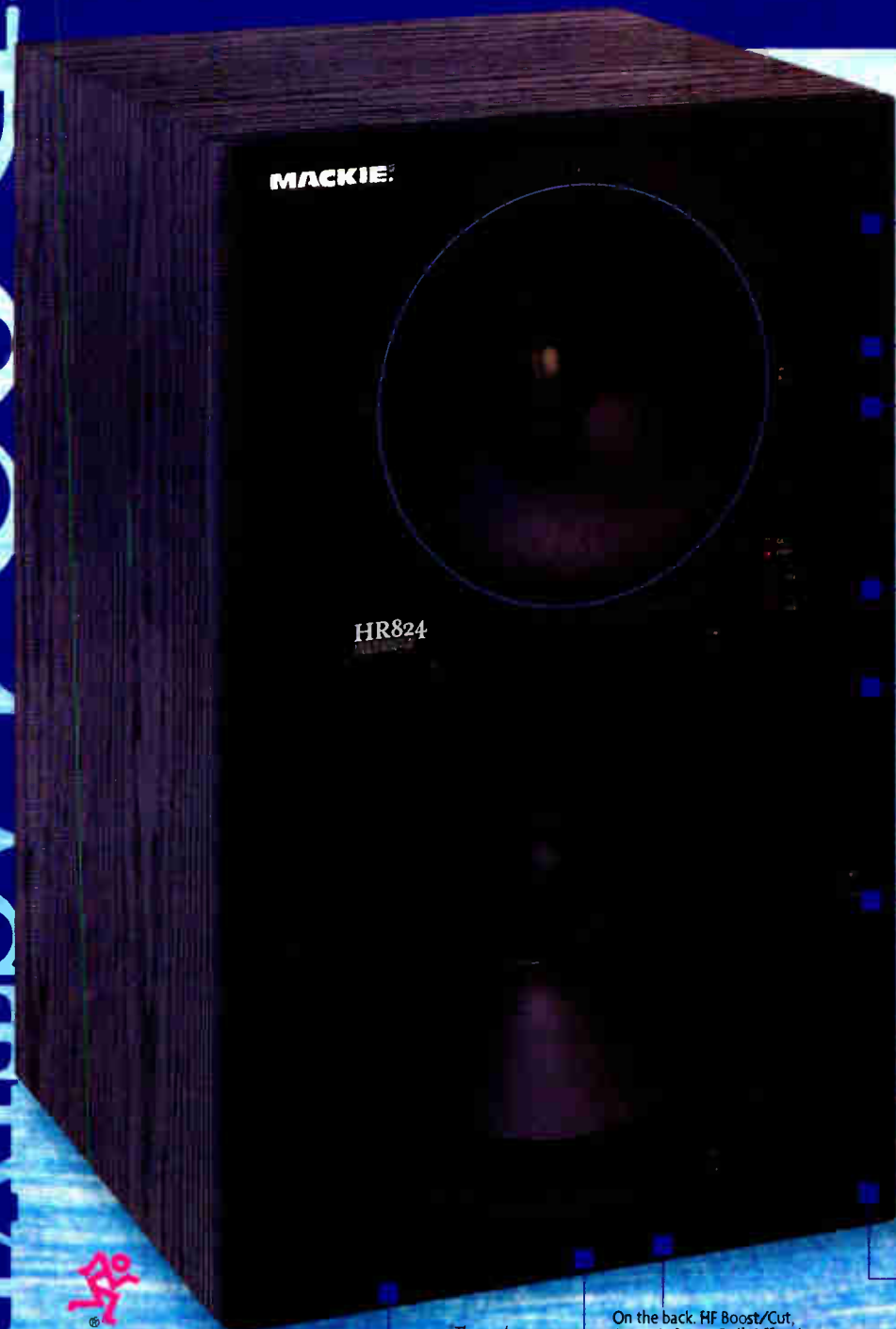
Actually this paragraph doesn't have anything to do with the HR824. Mackie is further expanding its R&D/Engineering department and is looking for more analog and digital engineers with experience in pro audio. Log onto our web page for particulars.

The enclosures — dressed in conventional yet classy black motif — are shielded." EM Magazine*

Inside. Two separate FR Series power amplifiers with a total of 250 watts rated power — the most of any active monitor in the HR824's class.

On the back, HF Boost/Cut, Acoustic Space, Roll-Off and sensitivity controls, balanced 1/4" and XLR inputs. "The Mackie HR824 is the only system (in the comparative review) that doesn't require the user to fumble around with tiny tools in order to make adjustments." EM Magazine*

"Overall frequency was almost hard



Logarithmic wave guide helps accurately propagate high frequencies over a wider area. Result: better dispersion, more precise imaging and a far wider sweet spot.

Edge-damped 25mm high-frequency transducer is directly coupled to its own 100-watt FR Series™ Low Negative Feedback internal power amp.

Alloy dome is free from "break-up" that plagues fabric domes, causing high frequency distortion.

Signal present and overload LEDs.

Instead of a noisy port, a passive honeycomb aluminum transducer on the rear of the HR824 almost doubles the low frequency radiating surface.

"This allows the HR824 to move a large volume of air with minimal low frequency distortion & power compression." EM Magazine*

Specially-designed 224mm low frequency transducer has a magnet structure so massive that it wouldn't even work properly in a conventional passive loudspeaker. But servo-loop-coupled to a 150-watt FR Series™ amp, it's capable of incredibly fast transient response and extremely low frequency output.

Inside, the HR824 cabinet is 100% filled with adiabatic foam. Result: Unwanted midrange reflections from the low frequency transducer are absorbed inside the enclosure instead of being reflected back out through the cone into your listening space.

* Electronic Musician, October 1997, All quotes are unedited.

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World Radio History

response was so flat that it to believe." Electronic Musician Magazine*

Ready to confront reality? The HR824 Active Monitor is now in stock at Mackie Dealers.

Owning a set of HR824 near field studio monitors has the potential of seriously altering your perception of sound.

For the first time, you'll be able to hear precisely what's going on all the way through your signal chain — from microphones right through to your mix-down deck. You'll suddenly

discern fine nuances of timbre, harmonics, equalization and stereo perspective that were sonically invisible before.

Some tracks you've recorded will amaze you; others may send you back for an immediate remix.

But either way, for the first time, you'll be hearing exactly what was recorded — not what a conventional loudspeaker may or may not have been capable of reproducing.

Admittedly, these are pretty brazen claims (which is why we're backing them up with comments from a credible, third-party source).

But all you have to do to become a believer is to visit

your nearest Mackie dealer. When you

compare HR824s to the competition,

you're going to hear some dramatic differences.

First you'll notice far more openness and detail. Critical listeners tell us that it's as if a curtain has been lifted between

themselves and the sound source.

Next, you'll notice low frequency output so accurate that you might look around for the hidden subwoofer (some of the world's most experienced recording engineers have

the traditional, narrow "sweet spot" directly between the monitors, you'll discover that the HR824s really DO live up to our claim of wide, dispersion. Their sweet

zone is so broad that several people can sit next to each

other — or if you work solo, you can move from side to side in front of large consoles — and still hear a coherent, detailed stereo panorama.

Finally, let the salesperson go wait on somebody else and enjoy an

extended session with one of your favorite CDs. When you're through, you'll discover that when distortion and peaky frequency response are minimized, so is ear

fatigue: You can listen to HR824s for hours on end.

One final point... your monitors are the only part of all your studio equipment that you actually hear.

Along with good microphones, HR824s are the best investment you can

make, no matter what your studio budget. And, like premium mics, HR824

monitors cost more than less accurate transducers.

But if you're committed to hearing exactly

how your creative product sounds, we know you'll find owning HR824s well worth it.

"In fact, all the sonic details that I can discern on a \$45,000 reference system were very well reproduced, although not identically, on the HR824s. That was very impressive."

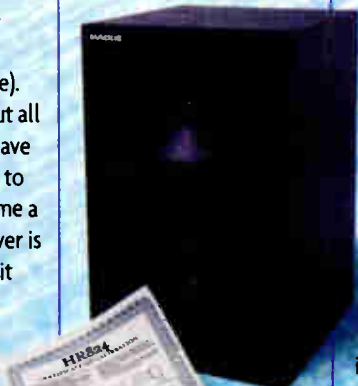
"The precise resolution is a major boon for finicky sound sculptors."

"The imaging and high frequency dispersion is brilliant. I was amazed at how far off-axis I could scoot my chair and still clearly hear what was going on in both channels."

"The low end was robust and present; the electric bass and kick drum thumped into my chest the way those huge UREI monitors did back in the old days."

"Overall, the response was so smooth that I wasn't even aware of a crossover point."

"Stereo imaging and depth were fabulous."



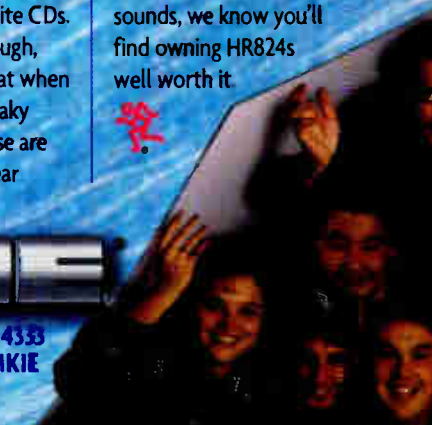
Each HR824 ships with its own signed Certificate of Calibration attesting to its $\pm 1.5\text{dB}$ 39Hz-22kHz frequency response.

done this, so don't be embarrassed), The HR824 really IS capable of flat response to 39Hz. Moreover, it's capable of accurate, articulated response that low. Rather than a loudspeaker's "interpretation" of bass, you can finally hear through to the actual instrument's bass quality, texture and nuances.

Next, if you can "unlock" yourself from

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FROM THE EDITOR

VIVE L'ANALOG!

In 1978, the audio industry was in a state of flux. Sony unveiled a videotape-based digital recorder/editor (the PCM-1600), 3M delivered the first digital 32-tracks, New England Digital debuted the Synclavier, and talks were already under way about a new consumer digital disc format. From pocket calculators to wristwatches, digital had taken the public by storm, and to many, the demise of analog technology loomed on the horizon—if not by the next year or so, then certainly in a decade's time.

Yet somehow, two decades later, our old friend analog remains with us—and not merely in whimsical waves of nostalgia, but as high-performance products that coexist with digital systems and often exceed them in terms of quality. In today's consumer market, some very non-digital items have skyrocketed in popularity, whether they be Rolex watches or discrete designs in audiophile components.

The situation in the musical instrument market isn't really much different. Once almost completely written off in the wake of the synth-pop revolution, guitar sales are currently at near-record levels. Fender and Gibson are turning out Strats and Les Pauls at an unceasing pace, and MIDI for guitars is more accepted as means to control effects than a means to translate picking and fretting into performances. Electronic drum kits and wind instruments are barely a ripple in the pond compared to their acoustic equivalents. In the keyboard market, where synths and samplers rule the roost, the most sought-after sounds are grand pianos, organs and vintage analog keyboards.

Meanwhile, in pro audio, the list of manufacturers without a tube product in their line is getting shorter, while the use of analog multitrack and mix formats has risen rapidly in recent years. Mastering houses, for example, report that a large percentage of major label product today is delivered on 30 ips 1/2-inch tape.

Despite all the buzz about hot new digital 96kHz/24-bit technologies, it's refreshing to hear about someone dropping a reel of Ampex 499 or BASF 900 onto an analog transport and really laying down some fat tracks. So whether it's for the sweet sound of saturation, the fuzzy warmth of that bottom-end head bump or just the satisfaction of those 2-inch reel slabs spinning in sync, we love to love our analog. But along the way, we have to accept that most of our projects will eventually wind up on some digital medium. And if the much-maligned CD format is really so bad, then why do we all have a few favorite CDs in our collections that sound simply breathtaking?

At the same time, we can still listen to recordings made 30 or 40 years ago that offer awesome clarity, detail and depth—and if this were simply due to the analog medium, then every recording from that era would be great. The key here is a combination of solid audio techniques and careful attention to every step in the signal chain as the first move toward a great recording.

Add a great song, an emotional performance and a well-crafted mix, and— analog or digital—you've got a great result.

Bet on it.



George Petersen
Editor



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Credits*Michael Jackson**Rolling Stones**Blackstreet**Whitney Houston**Stevie Wonder**Aretha Franklin**Janet Jackson*

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- Teddy Riley

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Now, you're probably thinking we had to pay Teddy to say all this. But the truth is, he's been using Pro Tools on every project since Michael Jackson's *Dangerous* — simply because it's the best tool for the job. Based on the number of hits he's cranked out, his career and life have been nothing short of remarkable. Or, as Teddy would say..."complete."

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TEDDY RILEY, PRODUCER | ARTIST

Man Records/Future Recording Studios, VA

FEEDBACK

EPIC OMISSION

I just received my Jan. '98 issue of *Mix* and was astounded to see the cover story on the "sound design" of *Titanic* without comment, inquiry or mention of the incredibly specialized, profoundly challenging contribution made by Jim Cameron's production sound team. We endeavored for nearly six months at night, exterior seaside, mostly in winter, to get all the primary tracks for the show. By most accounts, 60% to 70% of the dialog in the finished picture was original production track. Jim likes to do ADR lines on his whole show and then pick his preference after the fact.

We did the entire show with wireless boom and Audio Limited with full duplex, wireless com for the sound department, as well as several other simultaneous mixes for various other departments. We innovated a variety of specialized methods to deal with working production sound in the salt water environment as well as the complex communications requirements of the biggest film in history. Don't you think making inquiry into this work would have been of interest to your readers?

If the show gets nominated and should succeed at the Oscars, the Motion Picture Academy will be giving their award to the whole sound team. That means acknowledgment for production sound as well. Maybe you should break tradition with your consistent history of ignoring the essential contribution we make in production sound and talk to the whole team before you embarrass yourself the way you have with this article.

As a three-term sitting member of the Board of Directors for the C.A.S. (Cinema Audio Society), I have watched this wonderful organization work effectively to bring these two segments of the film sound industry into closer contact. Why can't you plug into that reality? No film is entirely production or post-production sound. They are integral phases in the larger process and, when acknowledged, deserve to be acknowledged as a whole.

My crew on *Titanic* were: Donovan Dear, boom operator; Jim Osburn, utility/second boom; Brendan Bebe,

P.A./intercom; Chuck Weiss, video assist; Mitch Bryan, assist video assist; playback operators Tom Brandau (second unit mixer also) and James Eric.

Mark Ulano, C.A.S.

Production Sound Mixer, Titanic

WINNING SOUND

I have always enjoyed Mark Frink's articles in *Mix* magazine, and now I must write to second his nomination of George Relles for a TEC Award, Sound Company ("...The Envelope, Please," Dec. '97).

This past summer I saw Tom Scott and John McLaughlin at the Brit Festival in Jacksonville, Ore. To my pleasant surprise, this gig included George and his new MSL4 rig. The sound was just fantastic! When Tom Scott played his encore/closing song, "Rock Island Rocket," I was in audio ecstasy. I've waited since 1976 when this album came out to hear it live—the highlight of the summer concert season!

I worked as a live mixer on a semi-pro level from 1982 to 1990, and I'm basically retired. But I still enjoy listening and reading Mark's excellent articles. They keep me feeling like I'm connected and passing voltage. Gig on, my friend!

Ty Karvey

Olympia, Wash.

DISILLUSIONED

Fortunately for the world, I've got a much smaller soap box than Stephen St.Croix has. In the November issue Stephen St.Croix (*The Fast Lane*, "America Today") made the mistake of asking what "you" thought about the "trend toward the mindless mass-production of 'music.'" He was addressing me, right? Well, here it goes...

My wife and I were road musicians for years, until 1997. The "trade for technology" was partially responsible for the end of our road careers. We were among the "pioneers" who were using automation to augment live performances. We were using an Oberheim DMX pre-MIDI (still have it), then syncing early MIDI sequencers via Garfield Nano-Docs, and eventually using sequencers to control events musical and otherwise (mix, FX, lights, laser, etc.).

The point here is that when we began, if you didn't possess the musical skills to dissect a piece of music and the technical expertise (or at least persistence) to re-create it on synths, etc., you were left with a Rhythm Ace (a different set of skills to be sure!). But now, buy a single keyboard and buy/pirate a few sequences and you are a "band." No playing required.

This has broken our hearts often. It also helped put us out of work because the "karaoke" bands, having few funds and no time invested, can and will work for less money. (This also doesn't speak well for the modern purchaser of entertainment who can't tell the difference.)

Now, I know we were just doing the club scene, but we provided a high-quality entertainment product at a bargain price. Our show used primarily original synth patches, exclusively original sequencing, and even (hold your breath) live playing/singing. We did some really cool stuff! On the rarest of occasions, someone would seem to appreciate the time, effort, skill and passion we "wasted." Oh well.

So, having come off the road, I looked into the local recording scene. I was disappointed to discover that the local recording market was too similar to the "road market." Quality matters little. And now, I'm working as a "service tech" at a local telecommunications company where I'm observing the same thing! Good work for honest pay seems to have been a myth my father sold me.

Don't know why St.Croix would be the least bit interested in my disillusionment, but, one cynic to another, keep up your good work. And if you ever find a place where people are more interested in doing good stuff than telling people they are doing good stuff, send me the address.

Jim Sharp

Yadkinville, N.C.

Send Feedback to Mix, 6400 Hollis St. #12, Emeryville, CA 94608; fax 510/653-5142; or mixeditorial@cardinal.com.

Capricorn. "A quality and resolution rarely attained with other systems"

Ted Jensen, Chief Engineer, Sterling Sound Inc.

"I have consistently been impressed with the sound quality of the mixes I have received from projects using Capricorn.

"Particularly impressive are the ones where care has been taken to preserve the 24-bit signal throughout the project.

"I feel there is a quality and resolution that is rarely attained with other systems."

Digital First



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CURRENT

COLIN SANDERS, 1947-1998

Colin Sanders, founder of Solid State Logic, died January 28 when the helicopter he was piloting crashed near Bicester, just outside his estate at Souldern Manor, England. He was 50 years old.

The cause of the accident was unknown at press time. It was reportedly a dark winter evening, with a light fog and light mist. Mr. Sanders, an avid pilot who was returning home from London, was the only person aboard.

"I had the good fortune to meet Colin at Souldern Manor in 1991, when we began discussions on the possibility of my writing a history of SSL," says SSL marketing director John Andrews. "He was a charming host and a delightful lunch companion, with some fascinating stories about the early days of the organ company which branched out into audio mixers. It's a great sadness to realize that if a history does ever get written, it won't have Colin's personal input."

Mr. Sanders founded Solid State Logic in 1969 as a manufacturer of components to provide electronic control of valves in pipe organs. (SSL Organs, based out of Suffolk, continues as a leading manufacturer of organs, with a subsidiary in the United States.) In 1971, he began researching console design, applying many of the same electronics principles on which the company was founded.

In 1977, SSL released the 4000 Series, the first in-line console with integrated machine control, and arguably the most successful large-format recording console in history. More than 20 years later, it is still in production, with more than 1,500 boards sold worldwide. In 1981, SSL jumped to the forefront of automation systems with the release of Total Recall, which was followed in the '80s by forays into workstation technology with ScreenSound and integrated production systems with the development of Scenaria, and later OmniMix.

In 1987, Mr. Sanders sold his shares of the company to UEI, which later was bought by Carlton. Mr. Sanders continued as managing director until 1991.

"He was a unique personality," says



former SSL marketing director and friend, Colin Pringle, now with AMS Neve. "Colin had that special ability to profoundly influence the lives of others, either through the landmark SL 4000 console design or, for those lucky enough to know him, through his charm, humour and generosity.

"Colin was always liberal with his praise, and as a result seemed more impressive for it. This trait also engendered a loyalty in others which is extremely rare. Indeed, it was his ability to bring out the best in others which was Colin's true skill."

Mr. Sanders is survived by his wife, Rosie, and three adopted children, James, 13, Craig, 11, and Terri, 9. Contributions are requested to The Prince's Trust or a charity of the donor's choice.

NASHVILLE'S MASTERFONICS DECLARES CHAPTER 11

Masterfonics, one of Nashville's leading recording and mastering facilities, filed for protection under Chapter 11 bankruptcy provisions on January 29. Studio owner and mastering engineer Glenn Meadows cited several reasons for the filing, including an overall drop in revenues in 1997 that affected many studios in Nashville, continued downward pressure on rates from record labels, and the proliferation of local home and producer-owned studios, as well as the opening of new major facilities that contributed to a saturation of the Nashville market.

Meadows stressed that the studio was in the process of reorganization, and that creditors were being cooperative and that he expected that the stu-

dio would emerge from the filing intact. However, he also said he expects that the same forces that precipitated Masterfonics' move are having a similar effect on other studios in Nashville, both upper-tier facilities and mid-sized ones. "It's going to be rough; several studios are for sale," he said. Masterfonics had laid off several employees late last year, but Meadows noted that bookings for 1998 were up significantly over 1997.

STUDIOPRO '98 SESSIONS ANNOUNCED

Plans are moving forward for *Mix's* StudioPro '98, a two-day conference on the technology of business and recording being held on June 25-26, at the Marriott Marquis in New York City. The conference will feature a dozen workshops and panel discussions; some of the scheduled sessions include "Making the All-Digital Transition," "New Technologies/New Specialties," "The Creative Interface: Project Studios/Commercial Facilities," "That Dangerous Upgrade Path," and "MDMs: The Revolution Continues." Other panels and workshops will focus on design solutions, sound for picture and file format interchange. In addition, producer forums, hosted by the Music Producers Guild of the Americas, will be held on both days; MPGA president Ed Cherney and other world renowned producer/engineers will address creative and business issues facing producers today. There will also be manufacturer forums dealing with the latest trends in equipment design. More events will be announced as they are confirmed.

For registration information, contact Daniela Barone at 510/653-3307 or fax 510-653-5142. Conference sponsorships are also available; interested companies should contact Hillel Resner, conference director, at 510/284-7729.

MFEA DISTRIBUTES TEC AWARDS PROCEEDS

The Mix Foundation for Excellence in Audio has announced the distribution of proceeds from the 1997 Technical Excellence & Creativity Awards held

—CONTINUED ON PAGE 16

There's Only One Way To Get The Sound You Want...

Introducing the Neumann TLM 103

Regardless of your recording gear, the single best way to improve your sound is with Neumann microphones. Utilizing a large-diaphragm capsule derived from our world-standard U 87, our new TLM 103 gives you the full, rich, warm sound that Neumann is famous for. It has the lowest self-noise of any condenser mic in the world – important in today's low-noise digital recording environment. And with our new TLM 103, owning a Neumann has never been easier...for less than \$1000 US, you can have the most important piece of equipment you'll ever own.

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w i t h
s o u l

Sony's complete

24-bit digital

recording system that includes the new PCM-3348HR



The Oxford's unique assignable control surface puts
underpins everything you do in your

DASH PLUS digital multitrack and PCM-9000 digital

master disc recorder.



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move you to the Sony OXF-R3. For more information,

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Direct interface to DASH DASH PLUS recorder

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SONY

INDUSTRY NOTES

At Quantegy Inc. (Peachtree, GA), president and CEO **Jack Kenney** announced his resignation effective April 2, 1998. Kenney stated that he will continue to direct Quantegy's operations and will work with the company to facilitate the selection of a successor and an orderly transition. **Tony D. Wilson** was recently named vice president of sales and customer support, U.S. and Canada. Before coming to Quantegy, Wilson worked for Allied Signal and 3M... **Rocco Ferraro** was appointed manager of finance and administration at Old Lyme, CT-based **Sennheiser Electronic Corporation**. Ferraro will be managing financial operations and logistics functions for the Sennheiser brand of products, the Neumann microphone line and D.A.S. loudspeaker series...CTI Audio Inc. announced the appointment of **Buzz Goodwin** to the position of vice president, sales. **Bruce Forbes**, who served as VP, professional products, was recently assigned a broader role as VP, product and market development...**Furman Sound** (Petaluma, CA) brought **Joe Territo** onboard as Marketing Manager. Previously, Territo was marketing and communications manager at Apogee...**Sonic Foundry** (Madison, WI) recently introduced a representative sales force to provide dealers with product information, merchandising support and software demos...San Francisco-based **Dolby Laboratories** announced that **EDnet** will now handle all U.S. and Canadian sales of the Dolby codec units necessary for Dolby Fax installations...News from the **Martin Group**: Founder **Peter Johansen** resigned from his position of managing director but will serve as consultant to the company on an ad hoc basis. Finance director **Lars Dige** and production director **Torben Johansen** were appointed joint group directors...**Sam Ash Music** has expanded its chain to the West coast. The new stores are located in the CA cities of

Westminster, Cerritos, West Hollywood and Canoga Park...**Fred Higgenbottom** was named senior vice president and general manager of **Crown Audio** (Elkhart, IN), and **Mick Whelan** was promoted to the newly created position of vice president of marketing and sales. Director of marketing **Bruce Peterson** will still be the main press contact regarding editorial placement and advertising. **Ian "Hawk" Magness** joined Crown as corporate webmaster. **SECOM** was named Crown representative of the year for 1997...**Auralex Acoustics** (Indianapolis, IN) purchased a new facility at 8851 Hague Road. The phone and fax numbers remain the same. The new facility allows the expansion of Auralex's sister companies, **Captive Audience Inc.** and **Alien Multimedia**; provisions are being made for audio and video recording, CD mastering and more...**Russ Berger Design Group** (Dallas, TX) hired **Deirdre Langworthy** as marketing/production coordinator...**AKG Acoustics'** (Nashville) new primary phone number is 615/360-0499; new primary fax number is 615/360-0275...Tustin, CA-based **Ricoh Electronics** named **Kimber Lee Davis** western regional sales manager, and **Bill Z. Oran** as eastern regional sales manager...**Production Resource Group** (New Windsor, NY) announced the acquisition of **ProMix**, which becomes the first sound company in the group and the initial member of PRG's new audio division...**Reg Tiessen** was appointed vice president, finance, and CFO at Toronto, Ontario-based **Leitch Technology Corporation**. To serve the Latin American market, Leitch opened a new regional sales office, directed by **Edel Garcia**, at 1265 Bluebird Ave. Miami Spring, FL 33166; phone 416/445-9640...**Superdigital** (Portland, OR) hired **Armi May** as production manager and promoted **Eric Squires** to audio recording technology sales engineer. ■

—FROM PAGE 12, CURRENT

last September in New York City.

A total of \$35,350 was presented to organizations involved in the prevention and treatment of hearing impairment and to scholarship programs for audio students. Fifty percent of the proceeds were contributed to the Hearing Is Priceless campaign of the House Ear Institute of Los Angeles. This program educates the public and audio professionals about the dangers of noise-induced hearing loss.

The remaining funds were distributed between the SPARS audio scholarship program, the AES Educational Foundation, Hearing Education Awareness for Rockers (H.E.A.R.), Berklee College of Music, Full Sail Real World Education, the Institute of Audio Education, Middle Tennessee State University, University of Massachusetts at Lowell, University of Miami and the University of Southern California. TEC Awards scholarship grants were presented to Joshua Philip Allen at Full Sail, Travis Gregg at Indiana University and Claudius Mittendorfer at Berklee College of Music.

For more information about the 1998 awards show or TEC Awards scholarship grants, contact Karen Dunn at 510/939-6149 or KarenTEC@aol.com.

TELEX AND EVI INTERNATIONAL MERGE

Telex and EVI, both controlled by affiliates of Greenwich Street Capital Partners Inc., the New York-based private equity investment fund, merged in late January. The combined companies benefit by sharing an extensive worldwide distribution network, multinational manufacturing expertise and research and development resources. In related news, EVI recently took up an option to purchase the minority share holding of Tony Oates in Shuttlesound Ltd., a distribution company owned by Greystone Industries.

CORRECTION

A caption in the January "Coast to Coast" refers to a single Malik Pendleton and Mary J. Blige remixed at The Hit Factory. However, the pair are actually pictured working in Sony Music Studios, New York City. ■

CHECK OUT THIS MONTH'S
MIX ONLINE!

<http://www.mixmag.com>

If you already know these interesting facts about Akai Digital Recorders . . .

8 Track simultaneous disk recording
 8 machines • 18 bit ADC • 64X oversampling
 digital mixer • Dynamic MIDI mix automation
 S/PDIF digital I/O • 50-pin SCSI port (DR 8)
 • 3 in 16 out + stereo master output
 Varispeed playback • Machine control • Auto
 input • Switchable + ADAT interface - \$299
 \$299 • 2nd SCSI port • parametric EQ - \$699
 destructive editing • 20 bit DAC • 8X
 Built-in mic preamp • 1/4" TRS in/out •
 Balanced input • DR8, DR16 and
 50-pin SCSI port • Auto punch in
 \$299 • S.M.P. controller - \$799



board to 128 tracks • Link up to
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 auto locator • AES/EBU and
 • 8 in 8 out + stereo master
 with fine resolution mode •
 MIDI automated mixing • MIDI
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 disk recording • Non-
 ADC • 64X oversampling
 MIDI mix automation •
 50-pin SCSI port • Balanced
 + stereo master (DR16) •
 playback • Compatible with
 Control • Adjustable preroll •
 4/10db line levels •
 MIDI interface -
 \$299 • MT8 MIX
 EQ - \$699 •

Maybe you'll be interested in these new facts.

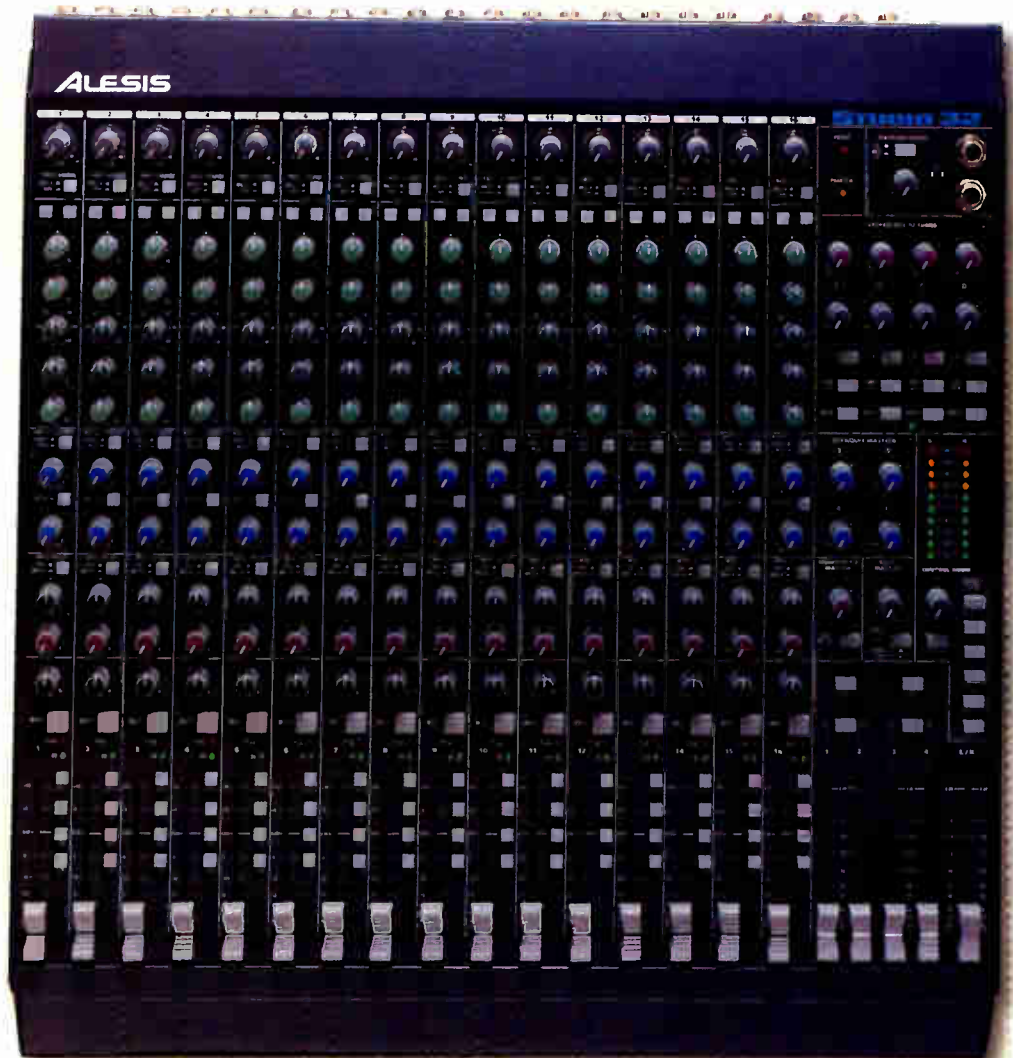
8 Track DR8 - \$1995
 16 Track DR16 - \$2995



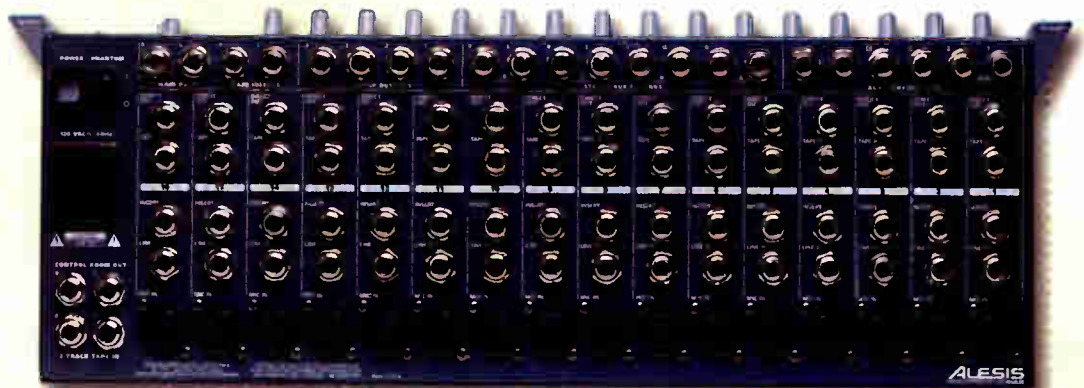
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The Recording Console That



The Studio 32's inline design gives you balanced XLR mic inputs and balanced 1/4" TRS line inputs, channel inserts, tape inputs and direct outputs on each channel. Four group outputs, six aux sends (four pre-fader and two post-fader), phantom power for every channel and separate control room outputs are also provided. And since all of these connections are on the rear panel, your studio stays neat and professional-looking.



Looks **Sixteen** but Acts **Thirty-two**

The world of small-format consoles seems to be suffering an identity crisis. After all, most of them look alike...and also act alike.

Where can you turn to get the advantages you need?



Introducing the Alesis Studio 32™ Recording Console with Inline Monitoring



The Studio 32 offers 16 hybrid/discrete mic preamps that combine extremely low-noise performance (-129dB E.I.N.) with a wide 60dB range, making them perfect for driving digital recorders. In fact, the Studio 32 offers a wider dynamic range than all of the currently-available "affordable" digital consoles (and it's a whole lot less expensive).



Audio sources in your studio multiply quickly. Instruments, miked drums, vocals, and stereo signals from synth modules keep adding up. Fortunately, the Studio 32 has twice as many inputs as an average 16-channel mixer, so simultaneous recording or mixdown of multiple sources—live or in the studio—is no problem.

It's the world's most affordable 16-channel console that offers inline monitoring capability. Inline monitoring means that each channel can send signals to a recorder and receive signals coming back from tape...at the same time. So, unlike your average mixer, the Studio 32 can hook up with sixteen tracks of ADAT™ (or any other recorder), instead of just eight. That's *double* the tracks you can access.

Other stuff that makes the Studio 32 stand out from the crowd: fully-parametric midrange EQ and super high-quality mic preamps that are more comparable with the consoles you see on magazine covers than on other compact mixers. 40 inputs available at mixdown...again, twice as many as most other small consoles. All at a price so low that you can afford to get that second ADAT (now that you can use it).

▲
Above: a 16-track digital recording studio that can fit into a corner of your living room. Centered around the Studio 32 and a pair of ADATs, this setup is a professional-quality, low-cost solution for serious recording.



The Studio 32's EQ section provides more than just high- and low-shelving EQ. You'll also find a fully-parametric midrange EQ with individual gain, frequency sweep and bandwidth (Q) controls.

The Alesis Studio 32. The console that acts a lot bigger than it looks. At your Alesis Dealer now.

STUDIO 32™
RECORDING CONSOLE W/INLINE MONITOR

For more information on the Studio 32, see your Authorized Alesis Dealer or call 800-5-ALESIS.
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CIRCLE #008 ON PRODUCT INFO CARD

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ALESIS

MORE FOR LESS

LESS FOR MORE



ILLUSTRATION: NATHAN OTA

Capitalism. Ain't it grand? It ensures that technology will advance. Yesterday I told my new car I was hungry, and it put 11 places to eat on screen, all within three miles of my current location. I picked one, and it gave me verbal instructions at each intersection to get me there. Unfortunately, the place was closed.

Fortunately for us, however, digital audio is part of this advancement, and for better or worse, it's still open. Capitalism has split audio development into two entirely divergent, if not seemingly opposite, paths: more for less, and less for more.

MORE FOR LESS

This is where the megabucks really are. It seems that when the typical fried teen or young, misguided

adult cruises into Circuit City, he is somehow totally relieved of his ability to make independent decisions. He is stripped of all judgment, all elective reasoning, all control. He is overpowered with some sort of trance or hormonal shift, and he blindly wanders to the loudest, brightest area of the store. He then leans directly into the boom boxes with the most lights, most speakers, most controls, most moving image displays, most knobs and smallest price tag. Ah, yes. More for Less.

More features for less bucks. These things play ten CDs, have more DSP than Industrial Light & Magic, more speakers than the house and more watts than Aerosmith. The plasma displays show

you EQ curves, spectral analysis, time, date, temperature and barometric pressure, the names of each of those CDs and where you bought them, and at least one of the ones I saw—this part is no joke—actually *allows you to program in your name* so when you turn it on it says "hello, your name here," and "good-bye, your name," when your mother makes you turn it off.

Of course, they sound like hell. They offer specs at 10% distortion and never even meet *that*, and they blow up later in the summer. But they sell so well that they are beginning to appear in high-end audio stores. Sad but true. I must be getting old after all. I sound like my father.

More for Less indeed. The man-

—CONTINUED ON PAGE 192

BY STEPHEN ST. CROIX

CDR-18

by Otari

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PROFESSIONAL
COMPACT DISC RECORDER

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The CDR-18 is an inexpensive device for writing CDs from virtually any analog or digital source. Universal recordable CD media is utilized and is readily available at a fraction of the price of other forms of storage. The CDR-18 has all the familiar controls you would expect to find on a consumer CD recorder but has been designed with the rigor of professional recording environments in mind.

CDR-18 Highlights

DAT, CD and MD IDs can be copied along with audio for easy copying functions

Balanced analog inputs with selectable input level

Comprehensive digital interface with AES/EBU input and SPDIF input and output

Digital Synchro Record Mode

Digital Fader function providing natural automatic fade-in, fade-out

Rack-Mount kit and infrared remote supplied standard

Input monitoring without dis

Built in sample rate convert

Ultra stable transport with downward firing laser

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World Radio History
CIRCLE #009 ON PRODUCT INFO CARD

The Panasonic DA7 Mixer. Taking Digital Further.

1-Step Functionality
24 Bit A/D and D/A
Moving Faders
Surround Sound
Automation & Memory

Inspiration can strike you in the strangest places. But, when you've been dreaming of the ideal digital a/v mixer for as long as we have, you jot it down on the nearest piece of paper. Well, the end results of that inspiration have come to pass...Panasonic introduces the RAMSA WR-DA7 digital mixer, and sets an entirely new standard in quality, flexibility, affordability, ease-of-use and value.

TAKE COMMAND... NOW

32 inputs and 6 auxiliary send/returns (for a total of 38 inputs), 8 bus, 24 bit converters, moving faders, instantaneous recall of all settings, surround sound... you'd think nothing this fully featured could be this easy to use or this affordable... but it is!

GREAT SOUND

32-bit internal processing combined with 24 bit A to D and D to A converters, yield an incredible 110 dB dynamic range, putting the DA7's sonic quality in a class by itself.

MAXIMUM FLEXIBILITY

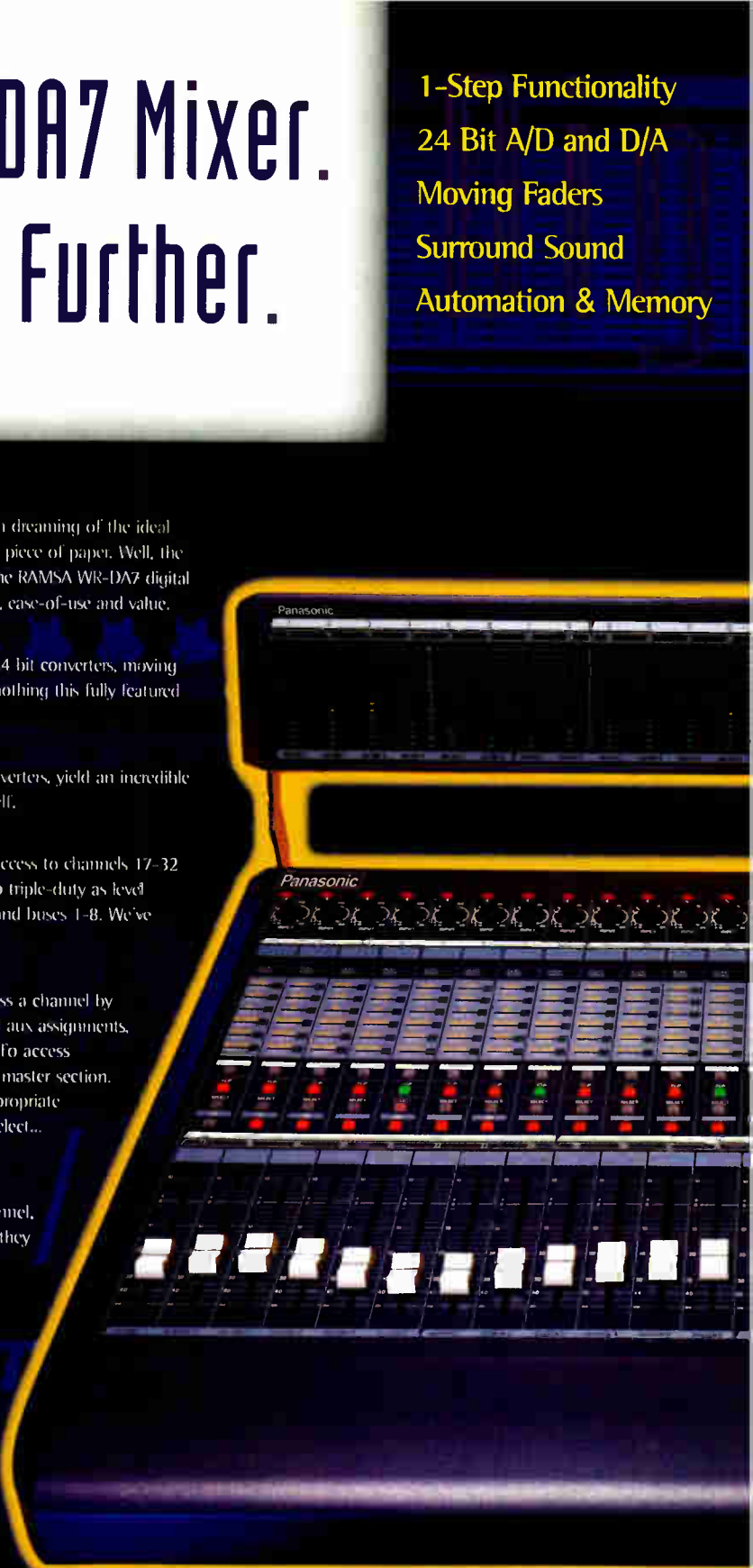
Packed into the DA7 are sixteen analog mic/line inputs and individual access to channels 17-32 through channel flip buttons located above each fader. Twenty faders do triple-duty as level controls for channels 1-16, 17-32, or Aux sends 1-6, Aux returns 1-6, and buses 1-8. We've even added an additional fourth layer, which includes MIDI faders.

EASY-TO-USE

The DA7 features automated, logical layout and intelligent design. Access a channel by pushing its select button, and all parameters for the channel: EQ, bus and aux assignments, and dynamic/delay settings come up on the large backlit LCD screen. To access individual parameters, just touch the appropriate knob in the console's master section. This calls up the sub-menu on the LCD screen and zooms in on the appropriate function. No digging through menus or getting lost in functions; just select... and you're there.

THE POWER TO CONTROL

The EQ section offers four true parametric bands active on every channel, with the top and bottom bands selectable from peaking or shelving, or they can be high and low pass filters, respectively. The frequency bands are overlapping, with the top two bands ranging from 50Hz to 20kHz, and the bottom two bands ranging from 20Hz to 20kHz. Boost or cut for these bands are adjustable in 1/2 dB steps to + or - 15 dB. The bandwidth is adjustable from 0.1 octave to 10 octaves. The DA7 is so full featured, even the Aux returns feature a 2 band parametric equalizer. The dynamics section offers you a choice of a Gate/Compressor/Limiter or an Expander on every channel with variable attack and release times and levels for threshold and ratio. A Delay of up to 300ms is available on every channel. In addition, 50 EQ and 50 Dynamics memories can store your favorite settings for instant recall.



RAMSA

SURROUND SOUND AT YOUR FINGERTIPS

The DA7 is equipped to mix 5.1 channel surround through its buses, so you don't have to tie up auxes, controllable by three modes for any channel or combination of channels.

All modes provide full dynamic control of panning, and can be copied, stored, and transferred to any other channel. An optional MIDI joystick gives yet a fourth method.

MORE FEATURES THAN WE HAVE ROOM TO TELL YOU ABOUT

The DA7 features four up/down/left/right cursor keys that are switchable to output MIDI Machine Control commands to MDMs, sequencers, or workstations. Data entry is done through the parameter dial or alphanumeric keypad. There's an undo/redo button, solo mode set, and built-in talkback mic. Honestly, the DA7 is so feature rich, (but still easy to use) that we don't have room to describe it all here. You'll have to test drive it in person!

TAKE IT TO THE WORLD

The rear panel has 16 analog mic/line inputs (8 XLR with individual software switched phantom power, and 8 with TRS); 16 channel inserts (pre-VDI); and 6 auxiliary send/return jacks (2 use S/PDIF; the rest, +4dB 1/4 inch connectors). Analog outputs include +4dB balanced master outs with XLRs; +4dB balanced record outs on TRS 1/4 inch jacks, and two +4dB monitor outs on TRS balanced jacks. Digital I/O, via XLR connectors is switchable between AES/EBU and S/PDIF. The rear panel also offers MIDI In and Out, word clock I/Os, plus both a 9 pin RS-422/485 serial port and PC port for Mac/Windows with software support for both, a 1/4 inch footswitch jack for controlling talkback on/off or automatic punch in/out for automation, and a D-15 subconnector for the optional meter bridge.

TAKE IT EVEN FURTHER

3 expansion-card slots allow connection of recorders with ADA1 Lightpipe, TASCAM ADI, and AES/EBU (switchable to S/PDIF) interfaces, with any of the audio cards fitting into any slot. A fourth card provides 8 more analog inputs/outputs via a D-25 subconnector. The third expansion card slot can be used 3 ways:

- Connect 2 DA7's together with true bi-directionality
- Replace analog inputs 9-16 with digital inputs
- Digital inserts across the 8 buses, six Auxes, and L/R stereo cut. An option card provides SMPTE and Video Sync input.

WHY?

Panasonic worked overtime to provide so much creative power and flexibility in such an affordable package. We can't possibly show all you can do with the DA7 on paper, so experience it yourself at your Panasonic RAMSA dealer.

Panasonic

Broadcast & Digital Systems Company

FOR MORE INFORMATION CALL:
1-800-777-1146

IN SEARCH OF A GRACEFUL DEATH

TODAY'S GEAR MEANS ALL OR NOTHING

There's nothing like having a bunch of students around to help you find the weaknesses in your gear. Those of us who have worked with audio hardware and software for many years develop an instinct about what we can or cannot do with our tools. We know, for instance, that on a tape deck built before the days of transport logic, if you quickly press all the transport buttons in succession, the result will be several yards of tape spilling all over the floor, or wrapped around the capstan, or both. We know that when a software program gives us a "You're running out of memory..." message, we don't just save what we're doing, we save everything we *have* been doing and get the hell out, because we know a system crash could be lurking around the next mouse click.

So we're careful. But students

and other newcomers to our field don't necessarily know what they're *not* supposed to do—the air is fresher around them—and so they find ways to screw things up that we older, wiser, more cautious, oft-stung old farts would never stumble across. They figure, in their naïveté, that things are supposed to work the way their makers say they do—and so they are constantly breaking stuff.

And there's nothing like the last week of a semester to bring this point home. This past semester, on the Saturday evening preceding the week my students were to present their big term projects, as they labored frantically around the clock to finish them, I got one of those phone calls I am constantly dreading: A tape deck had eaten a student's master tape. Of course, I

won't mention any brand names, but it was a modular digital multi-track deck that uses a transport originally designed for video.

So now her project was in danger. Not only did she fear that all of the music on the tape would have to be redone, but she was even more upset about something else: No one else in the class could work on their projects either until the masticated cassette was removed from the deck. I doubt the problem was caused by incompetence: She is among the small, elite group of students who are trained to assist our facilities director in maintaining all the studios. But while she can be counted on to find an errant normal in a patchbay or isolate a noisy fader in a console, pulling apart an MDM was not part of her training. It wasn't part of mine, either, so I couldn't be of much help. Our facilities director lives 30 miles away,

BY PAUL D. LEHRMAN

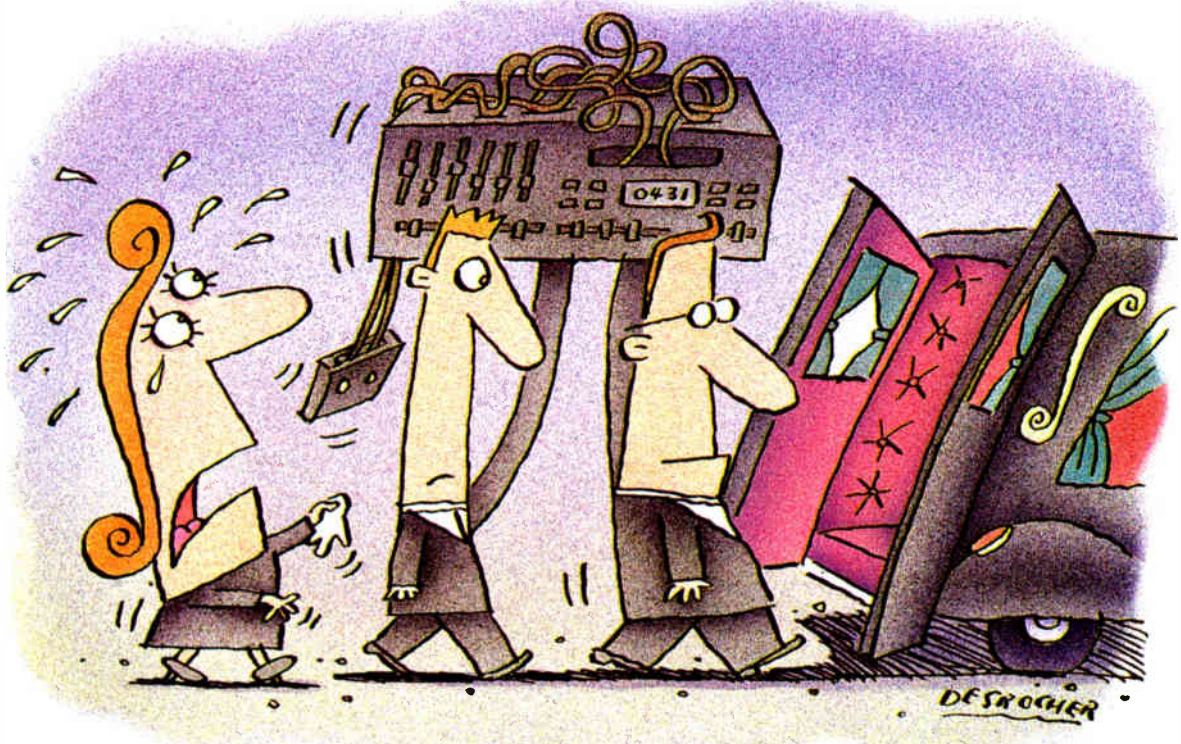


ILLUSTRATION JACK DESROCHER

I will play music

Nothing but music

*Way back then it was cool
to play the blues
When hip-hop was be-hop
you know, straight ahead.
When a young musician
had visions of Oscar an' McCoy
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and even if his wife hadn't been in labor, it's doubtful we could have convinced him to come in on a Saturday night and fix the thing; nor would he have felt comfortable walking her through the job over the phone.

As it happens, we have one of the area's top technicians on our payroll, so I told the student to call him. He was very sympathetic over the phone, but we don't pay him enough to come in on a Saturday night either—he lives 30 miles the *other way*, and all of his time at school that week was dedicated to hearing *his* students' term projects. All he could do was suggest she take an identical deck out of another studio, where it was also in round-the-clock use by a different group of students, and patch it into the studio where she was working. And, oh yes, forget about the original tape—it's toast.

So for the next five days, until the technician could get the thing into his shop, extricate the tape and figure out what the hell went wrong, we had hot and cold running students plugging and unplugging audio, timecode, MIDI and control connectors from one overused

multitrack and running it back and forth between two studios, while frantically rearranging their schedules to make sure that the same deck didn't need to be used in both studios at the same time.

The next day, Sunday, and I'm not making this up, an audio editing program the students were using stopped

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into our tools anymore.**

**Today's gear,
when it goes bad,
doesn't do anything
halfway: It's dead, Jim.**

working in one of the studios (not the one with the dead tape deck). No error messages, no crashes. All of a sudden it would just freeze halfway through the boot-up process. I came in the day after it started happening and spent two

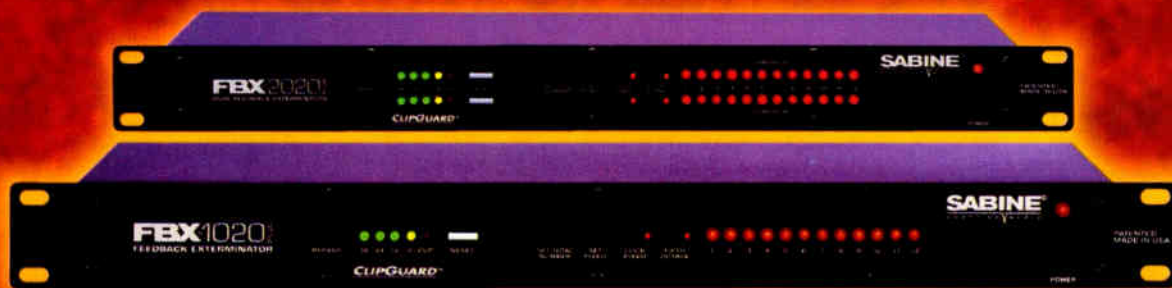
hours reconfiguring system extensions and prefs files, running disk analysis programs and reinstalling the program—everything short of initializing the hard disk and starting over. Nothing worked. They'd have to do without. There was no way they could use the software in another studio, since that would have meant disconnecting the various hard disks and dragging them around, and I wasn't going to go there. So I put up a little sign next to the computer: "Sound Patootie [not its real name] has stopped working. Deal with it."

They did, and in the next couple of days, they were somehow all able to finish their projects, and they were all good, despite the insane obstacles that were thrown their way at the last minute. They all managed to get time with the multitrack without forcing deprivation on other students. They all found ways to accomplish what they needed in terms of sound design without the software—either they found other software that could do the job, or they just shrugged and made what use they could of what they already had.

So I was proud of them, but I was still mad as hell. And what made me the most mad was realizing that there is no

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"graceful failure" built into our tools anymore. Just the way digital is all ones and zeroes with nothing in between, today's gear, when it goes bad, doesn't do anything halfway: It's dead, Jim.

Return with me now to another time, say, 20 years ago, and another place: a new studio in a far-away country with a brand-new console, brand-new 24-track tape deck and brand-new stereo plate reverb. The studio was in a very hot climate, and the air conditioning had been installed by people whose ineptitude was exceeded only by their dishonesty,

so the equipment broke down a lot. We were on the phone constantly to the dealer, who, not eager to send someone several thousand miles on a service call, was working just as hard as we were to solve the problems.

One of the output preamps on the reverb failed. First, we patched around it, then we managed to wire the two transducers on the plate to the single working output, so it ended up sounding pretty good, although it was in mono. Another day, the monitor section on the board started to get noisy. While we waited for a new op amp, we borrowed a cue bus that we weren't using

much and ran that to the monitor amps. The multitrack Dolby rack started to give out, one channel at a time; we patched around the dead channels and recorded without noise reduction if we had to. The 24-track mysteriously stopped erasing when we were overdubbing on certain tracks; we went to other tracks and finally traced the problem to faulty relays on the channel boards. We pulled the boards out and put the good ones in the channels that we needed to overdub on. In other words, as things deteriorated around us, though we weren't very happy about it, we were quite capable of carrying on, and the clients barely noticed.

Imagine that happening today. Your digital reverb freaks out and garbage starts spewing from the left speaker. What are the chances you'll be able to still get signal through the right channel? How about a multichannel A-to-D converter? If one channel fails, will you be able to patch around it and use the others? If an effects bus on your all-in-one digital mixer goes haywire, do you think the other five buses will continue to work just fine? And what happens when a channel goes down on a modular digital multitrack? Can you still record and play on the others?

The answer to all of these questions is a resounding "No!" When today's equipment craps out, it does so spectacularly and with great finality. There's no such thing as a "workaround" any more. If you need to make sure that something is going to work *all* the time, you buy two of them. One studio I know advertises itself as "24-track," despite the fact that it owns *four* of the previously mentioned MDMs. The owner knows that at any given time, it's almost certain that one of his decks will be in the shop.

Why has this happened? It's a sacrifice we've made in the interests of economy. Manufacturers are under constant pressure to come out with gear that packs more punch into the same amount of physical and financial space, and redundancy, field-repairability and user-oriented troubleshooting and diagnostic procedures just aren't part of the equation.

Audio manufacturers are becoming increasingly dependent on custom VLSIs, which, as time goes on, get continuously more sophisticated and include more functionality. That brings costs down but makes it impossible for a unit to fail partially or gracefully. Putting eight D-to-As on a single chip means that the manufacturer only has to

—CONTINUED ON PAGE 202

"...the meek shall inherit the earth."



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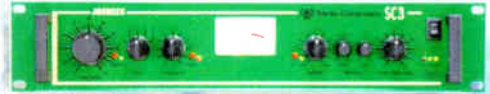
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Future Recording Studios

TEDDY RILEY'S PRODUCTION HIDEAWAY

Sometime in the late '80s, Teddy Riley decided it was time to leave New York. He had been engineering professionally since the age of 14, working his first session behind the SSL E Series at Soundworks, then moving over to Axis, Soundtracks and Hit Factory. The success of his band, Guy, and the popularity of New Jack Swing, brought with it the trappings of fame, including all the distractions that are part of daily life in the world's media capital. So he decided to pack up and move to Virginia Beach.

In 1991, Riley opened Future Recording Studios in this resort town, under the umbrella of his parent company, Life of Riley (which also runs Lil' Man Records, Funky Mama Productions and New Jack Swing Productions). Last year, he installed an 80-input SSL 9000J, pictured on this month's cover.

Future Recording is not for-hire; Life of Riley keeps the two pre-production suites (soon to be renovated into full mix stages) and mix room busy with in-house projects for the likes of Janet Jackson, Blackstreet, Soul Foo and Whitney Houston. In addition to his work at Future, Riley block-books at least a week a month at Hit Factory and has been consulting on the construction of a new facility in Los Angeles for Interscope Records, so that he'll have a home on the West Coast, as well. Business has been very good. He is all of 31 years old.

Future Recording was designed by studio bawtton with an emphasis on "true, flat" sound, a phrase that pops up regularly in conversation with Riley. Main monitors are a custom Augspurger design (he has another pair at Hit Factory, made specifically for sessions with Michael Jackson) with double 15-inch horns. When traveling, he carries ProAx Studio 100s ("You get the true low end and the true highs and mids—everything at the same time"), and he regularly checks mixes out on Radio Shack Optimus 7s, which he says are his "favorites"—his dirty little secret.

He records directly into 32 tracks of 24-bit Pro Tools (Glyph Technologies 9-gigabyte hard drive), which is wired directly into the 9000, as are his keyboards. "All of this comes up on the board without patching," Riley says. "I like to walk into my room, push a few buttons and have my keyboards come up." Riley also works regularly on a Digital Design AudioLogic system, which the company updated specifically for him when he outgrew the previous version in mid-1997. He endorses Digital Design, as well as Emagic.



PHOTO: BOB JONES

He also has two Studer A827 24-tracks, 48 channels of Dolby SR and a slew of Tascam DA-88s.

He has a wealth of Pro Tools plug-ins, including a favorite called Autotune ("tight, smooth vocals"), and is enamored of all that can be done within the Pro Tools environment. But hardware units hold a special place in his heart and his checkbook, and he's a self-described outboard nut. He has, he says, one of the largest collections of outboard processing in the music industry, and he buys four to five of each unit—not to guard against down time, "but just so we have extra dynamics if we really want to get an impact on any sound we want." He mentions units from Yamaha, Avalon, Neve EQs, Drawmer and dbx, but he holds his outboard cards close to his vest: "That's just my secret to having a sound on drums, percussion and things like that."

If Riley had his way, he would be mixing three to four projects at once, so plans call for the other two mix suites to be up and running by midsummer. Right now, it's all that he can do to keep up with the demands on his time and talents—as songwriter, arranger, producer, engineer and musician. He recently finished a Janet Jackson remix and some dates with MJ and Whitney, and he just put the finishing touches on two songs for the movie *Bullworth*, starring Warren Beatty.

To keep operations running smoothly at Life of Riley, he is assisted by his brother Markell Riley, CEO/VP of LOR Entertainment; Madeline Nelson, general manager and vice president; and Tom Taliaferro, chief executive of Future Recording Studios. Staff engineers are Jean Marie Horvat and George "Junior" Mayers. ■

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ROBBIE ROBERTSON

MAKING CONTACT WITH RED BOY

As the principal songwriter and creative guiding light for The Band, Canadian-born Robbie Robertson spent years reshaping American roots music into something altogether new—music that hearkened back to simpler times, yet was also unmistakably contemporary. Many of the songs he wrote for The Band surely rank with the best of the rock 'n' roll era.

For the past few years, however, Robertson has been musically exploring a side of himself that he had ignored most of his life: his own Indian heritage. His mother was a Mohawk born and raised on the Six Nations Reservation in Ontario, Canada, and growing up, Robbie spent most of his summers there. Rock 'n' roll, R&B and life on the road playing music took him away from his Native roots during his teenage years, and then it wasn't until 1993, when he wrote and recorded music for the six-hour TBS mini-series *The Native Americans*, that he began to integrate elements of Native American music and culture into his music.

Now he has released an album on Capitol Records called *Contact From the Underworld of Red Boy*, which moves far beyond his work on *The Native Americans* and paints some fascinating pictures of the Native American community through songs, chants and stories. Robertson the skilled song craftsman is still much in evidence here, but his palette has broadened on this record. There's a peyote song sung by members of the controversial Native American Church and a moving narrative by the jailed Indian leader Leonard Peltier. There's a song about the Native view of UFOs and a retelling of an ageless story from the Mohawk oral tradition. There are textures and beats that are from that world juxtaposed with music manipulated by the likes of the London DJ/techno wiz Howie B, Marius de Vries and others. The disc



PHOTO ANDREW MACHESON

was recorded in L.A., New Mexico, London and the Six Nations Reservation, using numerous Native American and other musicians. All in all, it's quite a melting pot.

I caught up with Robertson at the Village Recorder in L.A., where he has his own studio space, the night after he'd received a Lifetime Achievement Award from the National Academy of Songwriters.

So what did you say in your acceptance speech?

I was a little under the weather, but I told them a bunch of songwriting stories.

Can you share one?

Sure. I told them about when I was 15 years old and I first met Ronnie Hawkins & The Hawks. I heard Ronnie saying that he was looking for some new songs for his next record, so I went off and I wrote two new songs, and then I was trying to get him to listen to them, and finally he did, and he declared on the spot that he was going to record both of them when he went to New York in a couple of weeks! Of course, I was ecstatic about this. Then the next time I saw him he brought me the completed album, and I'm thinking, "Wow! I've got

songs on an album!" I'm really cherishing the moment. I open the record slowly and I'm savoring the scent of the vinyl and I look on the label and I see the song titles and I see my songs there, and under the songs it says, "Robbie Robertson and Morris Levy." And so I say to Ronnie, "Who the hell is Morris Levy and what is his name doing on these songs that I wrote?" And Ronnie says in his southern accent, "Well, son, there are certain things in this business we just don't question and it's better for all concerned to just accept."

A couple of days later, I was in a record store and out of curiosity I looked at some other recordings on Roulette Records, and I see Morris Levy's name on a lot of songs. And I think, "Man, this guy's a songwriting fool!" [Laughs]

Then, a few months later, Ronnie took me to New York because he was looking to get a head start on his next record, and he figured that since I could write songs he liked, maybe I could also help find material for him to record, as well. So we went to the Brill Building [the famous New York songwriters' den], and I met Doc Pomus and Mort Schuman, who went on to become friends of mine for years; Lieber & Stoller, who I've also now

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known forever; Otis Blackwell, who wrote "Don't Be Cruel"; Henry Glover, who wrote "Drown in My Own Tears." I'd go into these different little rooms where they were working and they'd play me these songs, and I'm saying, "That's great! Have you got any more?" "More? who is this kid?" [Laughs]

Then Ronnie took me up to Roulette Records to meet my "songwriting partner," Morris Levy. We go into his office and Ronnie introduces me as this young guitar player and songwriter who he thinks has great "po-tential," as he calls it. And Morris Levy looks at me and says, "Yeah, he's a cute kid. I bet you don't know whether to hire him or f___ him." And I'm thinking, "Whaaaaat? What is with this guy?" And I look around his office and he's got these guys in there with these tight dark suits on; they're packing heat or something. Two things became apparent to me immediately. One was that the Cosa Nostra was not a myth. And number two, that I would forego my comments about the songwriting credit dispute. [Laughs]

Let's talk a bit about the new album.

How did your previous album, Music for The Native Americans, lead to this one? It seems like a continuation in a certain sense...

When I started making the record, people in the Native community were saying to me, "Use your strengths. Don't try to be traditional; you're not traditional. Your strength is in speaking a language of today."

Well, that album definitely opened the door for me on this, and when I got inside I felt very comfortable. Of course I did *Music for The Native Americans* in

conjunction with the six-hour documentary, so what I did had to fit with that. I didn't have a blank canvas, as they say. There were boundaries and stipulations.

After I did that record, I thought, "Okay, what different thing am I going to do now?" and I was starting to work on some music and ideas in other directions. Some people from the Native American community that I really respect asked me what I was going to do next, and I told them these ideas I had, and they said, "Oh, you've opened the door and now you're going to walk away?" And I said, "Uh, no I'm *not*." [Laughs] That's all the invitation I needed.

At the end of *The Native Americans* project I definitely felt fulfilled, but on another level I knew I had only scratched the surface. So when I got to thinking more seriously about what I wanted to do next, I decided to really explore [my Native American roots] the way I wanted to. That felt good to me: I thought, "I'm going to do this now with what's in my imagination; lay out my interpretation of this is in this day and age."

I'm interested in your use of the word "interpretation" there. Obviously, these



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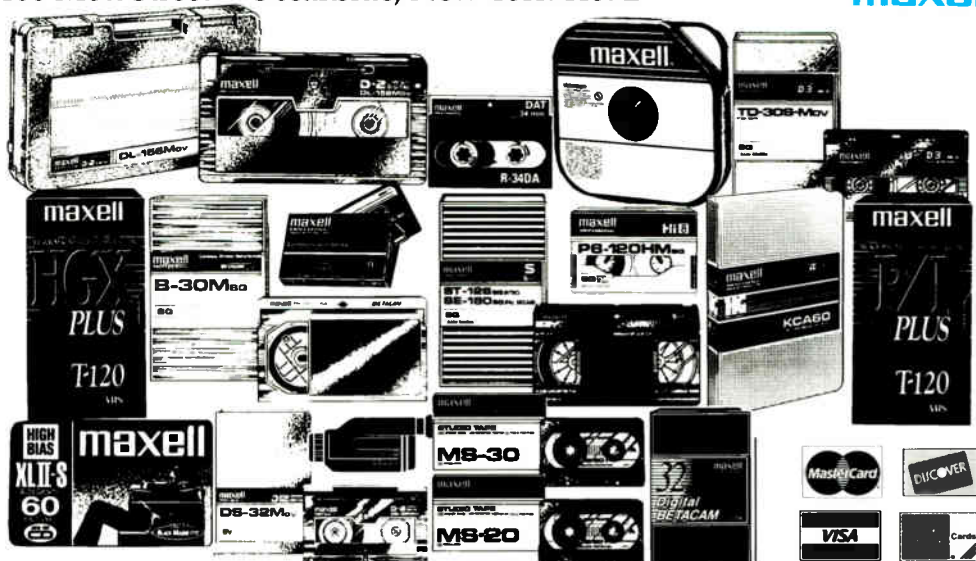
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THE MIX INTERVIEW

songs aren't strictly biographical, but you surely have a soul connection with the material. Does it feel personally revealing?

It's personally revealing in that this is stuff I've been carrying around with me my whole life. These are song ideas, stories, sounds, chants, rhythms that I've been trying to figure out how to get them from inside me *outside* me. So that's why it's really personal to me. Like "The Code of Handsome Lake"—this is a story I grew up with all my life. The first song on the album ["The Sound Is Fading"] has a tape of this young girl singing. I've been carrying this around with me for years. It touches something inside me. And sometimes those kind of emotions can be even more personal than saying "Well, here's a story about the time when I..." Because they're really from inside, and not just experiences. *Isn't it fair to say that even in your days with The Band you tended to not write autobiographically, but were more interested in presenting snapshots of the soul through storytelling?*

That's true, and because of the ensemble nature of The Band, I was trying to write songs that represented *our* sound and not just, "Here's another little song about *me*." [Laughs]

How did you book up with Howie B? He's everywhere these days—on U2's last album, on his own record...

I've known about Howie for several years. A couple of years ago, Björk and I were talking about him, and there's also this whole connection to some music people over there [in England] through some friends of mine—the Massive Attack people, who I've known for a while. So he's part of a musical world I've been connected to. But also, there were certain things he'd done over the years that I really liked. I heard a mix he did for Everything But the Girl, and there was a thing he did on the Passengers' record and various things of his own where he went under another name on some compilations. Then I got to know what his abilities are in the studio, and I thought he was somebody I could bring my stuff to and he might know how to help me sort something out. He's really good at that—"Oh, I see where you're trying to go with this."

What's an example of the sort of things he brought to the project?

Well, on "Makin' a Noise," I had this song which was mostly a beat and some guitar and a vocal, and then I brought in Howie and we started just messing

around with that and things started to take shape. He's a real good engineer and he has these two other guys he works with—Johnny Rockstar and Jeremy Shaw; they're like a little music team. The rhythms fell into place, and I just kept feeding him sounds and playing him rhythms and ideas and he would take guitar stuff of mine and manipulate it. It was almost like making a painting. *Is this something that would take place over days, weeks?*

It was very quick with him. It used to be that you would write a whole album and then you would go in and record it. But nowadays a lot of the writing is

the recording, so it's a different process. It's funny, all of this equipment that's supposed to make things go quicker gives you a lot more options, and it ends up taking a lot longer sometimes. [Laughs]

How savvy are you when it comes to sequencing and computer-generated music?

I don't write on a computer or anything, but it's not foreign territory for me at all. This record is really using the tools of today. When I first started making the record, what people in the Native community were saying to me was "Use your strengths. Don't try to be tradition-

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al; you're not traditional. Your strength is in speaking a language of today, so use that." And that was wonderful for me to hear; to not be afraid of that.

Who is Marius de Vries, who co-produced a number of tracks on the record?

He's a great programmer and a great musical talent. He was somebody I talked to in the early stages of the record who I felt might be good at helping me bring some of my imagination to life. So I would give him ideas, sounds, rhythms, chants, and told him how I imagined using them, and then he helped me put them together.

When you're making music like this that's highly layered and has all these textural elements, how do you know when a song is done?

That's an interesting question. A couple of years ago I was meeting with this old friend of mine, this painter named Bryce Marden, who's a famous New York artist, and I was looking at some of his paintings and saying that same thing: "How do you know when it's finished?" And the truth is there's no real answer for that. "It's done when you stop painting." I guess the same is true here. You just know when you know it's done. You stop and move on to something else.

It seems that you must have been quite affected by your first solo album experience with Daniel Lanois. That textural painting that he does has been an undercurrent of your solo work since then.

It's just part of my taste, really. Daniel and I are both from the same part of the world. He's a French Canadian, but he grew up in Hamilton, Ontario, which is just over the hill from the Six Nations Indian reservation, which is where I'm from.

But I'd have to say that as much as anything I was influenced by the years of working with [film director] Martin Scorsese [who directed the concert film *The Last Waltz*, featuring The Band, and *King of Comedy*, for which Robertson served as music supervisor]. You get to a point where you're almost scoring the songs as opposed to finding little cute riffs. I just started finding other ways of approaching songwriting and production. And when you see a film and you say, "God, this film is haunting" or "That was so emotional"...I try to get those things out of my records.

Do you think in visual terms for your songs?



The Band in the early '70s (L to R), Levon Helm, Garth Hudson, Robbie Robertson, Rick Danko and Richard Manuel.

PHOTO: MICHAEL OCHS ARCHIVES/VEENICE, CA

Somewhat. I do think cinematically, but for me a big part of it is to work on these without my eyes, and to feel my way along and to use my other senses. That way it becomes a little more purely emotional, and it kind of saves me from getting too heady, too clever.

How did the songs on the new album fall together as a group?

As I worked on them they kept drastically changing faces. A lot of times I'd have something in mind, but making this record the way I did this time, a lot of the excitement was in the discovery of new things. I'd go in and have some focus point, but as I discovered more, it would change drastically.

What's an example?

There's the song on there called "Sacrifice," which has Leonard Peltier on it. [Peltier is an Indian activist who has been in prison—some believe unjustly—since 1976 for killing two federal agents.] Originally it was a soundscape I was working on with various people in the desert in New Mexico, and I was going in a certain direction and imagining something. And as I started putting things together I was having these conversations with Leonard Peltier, who called me from Leavenworth Penitentiary. I'd talk to him every couple of weeks. He's a friend of mine and somebody I really care about and have great respect for. And it struck me as I was working on this piece of music what he was saying on the phone was connected to the music. And so I said, "Leonard, I have this idea. I want to go back and have you tell me your story, and I'll tape it." So we did that and that became that song. And after him telling me that, I wrote the refrain for it.

Did you feel as though you had to make any concessions to commerciality on this record?

When I was making it, I was trying to keep in the back of my mind that the object was for people to share it, and so I was trying not to do anything that was too "outside." I had other tracks that were perhaps more foreign to most people's ears than what's on there. I was trying to make something that spoke a universal language. I don't know if that's "commerciality." I was just trying to say what's on my mind.

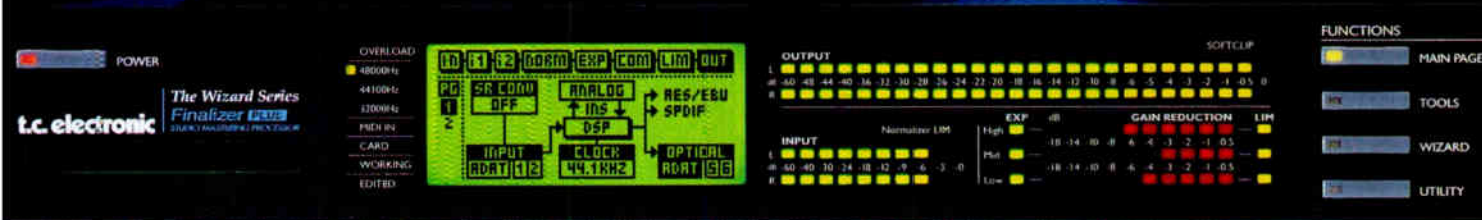
You worked in a number of studios in various instrumental configurations. Did the music come in on different recording formats?

Well, Howie is a 15 ips SR guy. He swears by that. We did some of the work here in Los Angeles, and I went to London and we did some of the stuff at Milo Studios, which is a place he really likes. And then there's another studio there called Whitfield, where he loves to mix. Then I did some more at the Townhouse Studio in London with Marius. Then I did some other work with this guy Tim Gordine, who has a little studio in a bedroom in his apartment. On "In the Blood" and "Unbound," I just brought all the samples and the music with me, and we made those two songs in that little bedroom. There were also times when I was sending sounds back and forth through the mail. I'd be in New Mexico working and I'd send something over to Howie or Marius or Tim. I'd say, "I have this idea. Listen to this rhythm..."

What is your setup at the Village? I know you've been working there for a number of years.

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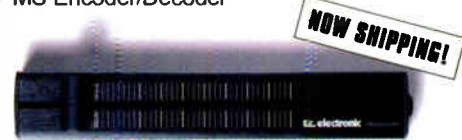
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I have a studio within the studio. The room I'm in is the original studio that was here. The music that was made here before I got here is amazing. This is where Sly & the Family Stone did a lot of *There's a Riot Goin' On*; all sorts of great stuff. It's a very musical little room. I just found that it's smart to have a studio within a studio because if anything breaks, they can come and fix it. Or if I need something, I just call downstairs.

I have an old 16-track Neve board—it's that old—and a Sony digital 24-track, and a whole bunch of guitars and gizmos. A thing I used a lot on the guitar on this album is these pedals made by this company in London called Lovetone. They're fantastic! They have names like Meatball and Big Cheese and Brown Source, and I used them on almost all the guitar on this record. They make great noises.

That's interesting, because I think for many years you were known for the pristine quality of your tone.

Hmm. Yeah. That could be. [Laughs]

Do you ever miss playing kick-out-the-jams rock 'n' roll?

I think in terms of songs. I don't think

in terms of jam sessions. On this record, I got to do some really fun things with the guitar. On the song "Rattlebone," the guitar was just *howling* through the building here. I had the Lovetone pedal on full effect.

Last year the big Band box set came out. How does that sound to you now in terms of the recordings?

I don't know, to be quite honest. I haven't really studied it. I haven't actually heard it. I have a little trouble these days going back. While they were making it, they were sending me some stuff, but I was kind of distracted with what I was doing at that time. I did all that so long ago, and they'd have to catch me at a different time for me to get really involved in something like that.

Have you heard that someone is trying to set up a studio in Big Pink [the famous house in Woodstock, New York, where The Band recorded, alone and with Bob Dylan, in the late '60s]?

Yeah, somebody told me that. That's fine. I don't know...

That was the beginning of this whole clubhouse recording concept of mine. It was my idea to put this thing in the basement, and it was my idea to create an atmosphere outside of the recording

studio atmosphere, where you could really do stuff that you would never dream of doing when you went into a studio. We were thinking nobody was going to hear it anyway, so we had a freedom that you don't have when you're in a big recording studio. It was all very carefree. Of course this is common now, but it wasn't then. Then it was like a big lesson. The Band was on the frontier of saying, "You know what, instead of me coming into your environment to make my music, you're going to have to come to my environment, because that's where my character shines through." And we did that on a lot of records, from the Basement Tapes to the work we did out at Shangri-La where we had our own environment.

Years later I preached that to the guys in U2, and I preached that to the Counting Crows when they made their first record. And I think it's a real valid point.

Have you read Greil Marcus' book about the Basement Tapes, Invisible Republic?

Not yet. He sent it to me, but I haven't had a chance to read it.

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[Laughs] I've been in Indian Country for the last few months and reading literature from that world. But I'm about to come up for air pretty soon.

Who do you feel taught you the most about record-making? The Band's second album [popularly called the Brown Album] is such a great-sounding record still...

Yeah, that's the epitome of what I'm talking about [the clubhouse studio, etc.]. We did it on *Stage Fright*, as well. But on the *Brown Album*, that's the only time I ever really did it hands-on myself. I engineered that record.

But who did you learn that from?

There's nothing to learn.

Don't tell that to Mix readers!

[Laughs] I mean, boards look really complicated, but really they're just a whole bunch of the same thing, you know? The only thing I wasn't really interested in is big patchbays. I always wanted somebody else to get down on their knees and figure out what hole to plug those things in.

Was the Brown Album 16-track?

Yes. Uh, let me take that back. It was 8-track, and *Big Pink* was 4-track.

So you were actually running the sessions?

Pretty much. I also set up the studio. I said, "This goes here, that goes there, put this up in front of that. No baffles. These are the kind of microphones which I think suit our music best." We used a combination of different mics; some Neumann tube microphones, but mostly cheesy little Sennheiser 421s and Electro-Voice RE15s. Sometimes you need to use microphones where the leakage sounds good.

So were you turning on the tape machine and then running in with your guitar and playing with the group?

Yeah, except I didn't have to run anywhere. The board and my setup were side-by-side right in there. I'd get a sound and levels on everything, hit record and start playing. It was all very homemade.

A lot of what's on the new record I did myself. I don't bother to mention it anymore, but I do a lot of the engineering on my records.

As a budding record maker growing up, how inspired were you by the records you heard as a kid, whether it was stuff from Sun Studios in Memphis, or Chess in Chicago?

That's what made me interested in getting behind the board originally. When you'd listen to these records from different parts of the country and different studios that really had a character, to me the sound was more important than anything. The sound on a Jimmy Reed record or the sound on Elvis singing "Blue Moon of Kentucky"—take that sound away and it's not a record. To me, that's what was so brilliant about it. And it's always been that way to me. As much as I like the musicianship and the songs and all of that, if it doesn't have a sound to it, it doesn't mean anything to me.

I guess Moondog Matinee [on which The Band tackled various rock and R&B oldies] was your shot at capturing some of those feelings.

But we didn't get to play in that field the way I really, really would have done it, because we were working in a studio that was a new studio then—it's when Bearsville was just built—and we were using it somewhat prematurely. It wasn't what I think it could have been if we were really going after trying to get at those kind of sounds.

What did you learn from working



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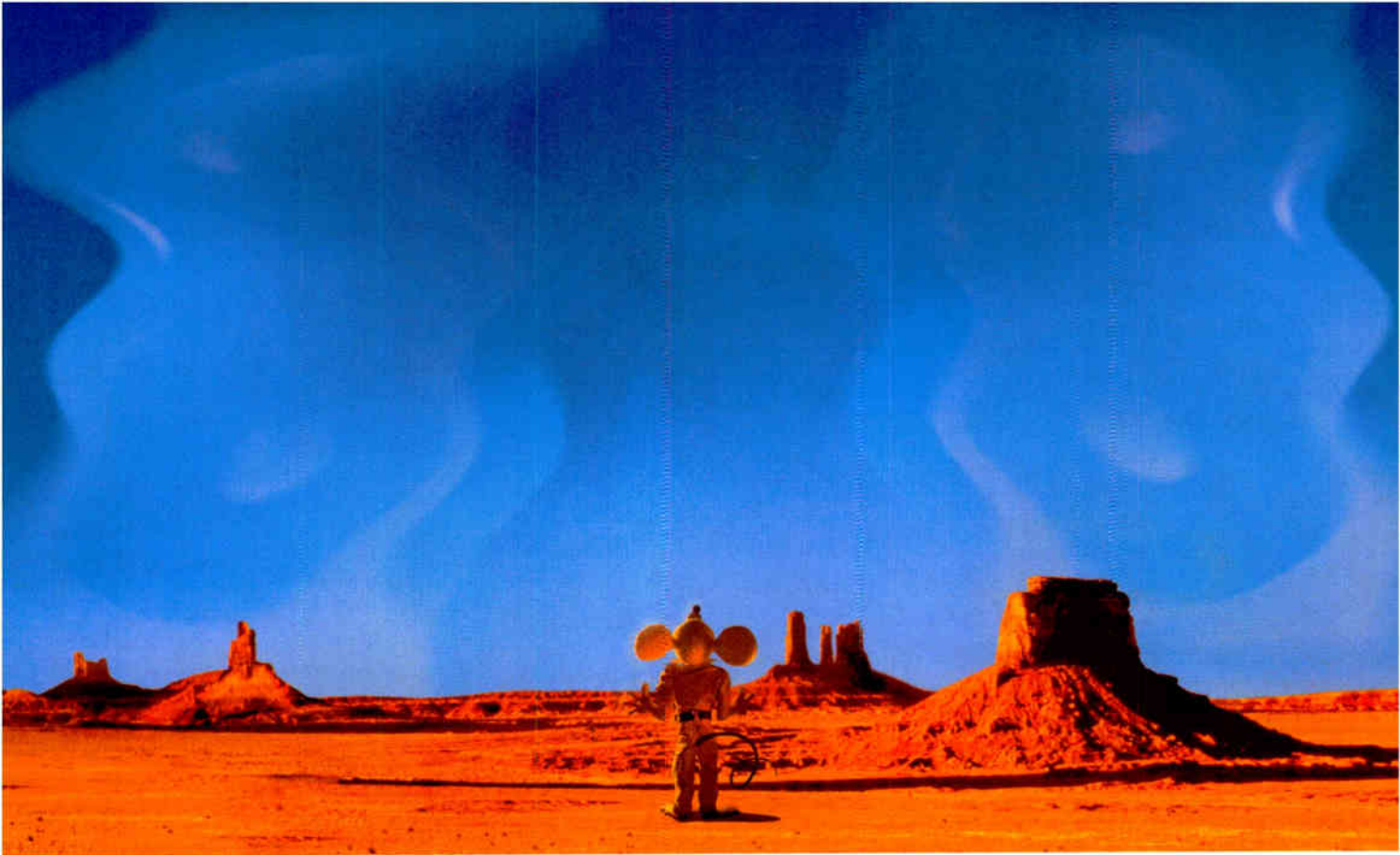
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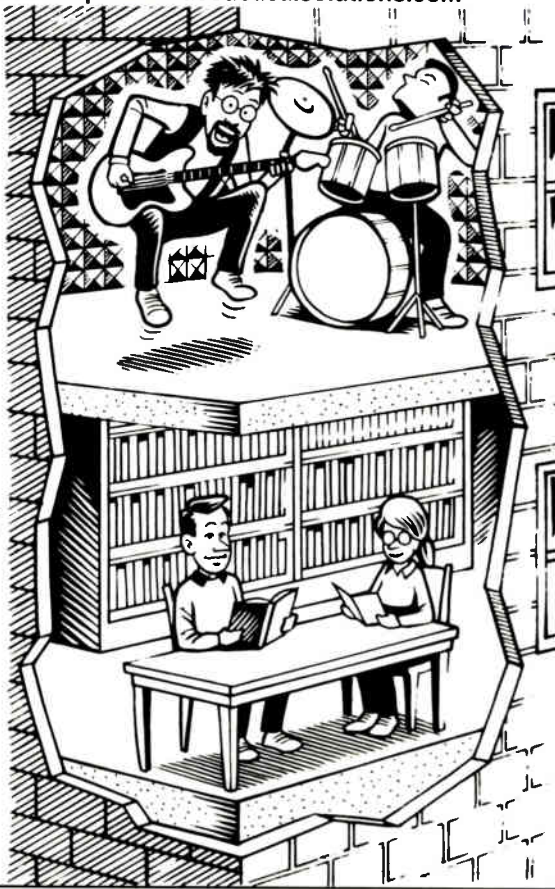
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THE MIX INTERVIEW

with Allen Toussaint (on The Band's Cahoots and Rock of Ages)?

Well, he was from that world of Cosimo's studio in New Orleans, which was another one of those places that had a sound. Those Lee Dorsey records he made there are *killer*. And Allen had very specific taste in the sound and the music and the way he would treat the instruments. He liked to hear the piano and the drums a certain way. When we worked with him that became evident fairly quickly because we did this recording together in New York City and people were trying to set things up a certain way, and he'd say, "No, no, no. I want it set up *this* way." And we're saying, "But we get this great sound doing it this way!" And he'd say, "I'm only going to say this one more time. I want it set up *this* way. I want them to sit over here. Him to sit there..." [Laughs] *But in the nicest possible way, I'm sure. He's such a gentleman.*

[Laughs] Of course! He is such an elegant gentleman. But he is quite specific in what he does, and he didn't want to get pushed around by that New York attitude.

Are you the kind of artist who constantly bears things you wish you had done differently on your past records: "If only I'd spent more time on that solo. If only I hadn't used that reverb"? No. When I let go of the project I really let go of it. And when you let go of it, it's no longer yours. It's everybody's.

I'm always most interested in what I'm working on right now. Like I've been working on some club remixes with Howie B on a few songs from the new album—"Making the Noise," "The Lights" and another song we didn't use on this record called "Weeding." That one's coming out on Pussyfoot Records, which is Howie's label in London. It's an underground label. He did these *monster* remixes. If you've ever seen him spin at a club, he tears the place down. He is really, really good at this.

I like the club thing. I like this world you go into and it's all about music, sweat, smoke and beats and the way it just pounds up your spine. I think it's a tribal experience that is very powerful. I thought there has to be a meeting place between the underground that Howie is from and the underground the Indians are from. And that's why I did what I did; that's part of what this new record is about. ■

Blair Jackson is executive editor of Mix.

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Recording Vocals



If you recall the classic popular vocal recordings that have endured over the decades, the primary element that has helped get the magic across was not a cleverly gated, million-dollar drum sound, but rather a vocal performance that communicated something essential and touched countless listeners. A top-notch vocal performance often contains qualities that transcend mere technique, and the best engineers and producers are those who are able to capture those sometimes fleeting moments when vocal genius is realized.

To talk about recording vocals, *Mix* enlisted four engineer/producers whose credits run the gamut from Gloria Estefan, Iggy Pop and the Rolling Stones to Metallica, Willie Nelson and John Michael Montgomery. We also invited a highly regarded vocal coach and producer to offer extra input.

While this applications piece addresses microphone, mic preamp and outboard gear technique, each of these contributors underscored the importance of providing the right emotional support to the singer or singers. After all, great mic technique can't salvage a bad recording climate, while some of the most powerfully immediate vocal performances have been caught in the most primitive of recording situations, where everyone felt in sync with the truth of the moment.

BY RICK CLARK



Illustration: Kitty Meek



KITTY.

World Photography



ED CHERNEY

Ed Cherney is one of the recording world's most highly regarded figures. Cherney's engineering, mixing and/or producing credits include Jann Arden, Bonnie Raitt, the Rolling Stones, Little Feat, Iggy Pop and Ritchie Sambora, among many, many others.

To me, a vocal is the hardest thing to record. It's harder than a hundred-piece orchestra or a three-piece rock 'n' roll band. That's probably because it is a very literal instrument. Typically, on a recording, a voice sounds like what a voice sounds like, unless you are filtering it or doing other things to it to make it fit into the music. It is also the most dynamic instrument there is. It goes from being really soft to being really loud, and you need a microphone that can deal with that.

After about a dozen records, the Audio-Technica 4050 is the first mic I put up for most singers. I used it on Jann Arden and Ritchie Sambora, as well as a lot of the Rolling Stones record I just did. The Audio-Technica is smooth, very clear and open-sounding, and it has a lot of headroom. It is also a very consistent-sounding mic.

That said, mic selection changes for every vocalist and situation, and sometimes I may get stuck with a microphone, not necessarily because of the way it sounds, but as a result of the way the music is tracked. I might have an artist who may like to be out in the room singing live vocals with the musicians playing for whatever spark of energy they can get out there and the groove. In that kind of situation, I have to consider the mic's rear rejection capabilities and how tight the mic is when you put the singer into the room. I also may not be familiar with the singer's voice, and I'll put up a microphone and get a really great take where 75 percent of that vocal performance may be a keeper. I'll then have to go back and match it up, punching in the lines that I need. As a result, I'm stuck using that microphone and that particular setup to get the vocal to match. Then later, in mixing, I'll try to get it sounding the way it probably should.

I rarely use mic pre's that are on the

newer consoles. I have a rack of old Neve 1073s I carry around with me. I really love the way the old mic pre's sound. They have plenty of headroom, and they are typically really rich and open at the same time.

To get singers to sing great is mostly psychological. A great performance will always transcend a less than great sound on a vocal. I think that everything that you do has to be designed around making the singer feel comfortable, and for me that means getting it quick. The first time that singer is sitting in front of a microphone, I hit "record" and get everything they do. Part of it, too, is letting them sing and staying off of the talkback. I let them sing the song five, six or seven times. That may entail building a slave reel, so you have plenty of tracks to comp and do your vocals.

It's all about creating that environment, making sure that the temperature is nice in the studio. If the lights are right, the headphone balance is perfect and the singer feels that you're working with them, then they sing better. I also always try to have the singer's principal instrument in their hand when they are singing.

Also as a producer, you have to understand that it may not be a great day for the singer, and you go on to something else. Of course, you try to plan out the session, like you are going to have vocals recorded on this day, but "vocal" day is like putting all of your eggs in one basket. It is the added pressure of, "Well, I have to do it now. It's now or never." I never want to create that situation. You should have the option of singing a song anytime you want. If you feel it now, well the mic is open so go get it. I even do that when we're mixing a song. If I feel there is maybe a phrase or a line or verse or something that can be phrased better and you are looking for that thing, I just want to be sure that everyone is free enough to go do it, when the moment happens. I want to make sure that I have tape on the machine, and I have the tools ready to go in and get it. I want to be there to document these great moments, because you never know when they are going to come.

RENE GRANT-WILLIAMS

Since the mid-'70s, Nashville-based vocal coach and producer Rene Grant-Williams has helped numerous singers develop artistically through her teaching methodology. Her clients over the years have included Huey Lewis, Bob Weir (of the Grateful Dead), Linda Ronstadt,

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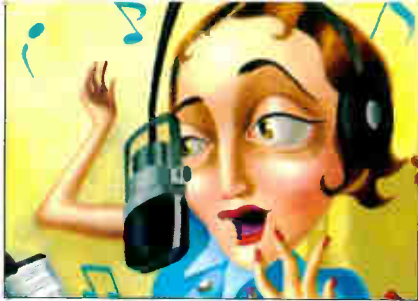
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Charlie Daniels, Tim McGraw, Lyle Lovett, Jill Sobule, Kim Wilson (of the Fabulous Thunderbirds), The Subdudes, Sonny Landreth and Doug Stone.

One of the things that is important to keep in mind is that the singer is a living organism, and the quality of the vocal will depend on how healthy and resilient and well-prepared that organism is. One of the things to take into consideration is scheduling. Sometimes the singer will wear out the voice singing rough vocals with the tracks two or three days in a row, and then the next day final vocals may be scheduled and there is nothing left. It's important to remember that, while the voice is a very resilient thing, it can get too thin and lose its elasticity.

It is important to give the singer time to re-warm up and re-establish their technique and be aware that it's like a

runner running short sprints. It's very important that the runner limbers up and not just run hard and then get cold and then run hard again. You always have to take waiting around time into consideration.

I very highly favor a microphone position that is fairly low. There is a tendency for some engineers to hang a microphone high, but if you have to stretch your head up or hold your chin up, it puts tremendous strain on the voice. The best position is right at lips level or slightly below, so you can kind of contract into your body support with your head tilted slightly forward. Think about the classic Elvis position—the way he cocked his head over the microphone that kind of looked up from underneath. That allowed all of that sound to resonate up in his head, instead of putting a strain on his neck and shoulders. Support, which is the way the body powers the sound, is very important.

Perfectly normal people, who wouldn't be caught dead running around town with their hands behind their backs, will do that when there is a microphone in front of them. Suddenly, it's like, "What am I going to be doing

with these things at the end of my shoulders? Let's stick them behind the back." Well, that robs you of a lot of support.

The body language from people in the control room is very important. A lot of times, people don't realize that while they are having a laugh about something totally innocuous in the control room, someone is singing out on the floor who can't hear what is going on, can become sensitive and can misconstrue things. Many singers, on some level, imagine that it must be about them. It is important to create an atmosphere that is helpful to the singer.

People tend to creep up on the mic as time goes by. That's why you need to put some kind of tape marker on the floor.

Give the singer a choice of headphones to listen through, so they can find what helps them the most. If the vocal is too high in a headphone mix, the vocal will tend to go flat. If the vocal is too low in the headphone mix, then the singer will often tend to push things and go sharp.

I have a problem when I hear people telling a singer to "relax." It's the one statement that I find makes a singer

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ERIC PAUL

Eric Paul has made a career out of recording country giants like Willie Nelson, Waylon Jennings, Johnny Cash and many others, including numerous modern country radio artists. Though Paul loves working with great vintage gear, he is quick to point out gear that offers quality while being affordable for most studios.

uptight. It can be terribly intimidating to hear—nobody wants to think that they are not relaxed. (There was a studio in Canada that had a sign that stated: "Try to relax or we will find someone who can!")

Often, singers have trouble figuring out what they did well during a vocal performance while they are out on the floor singing with their headphones on. I think it's important for a production team to be specific. I've been in sessions where the production team is making a singer do something over and over again and only offering statements like, "That's not getting it. Let's do it again." If the singer doesn't specifically know what aspect of the performance needs addressing, it can be very frustrating. Again, encouragement has more to do with getting a good performance than anything.

We are taught to be purists in one sense when recording voices, but the right compression while recording is great. Compressors work better off of live signals than off of tape, because a reproduced signal is never as strong and pure, and it doesn't have the same kind of transients as when it is coming off of a live microphone preamp. I'm very careful not to overcompress. I never use more than a couple of dB of compression when I'm recording a vocal.

If I'm in a studio where I don't have access to a good LA-2A, my favorite low-end compressor is the Composer by Behringer. The mass public has access to those, and they are in a lot of demo studios across the country. The reason that I like it is that it's transparent—it will hold back the vocals from

getting out of control, but you can't "hear" it. (While I prefer the LA-2As, it depends upon the tubes. My favorite tubes are the old GE tubes, if you can find them. You take any piece of tube gear—compressors, microphones—and you put a good old GE tube in there, and it will sound so much better than anything else. I've done many comparisons.)

I have a Sony C-37A that is the sweetest vocal microphone on a female voice that you have ever heard. Daniel Lanois used my C-37A on Emmylou Harris for the *Wrecking Ball* album. (Again, the trick to the whole deal is old GE tubes.) For male voices, I generally like the U47, but my favorite overall microphone for voices is the Shure SM-5D.

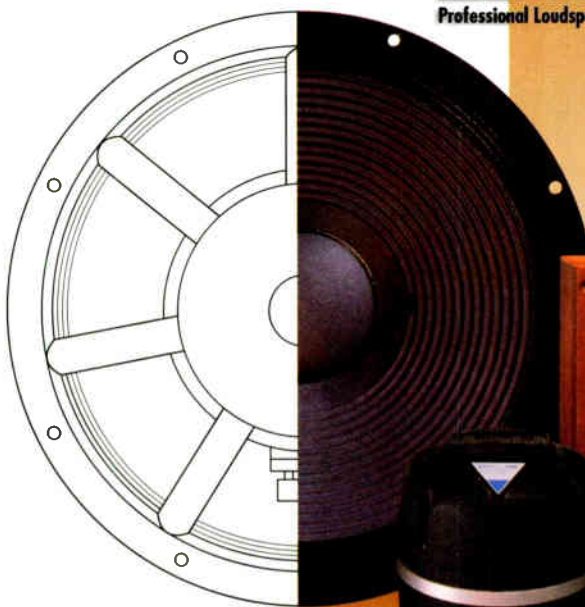
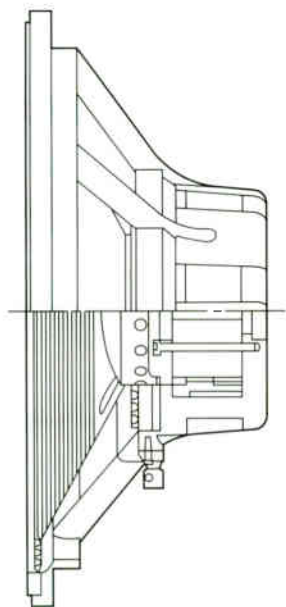
For mic pre's, the API 312 is my favorite, bar none. Peavey makes a dual tube microphone preamp that sounds great. The Peavey tube preamp and the Behringer Composer make an affordable combination for most people that is great. If they can't get a Shure SM-5, they can get Shure SM-7s, which are still available.

With analog tape, you have to be really careful not to hit the tape too hard with the vocal, because it can really do

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terrible things to it. In the same manner, it's important not to get too low of a level. I usually like to have my vocal peaking out at zero on a VU meter. It depends on what tape you are using and how you have it set, but I am in this case referring to 499 set at +5 over 250; it's what most everyone uses now on 499 and the new BASF 900, which I personally like better because it's quieter and has more energy to it.

CSABA PETOCZ

Csaba Petocz is one of Nashville's hottest producer/engineers; he produced John Michael Montgomery's most recent, Platinum-selling project, which generated three Number One country hits. Petocz's credits are also wide-ranging, including artists like Stevie Nicks, Metallica and Concrete Blonde.

I don't think there is any such thing

as the perfect vocal mic. It's just different mics for different people. You should just understand what each different mic sounds like and how it changes the sound of the human voice, and then obviously select the mic that enhances the sound of the voice.

You should go out on the floor and hear the person sing, hear what it is that they do and what part of their voice is really special. Obviously, if the person is worth recording, there is a uniqueness there, and you should really try to highlight that aspect of the vocal. Over the years, I have gotten to where I can hear a singer and know within one or two mics which should work.

If you've tried out three very expensive tube mics and you aren't happy with any of them, then the next step should immediately be something at the other end of the scale, like a [Shure] SM-7. I will almost always guarantee you that if the expensive mic doesn't work, an SM-7 will. You have to screw with EQ a little bit, but for some reason some people sound better on them.

I think that 80 percent of getting a good vocal is in giving the singer a good headphone mix. If you can make a singer enjoy singing and really hear

what is going on with the small nuances in the voice by giving them a great headphone mix, you can get the artist to do 90 percent of your work. This is especially true if you can get them to be attuned to what it is that you would really like to hear. Most singers get challenged by it. Artists really get into the fact that you care enough to make it that two percent better.

More than anything that you record, the human voice is the thing that reacts most to small changes. You can really make a vocal sound significantly better by changing variables minutely. Having been in country music for about five years, I've learned that you can take a lot of liberties, but taking liberties with the vocal isn't one of them. Country is not the genre to do that in. It just doesn't work. The most hi-fi aspect of country has to be the vocals.

I went through so many years of doing "alternative" rock records that it is kind of nice to record something really well. I know it may be un-hip to say that, but I get off on the purity of it. Also, without any disrespect to any of the other musical forms, I think country and R&B have some of the most accomplished singers, and it is a lot more

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ERIC SCHILLING

Miami-based engineer/producer Eric Schilling has worked with Platinum-selling recording artist Gloria Estefan throughout her long career. He has also recorded Jon Secada, Cachao and others.

When you work with someone who is singing, it tends to be a one-on-one process. The whole key to me is to keep a rhythm so the singer never loses the flow. If you are working and they say, "Let's go back to the verse and do lines two and three," you want to be fast enough so that it happens in a seamless way. The moment you start going, "Oh no, I've got to figure out where I am, and I've got to fix some EQs," they start drifting. Recording voices is one of the most fun things for me to do, and I love it when that "flow" is going.

When you're working with someone who has a really "pure" voice, it can be harder for them when it comes to the issue of pitch, because there are fewer harmonics in their voice. You easily hear it when things fall from pitch. Just to cite a crude example, Karen Carpenter had to be really in tune, because she had a very pure voice, but you take a Bob Dylan, who has a kind of gruff voice, and he can move the pitch around a whole lot, because his voice has a very wide spread of overtones. It's funny how you can find an album of someone like Dylan, who has that kind of voice, and though you hear some



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pitch problems, you don't really mind it. On the other hand, if the voice is really pure, it can be very grating if it isn't really in tune.

Concerning pitch correction tools, I think they have a use, but it is my preference that it gets used as the last thing that you do, and not the first thing that you do. I still like to see a person who is going to come in and work on the voice and not sing it through twice and say, "Well, you can fix it." I don't believe in that. I'll use it to fix some minor things on a vocal performance that may have a great overall vibe, where the singer feels that he or she can't top that level of performance again. Utilizing pitch correction at that point is probably fine. It is funny, but sometimes when you pull it too far in tune, it doesn't feel right and it takes away the character of the performance.

I don't believe that music is meant to be a perfect thing. When you sing, you don't always sing exactly on the beat, or exactly in pitch all the time, just like if you were playing a fretless bass or anything else where you have some room to move. You have to be careful when you tamper with the recorded performance.

Generally, I am a big fan of the John Hardy mic pre's, which I think are real neutral-sounding. I also like the Millennia and API. My first choice of compressor is a good LA-2A, if I can get my hands on one. Another compressor I really like a lot, which you don't find that much anymore, is a Compex. It is a British-made compressor that used to be called a Vocal Stressor. I always cut flat, mainly because if they are going to come back and change a part or we recorded a month earlier and they want to re-cut some lines, I find that it isn't as hard to match the sound if I cut it flat.

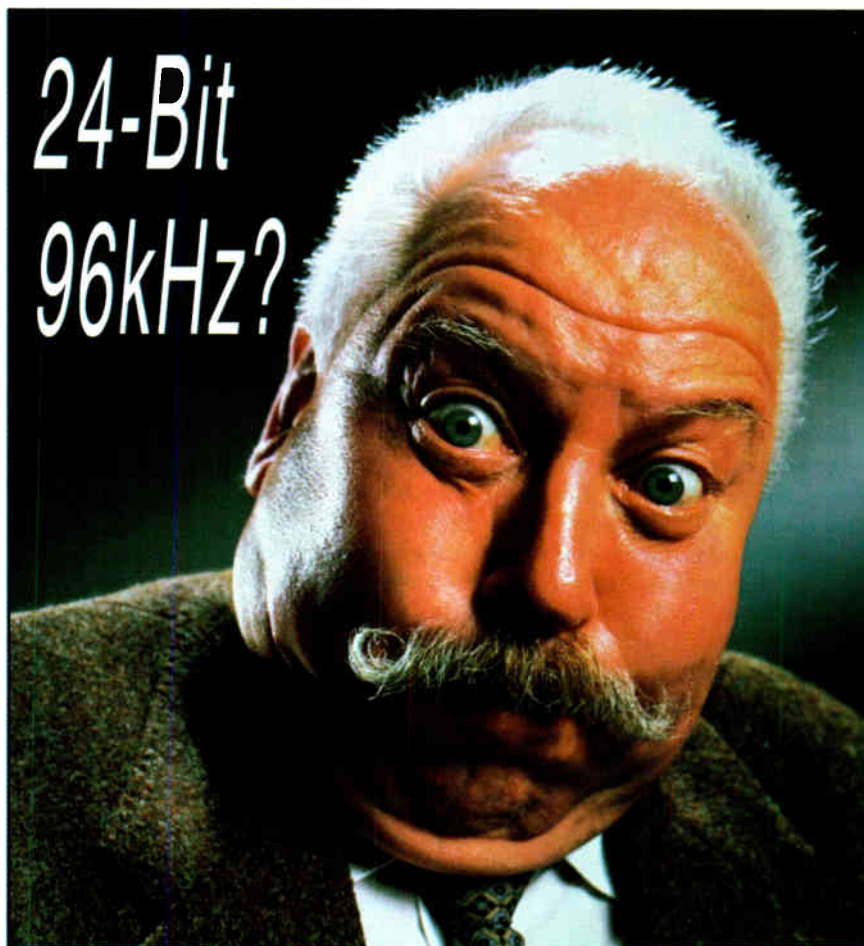
With many older mics, you have to be very careful about the room you're in, because if you're in too small of a booth, you'll actually start to hear the sound of that booth, especially in the lower frequencies. They essentially behave like omnis in the lower range. So if I have somebody who is working on a tube mic and they are in a small room, I'm going to have them about one hand width (or five inches) away from the mic. I generally use a pop screen instead of a windscreen to keep the spit off of the microphone, and it keeps people from getting too close. I can always tell when they can't hear enough in the 'phones, because they start to push the pop screen in closer to the mic.

Concerning singing with large groups, I guess I came from the school of putting up one microphone. When I came down to Florida, my old boss was doing The Eagles records. He would put up an omni, and they would stand around it and work until they got the balance.

I am not a huge fan of flying vocals in and that kind of stuff, but some people I've worked with will say, "Great, I'll sing it once and you can fly it all in." Nevertheless, if I can get them to sing the whole song through, that is my preference. I like doing it this way because the emotion changes. I just

think there is a kind of stride that you hit as a background singer that is also playing into the song from an emotional point of view. If you listen to a background track that is sung the whole way next to a sampled track with the vocals flown in, the sampled track will sound static. As a result, the music will tend to feel more static, too. I see why people fly vocals in, but there is an emotional side to this that they are missing. ■

Contributing editor Rick Clark is a writer, songwriter and producer based in Nashville.



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YOUR DIGITAL GEAR
(WITHOUT READING
THE MANUAL)**

R

everb

Twenty years after the first digital reverb units appeared, they are ubiquitous: Digital reverbs are found in every studio—from bedroom personal studios to the world’s best-appointed facilities—in musicians’ performing rigs, and in theaters and clubs the world over. Yet, despite the versatility of most digital reverbs, many are used in only a few basic ways, a reflection of the complexity of many digital reverb devices and the thickness of their user manuals. This article suggests that it is relatively easy to achieve a wider range of digital reverb effects than is generally supposed and offers tips on getting great sounds in a time-efficient manner.

It doesn’t take endless hours of experimentation to put features commonly found on digital reverbs to greater use, just a functional understanding of them and some imagination (often triggered, as with other things, by necessity).

The effect of time-based effects like reverb and delay is to smear things in time. Think of it as softening the focus of a lens, and it immediately becomes clear that this is of great use when trying to blend sounds together, but can be troublesome when definition is paramount.

The second important overall point about reverb is that it is used to achieve one of two goals: to enhance the source material in some fashion, or to transform it into something substantially, or entirely, different from the original sound.

ILLUSTRATION: KELLY ALDER

Tips & Tricks

NATURAL BLENDS

The most common type of enhancement application for reverb is to blend sounds together. Close-miked and overdubbed instruments, or an ensemble recorded in a particularly acoustically dead space, may sound distinctly separate from each other when mixed. Running the mix through an overall reverb adds the needed unifying element, making it sound like all the tracks or instruments were recorded at the same time in the same room, fusing the individual elements into a cohesive sound. The result feels much more natural.

Synthesizers and samplers benefit from reverb for the same reason: Reverb softens the strident sharpness of some electronic instruments. As with ensembles, a sound made of several layered sounds can be blended more smoothly with the addition of reverb.

More than a mere tonic, though, reverb can actually heal some afflicted sounds. For example, samples sometimes have ambiances that are abruptly chopped off. Running the sound through a reverb (after enveloping the sample’s end to take off the transient edge) can remove the harsh artificiality by restoring a natural tail to the decay.

BY LARRY THE O



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In some cases, the chopped ambience may be so prominent that it can't be glossed over with a reverb sheen. A more difficult alternative involves ambience matching and a "cut and paste" approach. Dial up a reverb with fairly fast attack and high diffusion and decay time to taste. Now comes the hard part: Match the timbre and pre-delay as closely as possible to the tone and duration of the chopped ambience. It doesn't have to be an exact match to work. If the tonal and volume match are reasonable, there will be a setting of the pre-delay where the transition from chopped to "restored" ambience becomes pretty seamless. (Can you say "ear training"? I thought you could.)

An advantage to this second technique is that the chopped ambience will often be acoustically generated early reflections in the room in which the recording was done. The early part of the sound is the most critical to the perceptions the ear draws from reverb. It is also the most complex, meaning that it is the hardest to approximate digitally. In short, as the song says, "ain't nothin' like the real thing." When push comes to shove, no digital reverb can compete with a decent room for good early reflection sound.

I make room for acoustical early reflections whenever they're available. (Hey, if you got it, flaunt it.) This can mean a long pre-delay or attack time on a reverb I'm using in a live performance situation, or inserting a real, acoustical room in-line with the digital reverb send.

If you can't use a real room, consider using a second reverb just for the early sound, to add complexity. The purpose here is not greater density, *per se* (though there are times when that is desirable, too), so the second reverb can sometimes be set to pretty low diffusion values.

Diffusion—the speed and character of early reflections building into reverb—is key to smearing: the higher the diffusion, the more smeared the sound. Percussion wants high diffusion because it is often impulsive and needs a smooth-as-silk smear rather than the confusing pattern of clicks that low diffusion would produce. This is one instance where greater definition is

achieved through more smearing, rather than less. On the other hand, vocals, wind instruments and bowed strings often enjoy greater openness and clarity with lower diffusion settings.

Maintaining clarity is also an issue when using very long or somehow unusual reverbs. Aside from the obvious and ever-present wet/dry balance, there are a number of techniques to try. Sometimes simply lengthening the pre-delay can separate the reverb from the source enough to keep it from drowning in its own reverb.

DUCK!

Ducking is a great method of getting long reverb or effect tails out of the way, especially on vocals or solos. Most any reasonable compressor can be made to do ducking if there's access to the sidechain. Just patch the source into the sidechain, the effects into the compressor, adjust threshold and compression ratio (to adjust ducking depth), and away you go!

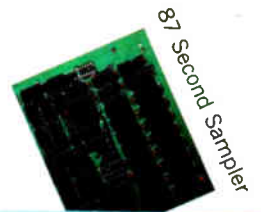
Some effects processors have envelope followers for the audio inputs. This could save you having to use up compressors for ducking. Configure the envelope follower to negatively affect the effects output level and you have your basic ducker. If the processor has onboard envelope generators that can be triggered by input level, these will generally produce even better results for ducking, as the attack and release rates of the ducking effect can be lengthened to mitigate pumping. Be forewarned: Settings usually require some tweaking before you can get any subtlety in the ducking action, but it's very useful once it's set up.

One other very simple gambit is to roll off high frequencies on the reverb. This can be accomplished with console or outboard EQ, of course, but there is usually a reverb parameter called something like Reverb Bandwidth or HF Roll-Off that can do the job. Setting bandwidth somewhere between 2 and 6 kHz will leave more room in the high frequencies for the source.

Used on shorter reverbs, HF roll-off can result in the source sounding less distinctly "reverbed," but generally fuller. For best effect, undermix the reverb. This is a spot where subtlety can pay off.

Pitch shifting reverb down by up to a whole step can also add fullness to a sound, especially snare drums. A fullness technique that works well for vocals is to prominently mix in discrete pre-echoes (use either the ones avail-

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able in the reverb program or a separate delay) that occur after the onset of reverb. The pre-echo delay times could range anywhere from 50 milliseconds down to a few hundred microseconds, depending on the context, while the reverb pre-delay should generally be set shorter than the longest pre-echo.

ABUSE REASONABLE CONCEPTS

But the beauty of digital reverberation is that it need not be thought of only in such utilitarian terms. A respectable digital reverb is a synthesis engine fully capable of turning a single sound into a glittering sonic mandala. And often all that is necessary is to abuse the reverb designer's concept of what are reasonable settings.

Earlier, optimal settings of diffusion were discussed for several sources. That's not what we're after now. Try setting the diffusion very high, like 95 out of 100. You'll get a metallic ringing in the reverb, particularly in plate programs.

Futz with the crossover and decay times, and the tones in the ringing change. Now set the decay time REAL long, like 30 seconds. Whatever something sounded like on the way in, it will scarcely be recognizable now. Especially if your wet/dry mix is 100% wet.

In fact, extremely long decay times are useful for a variety of transformations. If the diffusion is set extremely low and the sound has a smooth attack, like a flute, the result is rippling sheets of sound. A fine shimmer can be obtained by setting a very short LF decay time, a long HF decay time, and a fairly high (>1 kHz) crossover. Long tone sounds or sounds with long attacks work quite well with long decay times.

A lot of current pop albums use very short reverbs, and sometimes none at all. But contrast, especially between ambiences, is one of today's most favored pop production techniques. Throwing a long decay on a sound for a very short time (something between one note and four bars) can have the reverse of reverb's usual smearing effect and can, instead, cast the sound with greater definition because of the contrast between its reverb

and the rest of the reverbs. When only a few effects processors are available for a mix, MIDI is an effective tool for switching a single processor between long and short decays. Similarly, MIDI can be used to turn effects return channels on and off as needed.

Flanging reverb is an old trick that still works well in the same ways it always did. But there are wrinkles newer processors let you add. One interesting variation is to set up a multiband delay program such that there are several delay voices with overlapping frequencies. Set the delays to flanging length (up to 8 or 10 milliseconds), place them spaced through the stereo sound stage, and add some chorusing or LFO sweep. What you'll get is a flange that seems to float around the room. Modulating the panning of one or more of the delays creates more intense variations. This flange produces a very different sound in mono, so check it if you are concerned with compatibility.

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Another "moldy oldie but woody goodie" effect is backwards reverb, especially leading up to a sound; "preverb," as it were. In the "old days," this was

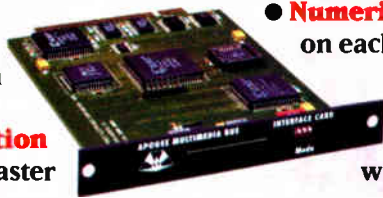
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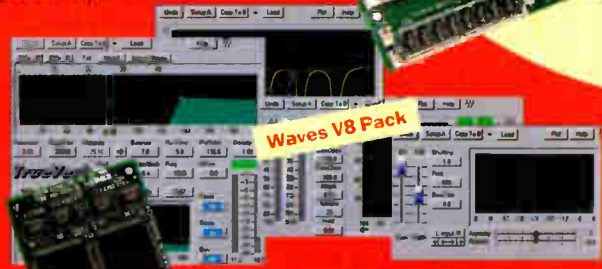
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achieved by flipping over the multi-track tape, playing the tape and recording the reverb, then flipping it back. Today, there are better ways.

For a start, update the old-fashioned method with new technology: Put the source you want to reverb into a hard disk system. Make a copy of the source file, open the copy and reverse the contents. Then import the reversed file into a multitrack editor, route it to an effects processor and record the return. Now open the reverb file and reverse it and, finally, import the reverse reverb and the original source file into the multitrack editor and position them as desired. It sounds much more laborious on paper than it really is.

Another DAW variation is to route the original source through an inverse reverb preset, record the return, then slip the return forward in time as desired.

MORE NEAT TRICKS

Even once you've achieved your basic

enhancement or transformation, getting the most out of reverb may still require some help from EQ and/or compression. Most reverbs have some form of EQ built in, whether it is in the form of a reverb bandwidth control, an HF roll-off parameter, or the decay and crossover settings. These can be very powerful tools in achieving exactly what you want. Use them to accentuate or play down certain spectral regions. Sometimes it is more effective to use console or outboard EQ, especially for the greater flexibility sweepable or parametric EQ offers.

And don't think you can only EQ reverb returns; EQ'ing reverb sends can sometimes be useful for avoiding "hot spot" problems (undesirable emphasis at certain frequencies) before they happen, or simply to produce an effect. Try putting a "telephone" EQ on a snare drum reverb send sometime.

Compression is also handy at either end of the chain. On the reverb send, it can make it easier to set an optimal input level by smoothing out peaks. On a reverb return it can bring the reverb decay out more, useful in low dynamic range applications like games and much other multimedia.

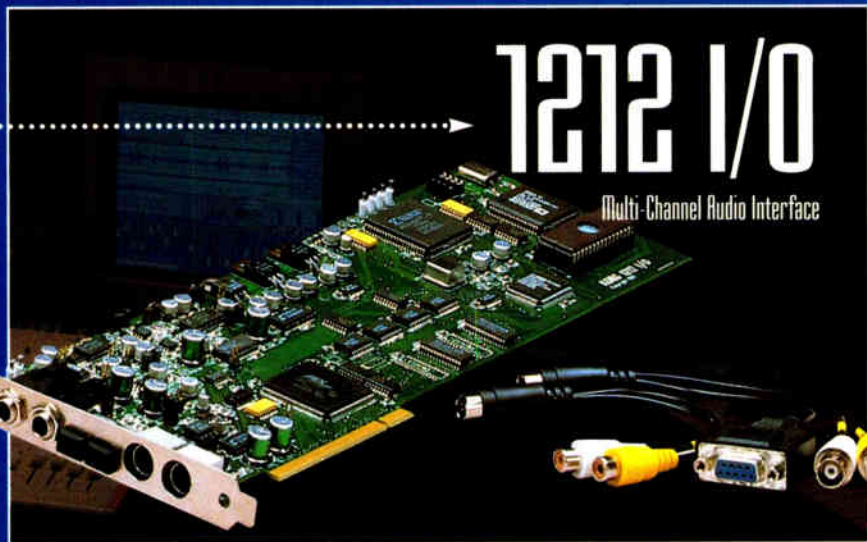
Finally, consider when to use overall reverb as the "sauce," and when to use reverb only on individual instruments or sounds. Overall reverb is most effective when the goal is to blend or place several sounds into the same space. Individual reverb is helpful when enhancing a sound or for a modern, "layered" production sound (e.g. snare, kick, vocal and guitars each have a very different reverb sound).

Digital reverberation is an incredibly powerful tool and can have major impact at any level of application. From the most natural, straightforward applications to the sick and twisted things I've done to otherwise perfectly good tracks, it takes little more than a sound in the mind's ear and a willingness to fiddle around with a small handful of parameters in a preset to get truly interesting results. For those willing to dig in with both hands and tweak up a storm, there is no need for sameness to ever be found in your mixes. ■

Larry the O uses snippets of runaway digital reverb feedback in some of the game sound design he does at Lucas Arts Entertainment.

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APPLE TALK

DESKTOP AUDIO VENDORS ON THE FUTURE OF THE MAC

BY
PHILIP
DE LANCIE

It's been a rough couple of years for fans of Apple's Macintosh computer. The roots of the Mac's problems go back a decade or more: a stubborn refusal to shed the self-defined maverick outsider image (which won Apple no friends in the critical business sector) and an unwillingness to compete on price/performance ratio until the opposition had already swept the field. Despite years of wrongheaded leadership and lax management, however, Apple was actually doing pretty well until 1995, when Microsoft finally figured out how to make a reasonably usable operating system.

By offering a credible alternative, Microsoft undermined the Mac's very reason for being. We don't need ads with pictures of Ghandi or Einstein to convince us that the Mac is different; the question is whether it is still better. Taken as a whole, the general computer market seems to have formed a pretty strong opinion on that issue; the market share of all Mac OS systems (including clones) has fallen steadily since Windows 95 was introduced. Apple users still have good reason to believe that the Mac is ultimately the more productive platform, but

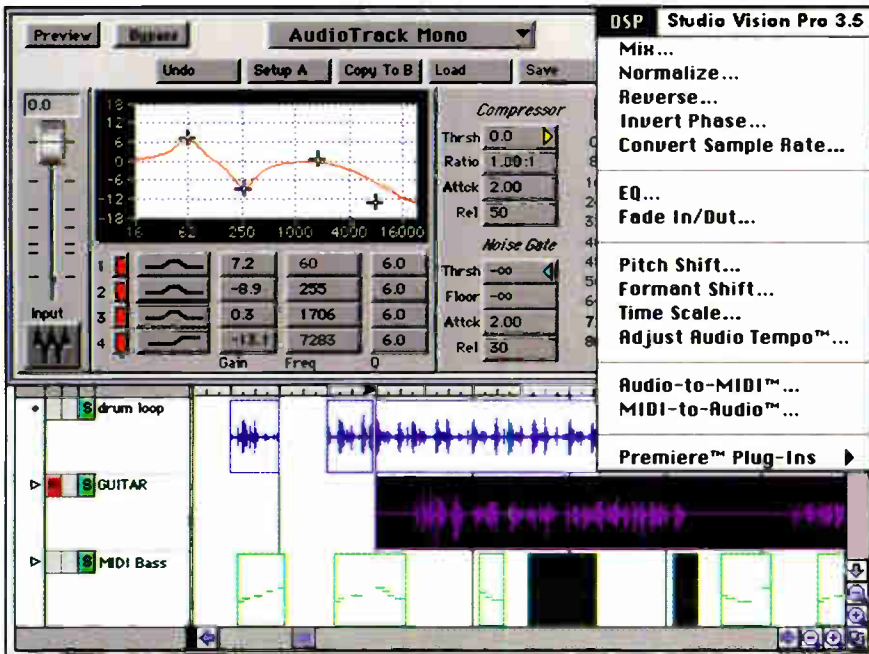


apparently it's tough to keep the faith when you're swimming against the tide.

With Apple's quixotic hopes of conquering the consumer market dashed forever, the company's last, best chance for the Mac is to concentrate on market sectors where the Mac has traditionally been a leader. Desktop publishing, education and multimedia are the areas most frequently mentioned in the press, but desktop audio production has long been dominated by the Mac.

as well. The success of Apple's strategy in this market depends on the continuing faith of tools providers in the long-term viability of the platform. To gauge that faith, and to see how the leaders in desktop audio are responding to Apple's troubles, *Mix* spoke with representatives of four companies whose products span the range of Mac-based audio production: Digidesign, Opcode Systems, Sonic Solutions and Waves.

Give a brief overview of your company's involvement with the Mac as a platform for audio related products, both historically and currently. What are your main Mac-



Two of Opcode's finest:
Paul de Benedictis and
Studio Vision Pro



based audio products? How important is the Mac market to your overall audio software business?

Alon Zacai, general manager, Waves: Waves initially entered the audio market with DSP solutions targeted toward the Mac platform. At the time, most of the professional audio market Waves was targeting was based on the Mac platform. Although it is not the only platform available, a great percentage of the high-end and professional studios still work with Mac-based solutions. Waves views the Mac market

as a very important one for its products.

The complete line of Waves plug-ins, effects and applications is available for Mac, running in both Digidesign TDM and "native" settings. Waves' Mac-based products include the Q10 10-band paragrahic EQ, the C1 compressor, the L1 Ultramaximizer, the S1 Stereo Imager, TrueVerb, the Renaissance compressor, AudioTrack, WaveConvert Pro and EZVerb.

Bob Doris, president and CEO, Sonic Solutions: Since the introduction of the Sonic System in 1989, Sonic has delivered all of its audio work-

Digidesign's general manager, Dave Froker, and a screen capture from Digidesign's Pro Tools 4.1



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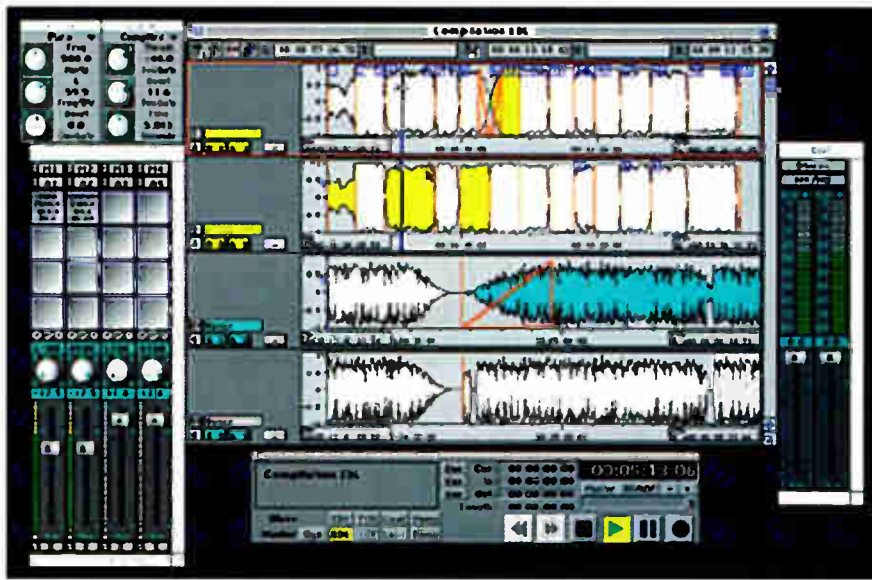
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cation.

Sonic's main Mac-based audio line is SonicStudio, a family of PCI-based digital audio workstations customized for specific applications: CD mastering, audio-for-video post-production, radio broadcast, sound for picture and audio for DVD. SonicStudio systems deliver up to 96 channels of I/O and 144 channels

Bob Doris, president and CEO of Sonic Solutions, and a screen capture of SonicStudio 5.3



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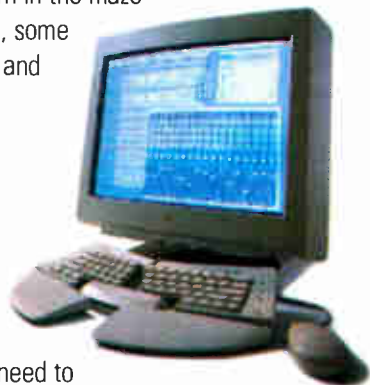
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Paul de Benedictis, VP of marketing communications, Opcode Systems: Opcode created the first commercially available MIDI sequencer in 1985, and then in 1990 we invented the integrated audio and MIDI sequencer with Studio Vision. At the high end, we still sell a lot of Mac



Waves' MaxxBass plug-in enhances perceived bass response by adding harmonics that create difference tones.

products, but the PC is definitely taking over the middle market. As soon as the industry accepts some kind of "Pro Tools-like" hardware on the PC, we'll see things change faster.

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Dave Froker, general manager, Digidesign: Digi's products have been on the Mac since the company's inception, starting with the original Sound

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APPLE TALK

Tools and moving on through to the newly released Pro Tools 24. We offer a range of digital audio workstations for the Mac, ranging from Pro Tools PowerMix, which uses only the Mac's own built-in audio (version 3.4 is available free), to Pro Tools 24, our high-end 24-bit, 32-plus-track workstation. We also work with a number of third-party development partners that are Mac-based. *To what extent has your company moved to embrace Windows as a platform for audio products? In terms of upgrades and new product developments in the audio area, has there been or will there be a shift in emphasis toward Windows?*

Zacai: As a company that is responsive to its users' needs, Waves makes it a goal to provide and fulfill its users' needs for both the Mac and the PC platforms. Through the years, the definition of the audio market has broadened to include users from the semiprofessional and nonprofessional markets. These markets tend to find more solutions on the PC platform, and to suit their demands, Waves now offers the same

high-end capabilities to both the PC and Mac platforms.

Doris: All of Sonic's products today run on the Macintosh. We are aware of what it will take to migrate our applications to Windows, but would only expect to do so when customer demand requires. To date, our users have preferred the functionality we are able to provide using Macintosh. Should we decide to pursue a cross-platform strategy in the future, any new audio technologies under development at Sonic would first be available on the Macintosh.

Beneditis: We are making all our new products cross-platform. For exam-

ple, our fusion: EFFECTS plug-ins ship on a single CD with PC and Mac versions. I think you'll see a general shift with every manufacturer toward the PC. We are definitely moving to support both Mac and PC.

Froker: Digi embraced Windows early on as an alternative in our low-end to middle markets, first with Session 8 and later with Session software, with Audio-media III, which is a PCI card running on both Mac and Windows, and also with SampleCell. We understand Windows well. At the lower end of our market, it is common for customers to already own their computer. If it's a PC,

The definition of the audio market has broadened to include users from the semiprofessional and nonprofessional markets. These markets tend to find more solutions on the PC platform.

—Alon Zacai

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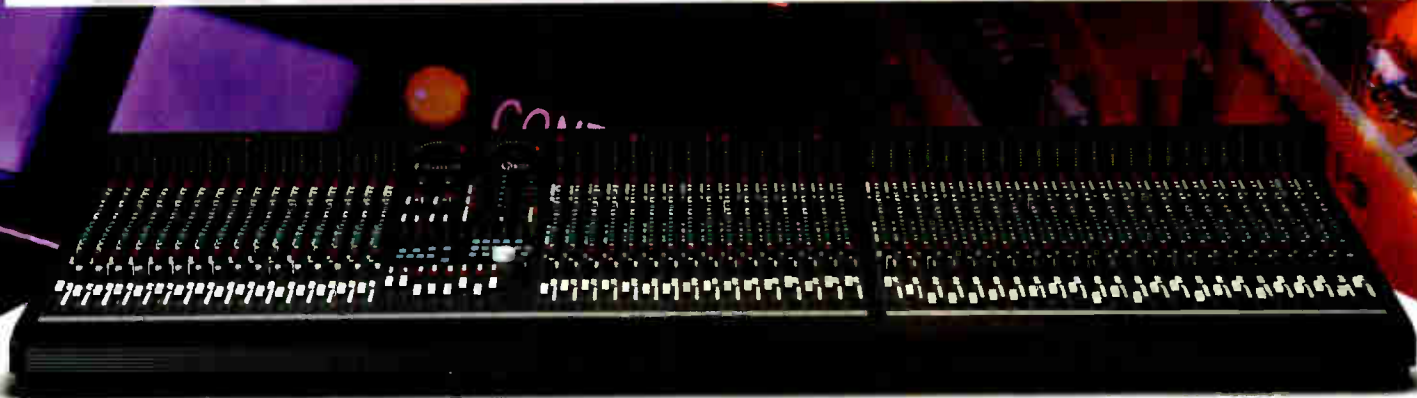
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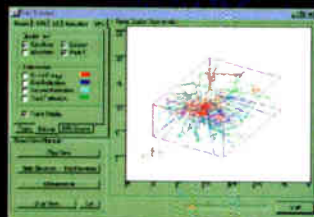


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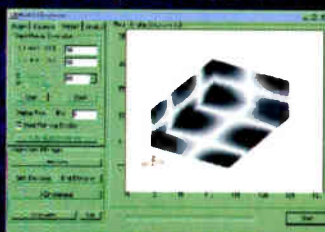
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APPLE TALK

they want a PC-based audio product. So Digi's strategy has been and will remain one of offering cross-platform solutions. *How would you compare the strengths and weaknesses of the Mac OS and Windows 95/NT as platforms to build audio production tools around? Does the Mac still have some unique features that make it a preferred platform for audio production, or have the Mac's early advantages been pretty much addressed in Windows 95 and/or NT?*

Zacai: Windows 95/NT makes Windows much more open for sound playback/recording and sound compression, and it supports multitasking, which is very important for real-time DSP/native processing. However, there are still a few advantages for the Mac. One is an advanced sound file format that uses resource-forks. Second, the PowerPC processor is efficient for DSP applications. Although Windows running on MMX processors closes that gap, very few applications really use the MMX capabilities. Third, video editing usually involves QuickTime, and if sound needs to go with video, this is still a Mac world. And fourth, the Mac comes with a very powerful basic configuration for audio. To get the same quality on the PC involves a dealer-integration package that is not as stable and reliable.

Doris: The Mac OS is designed as a very multimedia-savvy operating system and has many unique features that position it as the platform of choice for most multimedia development today. Along with QuickTime, it provides a very rich feature set and API for developers such as Sonic. Its ease of use is a very important factor in our users' ability to integrate our workstations into their day-to-day operations. Apple's new pricing is very aggressive and has helped to minimize the perceived cost difference between the two platforms. We are confident in Apple's plans and ability to remain at the leading edge of functionality as a platform for our applications.

de Benedictis: The Mac is still easier to get up and running and seems to have the best software/hardware combination. Pro Tools is a great hardware platform. As I understand it, there is still some DOS lurking in NT, and until people can find the files they save and not end up somewhere other than where they want to be, the Mac OS is superior. There are also some timing issues; MIDI, at least, seems to work better on the

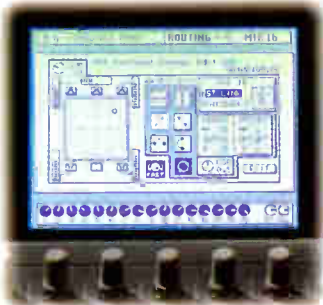
—CONTINUED ON PAGE 203

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ATLANTA POST

Growing From The Top-Down And Bottom-Up

Atlanta's audio post-production market is experiencing many of the trends common to other regions, including an increased turn toward content as a revenue source, and a careful balance of physical and technological expansion. Several new facilities have opened in recent years, as have a new generation of project studio-type post outlets. At the same time, Atlanta remains unique in that, even as it grows in terms of capacity, it remains tied to

BY DAN
DALEY

a core of a few massive clients, most notably Tribune Broadcasting and Turner, which last year merged with the largest media company in the world, Time Warner. Atlanta continues to grow even as its more established facilities continue to work—and work very successfully—with a slew of older workstation platforms.

Crawford Audio, a division of Crawford Communications, is the doyen of the Atlanta audio post community. Six audio suites support not only the company's regular array of clients, including Turner and Tribune, but also the highly advanced Crawford Digital, a video subsidiary that opened late last year in the office park campus that houses the rest of Craw-

All sweetening and mixing of the popular Cartoon Network cartoon "Space Ghost" was done at Synchronized Sound with engineer Roy Clements (seated) and producer Andy Merrill.





Studio G at Doppler

PHOTO: PAULAN/1996

ford's enterprises (including a satellite farm that Crawford has been trying to use as a conduit for offline audio and video overflow work from the extremely busy post houses of Europe). In addition, two of the six audio suites have been given over to a new venture within Crawford Audio: M&E, an in-house creative audio division that develops content such as scoring, music beds, sound design and effects.

"We're definitely moving toward content as opposed to simply for-hire facility rental," observes Steve Davis, director of Crawford Audio. "There's enough client demand for it, and it not only creates a new revenue source from the work but also from intellectual property royalty participation in the cases in which Crawford retains the copyrights. And it helps us build up libraries, so it's a very synergistic thing."

Steve Davis of Crawford Audio

Although Crawford is still heavily reliant on and satisfied with its six NED Post Pro workstations—one for each audio suite—it recently upgraded, adding a Fairlight MFX-3^{plus} and a dual-operator Euphonix CS2000 80-input console. "Our biggest problem is capacity at this point," says Davis, adding that Crawford is considering adding a seventh suite later this year, with possibly an Avid or a second Euphonix and a second MFX-3^{plus} system.





Synchronized Sound's Studio B, Mix 3

"We've been seeing a lot of growth in the last two years, and we have to respond to it," says Davis. "But we have to manage that growth, too. That's why a discussion of the issue of rates is a deep one, because the scope of services and technology here has been changing a lot in that time." Davis says Crawford's policy is to charge a basic rate for the facility and charge virtually everything else *a la carte*—such as ISDN lines and creative services. "That means the client is only paying for what they're using, and we get a better rate of return on our technology investments."

Doppler Studios is another established, large audio post facility in Atlanta, and its seven rooms continue to handle both music and post-production clients, the former at night, the latter during the day. "The only real problems we get are the few occasions where the

music clients stay really late and the post clients come in early and wonder why they smell something like herb cooking," laughs Bill Quinn, co-owner and manager of the facility started by Pete Caldwell more than two decades ago. Music recording still accounts for as much as 30% to 40% of Doppler's annual revenues.

For post work, Doppler's client base is mainly ad agencies, although the Turner networks are a big customer, as are movie promos and Latin American network projects. However, Quinn notes, since the merger with Time Warner, there has, predictably, been pressure to keep rates from rising; keeping volume work from Turner requires reciprocal rate discounts, as well. "That's part of being an approved vendor for Turner," he says. "But a lot of the companies in town have seen some of their Turner work diminish since the

merger, so keeping a good working relationship is important." And, say Quinn and other facility managers, Turner is hardly monolithic; it has so many semi-autonomous divisions that, for all intents and purposes, it's like dealing with seven or eight clients.

Doppler remains set on the seven Waveframe workstations it's been using for years. But where some Atlanta post facilities are building suites and purchasing technology around their technical talent, Quinn believes that uniformity is his best ally. He keeps the rooms consistent and maintains a staff that can move from one project to the next seamlessly.

Being able to manage and produce all types of audio projects is central to operations in most second-tier markets, but Quinn says there is a limit. Doppler has resisted entering the video arena, for example, although it has toyed with the idea of putting in an Avid video-editing suite several times over the years and has had several customers encourage it. "But every time we consider it, we then realize that we're audio experts. And we come back to our core competencies," he says, adding that he still has to make sure services such as libraries are larger and ISDN lines are always available.

The larger facilities in Atlanta are aware of the rise in the number of smaller post facilities that have sprung up in recent years. In many cases, they are former audio post engineers who purchase a Sonic Solutions or Pro Tools system and market themselves for specific tasks such as editing and sound design. One of Quinn's own former engineers did exactly that with an Avid system. But major facility owners are not rattled by this development; as Quinn points out, Atlanta post clients are used to full service. "We're becoming like the classic mothership, interacting with them and assembling the pieces of projects that come in from all over. So it works to our advantage, too," he says.

The Wolff brothers found themselves in that position once—an independent audio post company that acted as the audio arm of the former Editworks video post house in Atlanta. When Todd-AO bought out Editworks several years ago, the brothers stayed independent but chose not to ally

—CONTINUED ON PAGE 205



Crosstown Audio's chief engineer Nick Ketter

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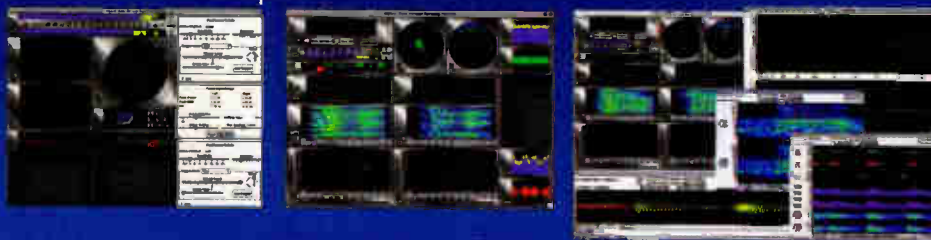
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Muscle Shoals

SOUND

Looking

TO THE

Future

Highway 72 works its way across the kudzu-ridden hills of northern Mississippi and Alabama. Shortly after you cross the state line, going into Alabama, you encounter a group of four sleepy towns—Sheffield, Tuscumbia, Florence and Muscle Shoals—gathered near the beautiful, lazy Tennessee River. This area isn't a tourist mecca, but pop and R&B music-lovers know that this region has produced some of the most influential sounds of the past 30 years.

During the '60s, '70s and '80s, the Quad-Cities area (as it is called locally) was a hotbed of studios and players. Key to all of this activity was a handful of hometown musicians who initially worked as a session band for Rick Hall's Fame Studios in Muscle Shoals. This group of gifted and soulful musicians, which comprised Roger Hawkins (drums), Jimmy Johnson (guitar), Barry Beckett (piano) and David Hood (bass), were the epitome of a brilliant Southern R&B-influenced rhythm section. They became known as the Muscle Shoals Rhythm Section, and their command of the groove and economical arrangement touches helped make songs like Wilson Pickett's "Land of a Thousand Dances" and "Mustang Sally," or Aretha Franklin's "Chain of Fools" and "Respect" utterly perfect. This wasn't Motown or Memphis; it was something different and unquestionably its own thing.

Muscle Shoals Sound co-owner/producer/engineer Wolf Stephenson



BY RICK CLARK

In 1969, the Muscle Shoals Rhythm Section set up shop in a modest building at 3614 Jackson Highway. The studio was called Muscle Shoals Sound, and from the late '60s to the early '80s, an astounding string of hit singles and albums came out that facility, many of them now widely regarded as classics. Among the seemingly endless parade of stars who worked there were Aretha Franklin, the Rolling Stones, Wilson

Pickett, Boz Scaggs, Bob Dylan, Traffic, Paul Simon, Bob Seger, Dire Straits, Lynyrd Skynyrd, Leon Russell, Linda Ronstadt, Joe Cocker, Laura Nyro, Alabama, Carlos Santana, Glenn Frey, Ahmad Jamal, Jimmy Cliff, Rod Stewart, Cat Stevens, James Brown, Melissa Etheridge and Eric Clapton.

By the late '70s, business was so hot that it was time for Muscle Shoals Sound to make a move into larger

quarters. The City of Sheffield, Ala., offered to sell the studio a huge Naval Reserve Armory, with more than 32,000 square feet, for a dollar a square foot. Even though it would cost MSS a small fortune to convert it into a world-class studio, it was a deal too good to pass up.

So in 1978, the new facility—situated right on the banks of the Tennessee River—opened its doors with superstar

DONNA JEAN

MUSCLE SHOALS
YESTERDAY AND TODAY

by Blair Jackson

She is best known in the pop music world as Donna Jean Godchaux, a singer with the Grateful Dead from 1972 to 1979. But before she moved to California in the early '70s and married pianist Keith Godchaux (who also joined the Dead), she was Donna Thatcher of Florence, Ala., and part of the vital Muscle Shoals recording scene of the late '60s. Now she's come full circle: Three years ago, after nearly 25 years in Northern California, she moved back to Florence with her husband—musician and songwriter David MacKay—and their teenage son, Kinsman. And last year she recorded her fine debut solo album, *Donna Jean*, at Muscle Shoals Sound on Muscle Shoals Records using local players who are her friends and musical colleagues.

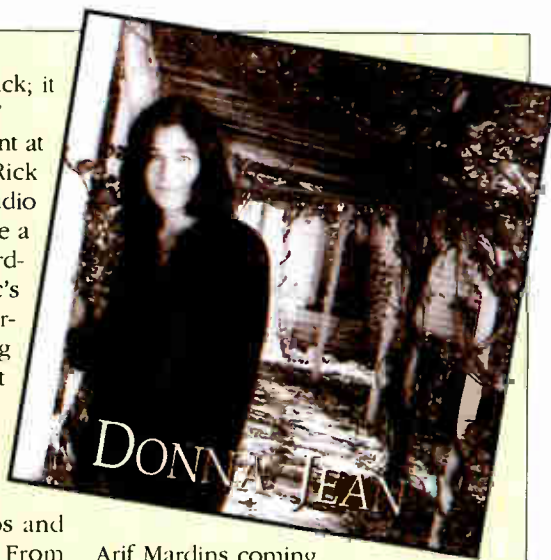
"The area is a lot different than it was 25 years ago," she says, "but it's still a place where there are a lot of great musicians and a lot of great music is being made. A lot of the people who are still the staples in the music business were playing at my sock hops when I was in high school—Barry Beckett, David Hood, Roger Hawkins, Jimmy Johnson. Barry is more in Nashville now, but the rest of them are still here and playing music. Obviously, things have changed a lot in the music scene since the '60s. A lot of musicians have home studios now. We have a studio, too, but we wanted to go back and record at Muscle Shoals Sound. That was real thrilling for me and for David—in fact when I first met David [in the early '80s], he was as impressed with what I had done in Muscle Shoals as anything else. Still, for me, making this record

didn't feel like taking a step back; it was more like moving forward."

Donna Jean was still a student at Sheffield High School when Rick Hall started his modest little studio operation, which would become a world-renowned center of recording for some of popular music's best-known acts. "I was a cheerleader, and I had always sung from when I was a little girl. I got in with some people who were involved in the studios, and eventually they started calling me to sing in background groups on various little demos and things that were happening. From there I kind of grew into the music scene that was happening," Donna Jean recalls. "So I would go from cheerleader practice in my little cheerleader outfit, to the studio. And if I had a session on Saturday and I had to be a cheerleader at the game on Friday night, I would have to mouth the cheers so I wouldn't be hoarse for the session."

Arthur Alexander and Tommy Roe were the first artists to break out hits from Fame Studios, but it was local favorite Percy Sledge who really put Muscle Shoals on the map: "He was an intern at the local hospital," Donna Jean says. "He had a little band on the side, and my best friend Jeanie Greene, who sang with me in a vocal group called Southern Comfort, had a husband, Marlin, who produced Percy's first big hit, 'When a Man Loves a Woman.' Us girls were the background singers for his first records. I remember the day it hit Number One on the charts. Percy was in the hospital with a kidney problem, and Jeanie and I took him the copy of *Billboard* to show him.

"Beginning with the release of 'When a Man Loves a Woman,' you get the Jerry Wexlers, the Tom Dowds, the



Arif Mardins coming down here and producing records on a consistent basis. We loved them; they were great. They were music people. They didn't come in to take over and be weird and tell everybody what to do. It was a real team situation that everyone was involved in, and everybody knew that something unique was happening here. There was something intangible, something about the players and the studios. It was a home-grown thing; kind of like a family. You hear people talking about a 'sister blend'—there's a blend you can't get anywhere else, even if you try to add other components.

"The town wasn't even that aware of what was going on," she continues. "We would have Bob Dylan, the Rolling Stones, all these people running around town and nobody knew who they were. Most people were not even aware that there was a music industry there. After a while that changed, of course, and eventually it became something the people were proud of. Now there's an Alabama Music Hall of Fame here."

Donna Jean had the opportunity to work with a number of top artists in the late '60s, including Solomon Burke,

—CONTINUED ON PAGE 81

Richard Dodd



Photo: Peyton Hoge Studio: Vital Recordings

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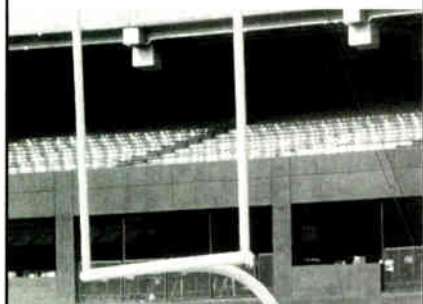
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clients lined up to record, and the boom continued until the early '80s, when repercussions from the nationwide economic recession hurt the music industry, particularly operations that functioned outside of the major markets.

Though Muscle Shoals Sound continued to do strong business, its heyday seemed to be over. In 1985, the owners sold the studio and its lucrative publishing company to Tommy Couch Sr., Wolf Stephenson and Stewart Madison of the Jackson, Mississippi-based Malaco Records, a very successful R&B- and gospel-rooted label that had enjoyed a close relationship with the MSS Rhythm Section since the early days.

The original section's lineup changed when Barry Beckett left for Nashville, but the remaining players stayed behind and continued to be a major part of the recording activity of Muscle Shoals. These days, Muscle Shoals Sound continues to lure bands and artists from all over the world who want to get in touch with the studio's magical past.

"There is something about going to a studio that has a discography

that is as lengthy as the one at Muscle Shoals," says Wolf Stephenson. "You've got hundreds of hit records that have been cut there by any artist you can think of. The list is as long as your arm, and for a lot of people, that is a good incentive."

Muscle Shoals Sound studio manager Suzanne Harris concurs, adding, "Whenever bands first arrive, they talk about the strong vibe that is here." She also believes that the environment is a major plus for those who really want to get down to work with no distractions. "A lot of the studio's lure is for artists who desire to leave some other music scene and work in an uninterrupted environment," Harris says. "Artists don't come here for just a day and leave. They pretty much are in for the long run. They love the fact they can make themselves at home and work whatever hours they choose. There are not a lot of pressures, or A&R or other people dropping in to say hi."

Harris is quick to point out that the majority of the MSS rhythm section players are actively working at the stu-

—FROM PAGE 82, DONNA JEAN

Joe Tex, Cher, Neil Diamond, Ben E. King, Boz Scaggs and many others. And in 1969, "My greatest dream came true. Elvis was recording in Memphis, and he heard a song called 'Suspicious Minds' that our vocal group had done a demo of. He loved it, and he brought us in to sing on that and 'In the Ghetto,' which were part of his big comeback. It was a real big thrill."

When Donna Jean went back to Muscle Shoals Sound to make her latest record, she enlisted the help of a number of veterans on the scene, including engineer/producer Steve Melton, an independent who had worked at Muscle Shoals Sound for 26 years, and a number of superb local players, such as keyboardist Joey Holder, her bassist husband, David, keyboardist/guitarist Jerry Wallace, drummer Mike Caputy. The best known of the bunch was guitarist Will McFarlane, the one-time lynch pin of Bonnie Raitt's band, but a Muscle Shoals denizen for the past 17 years.

"When I left L.A. in 1980," says McFarlane (who co-produced the tracks with Melton and also co-wrote four songs on *Donna Jean*), "everybody

was into cutting two-inch tape and getting the perfect tom fill out of the bridge; you'd do 95 takes at it, and then it was all creative razor. I came to Muscle Shoals, and at sessions here, the guys would run it down once or twice and then do a take—"That's it, boys! Great!" For fixes they might do a punch here and punch there, but what I really loved about it was that they were always going for feeling above all. Sometimes, even after 17 years, I still can't believe the feeling in there. You're with the guys who played on [the Staple Singers'] 'I'll Take You There' and all these other amazing songs. Guys like Roger [Hawkins] and David [Hood] breathe like each other musically. It's a privilege to work with them."

"It's still a great-sounding room," says engineer Melton, who can still fondly recall the early days of Muscle Shoals Sound, when the control room was equipped with a Dan Flickenger console. "Then we got an MCI 400 in '78. After that is when we moved to the 30,000-square-foot building on the river. We got some great sounds out of both places, but there definitely was a vibe to the old place that made

—CONTINUED ON PAGE 201

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Lynyrd Skynyrd video shoot at Muscle Shoals Sound

dio, as well as many other excellent "A" players who still populate the area in great numbers. "I regularly use Roger Hawkins and David Hood, who still have offices in the building. We also use Jimmy Johnson, who is the master of brilliant rhythm guitar. Clayton Ivy plays keyboards for us, and Will McFarlane plays guitar; he was Bonnie Raitt's and Candi Staton's guitarist for a number of years. He's done a little bit of everything. These are the players that I use for most all of the sessions."

Depending on a client's point of view, getting to Muscle Shoals can provide a desirable distance from the industry, or it can be an inconvenience. Though there isn't a major airport in the immediate area, there is one in Huntsville, Ala., which is an hour's drive from the studio. Memphis and Nashville are two-and-a-half hours away, and Atlanta is a four-hour drive.

Harris says that the studio gets a lot of business from New York and Los Angeles (though little business comes from Nashville). Besides being a great environment to get away to, Muscle Shoals Sound is heaven for lovers of meticulously maintained analog equipment: It boasts two vintage Neve consoles (a 32-channel 8068 and a 44-channel 8088 with seven subgroups equipped with GML Series 2000 automation); Studer A820 multitracks; loads of classic outboard gear (LA-2As, 1176LNs, Drawmer gates, etc.); monitors by Westlake, Meyer, Tannoy, Yamaha, Auratone and Genelec; and a large collection of instruments—including guitars, a 9-foot concert grand

piano, a couple of Hammond B-3 organs, half a dozen old Wurlitzer tube electric pianos, vibraphones, kettle drums and other assorted items to bang on—guitar effects pedals and amps.

"If a client is coming looking for splendor in accommodations at some five-star hotel, they are out of luck," says Stephenson. "There are plenty of places to eat, but there isn't a whole lot of elegance involved in most places. If you like barbeque, it is a wonderful place. There are plenty of places to go. You won't die of boredom, but if you are someone who is wanting to be 'seen,' then big deal—you can go down to the co-op and watch the farmers buy cotton poison or something! It isn't as big of a hick town as I might be making it out to seem. There are movies and shopping centers and all of that kind of stuff. It is a pretty good-sized area, but it's still a country town."

In today's highly competitive studio business climate, the Muscle Shoals Sound owners know that having a glorious past isn't enough to ensure a rosy future. That's why the studio has put so much energy into keeping the facility in top shape and employing many of the area's finest musicians. Still, the legacy and vibe of the studio are intangibles that are certainly worth a lot. And so is the sense of calm that pervades the studio's setting. "When you walk out the front door, you have a fishing pier and boat dock on the Tennessee River right in front of the studio building," Stephenson says. "There is a big park next door and walking trail for a couple of miles up and down the river. It is a very comfortable place to be." ■

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MICK GUZAUSKI

MIXING SECRETS FROM THE TOP OF THE CHARTS

He's the master mixer of smooth and soulful pop, with a list of Number One singles that's longer than many engineers' entire discography. Hit artists from Mariah Carey, Toni Braxton and Michael Bolton to Barbra Streisand, Boyz II Men, All 4 One and LeAnn Rimes seek him out to help craft the sound that keeps them out front and on top, and he always delivers. Success hasn't gone to his head, though; Mick Guzauski is a genial, unassuming fellow. The polar opposite of jaded, with almost 30 years spent in the music recording business, he still evinces a sincere and almost childlike fascination with the various technical and artistic elements that comprise his chosen field. These days, Guzauski mixes primarily at his own Barking Doctor Studios about an hour out of Manhattan, where recently he's been locked in with new projects for Eric Clapton, Lionel Richie and Monica.

Let's take it from the top—how'd you get started in the business?

I was always interested in music and electronics, and although as a kid I had music lessons, I never believed that I'd be a very good play-



er. But I was pretty good with electronics, so...

Did you build from electronics kits?

Kits, and I built a lot of my own stuff. I started recording as a hobby in the late '60s, so of course there was no semipro gear—nothing af-



Mick Guzauski at the SSL 9000J console at Record Plant in Hollywood

fordable for a kid. Then, when I was 15, I got my first job repairing turntables and tape recorders for a local hi-fi store, and I started buying used and broken equipment and fixing it up. Then I built a mixer and started a studio in my parents' basement; I was recording demos for local bands by the time I was a senior in high school.

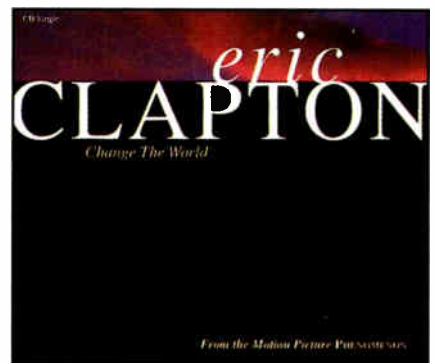
You had a studio in your house even back then?

It was tiny, but in Rochester, New York, there were very few studios, and they were mostly in people's basements. I did that for a couple of years after high school, then I went in with some other guys who had a commercial studio because my parents didn't want bands in the house all the time. I was doing jingles, as well as those band demos, and I'd been doing it on weekends. But it got to the point, when I had a Scully 4-track machine, that we'd do tracking on weekends when my parents weren't home, then do overdubbing and mixing on weeknights.

So you went into business with those other guys...

They did mostly industrial work, and I kept up the music end—more bands and jingles. There re-

ally wasn't that much work in Rochester, so I did P.A. work, as well. I did P.A. for Chuck Mangione and ended up recording for him in the studio and also live in the early '70s. Then, in '75, he signed with A&M and was getting ready to do the album that became



Chase the Clouds Away, with a live rhythm section and a 44-piece orchestra. He asked me, "Do you think you can handle it?" Of course, I'd never been in a real professional studio, and of course I didn't think I could do it, but I said, "Yeah, sure."

So I went out to L.A. with him and did the album; it came out good, and everybody was happy. After that, I went back and forth to L.A. for three years, in the studio with Chuck and also doing road

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work. I finally moved to L.A. in 1978. Now, 20 years later, I'm back in New York!

Your client base grew from Chuck's albums—people heard your work and liked it.

One of the last records I did for Chuck was a pretty big hit called *Feels So Good*, so people had heard of me as an engineer, at least in instrumental jazz. I started getting a lot of calls to do that kind of album—you know how you get sort of pigeonholed. Meanwhile, I'd also gotten my first real job in L.A. as a tech at Larrabee. A friend who worked at Westlake called me up one day, and I went over to see the place—I ended up doing a Chuck Mangione project there, and I became close to the staff. One night, a band was in with James Newton Howard producing and Andy Johns engineering. Andy had double-booked himself, so Jim Fitzpatrick, Westlake's head tech, needed an engineer and called me. The label's chief engineer happened to be George Massenburg. I did a rough mix that he liked, and that's how I got into working a lot in L.A. and went on to work for Earth Wind & Fire.

Things happened faster after that; I was working at Conway Studios with Average White Band, and I met Peter Bunetta and Rick Chudakoff. Through them I started working with Smokey Robinson, Michael Bolton, Kenny G and Walter

Usually I have a couple of automated channels on the console that are sends to different delays and reverbs, mainly for lead vocals and lead instruments.

Afanasieff—that's really the chain of events. David Foster, who I do a lot of work for now. I actually met back in Rochester where I did a demo for him in '73 or '74 when he was in a band called Skylark, who were managed by

someone who lived in Rochester.

You never went the runner/assistant route?

I never assisted; I came more from a technical aspect. I'm not a designer like Massenburg, but I built stuff for my home studio because I wanted to understand how it worked. I had time on my hands in the early years, and at one time or another, I designed and built every part of the analog chain. Not a whole console, but one channel each of record, tape and play, so I understood how everything worked from the mic pre to the power amp. Analog, of course. I started getting really busy before digital technology became prevalent, so I haven't had time to learn as much as I should about it. I want to, though; I want to get a DSP development kit and see how it all works.

Your records always sound so warm that I was surprised to learn you work mostly with digital.

I do work pretty much all digitally—it just makes sense because we have the digital final product of a CD. While it's true that analog does tend to warm things up somewhat with tube gear and such, I believe there's no reason digital can't be warm. I never really have much

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problem with that. I mix to a DA-88 through a Rane Paqrat. The Paqrat takes a 24-bit digital word and splits it onto two 16-bit tracks of an 8-track machine; you can record 24-bit stereo audio using four tracks of a DA-88, and it will re-assemble the 24-bit word on playback.

The system I use now is the AT&T digital mixer core for my SSL console, with a Sony 3348 multitrack. I have an analog multitrack for when people send me analog tapes, but I usually transfer them to digital, then we stay in the digital domain all the way through. I also

have a lot of digital outboard gear—TC5000, Valley Compressor, Weiss Equalizer, Eventide DSP4000 and H3000, Lexicon 300s and a Sony V77—a lot of gear that I can go in and out of and keep everything in the digital domain. I do also use analog—a GML EQ and compressor, and I have a couple of old Eventide SP2016s and an EMT140 plate that I use in combination a lot on vocals; I think that's where some of the warmth in my sound comes from. The 2016 has a nice high-frequency sizzle and definition in the reverb, and the plate has that big, warm sound behind it, because, although the EMT is transistor,

not tube, it's still a mechanical device. *The vocal ambiences on your records are always very clear; you may have a lot of reverb going on in a ballad but it doesn't get in the way.*

I always try to make sure that the low end of the echo isn't in the way of anything. Often, I'll EQ the reverb to attenuate lows, so that when it rings in the lower register of the voice, it doesn't cloud any instruments. Usually, I'll roll off some low-mids, around 200 or 300 Hz. I'm very careful that I don't lose richness, but most of the main keyboards and pads will be right in that same area, and it can be a balancing act to keep the vocal clear. I also work very hard on the high-end detail in the vocal to make sure that it's very present—not sibilant, but with enough diction so that you can hear the vocal in the track without putting it incredibly up front.

Are there particular compressors you like to use on vocals?

I'm using UREI LA22s a lot; they were only made for a couple of years. I like their flexibility. In addition to variable attack and release time, the detector is variable from peak to average. Also, you can use it as a frequency-selective compressor—not in the way that a sidechain is frequency-selective, but like a dynamic EQ that will dip a certain frequency. If you have a vocal that at certain levels and frequencies jumps out and gets harsh, you can use a channel of it and actually detect the threshold of that jump, then dip that frequency.

In general, do you vary the attack and release times a lot on compressors?

Actually, for vocals I'll usually leave them set pretty much the same. What seems to work is about a 3-to-1 ratio, with a 20 to 40-millisecond attack time and a 100 to 300-millisecond release. I don't just leave it set that way for every voice, of course, but I find for most applications, that range works. I usually adjust attack and release a lot more for instruments than on vocals—the envelope of the voice in general is usually close enough so that when a compressor is set this way, it will attack pretty well without pumping. With a slower attack time, you'll hear the vocal attack and then you'll hear the compressor grab—it will be audible. If the attack is faster, you sometimes don't get the transient of a word that's being emphasized. So in general these settings work. Once in a while, if something is sung very staccato, I'll have to speed up the release.

It sounds like you ride reverbs and delays a lot during the mix.

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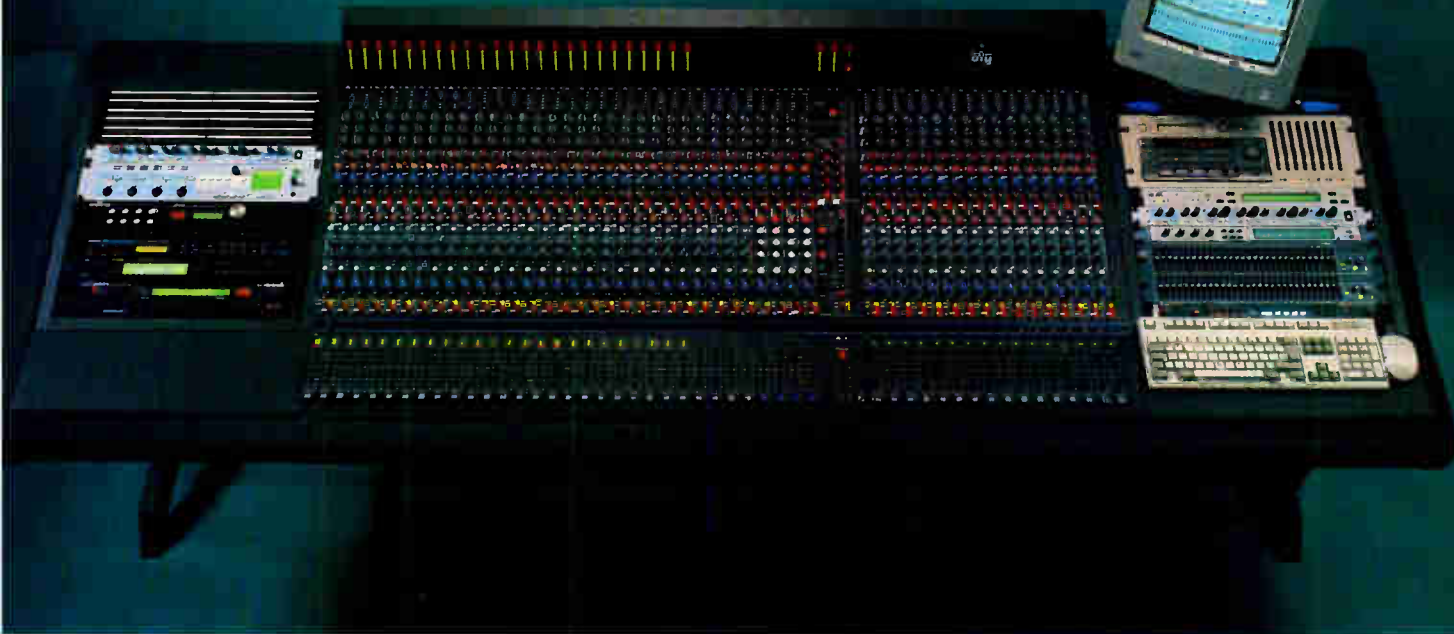
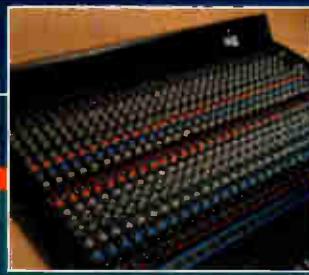
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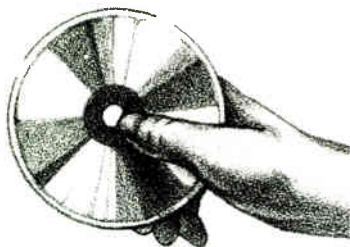
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Yes, usually I have a couple of automated channels on the console that are sends to different delays and reverbs, mainly for lead vocals and lead instruments. Sometimes it's an effect to really make a word swim, but more often, the reverb that would sound plenty wet in a sparse part of the track will be too dry as the track builds dynamically. So, often I'll ride the reverb and delay as the track builds.

You've done a lot of group lead vocals like Boyz II Men and All 4 One. How do you deal with so many vocals?

You'll usually find when you place each individual vocal in the track that certain frequencies will pop out in certain areas, while in other areas they won't be loud enough. When they are soloed and un-EQ'd, they sound good, but there may be little spikes that stick out in relationship to the track. So I'll EQ each vocal individually to be smooth, generally with parametric equalizers with the bandwidth set pretty narrow. I'll boost a frequency a lot to tune right to it, then cut it back to be smooth and in context with the rest of the spectrum. Sometimes I'll split a vocal on two channels and have a different EQ for verse and chorus. And sometimes frequency-selective compression will help. If you have a vocal EQ'd pretty bright that sounds nice when the vocalist is singing soft but which gets a little nasty when they sing

harder, that kind of compressor can automatically ride those changes.

If I'm going to cut a frequency back that's sticking out in the mix, I'll tune it narrow and sharp to find the exact center frequency and boost it to find it, then broaden it up and cut it back as much as I need to. Most of the boosting I'd do is very high-shelf, broadband, so you don't hear one note jump out, unless, of course, something is deficient in one small area.

And with backgrounds?

With BGs, I'll EQ for smooth response; I don't compress them that much. Usually, I get them in stereo pairs per part—one part that's a chord, and a counterpart to that. Sometimes the parts are individual. Then I'll bus them to a pair of channels so that I can work on them as a whole. I'm always listening for the chords. They may sound perfectly balanced soloed, but something may get lost when it's in the track. I have to say, though, most of the vocals I get are very high-quality, very well-recorded. Well-balanced within themselves and also with the track.

Do you use your console EQ primarily?

Yes, mostly the console EQ, except usually on lead vocals I use the GML parametric. My chain for that tends to be out of the converter to the GML EQ, then the compressor, the de-esser and the console EQ. That way, if I need to cut back on something, I use the GML, and the compressor is reacting to a fair-

MICK GUZANSKI SELECTED CREDITS

MIXING

Number One Singles

Toni Braxton "Unbreak My Heart"

Eric Clapton "Change the World"

Mariah Carey "Always Be My Baby,"
 "Dream Lover," "Hero"

Boyz II Men "Water Runs Dry,"
 "I'll Make Love to You"

All 4 One "I Can Love You Like That,"
 "I Swear"

Whitney Houston "Run to You,"
 "I Have Nothing"

Michael Bolton "Love Is a Wonderful
 Thing," "To Love Somebody"

Chuck Mangione "Feels So Good"
 (recorded and mixed)

Singles and Album Cuts

Barbra Streisand/Bryan Adams
 "I Finally Found Someone"

Vanessa Williams *Star Bright*

Kenny G *The Moment*

Babyface *The Day*

Celine Dion "Because You Loved
 Me"

Selena *Dreaming of You*

Quincy Jones *Back on the Block*

Talking Heads *True Stories*



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MIX MASTERS

ly smooth signal. Boosting I'll do on the console, post compression. So usually I have EQ both pre- and post-compression—cut before compression, boost after.

With the AT&T system, the console is switchable per channel between EQ that emulates both SSL E and G Series and Neve VR curves. Usually, I keep it on SSL E, but on acoustic guitars, strings and some high percussion, I'll go to the Neve VR curve because the characteristic of the high shelf is very airy—it has a little dip before the shelf starts and then sort of comes up a little steeper and gives you air without getting harsh.

I think of you as a bass expert. Your bottom end is present and big but never loose and boomy.

Well, with some projects I work on, the bass is in such a low register that there's no attack with it, but it works musically. That's where I'm very careful setting the attack time on the compressor. I'll listen to the bass in the track and check the attack of each note. Then, if you slow down the attack of the compressor and compress the track a little, the compressor will actually add some attack be-

cause the attack transient of the bass is getting through before the compressor reduces the gain on it. That's a trick I use a lot—to use a compressor with a slow attack and then to adjust the amount of compression so that there's enough of the attack of the note that gets through to define where it is in the track. I also EQ it to make the whole

Being a mixer is a pretty new profession. We're creating an ambience for a song, sort of like a photographer does for a picture.

register that the bass is playing in, the whole spectrum, sound smooth with the track. That doesn't always mean that every note is perfectly even, because something else might be covering the bass notes in some areas. You want to tailor it so it sounds even in the track.

The important thing is, I don't listen to individual tracks alone too much. I'll usually listen to a rough mix first if the client sends it, or else I'll put up all the tracks to hear what the song is about. Then I'll go through the tracks and EQ and set them pretty much where I think they're going to go, and then I'll put everything in and fine-tune.

Like mixing a live band.

It is probably a carryover from when I used to do live sound work.

What compressors do you like on bass?

Most of the time on bass I seem to use the Empirical Systems Distressor because it is so adjustable. I'll also sometimes use an older limiter like the LA-2A or the clone made by DeMaria—it's not very variable, but it has a very complementary attack and release time by itself. That's another optical; I use a lot of the optical compressors. Even though they don't have variable attack and release, their normal characteristics can work very well.

Do you have to do a lot of mixes for each song? Vocal up, down, etc.

Not so much; a mix, then a vocal up, a vocal down, so if later a word or a phrase isn't quite the right level, you can cut them in. I'm also mixing in

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stems a lot now, where I'll turn the bus compressor off, because of course that compressor in the final bus reacts to everything, and I'll do on DA-88 a pair for the track, a pair for BGs, a pair for leads, a pair for orchestration—four different stereo elements of the mix with their effects. That can be combined and sent to a bus compressor if we need to change balances without redoing a whole mix.

I'm also using Pro Tools a lot for that. I should mention that's now one of the most important things in my studio. I have Pro Tools 24 with 24-bit resolution, so I can put a whole mix in it without really losing anything. I use it for editing mixes, for flying and moving stuff around. I also use the plug-ins with automated EQ. If a vocal comp needs different EQ dynamically as the song goes on, I'll put the vocal in Pro Tools and let it run in sync.

There's also an auto-tune, another plug-in which is the greatest thing. You tell it what key the song is in and how fast and critical you want it to be about pitch. I'll just copy the vocal track into Pro Tools. That's another thing I really like about working digitally: You can copy back and forth, and as long as the clocking of the system is stable, you don't really have any loss. That's a point that should be made about digital: Generation loss in digital is nonexistent only as long as the clocking of the system is stable, all the connections and the wiring are good, and you are not getting noise errors into the chain.

Your console is a 56-input SSL G Series. Yes. The AT&T digital mixer core has a little card that goes on each channel of the SSL, each multiplexer board, and it picks up the recall information there and sends it to a computer and the AT&T DSP, which is actually just modeling what the whole console does. So the SSL isn't passing any audio at all; the recall section is all that's running. When the AT&T is operating, it forces the recall circuitry on all the time, so that whenever you are turning a knob or pushing a button, it knows what you've done. And then, of course, it reads the automation for the faders and mutes.

You must use your ISDN lines a lot. Our system is a Dolby Fax through EDNet, and definitely ISDN lines are one of the reasons that I'm able to have a home studio and to do most of my work here. Being this far from the city, producers don't always want to come, and also I still have a lot of clients in L.A. For the most part, people don't have the time to get on a plane and

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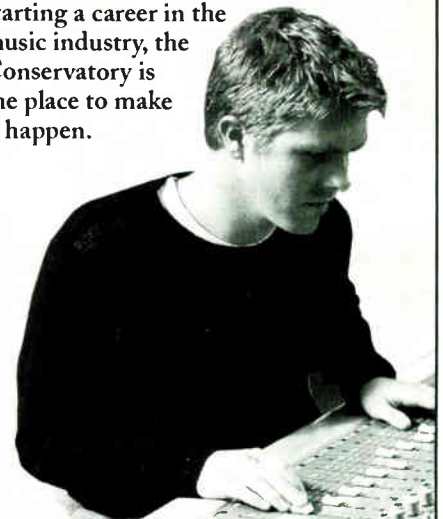
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MIX MASTERS

come here. This way, I can do the mix and then the clients can either listen at home or at a studio and we just tweak it together for the last couple of hours. Then we're done.

Which other engineers' work do you like?

Off the top of my head? I love a lot of the stuff Bob Clearmountain does; I think he's a master at getting really interesting spatial things happening. I love Elliott Scheiner, the precision and fidelity of his work. There's a naturalness to it, a natural ambience like everybody's right there in the room that's very good. I've always loved his Steely Dan records, and more recently, Fleetwood Mac's *The Dance* is just great. I love Swedien, Massenburg, Al Schmitt—there's too many excellent engineers to mention them all. There are a lot of great people in this business.

How about some thoughts on the philosophy of mixing?

Well, I think it really is a new profession now, because it's only in the last few years that records have been made that are almost totally synthesized. So being a recording and mixing engineer are almost two different things now. There are still engineers who do both, guys like Al Schmitt and Elliott Scheiner, who are great engineers and great mixers, and there is the type of music that really needs somebody to do both and to follow a project through—those projects with mostly live instruments, where so much of the mix is created in the recording.

But being a mixer, like me or Bob or Jon Gass, and all the guys that people send their tapes to, really is a pretty new profession. We're creating an ambience for a song, sort of like a photographer does for a picture, because a lot of pop music is mostly synthesized and not recorded with its own particular ambience. So, different mixers interpret the music differently. It really is a different set of responsibilities.

One last thing. Tell us your secret for getting all those Number One singles.

Honestly, I have no idea how it happened, but I'm sure glad that it did! Seriously, though, as an engineer or mixer, there would be nothing at all to do without great artists and producers. So that's how it happened. I was lucky enough to hook up with great people, and I'm really thankful to all of them. ■

Maureen Dronney is Mix's Los Angeles editor.

SCRIMSHAW SOUND RECORDING

NATHAN DIGESARE'S NASHVILLE DIGS

After 15 years as a touring artist, 14 solo albums and two years in A&R, Nathan DiGesare is right where he wants to be—at home. His morning commute now takes him about 20 feet, to a project studio in the converted two-car garage adjacent to his Nashville home. Scrimshaw Sound Recording (a name that means “art on ivory,” also the title of DiGesare’s first solo instrumental album) is a well-equipped facility that sees a constant stream of sessions, from song demos to master productions. DiGesare has his fingers in every project as producer, engineer, writer, arranger, keyboard player, programmer or all of the above.

Recent projects to roll through Scrimshaw include a Boyz II Men tune, a collaboration with Steve Winwood on the theme for Steven Spielberg’s *Balto* and an instrumental track for *The Apostle* (starring Robert Duvall and Farrah Fawcett). When he finds the time, DiGesare steals away to write and compose an Italian opera he plans to finish this year.

“Scrimshaw Sound isn’t really a room for hire,” DiGesare says. “It’s for my own work. My friends know about the studio, and I’ll charge them a nominal fee for using it. I don’t advertise, but I stay busy year-round.”

With Nashville being the hub of contemporary Christian music (CCM) as well as country, DiGesare has worked with a host of CCM artists, including Michael W. Smith, Wayne Watson, Sandy Patty, Phil Keaggy, Angelo and Veronica, and Michael Sweet. He also handled the production chores for a recent lullaby album featuring songs and performances by many top CCM artists. In the works is a debut album by new trio 3-N-1, a sophomore release from solo artist Charles Billingsley and a second lullaby album entitled *A Parent’s Prayer*.

Scrimshaw includes a control



room, tracking booth, office and lounge area. Computer analysis and acoustic treatment in the space were done by Dave Fry, and the result is a cozy, good-sounding room. Not one to fear tight spaces, DiGesare has tracked virtually every instrument imaginable in-house. For *The Apostle* piece, Dino Kartsonakis played acoustic piano in the house, then DiGesare cut steel guitar, fiddle, trumpet, even drums in Scrimshaw’s tracking booth. “When we do a mix in here and go to mastering,” says DiGesare, “it’s right on the money.”

DiGesare started buying gear piece-by-piece in 1989 and has amassed a healthy complement of equipment. Centerpieces of the studio include a 48-input Neotek Elan board with Optifile fader and mute automation, Otari MX-80 24-track recorder, 40 tracks of Fostex RD-8 MDMs, and Tannoy 12-DMT mid-field and Genelec 1031A near-field monitors. DiGesare regularly locks up the Otari and Fostex recorders, giving him 64 tracks with the best of both the analog and digital worlds.

Outboard gear includes Apogee A/D converters; Focusrite Red mic preamp, EQ and compressors; Tube-Tech compressor; Lexicon 300 reverb; and processors from Roland, Yamaha, dbx and BBE. Scrimshaw’s mic selection includes

a pair of Microtech-Gefell UM92S tubes, a Neumann U47, an AKG 414EB and other condenser and dynamic mics from AKG, Shure and Audio-Technica.

Scrimshaw Sound Recording’s MIDI rig plays a key role in the production process, boasting four samplers and nearly 30 tone modules. “The keyboards draw a lot of people to Scrimshaw,” DiGesare says. “We keep everything in-house as far as programming tracks.” Scrimshaw also offers hard disk recording and digital editing on Pro Tools. A handmade, 9-foot Kawai grand piano (one of just two prototypes built) sits in the house, connected to the studio with tielines.

In the future, DiGesare would like to move Scrimshaw into a bigger facility, where he can track instruments comfortably, especially drums and piano. When asked about his personal plans, DiGesare shares his desire to continue producing records, get into more film scoring and write “the next big hit.”

Until tomorrow comes, however, DiGesare is happy at home. “This project studio gives me the flexibility as a producer to not worry about the clock ticking. I’m able to experiment, to try different things, to be creative, to get the most out of my production dollar. That’s the beauty of having your own studio—you get to work until you get it right.” ■

BY LOREN ALLDRIN

STEVE HACKETT

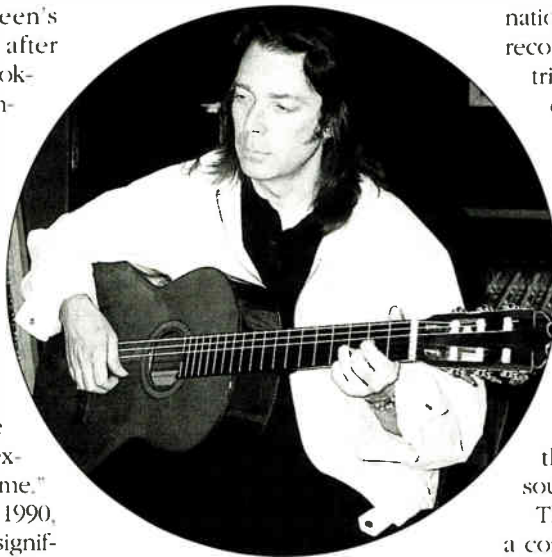
THE TERPSICHORE OF TWICKENHAM

Steve Hackett never intended to have a studio in his house. The former Genesis guitarist had originally planned to build or buy a commercial studio to use as a base for his own recordings, which have included 15 solo records, and collaborations with Yes guitarist Steve Howe, Queen's Brian May and others. But after spending more than a year looking for suitable premises without success, Hackett and his manager, Billy Budis, began to consider the consequences of setting up a home studio.

"My fear was that it would start to take over my home life," Hackett reflects, "you know, a kitchen full of roadies, and neighbors complaining about the noise. As it turned out, I'm extremely happy working at home." Since the studio was built in 1990, Hackett has used it to record significant portions of five solo albums, including all of the basic tracks for *A Midsummer Night's Dream*, which he assembled over a seven-year period. (The classical-guitar-with-orchestra suite spent several weeks on the UK classical charts and became one of the biggest hits of 1997 for EMI Classics.)

Hackett's studio occupies a ground floor room in the elegant five-story house he shares with artist Kim Poor. The Victorian-era home is situated in the leafy London suburb of Twickenham, and the studio control room occupies a front-facing basement room that was probably once the servants' parlor. The original fireplace remains, but the rest of the room has been rebuilt by studio consultants Recording Architecture. The walls have been covered with acoustic panels, and a suspended ceiling features an arresting arrangement of two-by-fours in a chevron pattern. Bass traps are concealed in the rear wall, which also features a

window looking out onto the garden. Next to the control room door is an isolation booth, paneled in wood and equipped with several of Recording Architecture's reversible baffles, each side offering a different absorption characteristic.



The doorway to a closet area in the rear corner of the room was widened in order to accommodate a Studer A80 24-track tape machine with Dolby, and this required the removal of several courses of brickwork. However, after Hackett and Budis switched the studio over to ADATs, the 24-track was sold and the tape machine bay now houses the ADATs, a tape library and part of Hackett's extensive collection of weird and wonderful stomp boxes. "There's even a Colorsound fuzz box named after me," says Hackett, looking slightly bemused.

The console is a secondhand 36-input Amek Angela. "It's not exactly state-of-the-art," he concedes, "but it sounds good, so I see no point in changing it." The control room monitors are UREI 813s, supplemented by Yamaha NS-10Ms. Final mixes are committed to Panasonic and Sony DAT machines.

The studio also recently acquired a 16-track Pro Tools 4.0 system.

For recording his K. Yairi classical guitar, Hackett usually uses an AKG C-414 mic into a Focusrite Red 6 preamp and records straight to tape. The 414 is also pressed into service, occasionally in combination with a road-abused SM58, to record Hackett's selection of electric guitars. A typical recording configuration would include a Peavey Classic 4x10 driven with a SansAmp preamp, with additional treatments provided by a Lexicon PCM 90, Roland SE70 and an Alesis Quadraverb. This configuration varies, even from take to take, as Hackett is constantly changing his rig and prefers to record immediately rather than attempt to re-create a sound later.

The outboard gear racks are in a constant state of rearrangement, since they get partially stripped for Hackett's onstage rig when he tours. Mainstays include a Joemeek compressor, Lexicon PCM 90, Alesis Quadraverb and Quadraverb 2 reverbs, Drawmer gates and a Drawmer 1960 compressor, and a pair of UREI 1176 compressor/limiters. Particular favorites include a Klark Teknik D780, of which Hackett says "That's a good one for drums—it 'powerfulizes' them."

Though Hackett is not particularly interested in developing his chops as an engineer, he is quite capable of recording himself; Budis or Roger King simply sets him up and troubleshoots when necessary. When a larger room is called for, Budis books the studio time. But whenever Hackett enters a top-flight (and expensive) commercial recording studio as a paying customer, he can comfort himself with the thought that one of the best-selling and most popular classical records of recent years was recorded in his own front parlor. ■

BY CHRIS MICHIE



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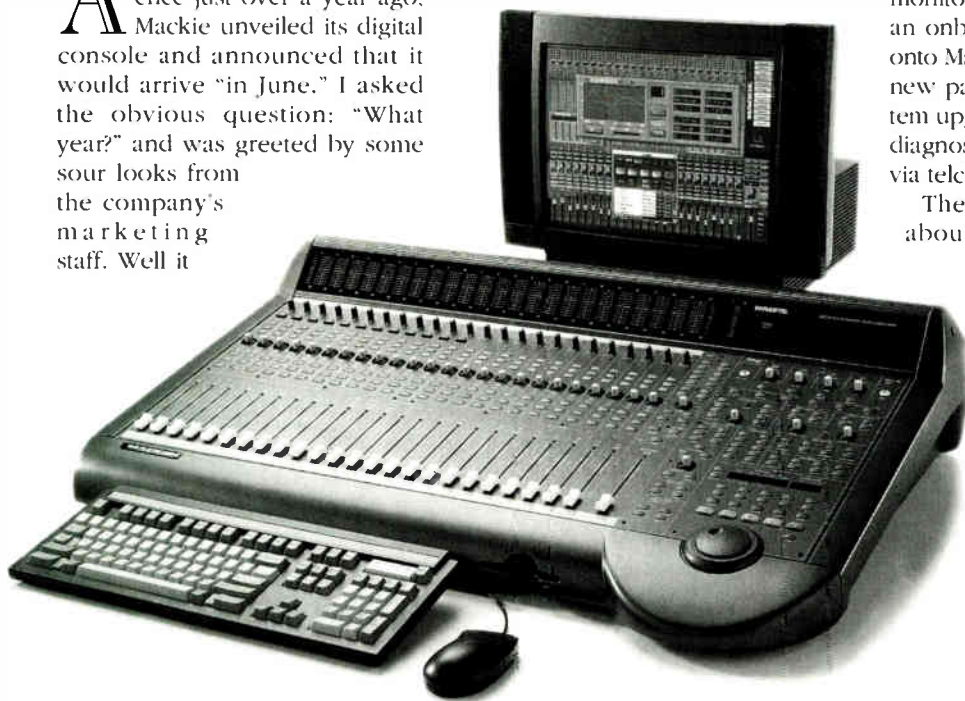
World Radio History

CIRCLE #073 ON PRODUCT INFO CARD

MACKIE DESIGNS DIGITAL 8-BUS

AUTOMATED 48-CHANNEL MIXER

At a packed press conference just over a year ago, Mackie unveiled its digital console and announced that it would arrive "in June." I asked the obvious question: "What year?" and was greeted by some sour looks from the company's marketing staff. Well it



didn't arrive last summer (no digital console in history has *ever* shipped on time), but it starts shipping next month. I was first in line to take Serial #00001 for a test drive.

Priced at \$9,999, the Mackie Digital 8-Bus (I'll call it D8B for brevity) is an 8-bus design with 48 input channels, 16 internal efx returns, 12 aux sends, 48 channels of automated dynamics/gating/4-band parametric EQ, onboard reverb/delay/chorusing effects, recall and moving fader automation. All console parameters may be displayed on any S-VGA monitor (up to 21-inch), and the 26-channel meter bridge features 24-segment ladders. There is also integrated transport control with a jog shuttle wheel and keys for 10 locator points. In addition, the D8B offers Apogee's UV-22 encoding technology to down-convert the console's 24-bit audio to the 16-bit CD standard for output to DAT or other low-res media.

But we're getting ahead of ourselves. I like to begin equipment tests from the inside out, with a thorough disassembly...

DON'T TRY THIS AT HOME!

With the console powered down, I began my probe of the subject's viscera, which can be accessed by placing the console on its dorsal spline and removing the underside cover. The first thing you notice is the mixer's *internal* power supply—no wall warts or huge rackmount toroidals here. In fact, the power supply is a PC supply, which makes sense, as the heart of the console is a Pentium motherboard (with floppy drive and a mini-hard disk for storing the operating system and automation data). Connected to it are the I/O and audio boards, a central logic board that gets/sends/receives commands to/from the controller surface and a video controller card

that drives your optional S-VGA monitor. Another console first is an onboard modem for logging onto Mackie Central to download new patches and operating system upgrades; long-distance auto diagnostics may also be possible via telco.

The most interesting thing about the console's innards is that a majority of the parts are standard: The PS, drives, modem, video card, etc., are all off-the-shelf items. So if you ever need service at some inopportune time (or want to expand the RAM for more automation storage by adding standard SIMMs), the solution may be as close as your nearest nerd shack. And the monitor, mouse and QWERTY keyboard are all readily available (and deeply discounted!) worldwide.

The DSP and converter cards are mounted directly over the I/O cards, a design that makes for extremely short cable runs and keeps external gremlins such as noise and interference to a minimum. The moving faders are by Alps, the mic preamps are Mackie's well-known discrete, low-noise models, and the 24-bit, 64x oversampled A/D and 20-bit 64x oversampled D/A converters are by Crystal Semiconductor—good stuff.

PICK A CARD

An 8-slot card cage on the rear panel accommodates various standard and optional cards, which snap in with a reassuring click. Included with the mixer is one card with two sets of MIDI I/O (one for MIDI communication, the other for MMC commands) and a 2-channel digital I/O card with AES/EBU and S/PDIF ports.

Optional cards include a sync

BY GEORGE PETERSEN

card with word clock, SMPTE in and ESAM-II ports and a digital effects expander card (IVL Technologies has announced a card that will provide pitch effects similar to those on DigiTech's world-class Studio Vocalist; a card in progress is from a major European reverb company). Also optional is an Alt I/O card with eight additional channels of digital I/O routing, and slots for adding up to three 8-channel, digital multitracks using Tascam TDIF or ADAT Lightpipe protocols (each card has connectors for both formats). It's interesting that the latter do not have to be matched—if you are doing a session with two ADATs and one DA-88, it's *no problemo*, except you're on your own in terms of how to sync dissimilar MDMs. You can also use the console's I/O routing to digitally transfer material between a Tascam and an Alesis deck in order to make interformat tape copies or backups—a slick trick.

INS AND OUTS

The D8B's rear panel looks surprisingly like any other console. A total of 24 analog inputs are standard; the first 12 channels have line/mic inputs, with individual phantom power switches

and 1/2-inch TRS insert jacks. The next 12 channels are 1/2-inch TRS line input only. All audio ports (except the insert jacks) are electronically balanced and handle unbalanced TS inputs without a hitch. One cool thing about the inserts is that they operate in the analog domain (prior to the ADC), so patching a favorite tube compressor after the mic preamp is hassle-free.

On the output side, the analog main outs are on XLRs and 1/2-inch. There are 12 1/2-inch aux sends, three sets of 2-track A/B/C inputs, a stereo studio foldback bus, two sets of headphone jacks and a top panel switch to select control room monitors. The outputs for the balanced bus I-8 outputs connect to a patchbay or multitrack via a single D25 sub connector. Two 1/2-inch foot-switch jacks allow for remote punch-in/out and talkback on/off.

OPERATIONS

The D8B's top surface is laid out a lot like a standard console, which reduces the learning curve considerably. Each input strip has a trim pot (for analog inputs only), 100mm long throw fader, mute and solo buttons. A centralized section—Mackie calls it the Fat Chan-

nel—is used to adjust aux levels, EQ, dynamics and effects. This way, all adjustments can be made from a center position, exactly in the sweet spot—no need to stretch for that tambourine EQ on track 48.

How the Fat Channel works is straightforward. If you want to adjust channel 43, you simply press the Select button above that fader. Press the EQ button on the Fat Channel and the EQ values are displayed on a 40-character, 2-line fluorescent display on the console. Simultaneously, an EQ window showing the EQ curve and all its parameters comes up on the video screen. The EQ is musical and allows glitchless tweaking in real time without clunks or funny shifts.

The console can certainly be used without a mouse, keyboard or monitor, but it's a lot faster and more fun with them. If the parameter window isn't large enough, click on the magnifying glass icon to enlarge it. Of course, if the window is too small, the icon is pretty hard to see, but eventually you'll figure out where it is.

The process for making compressor, gate or effects tweaks is nearly identical, and uses simple Cut/Copy/Paste

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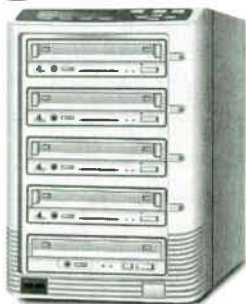


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CIRCLE #074 ON PRODUCT INFO CARD

FIELD TEST

keys to copy DSP parameters (or entire channel settings) from channel to channel or load favorite presets to and from onboard libraries (another use for those internal floppy and hard drives). Along with mutes, solos, faders and routing, all effects parameters can be dynamically automated to SMPTE.

A key to the console's intuitive operation is its use of Virtual Potentiometers, or V-Pots. These are continuously adjustable rotary controls that have an encircling LED matrix that indicates relative knob position. A small LED below each V-Pot glows when the control is in

the 12:00 position, and the knob itself may block your view of the upper LED. A couple of nice touches on the channel strips are Record/Ready (track arming) buttons on channels 1-24, and a Bounce button that acts as a submixer, routing any inputs through an internal 2-track bus connected to any two Record/Ready tracks.

To control up to 72 sources from only 24 physical channels, the console operates in three banks: channels 1-24; channels 25-48; and a third bank for the eight virtual groups, eight internal effects returns and eight buses. One button takes you to each bank instantly, and all V-Pot, moving fader

and LED scribble strip data instantly resets to the new location.

The master section has transport keys for external recorders or sequencers, which are controlled via MIDI or ESAM-II protocols. A large Jog Shuttle wheel provides fine control, and an LED display shows position in hrs/mins/secs/frames or bars/beats/ticks. The large Rude Solo Light reminds you when you're in Solo mode, and the talk-back control room monitoring section is comprehensive. The automation, which is based on Mackie's UltraMix II, is glitch-free and offers either dynamic modes or up to 2,000 static snapshots, ideal for live theater applications.

The automated surround panning (mouse-controlled) supports all formats and is creative, flexible and addictive to use. I liked this.

The proprietary Mackie operating system (MOS) is basically Mac-like and includes simple icons such as floppy disk, hard disk, mixer and toilet (trash). In a typical Mackie touch, all alert screens have the company's Chihuahua mascot informing you of any messages. English/Spanish/French/German graphics/languages are supported.

There are a couple of changes I would like, such as a large preset library of EQ/dynamics presets (Mackie is working on this) or a choice of meter ballistics and peak hold options. However, as such functions are under software control, they could appear in future revisions or be developed by third parties. Time will tell.

In creating its digital console, Mackie has taken a smart approach by not re-inventing the wheel. The top-quality audio is a product of Crystal converters. Apogee's groundbreaking UV-22 encoding and Mackie's popular pre-amp design; the onboard Pentium effortlessly handles routing, number crunching and housekeeping functions. The automation comes from Mackie's established UltraMix II, and for pitch and time-based effects, Mackie has relied on industry leaders in studio effects. For the rest, Mackie has added some clever code writing and years of expertise in console design and smart manufacturing.

The result is a great-sounding, flexible and ergonomically sensible digital board that's affordable and ready to meet the needs of the 1990s and beyond. Thumbs up on this one.

Mackie Designs, 16220 Wood-Red Rd. NE, Woodinville, WA 98072; 800/898-3211; fax 425/487-4337. Web site: www.mackie.com. ■

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CIRCLE #077 ON PRODUCT INFO CARD

YAMAHA DSP FACTORY

HONEY, I SHRUNK THE 02R

Three years ago, every conversation in the audio industry seemed to involve Yamaha's unveiling of its 02R mixer, a revolutionary, affordable (less than \$10,000) digital console packed with flexible mixing functions and processing capability. Now Yamaha has combined that technology with its DSP expertise and has entered the digital audio workstation arena with the DSP Factory, an extension of Yamaha's digital mixer family of products, designed for computer-based recording.

Introduced in January at the Los Angeles NAMM show, the heart of the DSP Factory is the DS2416 PCI card, which offers the mixing power of the 02R, including 24 channels of mixing and onboard DSP, plus 16 tracks of hard disk recording/playback with up to 32-bit resolution—all for \$999.

Many of the powerful features found on the 02R are available here, including the 24-channel/32-bit mixer with ten bus outputs and six aux sends, 104 bands of four-band parametric EQ, 26 dynamics processors, two effects processors (comparable to the REV500), channel delay on 20 channels, digital cross-patching for channel I/Os, plus a 2-channel 20-bit A/D converter. All of these functions are available simultaneously, because the DS2416 is independent of the host CPU for processing, relying on the horsepower of five internal proprietary DSP chips. (The card currently runs in Windows 95; a Mac version is in the works.) In addition, the mixer can be automated with control software.

Don't forget, the DS2416 is also a powerful recorder, featuring 8-track recording and 16-bit playback from disk, with up to 32-bit resolution. In addition, the card offers sample-accurate sync between tracks, and the recorder is "hard-wired" to the mixer in the digital domain. Through software, the recorder can be synchronized to external sources. The card features stereo analog and coaxial 20/24-bit digital inputs and outputs.

There's plenty of room for expansion: Multiple DS2416 units can be cascaded, and Yamaha is working on a series of components to provide multichannel expansion options and enhance

system flexibility. Scheduled to ship this spring is the AX44 audio expansion unit, which offers easy access to additional I/Os by installing in a standard half-height 5.25-inch PC tower drive bay. The AX44 provides four unbalanced 1/4-inch analog inputs (two are switchable mic/line), and four 1/4-inch outs—boasting 100dB dynamic range—plus a stereo headphone jack. Two AX44 units (\$299) can be connected to one DS2416 card to provide eight analog I/Os. In addition, Yamaha is currently developing interfaces to multichannel gear such as signal processors and modular digital multi-tracks. Slated for summer release, the first interface is the optional AX16-AT Audio Expansion Card, providing 16 channels of ADAT-format I/O; retail will be \$299.

A growing number of software companies are announcing support for the DSP Factory. At NAMM, that list included Cakewalk, Canam Computers, C-mexx, Emagic, IQS (Innovative Quality Software), Musicator, SEK'D, Sonic Foundry and Steinberg. These companies are developing control software for the DS2416 card or integrating the card into their software. Demonstrated at NAMM with the DS2416 was the C-Console from SEK'D, a software front-end that controls the DS2416's real-time effects and works in conjunction with the popular SEK'D's Samplitude software. In addition, leading software developers, such as Cakewalk, were demonstrating DSP Factory-compatible upgrades running with the card.

Expect the DS2416 and AX44 to begin shipping within a couple of months, and watch for more product rollouts in this line. Also, keep an eye out for a compatible upgrade of your favorite software. The only remaining question is which company will be first to drop a Pentium with three DS2416 cards into a sleek 7-foot, one-knob-per-function console control surface and deliver the world's first under-\$20,000, 72-input digital mixer/48-track DAW combination?

Yamaha Corp. of America, 6600 Orangethorpe Drive, Buena Park, CA 90622; 714/522-9011; Web site: www.yamaha.com.

BY SARAH JONES

PREVIEW

SPIRIT FOLIO FX16

The Folio FX16 mixer from Spirit by Soundcraft (Auburn, CA) is a multipurpose, 16-channel, 4-bus mixer that includes an on-board, 16-program Lexicon effects processor. The FX16 includes 16 mic/line inputs and four stereo line returns, and can route a total of 26 inputs to the mix buses, which include stereo and mono outs plus two subgroup outputs. Features include Spirit's UltraMic™ preamp, global phantom power, 3-band EQ with sweepable mids, 18dB/octave highpass filter, 100mm faders, pre/post-switchable direct outs for each channel, PFL, AFL and solo-in-place monitoring, and four auxiliary sends per channel (including a dedicated Lexicon send), two of which are pre/post switchable. Lexicon effects may be edited and stored. Output metering is via ten-segment, tri-color LEDs. Price: \$1,199.95.

Circle 327 on Product Info Card

TC ELECTRONIC FINALIZER PLUS

TC Electronic (Westlake Village, CA) upgrades its Finalizer Studio Mastering Processor. The Finalizer Plus offers an advanced set of features and enhancements, including 24-bit A/D and D/A converters, real-time sample rate conversion (32-48 kHz), BNC word clock input, digital clock, ADAT port for direct analog-to-Lightpipe stereo conversion, Toslink optical I/O, dynamic filtering and multiple simultaneous insert capability. Price: \$2,895. The Finalizer upgrade package (including



new motherboard, backplate and connectors) costs \$600.

Circle 328 on Product Info Card

QUESTED SELF-POWERED MONITOR

Quested (distributed by Audio Independence, Mid-

dleton, WI) introduced the F11 self-powered studio monitor. A magnetically shielded, two-way design, the F11 features a 6.5-inch woofer and soft-dome HF tweeter. Integral 100W LF and 35W HF power amps



deliver a max SPL exceeding 100 dB continuous at 1 m. Frequency response is 65 to 20k Hz (± 2 dB); optional B3 subwoofer extends LF to 30 Hz. Cabinets measure 8.5x12.5x11.75 inches. Price: \$1,994/pr.

Circle 329 on Product Info Card

PRESONUS MULTI-INPUT MIC PRE'S

PreSonus (Baton Rouge, LA) introduces two multi-input, rackmount mic preamps, both featuring Jensen low-noise, balanced-input transformers and Class A input amps followed by a twin servo gain stage. The M80 (\$1,499) has eight individual mic preamps; the MP20 (\$399) is a similar 2-channel unit. Features include polarity reverse, phantom power, 20dB pad, highpass filter and output metering. Both units contain an integral stereo mix bus and a Warmth control to emulate tape saturation and/or tube distortion. I/Os are balanced XLR and TRS (Neutrik Combo™), and each channel has separate insert and return jacks; stereo bus outputs are XLR balanced and phono. Both models feature internal power supplies.

Circle 330 on Product Info Card

ELECTRO-VOICE N/DYM DYNAMIC MICS

Electro-Voice (Buchanan, MD) has added five models to the N/DYM® line of dynamic microphones, including one mic targeted at female vocalists. The cardioid N/D168 snare mic (\$182) offers a frequency response of 25-15k Hz; the N/D468 (\$232) is a supercardioid instrument mic (freq.

PREVIEW

response: 60-20k Hz); the N/D267 (\$242) is a cardioid performer's mic (freq. response: 65-19k Hz); the N/D367 (\$200) is a cardioid performer's mic designed specifically for women (freq.

compressor sidechain in/out switch. Analog/digital switching is on the front panel, and the unit can output both formats simultaneously. Price is \$2,799.

Circle 332 on Product Info Card



response: 60-17k Hz); the N/D767 (\$242) is a supercardioid performer's mic (freq. response: 50-20k Hz). All mics in the N/DYM Series, including the previously introduced N/D868 and N/D967, feature high-output neodymium magnets, low S/N ratio and a dynamic range in excess of 140 dB.

Circle 331 on Product Info Card

JOEMEERK ANALOG/DIGITAL COMPRESSOR

Joemeerk (distributed by PMI, Torrance, CA) offers the SC3, an analog stereo compressor with digital I/O capability. Featuring 20-bit ADCs, the unit automatically switches between 44.1 and 48kHz sampling rates and offers AES/EBU and S/PDIF I/Os. Word clock I/O is via rear panel BNC connectors. Compressor features include five selectable ratios ("slope"), input, output and threshold controls, variable attack time, fast or slow release time, VU metering and

MIDIMAN FLYING CALF D/A

The Flying Calf D/A™ from MIDIMAN (Arcadia, CA) is a professional-quality external S/PDIF digital-to-analog converter. The tabletop unit automatically locks to the input signal sample rate and will convert any S/PDIF signal to stereo, line level audio; all rates under 50 kHz are supported. Features include 20-bit delta-sigma D/A converters with 128x oversampling for a 20 to 22k Hz (± 5 dB) frequency response and 99dB (A-weighted) dynamic range. Outputs are 1/4-inch unbalanced. Price is \$149.95.

Circle 333 on Product Info Card

STEDMAN C15 CONDENSER MIC

Stedman (Richland, MI) is now shipping its C15 condenser mic, a large-diaphragm, 48VDC phantom-powered cardioid model designed for studio applications. Featuring a sputtered-gold, lightweight mylar diaphragm, low-noise electronics and a solid aluminum, precision-machined body, the C15 includes an integral screen and is supplied in a hard case with a stand clip; a suspension shockmount and washable pop filter are optional. Frequency response is 25-19k Hz; max SPL is 132 dB; weight is 8.5 oz. Price: \$599.

Circle 334 on Product Info Card

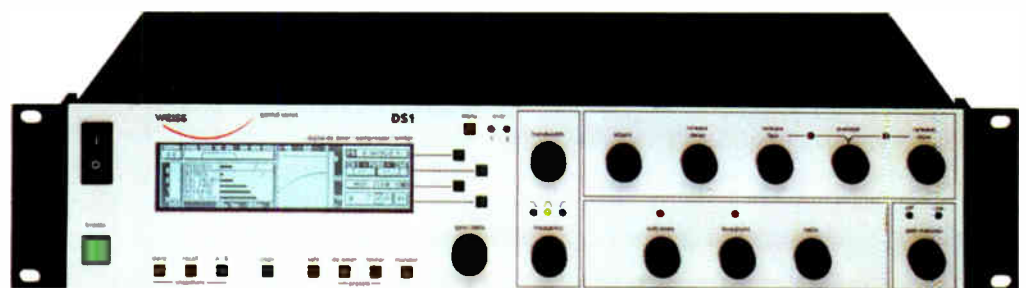
WEISS DS1 DIGITAL DE-ESSER/COMPRESSOR

Daniel Weiss Engineering (distributed by G Prime, New York, NY) offers the DS1 De-esser/Compressor, a digital rackmount unit that offers a wide range of frequency-selective and full-band compression capabilities. Bandwidth and compression parameters are selected and adjusted via 12 dedicated front panel knobs; a large backlit LCD shows current status and I/O metering. Featuring 40-bit floating-point processing, the DS1 offers 24-bit AES/EBU I/O



with switchable dithering, 128 snapshots with A/B comparison function, de-ess and limiting presets, "compressed band only" monitoring and auto gain makeup. Price: \$4,950.

Circle 335 on Product Info Card



PREVIEW

ART TUBE PROCESSORS

ART (Rochester, NY) has introduced two new tube processing units: the Tube PAC (\$249), a combo mic pre/compressor; and the Tube EQ (\$199), a 4-band equalizer. The Tube PAC mic/line input stage offers phantom power and polarity reverse, a 20dB pad and input gain control. An LED display indicates the harmonic content pro-

HOT OFF THE SHELF

Acoustic Sciences Corp. remodeled The Studio Trap for improved HF response by placing the diffuser panel closer to the surface. The Studio Trap is a cylindrical bass trap with a mid/high diffuser in one side and is used alone or in groups to modify the acoustic space around a vocal microphone, for instance. Call

two M-1s, is now \$750. A "Producer's Set" package (two M-1s and one FM 202 in a flight case) has been reduced to \$7,980. Call 41/1/725-7777... The Drumtrax Library 3.0 CD-ROM includes more than 25,000 measures of Standard MIDI File drum set and percussion performances. A Drumtrax Librarian database management system searches, marks, loads and launches

and oscilloscopes. For a free catalog, call 909/469-2900 or visit www.ittpomona.com... Georg Neumann GmbH offers a "new" vintage power supply in the old-fashioned style for the M149 tube microphone. Available as an option, the N149 V does not replace the N149, which will continue to be supplied as part of the M149 set. Visit www.neumann.com...

Version 3.5 software for the TC Electronic M5000 Digital Audio Mainframe features a Multistage Phaser, new reverb presets, and M2 updates for soft clipping and normalizing functions. A new PurePitch® option preserves formants when pitch-shifting to reduce "chipmunk" and "Darth Vader" effects. Call 805/373-1828 or visit www.tcelectronic.com... Meyer Sound's licensing agreement with Autodesk Inc. incorporates AutoCAD software in the development of Meyer's forthcoming MAPP product, a program for predicting acoustical response in enclosed spaces. Call 510/486-1166 or visit www.meyersound.com...

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sequences. Price is \$99.95. Call 508/977-0570 or e-mail sales@drumtrax.com... The MilesTek Catalog features 125 new items among an extensive inventory of products and tools for audio, video, networking, communications and wire management. Call 800/524-7444... Cirrus Logic announces the industry's lowest-cost delta-sigma 16-bit A/D converter (CS5529), available in 20-pin PDIP and 20-pin SSOP packages at \$3.80 for 1,000-piece quantities. Call 512/912-3736 or e-mail scottk@crystal.cirrus.com... ITT Pomona's 1998



duced by the 12AX7a tube, aiding the adjustment of tube "warmth." A non-VCA compressor section offers threshold and output level adjustment pots, switches for compress/limit ratio select and release time, and an LED gain reduction display. The Tube EQ has four frequency bands with ± 12 dB cut/boost; the high and lowpass shelving EQs are switchable (40-80 Hz, 5/15 kHz); low-mid and high-mid equalizers are overlapping and sweepable (20-20k Hz). Both units feature XLR balanced and 1/2-inch unbalanced I/O connectors and internal power supplies.

Circle 336 on Product Info Card

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Professionals rely on industry-standard tools from Whirlwind to protect each performance and recording from the frustrating failures and poor sonic results of second-rate components. Built to provide consistent superb results through years of tough use, these products are what sound specialists buy when they can buy what they want — *the good stuff.*



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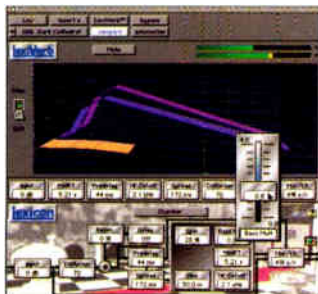


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LEXICON LEXIVERB PLUG-IN

Lexicon (Bedford, MA) introduces LexiVerb, a reverb TDM plug-in for Pro Tools 4.0. LexiVerb can be used as either mono-to-stereo or stereo-to-stereo and features 24-bit processing, offering four algorithms (chamber, plate, inverse and gate) with 100 presets. The intuitive interface displays algorithm parameters as 3-D wire diagrams with pop-up faders to customize parameters; a macro editor allows group parameter control. Pro Tools 4.0 automation functions are also supported.

Circle 337 on Product Info Card

SYQUEST SYJET 1.5

New from SyQuest (Fremont, CA) is SyJet 1.5, a 1.5GB removable-cartridge hard drive. Weighing less than 24 ounces, SyJet drives offer a portable storage solution for Macintosh and PC users; a 1.5GB cartridge holds two hours of audio and weighs less than three ounces. Internal and external versions are available.

Circle 338 on Product Info Card

METALITHIC DIGITAL WINGS ELITE

Metalithic Systems (Sausalito, CA), creators of Digital Wings for Audio, introduces DWA Elite, a 128-track hard disk recording system for Windows 95. DWA Elite

features 32-bit operation and 128-track capability, and includes DWA V.2.0 recording/mixing/editing software, plus Syntrillium's Way Cool Edit package, which provides 30 DSP plug-in effects. System hardware includes a PCI card and rackmount 10x10 breakout box featuring 8 analog in and outs (all with 20-bit conversion) and stereo S/PDIF I/O. An optional ADAT interface is in the works. Price: \$1,248.

Circle 339 on Product Info Card



OPCODE FUSION:VINYL

Opcode Systems (Palo Alto, CA) introduced fusion: VINYL, the latest in its fusion:EFFECTS line of cross-platform DSP plug-ins. fusion:VINYL emulates the "classic" sound of 78, 45 and 33 rpm vinyl records, and includes tools for adding compression or varying stereo width, in addition to custom Record Surface and Turntable System controls. Platforms supported include Pro Tools 4.0, Digital Performer, WaveLab, Sound Forge, Logic Audio, Deck II, Peak and Adobe formats, in addition to Opcode's Vision and Studio Vision Pro. Retail is \$99.95.

Circle 340 on Product Info Card

LINE 6 AMP FARM

Shipping soon from Line 6 (Culver City, CA) is the Amp Farm Pro Tools plug-in, which emulates classic guitar amplifiers by using Line 6's proprietary Tube-Tone™ physical modeling technology, also used in the AxSys 212 Digital Guitar System. Amplifier models emulated include the 1967 Fender Twin, 1986 Marshall JCM 800, 1963 Vox AC 30, 1964 Fender Blackface Deluxe, 1968 Marshall "Plexi," 1987 Roland JC-120, 1959 Fender Bassman and the 1964 Marshall JTM45. Price is \$595.

Circle 341 on Product Info Card

COPYPRO CD DUPLICATORS

CopyPro (Concord, CA) introduces new products in its family of CD duplicators, the CD Duplicator stand-alone tower and the CD-R SX rackmount series. The CD Duplicator copies up to 28 CDs or more per hour (drives are 4x), supports Track Editing and Disc at Once modes and features easy one-touch operation. Stand-alone units start at \$2,995. The CD-R SX rackmount units record at 4x speed and feature Duplication or Instant Copy modes, track editing capability and simple keypad operation. Prices start at \$4,495 for a two-drive, three-unit model.

Circle 342 on Product Info Card

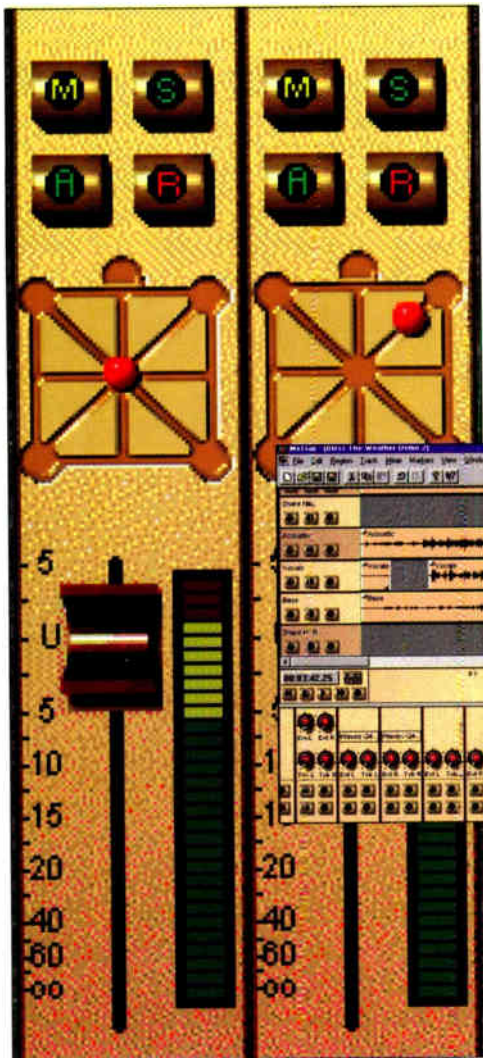
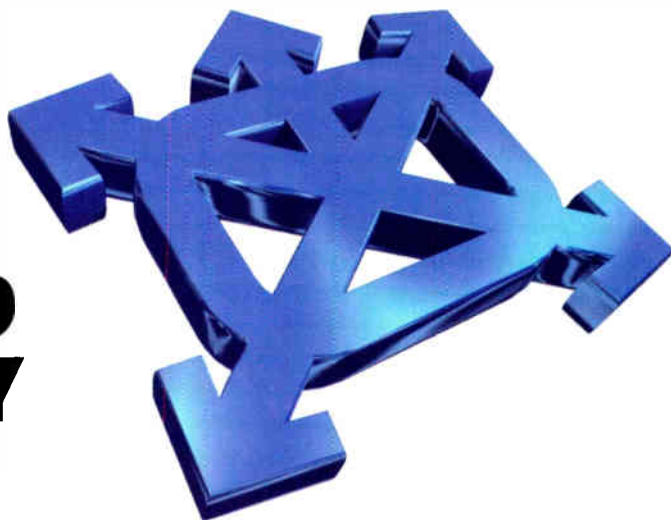


UPGRADES AND UPDATES

Second Wave (512/329-9283) introduces Xpanse P700R, a seven-slot PCI rackmount expansion chassis for the PCI-based Power Macintosh or PC. Xpanse can be slide-rail or tab rack-mounted, and includes a 250W power supply, cooling system and drive bays... Steinberg (818/993-4091) and Propellorheads released **Version 1.5 of Rebirth 338**, offering MIDI control and real-time sync mode. In addition, Steinberg offers **Cubase VST 3.55** and **WaveLab 2.0** updates for Windows... New from **Metric Halo** (914/298-0451) is the MLM-100 Master Level Meter, a high-resolution digital meter plus stereo balance meter, oscilloscopes and Lissajous phase scope, for Macintosh... Rewritable CD drives are here: CDWriter from Optima Technology (800/411-4237) is a 6x read/4x CD-R write/2x CD-RW drive retailing for \$899... **Glyph Technologies** (800/335-0345) offers a variety of rackmount and tabletop storage solutions for Pro Tools, featuring Seagate Cheetah drives... **Tracer Technologies** (717/843-5833) introduces Quartz Audio Pro 128-track digital audio software and Diamond Cut Audio Restoration Tools; free demos are available at www.tracertek.com... Power Technologies (415/467-7886) reduced the retail price of the **DSP•FX Virtual Pack** to \$499. ■

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DRAWMER MX30

DUAL GATED COMPRESSOR/LIMITER



By now, everybody in audio is familiar with Drawmer, which is well-known for its top-quality dynamics processors. Although not overpriced, many Drawmer products have been out of the price range of most project studios and club installations. This may all change with Drawmer's MX30, a dual-mono (stereo linkable) compressor/limiter/gate that retails at a wallet-friendly \$449.

Housed in a modest single-rack-space chassis, each of the MX30's channels has a minimal number of controls, due to its innovative program-dependent processing, which makes for fast operations.

The gating section combines a variable threshold control with a switch for selecting fast or slow release times. The actual gating action uses Ivor Drawmer's proprietary "Programme Adaptive" circuitry, which optimizes the attack, hold, ratio and release parameters to reduce "chatter" of signal fluctuating around the threshold point. I'm not exactly sure how this is accomplished, but it seems to incorporate an envelope follower circuit into the gate.

The compressor section has manual threshold and ratio knobs with automatic control of attack and release parameters. The compression section combines aspects of soft-knee processing (for subtle level control) and that of a traditional ratio-style compressor, for creative, in-your-face processing.

The output section has both a gain knob with a ± 20 dB range of gain makeup/attenuation and a variable threshold, "zero overshoot" peak limiter. The package is completed by two LED ladder

meters for gain reduction and input/output levels, individual bypass switches for each channel and a stereo link switch that controls both channels via the left channel controls. One nice touch is the use of multiple LEDs indicating the status of the gate time, gate threshold, peak limiter, and bypass and link switches at a glance.

Hookup is flexible, as both -10 dB unbalanced $\frac{1}{4}$ -inch and $+4$ dB (pin 2 hot) XLR I/O are provided. And as an extra feature, a user can feed a signal to the -10 or $+4$ dB input and take a feed from both the -10 and $+4$ outputs simultaneously, allowing, for example, the -10 out from a keyboard submixer to feed an onstage amp, while the $+4$ feed is routed to the house mixer, thus eliminating a need for a direct box or splitter. The power supply is internal, and a jumper inside the case converts the unit from 115 to 230 VAC use.

As fate would have it, the day the MX30 arrived, I was mixing a live concert CD. I didn't really plan to check out the unit that day, but as I was setting up to mix, I had a problem with the miked acoustic bass track, which sounded fine but needed a touch of compression to level it out. The problem with standard compressors was that they also brought up the level of the background audience noise. Gate a stand-up bass? I wasn't too sure about that, but I gave the MX30 a try.

After a minute or so of twiddling and setup, I was amazed by the results—there was no choppi-ness at all! The unit effectively

gated the background without cutting off notes or decays. Here's where Drawmer's Programme Adaptive circuit really shines: As the onset of gating is progressive, low-level signals are handled at an expander-like low gating ratio, while the background audience noise during pauses has a higher expansion ratio. But however it worked, it worked extremely well, and I got the effect I wanted, fast.

This brings up another point. After the session I still hadn't read the (actually very good) manual. The unit is simple to use, although most users probably won't need to refer to the somewhat silly front panel graphics that illustrate what compression and limiting are.

The compression is smooth and free of artifacts, except at extreme settings. Over the next month, I also used the MX30 on kick and snare, toms, vocals, electric bass, guitar and program material—all with great sounds. The audio quality is whisper-clean, and the output peak limiter section is a useful addition, whether as overload protection to optimize the dynamic range of a digital recorder, or for driver overload protection in a live sound application.

The MX30 is one versatile compressor/limiter/gate that not only handles everyday studio chores but adds a few slick tricks of its own. At \$449, anyone wanting to step up to Drawmer-level performance should check out the MX30.

Distributed by Transamerica Audio Group Inc., 2721 Calle Olivo, Thousand Oaks, CA 91360; 805/241-4443; fax 805/241-7839. Web site: www.proaudio.co.uk/drawmer.htm.

BY GEORGE PETERSEN

AVALON DESIGN VT-737

VACUUM TUBE DIRECT SIGNAL PATH

The latest addition to Avalon Design's high-quality line of preamps, equalizers and compressors is the VT-737 Vacuum Tube Direct Signal Path, a complete single-channel recording pathway for processing any audio source, regardless of signal level or source impedance. When I think of all the individual pieces of equipment I might have to patch together to simply record a vocal, the VT-737 seems like a godsend; it combines all the functions of a mic tube pre-amp, tube opto-compressor and a discrete Class A transistor 4-band equalizer with sidechain routing ability, all followed by a tube line

recording a direct guitar to recording a vocal to processing an already recorded track with the EQ and compressor. There are also switches for 48 VDC phantom power and (output) phase flip. Another switch selects a bass cut filter operating between the preamp tubes; it's a -6dB/octave passive design with a variable corner frequency of 30 to 140 Hz.

One continuously variable gain control trims the level for all three inputs via a ganged-pot that sets input level and gain of both dual triode stages together in the cascaded tube mic amplifier. The VT-737 uses four Sovtek 6922 tubes: two for the

a tube U47, the VT-737 was a tinge brighter than some of the other mic pre's. (Or, I could say, the others were a tinge duller...whatever). One small change I would like is a dedicated mic preamp output, so that the mic pre and the EQ/compressor sections could be used on different signals simultaneously.

OPTO-COMPRESSOR

The opto-compressor features two Class A triode tube sections. The optical attenuator acts as a passive level controller. The Threshold control sets threshold level from -30 to +20 dB with a center detent position of 0 dB. Preamp input gain and threshold settings are totally interactive; shaping the nature of the compressed sound becomes something of a juggling act between the controls.

The Compression control adjusts both the ratio and the "knee" of the slope; a continuously variable pot selects compression ratios from 1:1 to 20:1. The Attack control adjusts attack time from 2 ms to 200 ms. Release time is adjustable from 100 ms to five seconds. There is also a compressor in/out switch, a meter switch that toggles the VU between output and gain reduction and a very cool EQ to Comp Pre button that inserts the equalizer section either pre- or post-compressor. The compressor is very smooth, and I found it nearly impossible to make anything sound bad through it. The compressor is comparable to Avalon's AD2044 Opto-Compressor in operation and sound.

EQUALIZER AND SIDCHAIN

The VT-737 uses an all-discrete, Class A transistor circuit in the 4-band equalizer. The equalizer is divided into two separate equalizers: a Treble/Bass EQ and a dual mid-band circuit. The Treble/Bass equalizer is a passive, shelf-response design with ± 24 dB of gain. The Bass frequency selection points are 15/30/60/150 Hz; Treble frequency



level-balanced output stage.

I reviewed the new SP (Special Performance) version that upgrades the original VT-737's purple knobs and faceplate. In addition to the standard Avalon metal knobs and a more detailed faceplate, the SP has a new, higher-level mic input transformer.

The Avalon VT-737 is housed in a two-rackspace, aluminum and steel cabinet and is styled like the rest of the Avalon line, with backlit push-button switches and an oval VU meter. At first glance, the front panel may seem busy, but all four processes are grouped in an ordered, logical way.

MIC PREAMP FRONT END

A front panel switch selects three possible input sources: a rear XLR-balanced line input to the equalizer and/or compressor sections; a front $\frac{1}{2}$ -inch unbalanced high-impedance (1-megohm) mic input for directly recording instruments; and a rear transformer-balanced XLR input for studio mics. With three input paths, you can immediately switch from

mic preamp, one for the compressor and the fourth for the line output amp. For more mic gain, a front panel switch called High Gain zeroes out the negative feedback in the mic preamp circuit, resulting in an open loop gain increase of 18 dB (for a max total of 58 dB). In operation, I used the unit at the upper end of the gain range, where I found a more "linear" feel when setting level. I also used High Gain for a hotter mic sound but found the adjustment of an exact, working level touchy. In any case, getting a starting level is easy with the smooth, noiseless controls.

In/out switching for each section is via sealed silver contact bypass relays, so if the compressor is switched out, the signal bypasses that stage. Using the mic preamp section only (without EQ or Compressor switched in), I compared the VT-737 to some of the other mic preamps I use. I found the sound very clear, open and flattering on everything I recorded. With

BY BARRY RUDOLPH

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CIRCLE #081 ON PRODUCT INFO CARD

World Radio History

FIELD TEST

selection points are 10/15/20/32 kHz. This part of the equalizer was very good, broad and smooth. Even boosting at 32 kHz affected the high frequencies in a subtle and positive way.

But you can really carve in the equalizer's dual mid-band section. The variable low-mid control selects the 35 to 450Hz range while the high-mid section affects from 220 to 2.8k Hz (± 16 dB). Both sections have a "Hi-Q" switch that narrows the Gaussian curve width from a Q of 0.2 to 0.8. A "x10" switch multiplies the indicated frequency ten times. I'd like to see these sections fully

parametric with a little higher Q, but this may not be possible within this price/performance envelope. The equalization was smooth and perfect for vocals but not quite as cranky as I sometimes want when recording instruments such as percussion or drums.

An "EQ to SC" switch routes the two mid sections to the sidechain input of the compressor. (In this mode, the Treble and Bass sections remain in the final signal path, and the ability to switch them in/out and pre/post is unaffected.) Using the two overlapping EQ sections of the dual mid-band equalizer, it is a simple matter to zero in on problem frequency peaks and make the compres-

sor clamp more. Note that you must find new settings for Threshold, Attack and Release to effect the desired sidechain modulation at the same time as proper main-chain compressor operation. In practice, the sidechain feature worked well on certain synth patches having sizable level jumps when a filter rolled through resonance or a chorus effect caused giant, in-phase level build-ups. I also used this feature on a difficult bass guitar; the instrument had uneven output level from one string to the next, and the G string was really loud when an open G was played.

My results on de-essing were mixed, as I found it hard to arrive at optimum settings that squashed sibilance sufficiently yet didn't overcompress the signal. If you have a singer with sibilance problems, you may need to rely on an external de-esser.

The output tube stage—where you "make up" or "take away" level to achieve your final recording level to tape—has a trim range of -40 to +10 dB. The tube amplifier is followed by a transformerless, high-voltage, discrete, transistor-balanced output amp circuit.

I got big, fat and impressive results on acoustic guitars, vocals and direct bass. I recommend the VT-737 for any recording task requiring a big, open and natural sound.

DETAILS

The internal toroidal power supply can be powered by any AC source in the 100 to 240-volts range. An integrated "soft start," 40-second power-up routine is said to enhance tube life, and Avalon recommends following this with 30 minutes of warm-up time for optimum performance. Maximum gain is 58 dB using the balanced mic input; maximum input level is +10 dB at 25 Hz from the balanced mic input; maximum output level is +30 dB into 600 ohms; EIN noise 20kHz unweighted is -92 dB; THD is 0.5%.

Current retail price is \$2,495 for the VT-737SP, while the original purple-knobbed VT-737 is \$2,195.

Thanks to Lex Marasek and Dan Vacari at LAFX Rentals in L.A., Constantine Psorakis at EVIA Systems and Wynton Morro at Avalon Designs.

Avalon Designs, P.O. Box 5976, San Clemente, CA 92673; 714/492-2000; fax: 714/492-4284. Web site: www.avalondesign.com.

Barry Rudolph is an L.A.-based recording engineer. Visit his Web Site at <http://home.att.net/~brudolph/>.

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CIRCLE #082 ON PRODUCT INFO CARD

It took this man a decade to find his next reference monitor.



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Then he listened to his work on a pair of Exposé E8s. Now he's using them exclusively on his current projects, the next releases from Steely Dan, Fleetwood Mac, John Fogerty and Toto. "The moment I heard the first sounds come out I knew these were right." What he means is the exceptional accuracy and ultra-low distortion Exposé offers to track and mix with confidence. With the smoothness and musicality that would otherwise make long sessions difficult.

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—Elliot Scheiner
(producer, engineer extraordinaire)

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He was also impressed by the expanse and depth of the stereo image they create. Elliot says, "I don't know how they do it, only that they seem to do it better than anyone else. Very, very clear. Everything is distinctly audible and natural. It's pretty amazing how they open up a mix."

So should you go out and buy a pair of Exposés today just because Elliot Scheiner uses them exclusively? No, but you owe it to your next project to run down to the nearest KRK dealer and get a demo for many of the same reasons.

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AMS NEVE VX/VXS

ANALOG RECORDING AND PRODUCTION CONSOLE

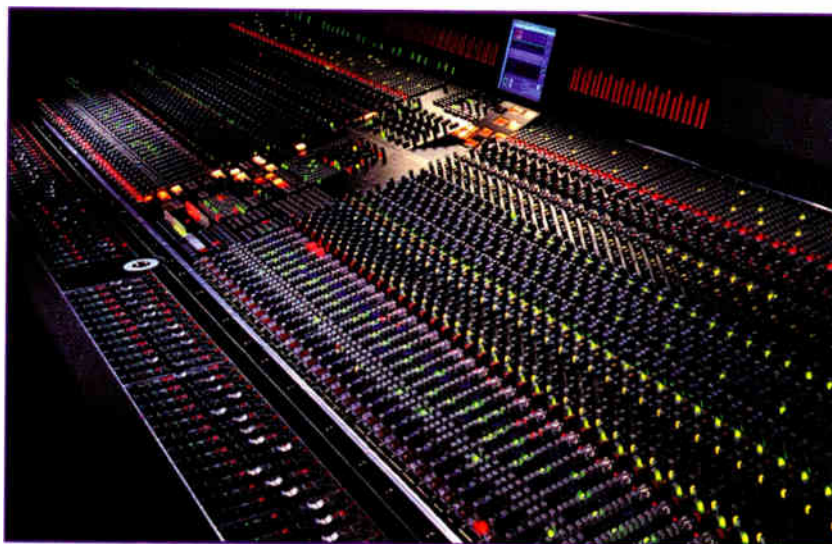
While digital rapidly eclipses analog as *the* technology of choice in an increasing number of facilities, manufacturers are carefully looking at their existing product lines and making difficult decisions: upgrade, update or replace? With a large installed base of AMS Neve VR and Legend consoles around the world (close to 350, according to company sources) and continued interest in a design that, for many users, offers a number of outstanding features and superb sonic performance, conclusions reached at the firm's UK headquarters must have been easy. Add some features that users have been asking for, spruce up the front-panel layout, adopt a revised color scheme and, presto: the new VX Music Recording and VXS MultiFormat Production console.

As I discovered during a hands-on session at Skywalker Sound's new scoring stage, featuring a 72-input VXS with Flying Faders, this revitalized console series represents a significant improvement over its predecessors. In essence, AMS Neve has taken the basic VR/Legend topology and added the following capabilities:

- **Improved Metering:** To maximize headroom, it is now possible to meter signal levels at the critical post-input trim point via the console's high-resolution bar graph meters. (Dynamics metering is now also a standard feature.)

- **A Direct-to-Fader Input Module:** This option bypasses the channel module's front-end/EQ section and provides, for example, direct-from-tape-machine-to-fader connections during remix, eliminating unwanted electronics from the signal path.

- **Encore:** AMS Neve's cross-platform moving-fader automation system—which enables mix data to be transferred between various consoles—can be supplied on the VX and VXS. Encore also provides optional automation of channel



switches and accommodates the new Recall system.

- **Automation Data:** This is now displayed on a color TFT screen built into the meter bridge, eliminating the need for an external monitor.

The VXS MultiFormat version adds features for surround sound mixing and music scoring, plus an independent mono or stereo dialog input. The VXS also provides:

- Up to *eight* discrete output buses; the enhanced flexibility handles SDDS and similar eight-way film formats. (The VRP panel for VR consoles offered access to only six buses.)

- PEC/Direct paddle switches for monitor select and arming record modes for external audio/video transports.

- Optional assignable joystick panners and dual-track faders for music and dialog returns.

During extended listening tests, the VX/VXS outshined its predecessor, particularly in such areas as sonic openness, high-frequency response and general "punch" in lower frequency and midrange. Neve designers are said to have also further reduced crosstalk, noise and errant RF signals. Overall signal-to-

noise ratios are now said to be 8 dB quieter than the VR; 6 dB better than the VR Legend. Major signal-path enhancements have been focused on a substantial re-engineering of input racking and module interconnects. On the VR, twisted-pair cables up to two feet long were used for line-level signals in the input module, bundled together and terminated with wire-wrapped connections. On the VX, connections are formed by short, interleaved signal and ground tracks that are hard-soldered onto a multilayer PCB.

Mic signals are now physically separated from the line-level signals of other channels, and external connections to this section are grouped by channel, not function. Power busing within the VR Series was achieved via bus bars; this function has been retained in the VX Series, but with supply rails formed from strips of wider, 10-gauge conductors. The resultant DC impedance is reduced to 20% of that of the older model. (Though I had no way of physically checking these mods, the end result was clear during listening tests.)

IN-LINE/DUAL-SIGNAL PATH DESIGN

Given its direct lineage from the popular VR Series, the new VX/S

BY MEL LAMBERT



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TECHNOLOGY

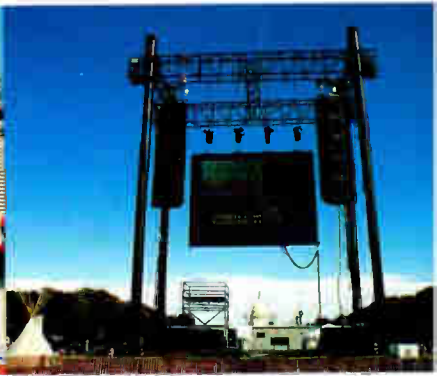
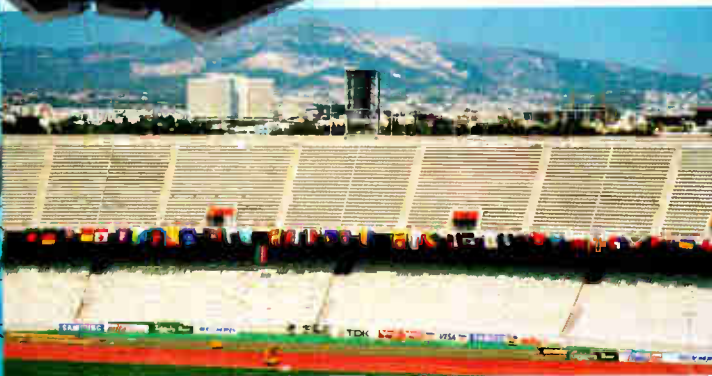
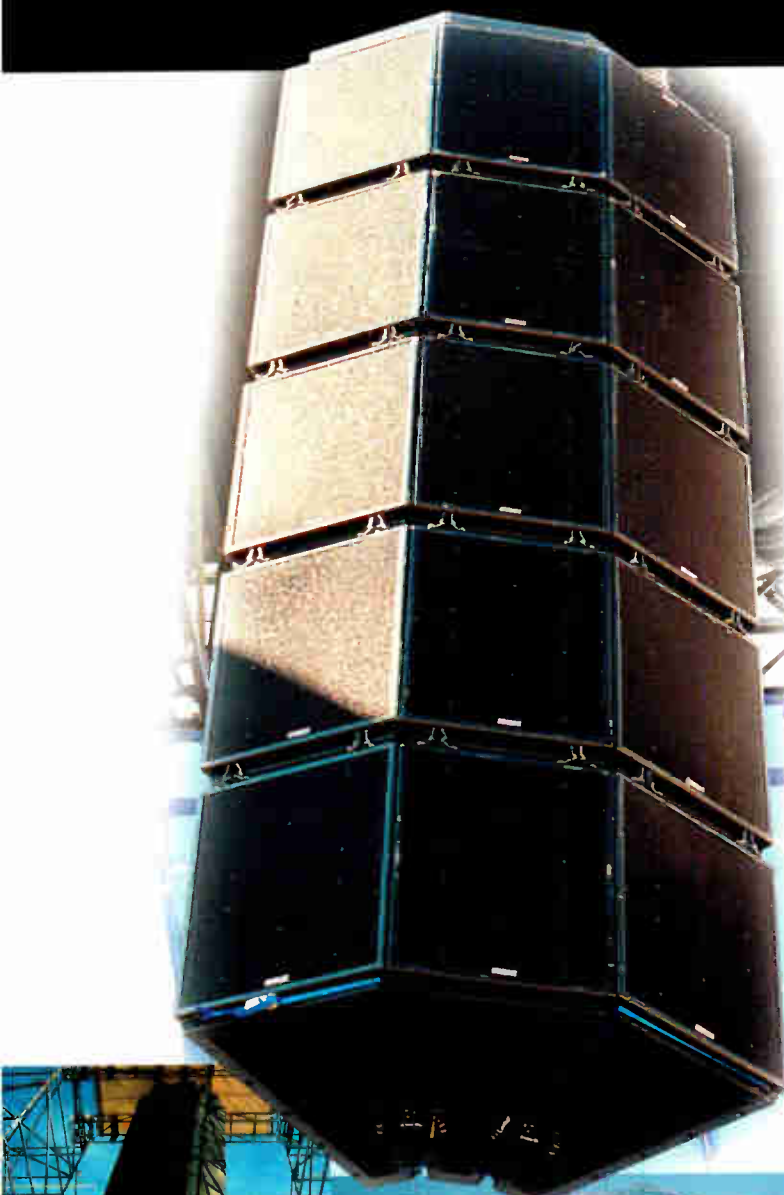
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FIELD TEST

features an in-line monitor modular layout, with two distinct signal paths—an input source during recording/overdubs and tape playback during remix—with separate faders on each path. The dedicated monitor path is used primarily for monitoring multitrack sends and playback during tracking, as effects sends/returns during remix, or to provide additional tape replay inputs for large mixdown dates. By swapping small and large faders (along with companion solo/cut functions) either individually or globally, the engineer can use whatever fader is more comfortable or offers the more comprehensive automation functions.

Versatile channel-input selection and output routing on the VX/S can be modified either by master status controls located within the center section, or on a channel-by-channel basis. Master switching allows the user to configure the console quickly using status selectors, mic/line switching, fader swapping, track-laying/mixdown status and broadcast selection. Consoles can be set to one of three primary operational modes: Track Laying, Mixdown and Broadcast. Master switching operates over the entire console, or on the left- or right-hand sections. In this way, conventional in-line topologies can be set up in the VX/S, or a split configuration, with an input bank and a separate monitor section on either the left/right or the center section. (Stereo input channel strips can also be supplied for video post applications, etc.)

As will be appreciated, such freedom of front panel layout greatly enhances the VX/S design's flexibility. The front panel layout is very clean and easy to follow, with colored knob caps to aid in recognizing module sections, plus clear labeling of even the smallest buttons. In contrast to the gray color scheme used on the VR/Legend, the VX/S now features a high-contrast black background color, which makes it easier to read button and knob nomenclature.

During multitrack recording, mic or line signals are fed via the channel path and large fader to the routing matrix of 48 group buses, arranged in doubled pairs (1 and/or 25, 2 and/or 26, etc.). Panning is selectable between odd and even track sends. Inputs can be processed using a highpass and low-pass filter, equalizer and dynamics unit. The channel path can be routed directly to the track send of the same number or designated as part of an audio subgroup; a useful trim control provides

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FIELD TEST

level adjustment for the track send. Simultaneous monitoring of either the multitrack sends/returns is possible globally or from each channel.

A new mic amp design is said to offer low noise and low distortion at all signal levels; during listening tests, it was hard to detect any trace of overload or clipping, and noise seemed to be more a function of the mic/line source than the preamp. EQ and dynamics sections can be laid into the monitor path; similarly, aux sends can be fed from the monitor path, either prefade/precut for foldback cue sends and post-fade for reverb sends. Although the small channel fader is normally configured for setting control room levels, this can be reversed with the large fader either globally or individually. Monitor signals can then be panned and bused via a 4-track routing matrix to one of the two stereo main outputs.

EQ, FILTER AND DYNAMICS CONTROL

As with the majority of AMS Neve consoles, the VX/S's equalization is a marvel. Smooth and clean in operation, it is possible to reach for outrageous amounts of cut/boost without running into clipping or other strangeness. A pair of 12dB/octave highpass and low-pass filters are provided, running from 31.5 Hz to 315 Hz and 7.5 kHz to 18 kHz, respectively. Filters can be switched into the channel path independently. Neve's Formant Spectrum Equalizer section provides four bands of parametric EQ, with overlapping frequency ranges. The two mid-frequency bands feature center frequencies from 190 to 2.0k Hz, and 800 to 8.7k Hz. The high- and low-frequency controls provide ± 18 dB of cut/boost, switchable Q (0.7 or 1.2) and peak/shelf; ranges are 1.5 to 17 kHz, and 33 to 370 Hz.

In addition, a limiter/compressor and gate/expander are available on each channel, with flexible side chain control. Gate/expander controls include a 50dB gate range, 70dB threshold (expansion ratio is 2:1), release time from 30 ms to 3 seconds, with switchable attack time (1 ms or 100 microseconds) and variable hysteresis. (Hysteresis adjusts the threshold level for signals that are rising or falling in level and enables precise triggering on the targeted signal while still allowing the correct amount of signal "tail" through the section. Very useful.) External key input and invert (for ducking) are also provided.

The limiter/compressor features

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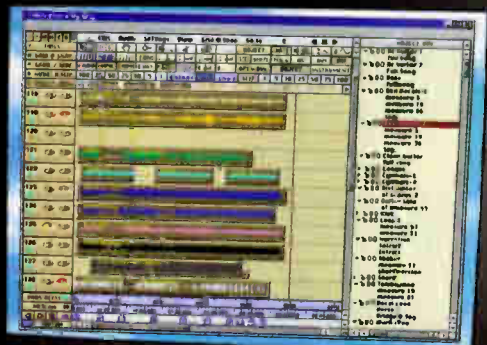
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30ms to 3-sec release times, 50dB threshold, ratios from 1:1 to limiting, plus 30dB makeup gain. Attack time is program-dependent, with a switch for fast impulse response. Release can be set to follow automatic program-dependent release. The EQ section can also be inserted into the sidechain for de-essing, etc. All in all, the dynamics section is easy to set up and use and provides an outstanding range of system control; sections can be linked for stereo operation. My only complaint is that the knobs are a little too close together for my prehensile digits. But, given the limited amount of real estate available on the surface, it's a minor hardship.

Eight aux sends feature individual On/Off and Pre-Fade/Post-Fade switches and can be configured as eight mono buses, with either the channel or monitor path as source. Pairs of sends can operate as a stereo aux with level/pan controls. Inserts also can be linked to either the channel or monitor path independently of the EQ section; pre-EQ/pre-dynamics topologies are also possible. Direct outputs are provided, bypassing the multitrack matrix.

Fader automation on the VX/S is nothing less than comprehensive. Again, Touch Record/Lock Record modes are available for the fader. Match and Auto Match LEDs indicate which direction the fader needs to be moved to return to the Play Pass position in Group and Link modes. Global master fader controls are also provided for linking channel functions. While, for many users, Flying Faders represents the current paradigm for easy-to-use, intuitive yet comprehensive automation, the new Encore system adds enhanced functions such as Replace, Relative and Auto Match Modes.

The Meter Bridge provides multitrack meters for each channel and displays signal levels via VU or PPM scales. (A handy 6dB Dump facility for the VUs decreases the sensitivity to allow metering of signals that peak above +3 dB.) Two small dynamics meters below the main bar graphs display the settings within the dynamics module. A Signal LED, with user-selectable threshold, lets you see if there is a signal present. Dedicated 2-track meters follow selection of Mix 1-2, Mix 3-4 or an external monitor source.

STEREO AND FADER DIRECT INPUT MODULES

The optional Stereo Module fully utilizes both line-level signal paths and

—CONTINUED ON PAGE 206



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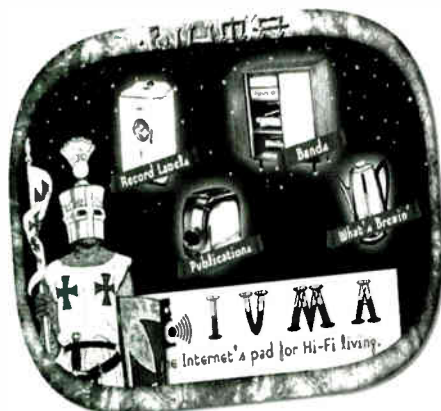
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RØDE NT1

STUDIO CONDENSER MICROPHONE

When I mentioned that I was reviewing the RØDE NT1 mic to my local pro audio dealer (Hi Garth!), he told me they were hard to sell because the price was too low! Evidently, most people are thrown off by the \$499 price tag, but do not be deceived; this is a great mic.

The NT1 has a friendly, vintage look. The low-noise, transformerless circuitry is internally shock-mounted in a machined aluminum shell with a light gray enamel finish. It feels solid in the hand but is amazingly light (320 grams) and well-balanced. The grille has two different densities of mesh: The first layer is an open weave, and the second layer is made of a fine steel fabric. This assembly forms a rugged transducer cover that is acoustically transparent but physically strong.

The mic comes in a rugged plastic case with foam lining and a packet of silica crystals for moisture absorption. The manual warns that the diaphragm (as with most condenser mics) dislikes moisture. When I received the mic, the crystals were pink, indicating that they were full of moisture. I dried the packet to a nice blue color, but when they were returned to the mic case, they turned pink within an hour. Perhaps my Seattle studio is ultra-damp, or maybe the mic itself had a fair amount of moisture in it. The mystery remains...

My first opportunity to use the NT1 was on a CD editing session with Eyvind Kang. As an old Kimball piano had been delivered to the studio just days before, Eyvind suggested adding a piano track to the project. Six seconds after phantom power was applied, the NT1 stabilized and I was hit with amazingly accurate sound. The sound was so stunning that I ran out to the studio to see if the piano actually sounded that way of its own design or if the mic was able to make an old, beaten instrument

sound more beautiful. Fortunately, the Kimball actually sounded good of its own accord.

The manual suggests the use of an external pop filter, stating that plosives might bottom out the capsule. Indeed, I found that just a steady blowing toward the capsule bottomed it out. The ol' pencil trick reduced the plosive effect, but an external wind screen would probably be required on an up-close and personal vocal.

Accuracy is the operative word here, so I subsequently tested the NT1 on cello, contrabass, vocals, violin, trumpet, acoustic guitar, hand percussion, electric guitar, various odd sound makers and drum kit, and was impressed with the mic's ability to capture what I was hearing. On each instrument tested, the musician was asked to evaluate the sound of the test recording, and in each case the artists were pleased with the sound of their instruments—so much so that several commented that their instruments had never sounded better.

The cello and acoustic guitar tests were particularly stunning. I felt that a single NT1 produced three-dimensional recordings. The cello recording possessed extreme depth, and the acoustic guitar seemed to jump out of the speakers.

I was curious about using the NT1 for stereo. During this test, I discovered a key to its sound: The NT1 is a true large-diaphragm condenser mic with a single 1-inch, gold-sputtered diaphragm. This single diaphragm creates a semi-cardioid pickup pattern that resembles a deranged figure-8. It picks up beautifully in front, to a lesser degree on the sides and quite well in the back.

As a stereo pair, two NT1's work well together. I've found that a pronounced stereo recording can be made with the capsules forming a 90-degree angle with the front



facing out. It works well because of the "blind" spot on the sides of the mic. If you face the capsules toward each other, the image is not as wide (obviously), but the "blind" spots on the mic's sides punch holes in the stereo image.

Although the mic boasts a 135dB maximum SPL spec, the NT1 failed to capture the sound of a Super Deluxe and Telecaster combo without overload. Too loud, I guess. Nor does it like to be an overhead on a drum kit (although it sounds great at 20 feet away). Use the pad switch on your preamp for the loud stuff, but I think I'll reserve these mics for the quieter instruments and vocal passages.

Overall, the RØDE NT1 is a real workhorse, sounds good on just about everything, and is relatively inexpensive. Personally, I could use ten of them!

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

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BY SCOTT COLBURN

SOUND FOR FILM

GATHERING
YOUR PERSONAL
EFFECTS, PART 1

by Larry Blake

Almost all of my work in film sound has been in post-production—that is, sound editing and mixing. I have done very little work in production recording, and that has been mostly on documentaries and for the odd freebie work on friends' short films. I have done enough work on sets to know that both my interests and skills lie elsewhere.

There is one part of film

work in conjunction with the production, editing field tapes to prepare them for library entry and organizing your sound library. This month, I'll discuss why you need to do effects recordings in the first place.

Simply put, original sound effects recordings are the foundation of a top-notch sound editorial company. While I think that commercial sound effects libraries are great tools, the fact of the matter is that most sound editors have many of the same libraries, so you have to look elsewhere to make a distinction. And while I will always place people first in any artistic endeavor, I humbly submit that the quality of the company-specific sound effects are almost as important to an overall sound job as

commercial CD sound effects libraries." Of course you can, especially since the quality and variety of commercial libraries is increasing every day. That said, a custom-recorded effect not only *de facto* has a better chance to work with the image, you have to work less if you recorded it originally.

I'm not just referring to obvious see a dog, hear a dog issues (an example being a car maneuver that you can mimic exactly if you are recording the effect custom for a film). Such literal effects do indeed make for easy editing. I'm mainly referring to the ease with which one can be *creative*, and a steady diet of field recording will expose your recorder to all sorts of serendipity. Thus, the first rule of this month's missive



sound that shares many aspects of production and post-production work: sound effects recording. It's like production recording in that historically it has involved a Nagra or a DAT over the shoulder, battling the elements, removed from the cocoon-like atmosphere of post. In spite of these out-in-the-real-world similarities, it's actually closer in spirit to post-production sound, because it relates directly to sound effects editing and does not go through picture editing as production recordings do.

This is the first of four columns dealing with all of the issues concerning recording sound effects in the field: equipment choices, how to

the sound effects editors themselves.

Just as that most glorious of old sayings—you can't polish a turd—is true in its usual context of mixers not being able to make bad recordings (be they dialog, music or sound effects) sound good, the same holds true for sound editing. Badly recorded, mono, loopy (i.e., one short section with recognizable peaks repeated over and over) restaurant walla will never sound good, no matter how skillful the editor is.

But how does this relate to the issue of custom sound effects? It's not only too glib, it's downright inaccurate to make any statement like, "You can't do good work with just com-

on sound effects recording:

- Record any interesting sound any chance you get. In recent months, I've been doing a lot of traveling to do effects recording and have come across a few bizarre hotel TV sets. I'll leave it up to you, faithful reader, as to what comment on my life it is that I will be up at 5:30 a.m. in a hotel in Eunice, La., recording the funny buzz of the TV set in the Quality Inn on Highway 190.

The same held true in Miami, where my hotel room was next to the elevator shaft, which produced all sorts of neat tonal Doppler-bys just aching to be used in a sci-fi film. And in Detroit, on my

—CONTINUED ON PAGE 136

WENDY AND LISA

MUSIC TO FILM

by David John Farinella

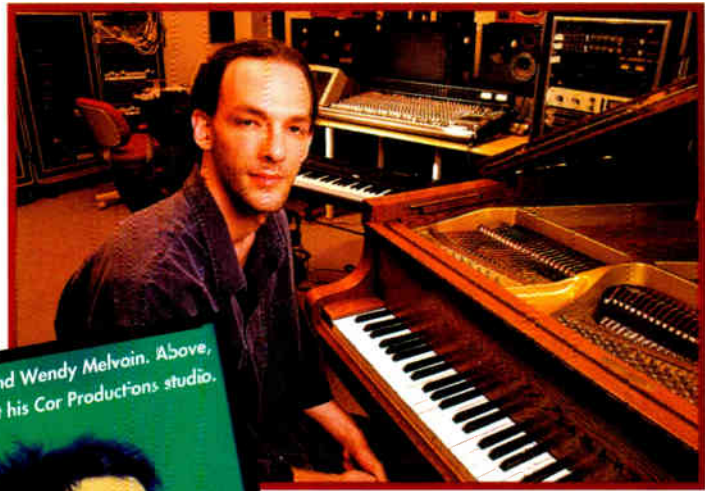
There's a garage in Los Angeles where Wendy Melvoin and Lisa Coleman, formerly members of Prince's band The Revolution, regularly drop by with suitcases and videotapes. It's an unassuming place with an unofficial name of Punker Pad West. No signs, no lobbies, no atriums. Even the neighbors wouldn't be aware that it's where they scored the hit film *Soul Food*.

Home to Andrew Scheps' Cor Productions, the 1930s-era two-car garage boasts 32 tracks of Pro Tools and 32 tracks of Tascam DA-88s. "It's basically a mini-commercial recording studio, and I mostly engineer," Scheps says. "So it's built around something to record on and something to mix it with, which is the Mackie 8-bus with the Ultramix automation." And, de-

pending on the session, the room is stocked with a bevy of synthesizers (Roland JV-1080 and JD-990), samplers (Roland S-760, an Akai S-3200 and a Kurzweil K2000R), a Minimoog and a Synclavier. He runs Pro Tools III and Studio Vision Pro with a Power Tower Pro 22 (he used a Power Macintosh



8100/110 during the scoring of *Soul Food*. Throw in your assorted per-



PHOTOS: PETER HENRY

middle and spin in circles looking for something to do," Scheps says.

With Wendy and Lisa, there never seems to be a shortage of work. In addition to their bevy of side session and production gigs for such acts as Doyle Bramhall, Victoria Williams, Seal and Tricky, the duo have been hard at work developing their scoring reel. "Our budding business is the score thing right now," says Lisa. "We just got new agents, so we've been having

—CONTINUED ON PAGE 139

LITTLE DIETER NEEDS TO FLY

WERNER HERZOG DELVES INTO DOCUMENTARIES

by Tom Kenny

Today, Dieter lives a quiet life in a small home in the hills of Marin County, Calif. He has stockpiled supplies in his basement, not against the threat of earthquakes, but perhaps against a general fear of the unknown, the fear of what tomorrow might bring. Dieter was a pilot, and Dieter dropped bombs in Vietnam. In 1966, while on a mission over Laos, Dieter was shot down and made a prisoner of war. After unimaginable physical and psychological torture, he escaped from the

POW camp, hid in the jungles and was picked up by a spotter plane 16 months after his capture. It's an amazing story of a determined individual, and it was a perfect fit for German filmmaker Werner Herzog, who has directed the critically acclaimed documentary called *Little Dieter Needs to Fly*.

Dieter's story actually begins during World War II, as the Allies strafed and bombed his hometown in Germany. At one point, he looked up from the street and saw a pilot swooping low, to the point that he could make out the goggles on his face. Dieter decided then that he needed to fly. Herzog took his subject back to Germany, then later to Vietnam and re-created some of the scenes for the documentary. Interspersed throughout are war scenes,

including previously unreleased Pentagon footage of aerial raids.

Actually, Herzog created the equivalent of three films, each of different length, each with different cuts: one for German and one for American TV, and one for theatrical

release. Because the financing was coming from German TV, scenes were shot in English, then shot with Dieter narrating in German. (Herzog also provides narration, he was recorded direct into Pro Tools, using a Neumann U67.)

—CONTINUED ON PAGE 142



Mixer Dave Nelson, left, turns to assistant director Herb Golder, far right, and director Werner Herzog, at the desk, as supervising sound editor Josh Rosen makes a fix in Pro Tools.

ROCKIN' CHAIR CREATIVE SOUNDS

NOT SITTING STILL IN MIAMI

by David John Farinella

As part of one of the hottest video post houses in Florida, you'd hardly expect Rockin' Chair Creative Sounds to be a stationary partner. In fact, the division of Broadcast Video Inc. has been at a virtual sprint since opening its doors last September. Not only has the company been adding audio post rooms in its Co-

conut Grove facility, but it has been upgrading and improving systems at the original North Miami facility and planning for a new 10,000-square-foot space in South Beach's Sony Building.

The North Miami locale features two rooms, both stocked with SSL ScreenSounds and AMS Neve Logic 3s. MOTU Digital Performer is run from a Macintosh, and the team makes heavy use of the E-mu E-IV-X Turbo Digital Sampling System and Roland VG8 Guitar System for sounds. Outboard gear is kept to a minimum, with an Eventide H3500 and DSP4000, as well as a Lexicon PCM 70 digital effects processor. As the audio di-

gnosis has grown, the company has done all it can to ensure that a true plug-and-play atmosphere exists, including the installation of digital patchbays that connect to each other room. They made the choice to go with the SSL system after Gandola arrived because, "How much bigger are you going to get than SSL?" he asks rhetorically. "Then we got some AudioFiles and some Neves, and now we're leaning toward Pro Tools."

Pringle adds, "Time for an engineer isn't much of a concept. I spend three hours on a 15-second spot, so five years is like 15 for me. When we went from analog to digital, we looked at everything, and since we're heavily video, ScreenSound really caught our eye because of the interface with the video and the synchronizer. That is huge because when you've got a submaster with *this* on it, a film transfer with *this* on it and a DAT that has *this* ... I just plug in all three machines and I don't have to change tapes; I can control all three machines either simultaneously or one at a time. I can import all the sound I need, and if the client comes in with a 1/2-inch offline that has total arbitrary timecode, I can just punch in the numbers and roll it as though it was at the even minute. For me, no one has done it like SSL has for the serial page, where you can have so many machines lock up in two seconds."

And while Pringle's allegiance is still to SSL, he added Pro Tools 4 to one of the two rooms at Coconut Grove and added reverb and surround sound plugins. Although the facility has only dedicated one room to surround sound, with Meyer HD-1 monitors, both Pringle and Gandola see a future in multichannel playback. "Our room is just brand-new, so we just got it together," Pringle says. "This market is pretty untested when it comes to surround sound. We're trying to push a new room, a new guy and new things. You gotta do it one at a time so no one gets flipped out."

Gandola concurs: "[Surround is] becoming more and more popular. It's funny, because this market has really blossomed. I don't think Miami was considered a huge market, but there's so much happening down here right now. As far as surround sound, we're still teaching people what it is, but the minute they see it and hear what it is, they're all excited and want to get involved."

Although Gandola is sold on the economic benefits of Pro Tools—"It's easier to buy a \$900 piece of software instead of a \$3,000 box"—he isn't completely sold on the Avid-Pro Tools OMF connection. "On a long project, we go back to the traditional way and take their tape and dump all the audio in, in real time," he says. "We have the AudioFile and Logic 3 consoles, and we're updating, so the OMF still will be happening for us. It's funny how at one time it was, 'Here's your video, there's your audio. Keep them completely separate.' It's not like that now; everybody's got to talk to everybody else now."

That philosophy extends nationally as well as between rooms and facilities. "As soon as we finish a mix in the Grove," Pringle explains, "we go upstairs and we can phone it Beta-quality to a client using Drums," which is a graphical interface program supplied by Sprint that enables houses like BVI to offer clients real-time presentation and revisions via an ISDN line. "We do that a lot for McDonald's, where all



Audio 1 in: Coconut Grove features an Amek BIG by Langley console with Supertrue automation, SSL ScreenSound V.5, Otari MTR-90 24-track and Meyer HD-1 monitors.

vision has grown, the company has done all it can to ensure that a true plug-and-play atmosphere exists, including the installation of digital patchbays that connect to each other room. They made the choice to go with the SSL system after Gandola arrived because, "How much bigger are you going to get than SSL?" he asks rhetorically. "Then we got some AudioFiles and some Neves, and now we're leaning toward Pro Tools."

"We got the SSLs a few years ago," Pringle adds. "Time for an engineer isn't much of a concept. I spend three hours on a 15-second spot, so five years is like 15 for me. When we went from analog to digital, we looked at everything, and since we're heavily video, ScreenSound really caught our eye because of the interface with the video and the synchronizer. That is huge because when you've got a submaster with *this* on it, a film transfer with *this* on it and a DAT

"This was a natural progression from Broadcast Video Audio Post," explains Gandola. "We became a division where we do creative sound services, sound

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of a sudden they'll have a change where they want this new campaign and they need it in two days," Pringle explains. "As soon as we're done, we run it into Drums and the client is seeing it two minutes later." The company also has 3D2 and Zephyr connections between each facility.

Although the bulk of the work that comes out of BVI is video, Rockin' Chair is well-versed in radio. Rather than dubbing a spot hundreds of times, they dump a DAT master into a computer and send it to DG Systems in San Francisco, along with routing instructions. DG then sends the spots to radio stations around the nation via ISDN. DG has just come online with video delivery, so Rockin' Chair will be turning to them for national video delivery, as well.

In addition to spots for the Southeast Toyota Dealers, Sea Doo personal watercraft and State Farm Insurance, Pringle and crew have been putting together promos for Nickelodeon's *Hora Nick* program, an ID package for MTV's game show and Pepsi's Generation Next campaign, all for Latin America.

The only change Pringle makes before he delivers tracks to Latin America is

to split his mixes on a DAT, "in case they have to have their own announcer, because of accents or something like that. They come to the U.S. for a high quality of work. I keep the level really high, and that keeps 'em coming back." ■

—FROM PAGE 132, GATHERING EFFECTS

way out of the hotel to record the famous Kronk Gym, I opened up my 15th-floor window to record sirens and police whistles as the funeral motorcade of former Mayor Coleman Young was proceeding down Jefferson Avenue.

While the latter recording is so specific that it's doubtful I would ever have the chance to use it literally, there is also the point that such recordings are hard to come by, and certainly cannot be staged. So get it while the getting's good. And one day, the neat blend of sirens and whistles might be a good starting point for an abstract design sound.

So, you end up recording for your library, not for a specific film. Yes, I acknowledge that you have a laundry list of effects that you *need* and only so much time to get them, but you should always try to keep your ears on the big

picture. Let's say you get the keys to a gymnasium to go in at night to record some dribbles. Since you won't often have such a good opportunity, you should stock up on any gym effect you can get your mics on: net swishes, squeaky sneaker movement, gym doors, footsteps on bleachers, even the scoreboard buzzer if you can get it to work.

Of course, always try to get not only variations of performance but also of perspective. Because film sound is not a subtle medium, don't record your distant door slamming in the gym 20 feet away; do it 50 feet away. And maybe even off-screen (read: in the next room), if you have the time and patience.

The "get it while you can" approach is classically taken with a car series. While the film at hand only calls for a VW Beetle doing an in and stop, you should make sure that you also get other takes with a variety of ins, idle lengths and types of turn-offs. You also want to get a similar series of starts and outs, pass-bys and constants (i.e., riding inside the car).

And last but not least, get the always-handy door closes and horn beeps. Some neat sounds will present themselves when you least expect it, and not

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when you're already locked and loaded and ready to roll, as was the case with the funeral procession. Thus, effects recording rule Number 2:

- Always be ready to record. Your recorder at home should always have fresh tape and batteries, with mics and headphones plugged in. This way, you're ready when a cool thunderstorm rolls in. Or when a group of chattering schoolchildren is being led down the street by their teacher. Or when the old guy with a vegetable cart yells some neat-sounding but unintelligible sales pitch. Or when you miraculously find a picnic in the park across the street from your house that has great walla but no music. All of the above have happened to me at my home in New Orleans when I was not ready.

If you're really serious about your effects recording, you'll always have something with you, even if it's not the best mic and best recorder. An okay recording of a great sound is a damn good sound, and certainly better than no recording of a great sound.

I should come clean that not even I, fool for sound that I am, carry a recorder around with me. But you should. You will not always be able to go out and literally record what you want, or be lucky enough to stumble upon something. This is both the toughest challenge of sound effects recording and its greatest tool. So...rule Number 3:

- Free association is your best friend. I remember when I first came to Los Angeles in 1979 to write about film sound and was fascinated to hear Frank Warner, one of the great sound effects editors in the industry, say that he would begin a film by randomly listening to sounds in his library that might bear some relationship to what he was looking for. He'd play the tapes at various speeds, forward and reverse, all the while recording the output on another 1/4-inch deck. If he came across something neat and magical, it was there—recorded and ready to use.

The current modus operandi of pulling effects from DATs or CDs does not lend itself to such serendipity, although one can certainly mimic this with a keyboard attached to a sampler, albeit with much less charm.

Insofar as effects recording is concerned, you have to keep your mind open to all possible variations of what you need, again, not only for the film you're working on but for what your library will make good use of in the long run. If you need whooshes, don't just record the standard twirled mic cable or fan blade, but try swinging dowels of differ-

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ent sizes.

Creaks and squeaks are other multi-use, all-purpose sounds that you should record in every which way possible. If you can find an old metal dumpster, do everything to it but blow it up. (Then again...) Bang it, inside and out, do a complete set of creaks with the hopefully rusty lid, roll it down the street, drop it off the top of a building. Use your imagination, knowing that your library will reap the benefits for years to come.

This column has focused on approaches to take when you're out recording effects on your own. Next month, I'll be talking about an area that is not frequently talked about: recording effects on location with the main production crew. But for now, let me go home, where I'll be reminded that I need to record the bizarre pings that the elevator makes as it goes past each floor. ■

Larry Blake is a sound editor/re-recording mixer who lives in New Orleans for reasons too numerous to mention, although one of them would have to be that when he's working on a film in Los Angeles, he knows that he'll eventually make it home, across the street from the live oaks.

—FROM PAGE 133, WENDY AND LISA
150,000 meetings a week, getting introduced to everybody. We'll just see." While their names have surfaced for a number of upcoming major motion picture scores, Wendy and Lisa have already contributed to the films *Dangerous Minds* and *Toys* (title track), in addition to *Soul Food*.

After the standard spotting meetings with *Soul Food's* directors and producers (including Kenneth "Babyface" Edmonds), the team hunkered down at Scheps' place, as Wendy explains. "We refer back to the spotting session to find out where all of the emotional arcs are within the scene and, especially within this last film, Lisa would say, 'Pull up the cellos.' We look at the scene, and Lisa starts playing melody lines over certain cue points until we start building on that. On some of the traditional jazz cues, I'd hook the stand-up bass and Lisa and I would play together through a scene with an acoustic piano and a bass. We'd just watch the monitor, find the moments in the scenes and go for it. It's really instinctive. It doesn't have as much arithmetic as most composers probably have."

In Lisa's eyes, she's able to play from



PHOTO: PETER FIGEN

Wendy and Lisa at Cor Productions

a purely emotional vantage point because Wendy is nearby. "I feel really lucky having a partner to do this with," she says. "I watch the screen while I play, trying to find it, and it's great to have Wendy listening while I'm cutting through all of these notes, trying to find the right range. It's helpful when Wendy's there saying, 'That's just a little too sad...You're going way too far into the dark...That scene doesn't need a huge crash cymbal...You have to be a

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little more subtle.' We're an extra set of ears for each other."

And while they bounce things off each other musically, Scheps is busy keeping things in order sonically. During one intensely emotional scene in the *Soul Food* score, Lisa was playing away without thought of structure, and when she was done, the music was completely free-form. "It was going to be really hard to go back and put a string arrangement to it," Lisa explains. However, with the use of Pro Tools, Scheps was able to put a click map together. When the team then went to Ironwood Studios in Seattle to track a 30-piece orchestra, they were able to play along with the original composition. That two-day session was tracked by Clark Germaine.

In addition to Wendy and Lisa's innate musical ability and Scheps' engineering prowess, what made this score a bit easier to work on was the first-class loan they received from Hans Zimmer. The composer lent the team eight E-mu E-IVs, seven of them filled with his sample library of the London Symphony Orchestra. The loan wasn't surprising, considering Wendy and Lisa worked with Zimmer on both *Toys* and *Dangerous Minds*. As they say, he has taken them under his wing. The eighth E-IV was used, Scheps explains, for any additional instrument voicings. Zimmer also loaned them a Yamaha O2R for mixing the E-IVs, which was a godsend in Scheps' eyes. "We had a snapshot on the O2R for each cue, which would be recalled as part of the sequence. That kept us from having to start documenting on the Mackie, which would have been a nightmare," he says.

Wendy and Lisa knew from the outset that they would be blending a live orchestra with Zimmer's samples, but that didn't mean that they composed in a temp score vacuum. "Until the film is out, everything is temporary I guess," Lisa says with a laugh. "But we do temp scores with the intent to use everything that we have. We're lucky that the gear we are using is good enough to keep everything that we do. We ended up keeping some things that we thought were rough, but they ended up having that magical sound even though it might not have been the exact thing we envisioned. It just ended up having the right magic. We used everything we did in the garage."

While they relied heavily on the symphony samples, Lisa also played a Yamaha piano and Wendy played an upright bass. Scheps added a trumpet

or two throughout the score, and Wendy and Lisa added an oboe to track the main character. For the trumpet and oboe, Scheps relied heavily on the Autotune Pro Tools plug-in. "That allowed us to keep quite a few takes of the oboe, which were beautiful performances but because of the piano and all of the strings, if the tuning was out at all it was a nightmare. I would say that was the star of the show while tracking."

And, he adds, other than the Nuverb reverb, the sessions were pretty straightforward as far as electronics. Their microphone selection was relatively simple, with Scheps using a pair of AKG C-414s, a Shure SM57 and an AKG D112 for the drum kit. On piano, he used two AKG tube microphones that are so old they don't have numbers on them, although he suggests they were the precursor to the C-12. The most interesting microphone trick he pulled was while Wendy was playing the upright bass, he stuck a 414 in the bridge about an eighth of an inch from the body of the instrument. "It sounded huge," he says. "My one last recording secret gone. It was very present and very large."

Their variety of songwriting and production styles gives them a tremendous leg up as they begin to make a name for themselves in the scoring world. "With *Soul Food*, we were presented with this 'black' film, and we thought we should take the score into a traditional-sounding score with strings, piano and oboe representing the lead character," Lisa explains. "I think we were probably hired because we were Wendy and Lisa, and the association of having come from Prince & The Revolution and having worked a lot in black music, but that's not what we ended up offering. One of the films we are up for right now is actually a white, suburban-type, hard-luck story, which we think would do well with a really funky score. So, we have this ability to straddle two worlds, if you will."

It's a point that strikes a chord with Wendy: "Not only that but a lot of young directors right now are trying to find young composers who can take movie motifs a bit differently. All the directors we're meeting with are trying to connect with a composer who will be their voice through their films. We have a window of opportunity at this point, and that's why we've been lucky enough to have 5 trillion meetings, and we're just on the verge of having two films. We're lucky to be in a climate right now where directors are looking

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for this new thing, so there's a lot more openness to exploring other ways of creating motif and emotional arcs in films with composing. It's a great time for a lot of people in pop music to cross over into film." ■

—FROM PAGE 133. *LITTLE DIETER NEEDS TO FLY*

The entire film and audio post-production were handled at the Outpost Film Center, a San Francisco facility that specializes in medium-budget, story-based projects. Joe Bini, Outpost co-owner, edited the film upstairs on an Avid system with Glenn Scintelbury, while Josh Rosen, co-owner of Outpost, edited audio downstairs on a Pro Tools system. Dave Nelson, former owner of Poolside Studios in San Francisco and now co-owner of Outpost, mixed the film to ADAT (for television, Nelson created four 2-track stems—VO, effects, stereo music, composite—transferred to timecode DAT for the online session) on the Euphonix console (Serial No. 001), manufactured and hand-wired by Scott Silvfast in his garage in the mid-1980s.

"[Werner] liked the idea that he could be upstairs editing his film and then

come downstairs and do a voice-over, then take a Jaz cartridge back upstairs, plug it in and say, 'Oh, let's make this a little shorter,' and go back down to redo his voice," says Nelson. "We have that experience a lot with experienced filmmakers, who have never really cut voice to picture with all the other audio elements in place."

Obviously, voice was paramount, and according to Nelson, Dieter has a hypnotic, compelling storytelling style, full of expression and self-confidence. And Herzog lends an earnest narrative. But Herzog will never be described as a conventional filmmaker, and his foray into documentaries brings with it an interesting approach to music. There is minimal sound design, and in many cases, the juxtaposition of music and image adds a touch that is at once impressionistic and extremely emotional.

"We have a lot of really old music in this film," says Nelson, "some old, scratchy opera recordings where you can

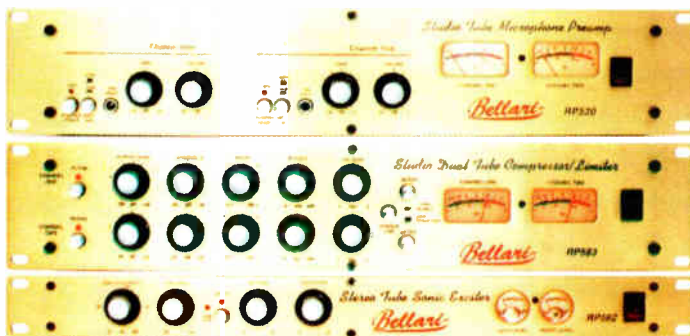


Little Dieter film editor Joe Bini at the Avid station

tell they're from 78s—very crackly and poppy. So it lends a very impressionistic, surreal vision to this archival footage. Very Herzogian. Then we have some Tuvan throat singers—monkish-sounding stuff. And we have some pieces from Madagascar that we got through Henry Kaiser. And even though the music in most cases has nothing to do with the historical perspective of the film, it seems completely appropriate. My instincts would have been sound design—you know, you see an airplane dropping napalm, what do you do? I get the feeling from viewing it and mixing it that Werner just made some connection in his mind between the emotion of the music and the emotion of the images that completed the picture for him." ■

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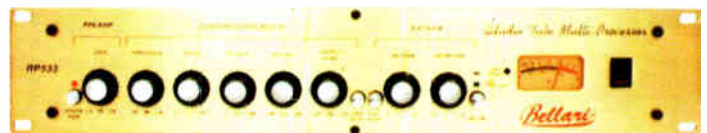


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Crystal-clear audio is just the beginning: the X905 is free from drop-outs, interference and multipathing. Four omni-polar patch antennas and two complete receivers are hidden behind the front panel of the XR905 receiver creating Quadiversity™ — two completely separate diversity systems working in tandem. A unique digital key identifies the transmitter's signal to the receiver, locking out all other sources of possible RF interference. The X905 system provides a minimum range of 100 feet under adverse conditions, 300 feet with clear line of sight.

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- ✗ 100 – 150 foot operating range under adverse conditions, 300 feet line of sight
- ✗ Receiver LCD shows operating channel, audio level, data percentages and battery life (in one-hour increments, 11 hours typical)
- ✗ Instrument and microphone systems available
- ✗ FCC approved, no license required
- ✗ Made in the USA
- ✗ Five year limited warranty

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"The X905 should not be compared to other wireless units, it should be compared with your favorite cord."

Bass Frontiers magazine

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Dan Daniel, Chief Engineer,
Laughing Tiger Recording

Call now to reserve your free copy of our upcoming demonstration CD which will feature cable and wireless comparisons, great music and more.

AUDIO PRODUCTS FOR FILM/VIDEO

EUPHONIX HYPER-SURROUND

Euphonix (Palo Alto, CA) has introduced Hyper-Surround™, a set of surround sound mixing tools for the company's CS3000 digital-control mixing console. When equipped with Hyper-Surround hardware and MixView 3.1 software, the CS3000 may be used to create surround mixes in all current formats, including LCRS, 5.1 and 7.1, and will output to custom formats up to 16 buses wide. Features include automated surround panning with an integrated GUI, a "focus" pan control that controls audio localization and diffusion and an optional track-ball pan control. Hyper-Surround is also available for CS2000 consoles.

Circle 301 on Product Info Card

SONIC SOLUTIONS SONICSTUDIO DVD

Sonic Solutions (Novato, CA) has announced SonicStudio™ DVD, a next-generation DVD authoring and formatting system that outputs audio in PCM streams, Dolby Digital, MPEG-2 surround and other DVD-related formats. SonicStudio DVD includes integrated project planning assistants, a storyboarding/layout editor, Bit Budget™ management and direct integration with video and audio capture and formatting tools. Features include 24-bit, 96kHz multi-track recording, NoNOISE®, extended frequency range 48-bit filters and an interactive DVD preview facility. Sonic also announced Direct Stream Digital™ (DSD), a digital



recording format developed in association with Sony Corporation. DSD uses an oversampled delta sigma modulated A-to-D converter to generate a 64fs 1-bit signal at the 2.8224MHz sampling rate, a multiple of the 44.1kHz standard. Audio recorded in DSD format offers frequency response beyond 100 kHz, and DSD signals may be down-converted to other digital formats.

Circle 302 on Product Info Card

TECNEC CAMCORDER INTERFACES

TecNec (Saugerties, NY) has introduced the iMIX-2 Interface for Sony VX-1000 and



Panasonic AG-455, 456 and EZ-1 camcorders, enabling professional mics to be used with these consumer devices. The belt-pack-style iMIX-2 accepts two XLR mic inputs, has a 3.5mm mini unbalanced aux input and outputs to a stereo 3.5mm mini connector. Inputs may be recorded direct in stereo or mixed to mono. The iMIX-1 Belt Pack Audio Mixer allows the camera operator to mix two mics to one output; a Mix knob controls the balance of the two mics. Both units cost \$175.

Circle 303 on Product Info Card

PUBLISON TOTALSTATION

Publison (Bagnole, France) introduces Totalstation, a 32-track audio DAW capable of up to 280 hours of recording (80 hours standard). Running under Windows NT, the Totalstation offers 20-bit A/D and D/A (24-bit optional); internal DSP is 32-bit. The system offers fast backup in the background, and network capabilities allow for fast file exchange and multiple users on one machine. Integrated broadcast-quality video eliminates a conventional VTR, and the system includes moving waveforms, jog and

shuttle, reverse play, cross-fade and overlap capabilities. Seventy graphic editing functions are accessed via a dedicated control surface, and the system includes a 32-track graphic mixing console; an automated physical console is optional. Additional features include OMF interchange, digital effects, 10-band parametric EQ on every track, and 32 I/Os in both analog and AES/EBU formats.

Circle 304 on Product Info Card

GALLERY CONTROL KEYBOARD FOR PRO TOOLS

Gallery Software (distributed by Cameo International, Los Gatos, CA) offers the Production Palette PX-10 macro control surface for Digidesign Pro Tools 4.0. A 128-key device specifically tailored for post applications, the PX-10 provides Pro Tools users with an editing control surface that logically groups Pro Tools functions; dedicated keys are color-coded and identified by icons. The included Macro Engine comes preprogrammed with more than 200 functions, including immediate access to "hidden" functions typically known only to experienced users; keys may be reassigned and new macros loaded via software. The PX-10, which connects via the ADB port, can issue MIDI messages via OMS and will interface with the Mackie HUI mixing surface. Price is \$999.

Circle 305 on Product Info Card

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CIRCLE #104 ON PRODUCT INFO CARD

World Radio History

THE WEDGE MONITOR BUYER'S GUIDE

by Chris Michie

Mix Checks Out All the Angles

Many years ago, in the pre-dawn of the Monitor Age, if you wanted to use a "wedge" monitor you had to build it yourself. Before the touring sound business went multinational, only regional sound companies and MI stores built wedges. And despite the wide range of wedge monitors available off-the-shelf today from professional loud-speaker manufacturers, many of the major sound companies still build their own: Audio Analysts, Clair Bros. and Showco (to name only three) manufacture and sell their road-tested models to a wide market.

Today's wedge monitors are little different from those designed in the early '70s. Now, as then, a professional-quality wedge must be capable of delivering clean and accurate sound over a wide frequency range, despite the compromises of physical size and shape. Of course, a wedge's uncolored frequency response is often less of a priority than in a studio monitor, but, generally, a flatter response provides more gain before feedback. As always, a wedge monitor must be robust, should present at least one useful front baffle angle, and be at least as loud as the guitarist and drummer.

The accompanying chart lists most of the professional-quality wedge monitors readily available in the U.S. To keep the chart under 400 pages in length, we've limited it to bi-ampable designs with an HF compression driver having a 1.4-inch (or greater) throat diameter, along with some coaxial models and systems featuring ribbon HF units. The frequency response, HF horn type and coverage pattern, connector type, dimensions and weight are listed when known, but manufacturers often change specifications. Transducer measurements are notoriously controversial, and no attempt has been made to compare sensitivity, maximum power handling and SPL figures; readers are encouraged to make real-world comparisons. ■

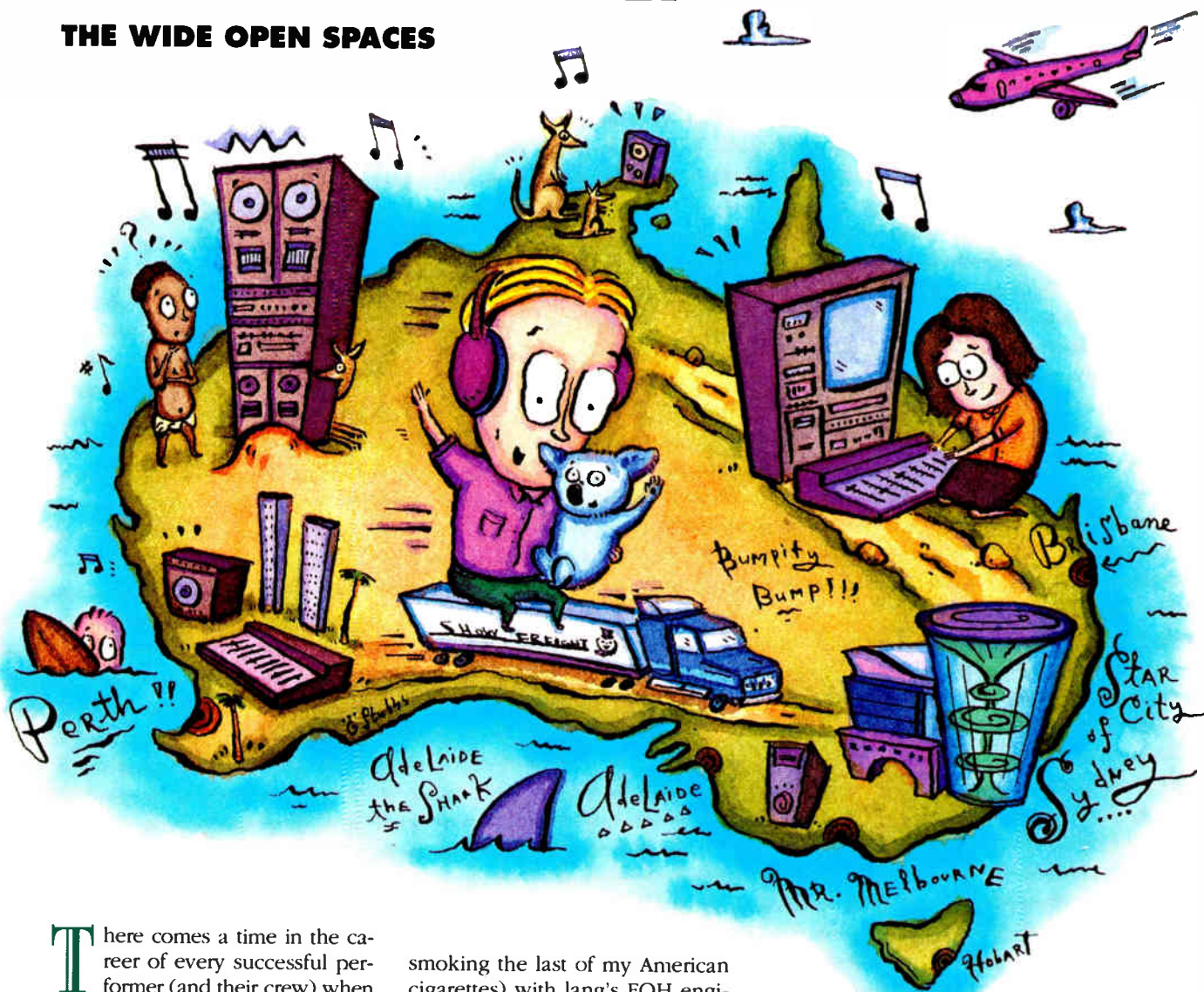
Chris Michie is Mix's technical editor.

Company name and product	Frequency response	Woofer size (model no.)	HF driver throat size
Audio Analysts 12FR (Colorado Springs, CO) 719/632-8855 Circle 200 on Product Info Card	65Hz-18kHz	12" (JBL)	1.5" (JBL)
Audio Composite Engineering Inc. Model 1250 (Escondido, CA) 760/741-3787 Circle 201 on Product Info Card	45Hz-18kHz	12" (modified JBL 2206)	1.5" (modified JBL 2450)
Apogee Sound AE-8B (Petaluma, CA) 707/778-8887 Circle 202 on Product Info Card	46Hz-16kHz	15"	2"
Clair Bros. Audio CBA 12AM (Lititz, PA) 717/626-4000 Circle 203 on Product Info Card	65Hz-18kHz	12"	2"
D.A.S. Audio ST-32 (Old Lyme, CT) 860/434-9190 Circle 204 on Product Info Card	60Hz-20kHz	15" (CX-32)	2"
EAW (Eastern Acoustic Works) SM200iH (L/R) (Whitinsville, MA) 508/234-6158 Circle 205 on Product Info Card	75Hz-18kHz	12"	2"
EAW SM400iH Circle 206 on Product Info Card	60Hz-18kHz	2 x 12"	2"
EAW SM260iV Circle 207 on Product Info Card	70Hz-18kHz	12"	2"
EAW SM500iV Circle 208 on Product Info Card	65Hz-18kHz	15"	2"
Electro-Voice XW12 (Bucchanan, MI) 616/695-6831 Circle 209 on Product Info Card	60Hz-16kHz	12" (DL-type)	1.4" (DH6)
Firehouse Productions F15 (Red Hook, NY) 914/758-9898 Circle 210 on Product Info Card	N/A	15" (TAD TL1601B)	2" (TAD 4002)
Firehouse Productions F12 Circle 211 on Product Info Card	N/A	12" (JBL 2206H)	2" (TAD 4002)
JBL Professional SR4706A (Northridge, CA) 818/894-8850 Circle 212 on Product Info Card	60Hz-20kHz	15" (2226G)	1.5" (2447J)
JBL Professional 4890 Circle 213 on Product Info Card	40Hz-18kHz	14" (1400 PRO)	1.5" (2450 SL)
JBL Professional 4891 Circle 214 on Product Info Card	70Hz-18kHz	14" (1400 PRO)	1.5" (2450 SL)
L-Acoustics 115 FM (manufactured by Cox Audio Engineering, Sun Vally, CA) 818/503-1550 Circle 215 on Product Info Card	75Hz-18kHz	15"	1.5"
Martin Audio LE700 (distributed by TGI North America, Kitchener, Ontario) 519/745-1158 Circle 216 on Product Info Card	60Hz-15kHz	15"	1.4" titanium compression driver
Melhart Audio PRO 212M (McAllen, TX) 956/682-6147 Circle 217 on Product Info Card	N/A	2 x 15"	2"
Melhart Audio PRO Monitor Circle 218 on Product Info Card	N/A	15"	2"
Meyer Sound UM-1C (Berkeley, CA) 510/486-1166 Circle 219 on Product Info Card	60Hz-20kHz	12" (MS-12)	1.4" (MS-1401B)
Meyer Sound UM-1P/100P Circle 220 on Product Info Card	60Hz-18kHz	12" (MS-12)	1.4"
Meyer Sound USM-1 Circle 221 on Product Info Card	40Hz-18kHz	15" (MS-15)	2" (MSD-2001A)
Meyer Sound PSM-2 Circle 222 on Product Info Card	50Hz-18kHz	12" (MS-12)	2" (MS2001 CQ horn driver)
PAS (Professional Audio Systems) TOC™ SW-2.2 (Carlsbad, CA) 760/431-9924 Circle 223 on Product Info Card	55Hz-16kHz	15" (CXL-2580C co-ax)	2" (DE 750/8)
Peavey DTH™SM (Meridian, MS) 601/486-1618 Circle 224 on Product Info Card	68Hz-16kHz	15" (1505-8 DT)	2" (44T™)
Renkus-Heinz TRC151D (Irvine, CA) 714/250-0166 Circle 225 on Product Info Card	40Hz-17kHz	15" (SSL15-6)	2" (SSD3301-8; 1" driver optional)
Showco PRISM® Stage Reference Monitor (Dallas, TX) 214/630-1188 Circle 226 on Product Info Card	40Hz-20kHz	12"	2"
Stage Accompany Leader L24 (Bay Ridge, NY) 800/955-7474 Circle 227 on Product Info Card	80Hz-30kHz	12" (SA 1202)	SA 8535 Ribbon Compact Driver
Stage Accompany Leader L26 Circle 228 on Product Info Card	80Hz-30kHz	2 x 12" (SA 1202)	SA 8535 Ribbon Compact Driver
Stage Accompany Leader L27 Circle 229 on Product Info Card	70Hz-30kHz	15" (SA 1530)	SA 8535 Ribbon Compact Driver
Turbosound TFM-300 (distributed by Audio Independence, Middleton, WI) 608/831-8700 Circle 230 on Product Info Card	60Hz-16kHz	15" (LS-1508/1)	2" (CD-203)
Turbosound TFM-330 Circle 231 on Product Info Card	55Hz-16kHz	15" (LS-1513)	2" (CD-204)

HF horn type (coverage angle)	Crossover	Connector	Dimensions (to nearest 1/4")	Weight	Price	Notes
Custom aluminum (40°H, 60°V)	1,200Hz	EP-4 x 4	15x24x17.75"	64 lbs	\$2,600	Cabinet constructed from carbon fiber composite. Integral rigging hardware options conform to Aeroquip standards.
Spherical waveguide (75° x 75° @ 8kHz)	Defeatable passive crossover included	4-pole Speakon	12.5x29.5x19.5"	47 lbs	\$2,695	
(60°H, 40°V)		NL4s or EP-4s	19.5x21.5x26.5"	80 lbs	\$2,636	Requires processor: P-8, DPA-8, D-1 or PA-8.
Custom asymmetrical horn		EP-4 x 2	14x22.5x18"	74 lbs	\$3,945	Available in mirrored pairs.
Conical horn (coaxial; 85° x 85°, 500Hz to 8kHz)		Speakon x 2	18x21x28"	51 lbs	\$960	Front baffle is 35° to floor.
Wave Guide Plate™ (conical, 90°)	Switchable active/passive	NL4 x 2	14.5x22.5x10"	58 lbs	\$1,805	Recommended highpass frequency (24 dB/octave): 58Hz. Available in mirrored configurations.
CD horn (60°H, 45°V)	Switchable active/passive	NL4 x 3, AP4 x 2	22.5x27.5x14.75"	98 lbs	\$2,575	Recommended highpass frequency (24 dB/octave): 45Hz.
Horn (60°H, 45°V)	Switchable active/passive	NL4 x 2, AP4 x 2	22.5x14.5x14.75"	62 lbs	\$1,965	Recommended highpass frequency (24 dB/octave): 50Hz.
CD horn (60°H, 45°V)	Switchable active/passive	NL4 x 3, AP4 x 2	25.25x18.25x20"	89 lbs	\$2,115	Recommended highpass frequency (24 dB/octave): 50Hz.
HP-type horn (80°H, 55°V)	1,250Hz	NL4 x 2	14x23x12.25"	62 lbs	\$1,749	Requires E-V Dx34A digital crossover.
Custom E-V horn (85°H x 55°V)	1,200Hz	Per customer order	25x18x16.5"	68 lbs	Call	Recommended crossover is unmodified PIP card on Crown 36x12.
Custom E-V horn (85°H x 55°V)	1,200Hz	Per customer order	21.5x15.5x15"	58 lbs	Call	Recommended crossover is unmodified PIP card on Crown 36x12.
2383 Optimized Aperture horn (90°H x 50°V)	1.2-1.4kHz		20.5x32x19.5"	82 lbs	\$1,853	30° and 60° front baffle angles.
Optimized Aperture Flat-Front Bi-Radial (60°H x 40°V, reversible)		Parallel 8-pin Neutrik	15x27x15"	75 lbs	\$2,953	Requires JBL's DSC 490 Digital or ASC 24 Analog Controller.
Optimized Aperture Flat-Front Bi-Radial (60°H x 40°V)		Parallel 8-pin Neutrik	18.5x15.5x22"	75 lbs	\$2,953	Requires JBL's DSC 490 Digital or ASC 24 Analog Controller.
Concentric (coaxial)	1kHz	Speakon x 4	14.5x22.75x16.25"	68 lbs	Call	Features a coaxial woofer/HF driver.
Differential dispersion horn (100°H x 70°V)	1kHz	Speakon x 2, EP8	28x19.5x15"	97 lbs	\$2,500	Requires Martin Audio MX4 system controller.
Fiberglas CD horn	1.5/2.5kHz	Speakon or AP	38x16x20"	105 lbs	\$1,995	
Fiberglas CD horn	1.5/2.5kHz	Speakon or AP	28x25x20"	95 lbs	\$1,995	
60° x 60° CD horn	1.6kHz	EP-4	14x14x22.5"	67 lbs	\$2,783	Requires M-1A Control Electronics Unit (\$1,590)
UM-1P features a 45° HF pattern; 100P offers 100°H x 40°	1kHz/1.2kHz	XLR (summing or looping)	17x16.5x22.5"	77 lbs	\$4,900	Self-powered models.
70°H x 60°V	900Hz	EP-4	21x24.5x18.25"	82 lbs	\$3,520	Requires S-1 CEU (\$2,200)
50° x 50°		XLR (summing or looping)	24x18x14.5"	90 lbs	\$6,400	Self-powered. Asymmetrical cabinet offers multiple tilt angles.
(40°H x 60°V above 2kHz)	1.2kHz	NL4 x 2	21.25x17.25x15.25"	65 lbs	\$1,282	Coaxial woofer/driver. Requires S2 Signal Processor (\$2,000)
CD horn (CH™-6)	2kHz	NL4 x 2	17x30.25x20.5"	76.3 lbs	\$879.99	Switchable bi-amp/full range. Available in L/R versions.
Complex Conic horns available in 90°H x 40°V and 60°H x 40°V coverage patterns.	1.2kHz	Neutrik 4-pin	29.5x17.4x14.5"	75 lbs	\$1,530	Available in dual-woofer model (TRC152) and with internal 1.6kHz crossover.
Proprietary horn design		Neutrik Speakon	14x23x18"	74 lbs	\$2,500	Requires SRM PIP input card (\$175) for Crown 36x12 amp.
70°H x 30°V	1kHz	Speakon x 2	15x26.5x13"	62.7 lbs	N/A	Internal crossover, switchable for bi-amping.
70°H x 30°V	1kHz	Speakon x 2	15x39.5x13"	88 lbs	N/A	
70°H x 30°V	1kHz	Speakon x 2	18x29.5x13"	68.6 lbs	N/A	
Custom waveguide	1.6kHz, 24 dB/oct Linkwitz-Riley.	NL4MP, EP6, XLR are optional	17x26x20"	75 lbs	\$2,322	LMS-660 (analog) or LMS-700 (digital) crossovers recommended. Passive 3rd-order highpass crossover (PX-300) included.
Custom flare (60°H x 40°V)	1.3kHz, 24 dB/oct Linkwitz-Riley.	EP6	17x26x19"	86.9 lbs	\$2,719	LMS-660 (analog) or LMS-700 (digital) crossovers recommended.

TOURING IN AUSTRALIA

THE WIDE OPEN SPACES



There comes a time in the career of every successful performer (and their crew) when the opportunity arises to cross the international dateline and play in Australia. Aussies affectionately refer to their homeland as Oz, and there's more than gold waiting over the rainbow. With the Olympics coming up in September 2000, there'll be plenty going on Down Under in the next 18 months—maybe your next international tour.

I recently had the chance to spend a month in Aus-tralyah (not Austray-lia) as monitor mixer with chanteuse k.d. lang. Sitting on the roof of the new Star City Casino, I look over Darling Harbor at Sydney's skyline as the sun slowly sinks on my last evening in town. I'm sipping a "flat white" (and

smoking the last of my American cigarettes) with lang's FOH engineer and production manager Grant McAree, who's finishing his fourth trip and second major tour here. He shares some thoughts on touring the continent, as does David Sneddon, general manager of Jands Production Services and production manager for the casino's new Lyric Theater.

"On the last Australian tour, the biggest show was the first night in Sydney," McAree begins. "We'd never played here, the tour sold out in days, and all of the press was there. That first show was the most important of 120 shows we did on the entire world tour be-

cause it was a new market. Eventually, all there is to increase a band's profit is a new market. New markets to any business are huge—that's newfound money. You have to spend more time and effort making sure you get it right."

WHAT TO BRING?

The largest tours carry almost everything for production, because the economics of selling out a stadium affords the expense of filling a 747. But for most acts, backline and a few key audio pieces are enough. "To me, international touring means

BY MARK FRINK

—CONTINUED ON PAGE 154

TOUR PROFILE

GEORGE CLINTON AND THE P-FUNK ALL-STARS

Funk Legends on Tour

George Clinton and the P-Funk All-Stars toured the U.S. last summer, performing at arenas and sheds across the country as one of the headliners on the House of Blues Smokin' Grooves festival. Smokin' Grooves featured an all-star lineup of R&B, rap and hip hop acts, including Erykah Badu, Cypress Hill, Brand New Heavies, The Roots and Foxy Brown with audio production by RSA Audio of New York City. Toward the end of the year, Clinton and band shifted gears, winding down the U.S. leg of their tour with a month of intimate theater dates before heading off to Europe. Mixing this scaled-down leg of the tour required plenty of flexibility, since the crew carried production gear (supplied by Thunder Audio, based in Detroit) but ended up using house equipment at almost half of the venues they visited.

Mix caught a December show at San Francisco's Maritime Hall, an acoustically renovated union hall that serves as a part-time concert venue. A couple of years ago, the venue was equipped with a Meyer P.A./stage monitor system based around MSL4 four-way powered speakers and TSW subs, and a SIM system was installed (the hall is often used for SIM classes). Other equipment includes ATL (Acoustic Technical Laboratory) monitor and front-of-house consoles, and a full selection of outboard gear, including Meyer and Ashly EQs and Yamaha reverbs.



PHOTO: MARCY GUIRANGOSSIAN



PHOTOS: NICOLE BELANGER



FOH mixer Carl Monforte (L), and monitor mixer Garry Robbins

Mixing at the monitor position is freelance engineer Garry Robbins, who joined the P-Funk tour during the Smokin' Grooves festival. Since then, he's been touring on and off with George Clinton, while taking some time off from the tour to work with Grand Funk.

Robbins says he's mixed monitors for George Clinton "on everything from a [Midlas] XL3 to a Spirit 24-channel," but he tries to bring in a Soundcraft SM16 whenever he can. He hasn't convinced the band to monitor on in-ears yet, but he's working on it.

"The [monitor] mix is a basic R&B mix, with kick and snare down front, keyboards underneath and backing vocals on the sides," says Robbins. He notes that one of the biggest mixing challenges of providing 12 monitor mixes for 20 or so performers is managing SPLs onstage. "It's pretty brutal back there; I've got two saxes, two trumpets, and one sax player sings," says Robbins of the back line. Compressors on vocals

BY SARAH JONES

—CONTINUED ON PAGE 152

Fiona Apple

ALL ACCESS

Fiona Apple



ACCESS
ALL
AREAS



TEXT AND PHOTOS BY STEVE JEININGS

Fiona Apple and her band of crack players have been touring continually in support of her double-Platinum album *Tidal*. Mix caught the show at the Warfield Theatre in San Francisco during a leg of headlining dates in soft-seaters.

"We flew a left and right cluster, we ground-stacked left and right and ran subs off an auxiliary," Dalen says of the Warfield show setup. "It's such a dynamic show, we have to have a great-sounding P.A., so I spend a lot of time optimizing it. One little trick is we always use conventional floor wedges for the drummer, so we don't have a lot of extra low end or volume flying around." Drum mics are Audio-Technica ATM-23s and 25s on toms and kick drum, 4050s for overhead and a 4033 on hi-hat. Vibes are miked with 4050s.

"We use different enclosures and consoles and different monitor engineers most every night, so it can be very challenging," says Dalen. "By the same token it's good, because it forces you to really rely on all your experience to get a good result. That and extensive phone advance work, along with a thorough follow up." Dalen carries only the Audio-Technica microphones, FOH processing and four A-1 Audio floor wedges for Apple. "It makes for a level of consistency that would be impossible to create otherwise on a tight budget," he says. For the Warfield show, Sound on Stage supplied a Yamaha PM4000 at FOH and a Ramsa 840 Series monitor board. Effects included a TC Electronic M5000, a TC 2290 and several multiprocessors and Yamaha 990s. As well as setting up the monitors with the monitor engineer, stacking and arraying the P.A. and tending to other equipment needs, Dalen acts as production manager. "I have to say this is one of the most pleasing and fun tours I've been on in my twenty or so years of doing this," he says.



Apple spends a good portion of the show at the piano, where she sings into an Audio-Technica 4055, A-T's new large-diaphragm cardioid condenser. "It was a problem dealing with a real piano because of tuning issues, weather and occasionally being an opening act, especially in smaller venues," says FOH mixer/production manager Paul Dalen. "So, after a great deal of experimentation, we opted to customize an old baby grand piano by gutting it and fitting it with a Kurzweil PC-88. It's been very successful."



At center-stage, Apple sings into a dynamic, hypercardioid Audio-Technica ATM-61. Dalen inserts a dbx 160-X compressor and a Klark Teknik DN-410 parametric equalizer on both vocal channels at FOH. He dials in Apple's monitor EQs at soundcheck (he specs KT DN-360s) and monitors his FOH and monitor EQs on Sony MDR-V6 headphones. He also carries an IVIE handheld 1/8-octave analyzer.



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- Power standby control
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- Detented gain controls
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—FROM PAGE 149, GEORGE CLINTON

and gates on drums help keep levels under control, and make up the majority of the processing onstage.

Keeping track of migratory microphones onstage is another challenge. The P-Funk front line alone is six or seven people; the total All-Stars lineup ranges from 16 to 20 performers. ("I've done the full thing with Bootsy Collins, where there are like 24, 25 people onstage," says Robbins.) And people are always switching positions, Robbins says, adding that at the end of a four-hour show, mics never end up where he had originally set them up. "I have to figure out which mic George has; that's why I like to have a console that has a good meter bridge on it, to see who's singing into which mic, which strip they're in. I have to keep some mixes segregated, because certain singers, they don't want to hear down front. Then when they switch mics, I find out that the mic that's been zoned out in its own little world, George has got it. There's dancers that come out sometimes, we've got [audience members] up onstage during 'Atomic Dog';

it gets to be a zoo every once in a while."

Over at the front of house is engineer/production manager Carl Monforte, a freelance engineer out of Detroit who has been mixing George Clinton and the P-Funk All-Stars for two years. In addition to his front-of-house duties, Monforte's job is to make sure everything to do with lighting, sound and the crew runs smoothly. "My job is wearing two hats with this band; [in addition to mixing, I also] keep relationships good with the crew, making sure everyone can get along," says Monforte. "The only thing that we're lacking right now is that we're not carrying our normal production."

Monforte likes to carry a Soundcraft Series5 console, and uses mostly Shure and CAD mics. "They're industry standards, always the best. Old faithfuls," he says. When the All-Stars are not system hopping, the backup singers are all miked with Shure SM58s. The horn players get Beyer M88s and Sennheiser 441s. Clinton sings into a CAD90, and the drums are usually miked with Shure Beta 52s, 56s and 57s, with A-T 4041s on overheads. The new Mesa/Boogie M2000 bass rig is DI'd and miked with

an RE20, and 57s and a Sennheiser 409 are used on guitar. All of the cables for the backline are custom-made Monster Cable ProLink.

The show is straightforward, processingwise. "For effects, normally what I like in my rack is an [Eventide] H4000 or 3000, depending on who's got what available. I'm using all SPX990 reverbs, compression and gates from Drawmer, plus White EQs—your typical A-rig stuff," says Monforte, noting that he prefers to carry gear from Thunder Audio, whom he's worked with for ten years, as much as possible. (He adds that when he can, he carries an EAW KFA 850 rig with SP1000s for sub-bass, all powered by Crest.)

Overall, both Robbins and Monforte say the mix is pretty consistent each night and feel they've earned the performers' trust in getting the right sound. "George is great," Monforte says. "He's really complimentary, open-minded about letting me mix the band the way I feel because he seems to think I've captured the mix. So to have the artist come in and say 'Boy, you've captured it,' that feels really good." ■

Sarah Jones is an assistant editor at Mix.

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—FROM PAGE 148, TOURING IN AUSTRALIA

you bring mics, looms and any special DIs," says McAree. For the k.d. lang tour, these were shipped over in a small three-drawer road-case, along with the band gear.

Dynamic instrument mics were the Audix D Series; vocal mics included the AKG C-535 that lang has used for over a dozen years. Other condensers were AKG C-5600s (a rock 'n' roll version of the 414 for piano and accordion) and Neumann KM84s for overheads and hi-hat. Direct boxes were the new Ca-

bleTek JDV active Class A DIs, along with several of their passive, Jensen-loaded JDI boxes. The pre-loomed mic cables saved us time, though we had to adapt to deal with the stage layout dictated by Jands' 19-pair hard-wired sub-box arrangement. "You can get backline, but it's just as easy to bring it, and the transformers are readily available," McAree says.

Power in Australia is 240 volts at 50 Hz. "If you require 60 cycles you may have a problem," points out Sneddon. "Leslie cabinets run a bit slower. Conn strobe tuners are a problem, since they get their reference from the AC fre-

quency, but Petersen tuners don't. Some people freak out about their power amps. We run 110-volt power for the Carvers on our S-4s, and they work fine at 50 cycles. We have plenty of 110-volt transformers—we've got to be able to supply them for backline and production offices." Electronics that get power from wall warts get hot and eventually fail if they're not designed for 50 Hz, as we found out with a few minor pieces of U.S. processing gear. A trip by the runner to Tandy provided voltage-selectable ones that worked fine.

The important first step for an act coming to Australia is to get in touch with the promoter's production coordinator and confirm exactly what's needed. "Certain newer items are going to be unavailable," comments Sneddon. "It's often six months to a year before an Australian distributor can get a new product, particularly the latest processing and keyboards." It's not uncommon for a technical rider sent by management to be either out of date or exaggerated, and they're not taken any more seriously in Australia. Preparing a Technical Rider Update subtitled Australian Audio Requirements with the month and year begins the process. The reality check will come eventually.

Even the longest tours in Oz last only a few weeks, so unusual items not found on typical riders are often unavailable from a vendor's inventory. "If you're using something exotic, it's not going to appear magically," McAree says. "If they have to special-order it, they'll have to charge you through the nose, because everything down here is simply much more expensive to buy." Import duties and shipping double the cost of gear not manufactured there, and it doesn't make sense for companies to buy specialty items for a handful of shows, then have them sit on the shelf for months afterward. "Substitutions Down Under are big—they don't have everything," McAree adds. "They can't just phone your favorite manufacturer and have it drop-shipped the next day, even if you're willing to pay for it." If it's important to the show, just bring it, or else be prepared to be flexible.

McAree substituted a Midas XL-4 for his Amek Recall at FOH. Instead of a Yamaha monitor board, I got a Midas XL-3, which seems to be the quality desk most plentiful in Australia. Clair 12AM wedges, of which Jands stocks dozens, were substituted for the eight mixes of Meyer UM wedges used in the States, and JBL/UREI graphics were substituted for the KT 360s. Sidefills and

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mains were the Meyer MSL-4s we'd used before with great success.

GETTING READY

While the band spent the first couple of days recovering from the flight and adjusting to the new time zone, the crew was at the shop helping with the rig. "Everybody knows that a rider has a limited amount of information, and the production manager can only communicate so much," McAree says. "It's much simpler to have the personnel handle the prep in a hands-on fashion." The three months around the New Year are crazy. Chances are you'll see this busy season because everyone wants to come down for summer in the southern hemisphere, and that's when bringing a good staff and prepping will pay off. You're fitting up a rig that will do a dozen shows, not a hundred. "It's worth getting it right the first time. Let's say your first show is Sydney," McAree illustrates. "You wouldn't jump off the plane in New York and meet a sound company you hadn't dealt with before at the first show.

"The same thing with the band," he



The author, with a new Aussie pal

continues. "Don't expect them to fly 14 hours, get off the plane, play the show and have it be stunning. They should have a day or two to mellow out and prepare for market-breaking shows."

Upon arriving in Sydney, we met our sound and lighting techs, Andy Mitchell and Andy Mitchison, at Jands' enormous warehouse near the airport. We spent the first day labeling the stage, with sub-boxes and our pieces added to the racks being prepped. We brought our Amek 9098 mic pre and an Aphex 661 Tubessence compressor for lang's vocal channel. I'd also brought a Sabine ADF-2400 and an EAW JF-80, for the center-fill monitor mix downstage-center. The effects racks were assembled with a min-

imum of substitutions—most of the Lexicon, TC Electronic and Yamaha 'verbs were either in stock or easily sub-rented.

"You also need to consider what people to bring," says McAree. "There's good technicians here, but if you have an involved lighting system, for example, you should bring your own tech to stand onstage." We traveled with Studio Colors, Cyberlights, ColorScans and bubble machines, and Robbie Hanaford's familiarity with the design was a big help to lighting designer Brent "Ski" Lipp. "If you've got special effects and your LD is stuck out at the board, what's he supposed to do if something goes wrong?" McAree asks.

We also brought our two backline

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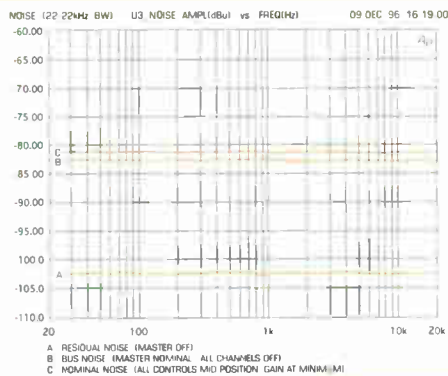
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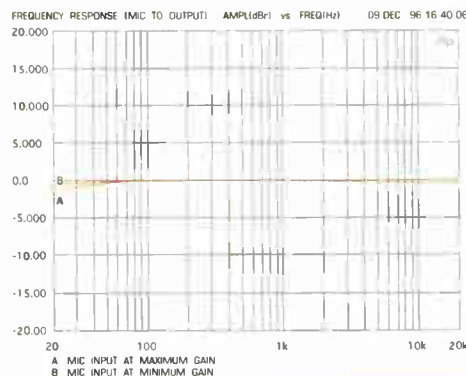
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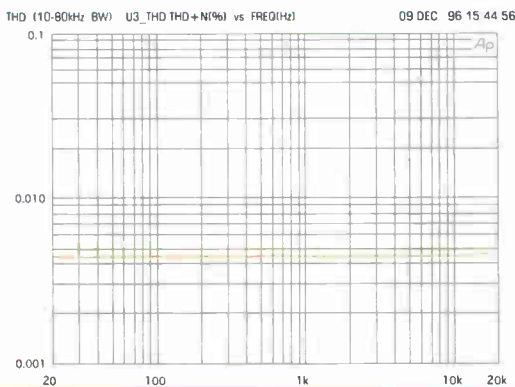
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LIVE SOUND

techs. Ron Johnson, who's been with k.d. lang as long as McAree, is a world-class luthier and was responsible for all two dozen stringed instruments, as well as the vintage Fender amps. "It's definitely a perk for the people you bring—they'll put out for you, and they'll be putting out ten years from now because they've had a chance to go see some of the world," McAree points out. Stage manager and keyboard tech Peter Maher, borrowed from Yanni by way of Aerosmith, was responsible for both tuning the piano and fitting the Helpinstill on a daily basis, besides the bass rig and drum kit. "The same goes in audio world. You definitely bring your monitor engineer—that's a given," McAree adds. "If you've got some super-involved situation, you'll want to bring more." SIM guru Jamie Anderson came, along with A-1 Audio's elaborate eight-zone BSS drive rack that we'd used in the States, which was easier to bring than to duplicate.

THE ITINERARY

While the rig was prepped, the speakers we were starting with in Brisbane were at the grand opening of the Star City Casino. A barge floating in Darling Harbor in front of the casino is the stage where Diana Ross gave a free show. Michael Crawford opened Star City's new 2,000-seat Lyric Theater, where we'll finish up our run in a couple of weeks. While we toured the rest of the country, Natalie Cole, and then Peter, Paul and Mary, performed, and after we finished Kenny G came in from Tokyo for a three-day run. Star City also has a 900-seat showroom that Tom Jones opened, and I just missed meeting up with Sandy Battaglia, though we played hotel phone-tag for a couple of days. There is now a major casino in every state capital, and some artists simply tour Australia in their showrooms.

There are five major cities to play, where more than half of the 18 million Australians live. The four state capitals along the south and east coasts are each

NEWSFLASHES

The Hollywood Athletic Club is expanding its Sunset Blvd. facilities to include a live music showcase theater. The sound system for the new room was designed by Bradley Spurr in collaboration with engineers from Bag End Loudspeaker Systems and will include Bag End's GEM Series speakers controlled by the ELF system. Performers slated to appear during the opening weeks in April include Big Bad Voodoo Daddy and Sneaker Pimps. The HAC was founded in 1924 and was once frequented by the likes of Charlie Chaplin, Rudolph Valentino, Errol Flynn and Clark Gable... Denmark-based sound company European Tour Production purchased 26 QSC PowerLight 4.0 amplifiers from QSC's Swedish distributor, Englund Musik AB. ETP works mainly with local Danish bands, festivals, clubs and TV stations. QSC CX amplifiers are being used by Audio Visions (Irvine, CA) in new Virgin Megastores in Orlando, FL, and Long Island, NY...As part of the J. Paul Getty Museum's massive restoration, audio-assisted tours were added. Beyerdynamic DT 250 headphones were selected for visitors' use...Artists currently touring with Audio Analysts include Status Quo and Portishead... Sound design for the Broadway pro-

duction of *The Lion King*, at the New Amsterdam Theatre, is by Tony Meola. Equipment provided by ProMix (NYC) includes a 117-input Cadac J-Type console with 111 motorized faders and eight programmable dual-input channel modules, and 45 Sennheiser wireless mics...The Cardiff Arms Park Millennium Stadium, now under construction in Cardiff, England, will be the first stadium in the UK with a retractable roof. This new venue will host the 1998 World Cup Rugby Games. The sound system was installed by Sound Department and includes 38 Community M4 co-ax loudspeakers in a main cluster, plus a distributed system of 180 more Community speakers to cover the bowl area...Chris Lord-Alge mixed the Country Music Association Awards, which were broadcast live from Opryland USA last fall. Audio-Technica reports that its ATM25 mics were used to close-mike drum kits during the performances; 4051a's were used overhead, on hi-hat, acoustic guitars, fiddle and cello, and Lord-Alge used A-T headphones in the control room for talkback to the stage...Allen & Heath reports that a 40-channel GL4000 console has been installed in Barcelona's Luz de Gas nightclub. The venue hosted a recent appearance by Paco de Lucia, known as the king of Spanish guitar. ■

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LIVE SOUND

about 500 miles from the next. The two largest, Sydney and Melbourne, have more than 4 million people each, and the two largest airports, so it's not unusual to arrive in one and finish in the other. Brisbane (1.5 million population) is north of Sydney and near the Gold Coast beach resorts. Adelaide (1 million) is west of Melbourne. Touring as we know it in the States would be difficult at best. The distances involved are too long for tour buses to be practical—the band and crew end up flying everywhere—and it's almost impossible to get gear to a next-night show by truck.

Placing a map of Australia on top of a map of the U.S. is a good way to get a perspective of how big a country you're dealing with (i.e., they're about the same size). The drives are long, and the roads are not great. At the last minute, plans were made to include a show in Perth, on the far side of the continent, with a travel day on either side for the band and crew to fly. When someone says Melbourne to Perth, that's equivalent to Atlanta to Los Angeles. Distances are often measured in driving hours. Trucking from Melbourne is 38 hours (2,200 miles), but we pick up three hours due to time zone changes. Our two Showfreight trucks were loaded and on the road at 1 a.m., and by using double-drivers, they were able to go nonstop, loading in at 1 p.m. in Perth. Coming back to Adelaide is a little shorter (1,700 miles), but the time zones worked against us; again, we were able to load in at 1 p.m.

Our tour began at the Brisbane Convention Center, a legacy of the '88 Expo, and we load in the day before the first show. Any time you change continents, it's worth a production day. This large room converts to theater

mode with bleachers lowered from the ceiling by five-ton motors at one end and an air wall that slides in a third of the way down where the stage is set up. "The Palais in Melbourne is like the Tower in Philly, and everyone's played there," McAree says. "It's a good-sounding room, even though there's problems getting in and it's funky because of its age." In Perth and Adelaide, we played large entertainment centers that hold upward of 4,000 and are multipurpose rooms with a temporary stage at one end. "The newer micro-arenas are a pleasant surprise because they're not completely oriented toward sports," McAree adds. "The rigging in those places is good because there's ten-by-ten squares, and there's mesh so riggers can't fall out."

THE SOUND COMPANIES

Along with being the VariLite franchise, Jands has the largest audio inventory in Australia. The company has served numerous international tours over the years and has special relationships with the half-dozen major promoters, who usually recommended them. There are other sound companies, however, and every state capital has at least one that can offer the equivalent of the better vendors in the States. I made an effort to meet with the principals of the largest as we traveled each city.

Australian Concert Productions (www.acp.net.au) in Brisbane, owned by Mick Privitera, is the largest Turbosound outfit. They have Flashlight and Floodlight speakers and are part of the Worldwide Turbo network. Consoles include a Yamaha PM4000 and a Midas XL-3. In Melbourne, McLean Audio (3-9429-5381) has EAW KF-850s and a full range of Yamaha consoles. Before forming the company, principal Richard Belinsky worked for Artist Con-



**Recruiting stage hands
Down Under**

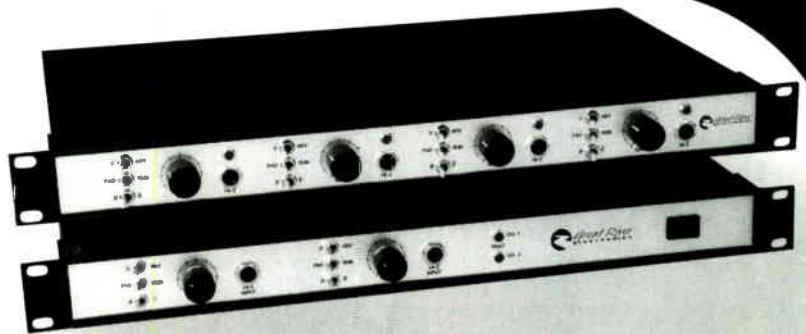
cert Tours, which merged with Jands in the mid-'80s. Audex Concert Sound (8-9328-3188) in Perth is owned by Keith Crammond, and the inventory includes XL-3 boards, KF-850s, MSL-3s and Crest amps. In Adelaide, the largest company is Osmond Electronics (8-8410-1111). Managing director George Psorakis informed me that they run EV MT-4 and DeltaMax speakers with Midas XL-3 and XL-200 consoles. Lots of Watts (2-9638-0302) is the second-largest production company in Sydney, having acquired its audio division when it bought a Midas XL-3 and Turbo speaker system from the PA People in '96. Not many companies own both sound and lights, though our High End moving lights were sub-hired, and there are several good lighting vendors. My advice is to do research ahead of time by phone, fax and e-mail. It's 18 hours ahead of California, so calls in the afternoon are early morning the next day over there.

PARTING TIPS

Smokers should bring a carton of their American brand. Sharpies are also not readily available, so bring a few boxes as gifts. Other staples from the States, like a Leatherman and Mag-Lite, also make fine presents. Suitcases have a strictly enforced limit of 70 pounds. You can check two pieces and bring one carry-on (with smaller dimensions than allowed in the States). Most flights originate from L.A. at night and arrive in the morning. Drink a gallon of water, eat only half the food and take Melatonin after dinner. When you arrive, don't sleep until dark to reset your internal clock. The exchange rate is about the same as Canada, and ATMs on the Cirrus or Plus system can take out Aussie bucks that are deducted in U.S. dollars from American accounts at the current exchange rate.

Not-to-be-missed highlights include Perth's beaches, Brisbane's Lone Pine Koala Sanctuary and Melbourne's Victoria Market (closed Mondays and Wednesdays), which has souvenirs—Ugg boots, Coogi sweaters and Okubra hats—at the best prices you'll find. Sydney's tourist crawl must include a water taxi ride to The Rocks in the shadow of the Harbor Bridge, where you can find any remaining mementos and a few fine watering holes. Finish with a trip up Argyle Street to Australia's oldest pub, the Lord Nelson, where a pint of the Old Admiral (6.5% alcohol) will send you to bed with a smile on your face. Oh, and the Opera House? Few play it twice, even though it looks great. ■

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New Sound Reinforcement Products

SPIRIT POWERSTATIONS

Spirit by Soundcraft (Auburn, CA) intros three new powered mixers in its PowerStation range. The PowerStation 350 (\$1,099.95) has six mono mic/line inputs; the 600 (\$1,499.95) offers eight mono inputs; and the 1200 (\$1,999.95) has 16 mono inputs. Integrated 2-channel power amps are rated (at 4 ohms) at 175, 300 and 600 watts, respectively. All mixers feature an additional dedicated auxiliary send to an internal Lexicon effects unit, 18dB/octave highpass filter and UltraMic™ padless mic pre-amps, three-band EQ with sweepable mid on all mono inputs, two aux sends and two additional stereo inputs with three-band EQ and level control, seven-band graphic EQ and 48V phantom power.

Circle 314 on Product Info Card



TELETRON VHF WIRELESS SYSTEMS

Teletron (Oakland, CA) has introduced a new line of mic and instrument VHF wireless transmitter/receivers. Features include 14 standard VHF frequencies and optional custom frequencies, integral companding circuitry, minimum range of 250 feet and maximum of up to 1,500 feet, LED low battery indicator and up to 20 hours performance on a single 9V battery. The half-space, rack-mountable chassis features XLR and 1/4-inch outputs. Systems include the \$449 THV-60 (with AKG-based THS-6 handheld mic) and \$437 TLV-60 (with Audio Technica-based lavalier). Instrument systems are also available.

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HUGHES & KETTNER RED BOX PRO

Hughes & Kettner's (Mt. Prospect, IL) Red Box PRO is a combined guitar cabinet simulator and DI box. Featuring



1/4-inch input and loop through connectors and an XLR mic level output, the unit can accept instrument, speaker and line-level inputs. Used with a line-level signal, the unit may be switched to emulate a power amp/speaker combination, eliminating the need for an onstage amp and mic. The Red Box PRO includes a balanced transformer for impedance matching and isolation; a ground lift switch helps eliminate hum. The passive device does not require phantom power or batteries.

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MARTIN AUDIO TOURING SUBWOOFER

The W8CS Compact Touring Subwoofer from Martin Audio (distributed by T.G.I. North America, Kitchener, Ontario) is a port-assisted, folded-horn design with a single 800-watt 15-inch



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ALLEN & HEATH SOFTWARE UPGRADE

Allen & Heath (Sandy, UT) has released Version 1.20 of its WinDR System Manager software for the company's DR66 and DR128 digital processors. The 32-bit Windows 95 application allows installers to tailor functions and parameters in the DR66 and DR128, which may be programmed to perform a variety of signal processing functions. New features: a scheduled event programmer, a new channel-naming facility, independent control of limiter attack and release parameters, and enhanced control and display of parametric EQ values. WinDR Version 1.20 also supports optional delay and Sysnet functions (the latter allows direct control by third-party systems such as AMX and Dataton). Download the upgrade from www.allen-heath.com.

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PEAVEY DIGITAL CROSSOVER

Peavey Architectural Acoustics (Meridian, MS) debuts the CEX™ 5 digital crossover, with integral EQ and limiters. Based on multiple Motorola 56002 DSPs, the CEX 5 provides a choice of Linkwitz-Riley, Butterworth and Bessel filters, and variable crossover slopes of 6, 12, 18, 24 or 48 dB/octave. The unit provides two inputs and four outputs, switchable between analog and AES/EBU digital. Inputs feature five-band parametric EQ; outputs offer three-band parametric EQ, and output muting is standard. Application software (32-bit) for Windows 95 and NT platforms is included.

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World Radio History

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MICHAEL PENN

SIGNED, UNSIGNED
AND "RESIGNED"

by Paul Myers

"This album," explains Michael Penn, "was 'Let's make an album, this would be really fun.' We just kind of got in there and did it quickly. I hadn't made one in so long, I was chomping at the bit."

The album, *Resigned*, is not only Penn's first album in five years but his first for Brendan O'Brien's new Epic imprint, 57 Records. Penn first surfaced on record in 1989 with the Tony Berg-produced *March* for RCA. That album yielded the MTV-favored "No Myth," which climbed to the superstitious chart peak of Number 13 and did a great job of introducing the New York-born, Los Angeles-based Penn and his solidly crafted pop songs. The sophomore jinx set in with 1992's *Free for All*, a darker follow-up album, which was also produced by Berg but was not embraced commercially. In time, Penn found himself unsigned, but he surfaced on records by Aimee Mann and The Wallflowers as he wrote new material and looked for a new deal. Five years went by. Enter label boss Brendan O'Brien, who as producer and engineer had twiddled the knobs for Stone Temple Pilots, Black Crowes, Pearl Jam and Matthew Sweet, who as an A&R man saw Penn as the kind of solid artist he wanted for 57 Records. Not surprisingly, O'Brien fell into producing the album as well.

"I thought some of his Black Crowes records sounded really great, so it just felt completely natural that the

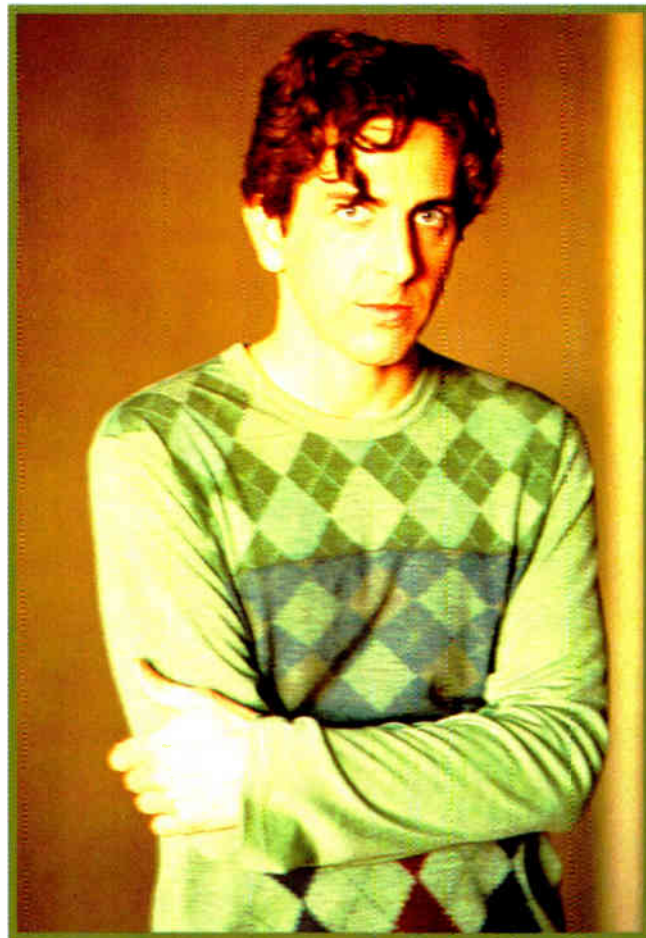


PHOTO: FRANK OCKENFELS

three of us get together and make a record," Penn says. The third in Penn's "three of us" is Patrick Warren, Penn's longtime keyboardist who once again lends his distinctive piano and Chamberlin work to the album. "Patrick was in a band I had called Doll Congress," says Penn. "That band broke up but I still wanted to work with Patrick, and we've worked together since then." In addition to O'Brien on bass, Penn's rhythm section for the sessions included drummer Dan McCarroll, a former member of short-lived L.A. band The Grays.

Convening in Atlanta at one of O'Brien's favorite studios, Southern Tracks, the four-piece band began to record the rock-solid beds for

Resigned, tracking through the studio's SSL 4064 G Plus console (with Total Recall) to a Studer 827 24-track machine. "The drums, bass, guitar and usually some keyboard were all tracked at one time, like a live band," explains Penn.

For the most part, Penn skipped the demo stage, preferring to record his songs fresh with the band. "I had demo'd to death on *March*," explains Penn. "That album was basically a re-creation of the demos. It was a really interesting experience to try to recapture things, but it was a lot of work. The second album I left more to the studio so that the demos were the album. In essence, I like that better. We did the same

—CONTINUED ON PAGE 171

ROB MOUNSEY AND STEVE KAHN

MONKEY BUSINESS

by Gary Eskow

He's not exactly the Cheshire Cat, but you have to look past a rather sedate demeanor to catch Rob Mounsey's fire. Having lent his talent to some of the great pop artists of our time—the short list would include Donald Fagen, Paul Simon, Phil Collins, Madonna and, most recently, James Taylor, who tapped the New York-based composer to arrange the song “Ananas” for his latest album—Mounsey could be forgiven a certain regal bearing. And yet he displays no



Flying Monkey composer/arranger/musician Rob Mounsey

trace of self-importance.

Mix recently sat in on a session at Flying Monkey, Rob's downtown studio, where he and guitarist Steve Khan, along with engineer Richard Alderson, were working on “Clafouti,” a track

from the duo's forthcoming release. The pair's first album, *Local Color*, recorded a decade ago, garnered a Grammy nomination, which begs an obvious question: “Why did we wait so long to record another album? Gee,

I guess we were busy!” he says. In fact, Mounsey, who augments his record industry work with a truckload of film, TV and commercial jobs, and Khan, who sports a lengthy credit list of his own,

—CONTINUED ON PAGE 175

HORACE SILVER

THE DOCTOR IS IN

by Chris J. Walker

Prescription for the Blues, mainstream jazz pianist/arranger Horace Silver's second CD for GRP/Impulse, marks a return to his most popular format, the quintet. Silver has dabbled with many different types of ensembles throughout his career, yet many people agree that his most appealing jazz “hits” have come from his various five-piece groups.

“The quintet has been very successful for me for years, but I got tired of that formula,” he notes. “I kind of wanted to stretch out and do something else, so I went into the Silver and Brass Ensemble, a ten-piece band, for two albums on Columbia. Then, the first album I did last year for GRP/Impulse was a septet. I just wanted to deviate for a minute and try

different things. So I thought now is the time to go back to the quintet for an album.” Asked if this is a back-to-basics concept for him he replies, “Well, it's sort of the old quintet concept with today's Horace Silver music.”

Silver says the title of the CD is to be taken literally: “Hopefully it will be ‘a prescription for the blues.’ First of all, I want it to be entertaining. I want people to pop their fingers, shake their butts to it, groove to it and play it in their cars. It's designed to chase a person's blues away and relieve some of their stress. You can dance to a lot of the stuff on this album and sing along.”

Silver managed to enlist some of his favorite players on the album, including bassist Ron Carter, trumpeter Randy Brecker, the versatile sax player Michael Brecker and drummer Louis Hayes. Tommy LiPuma, the album's executive producer, as well



PHOTO: ROCKY SCHENK

as president of GRP/Impulse, comments, “It wasn't hard at all to get the all-star players. It was really just a

matter of when we wanted to do it, that the dates were open, and that the guys we

—CONTINUED ON PAGE 176

BOB DYLAN'S "HURRICANE"

by Blair Jackson

Bob Dylan works in mysterious ways. This should come as no surprise to anyone familiar with his singular oeuvre. He has always managed to do exactly as he pleases without regard to trends or the accepted ways of doing things. This is even true in the recording studio, where he is famous for working very quickly, engineers' and musicians' needs be damned. He is interested in capturing spontaneity and freshness; forget about spending two hours trying



to get the perfect bass drum sound. Engineers better be ready to have the tape rolling the minute he walks into the studio, because he's liable to start a take without warning and nary a downbeat, and that first take might be the keeper. He's famous for changing tempos and other arrangement ideas from take to take, and also for radically reworking songs from one session to another. His songs sometimes are mere sketches when he enters the studio, to be fleshed out by the musicians he's picked to accompany him that day. If his albums occasionally have a tossed-off quality, it is because they are not labored over endlessly by either the musicians or the engineers. For the first two decades of his career, it often seemed as though he was barely able to record his new songs quickly enough to keep up with the

sheer volume of his output.

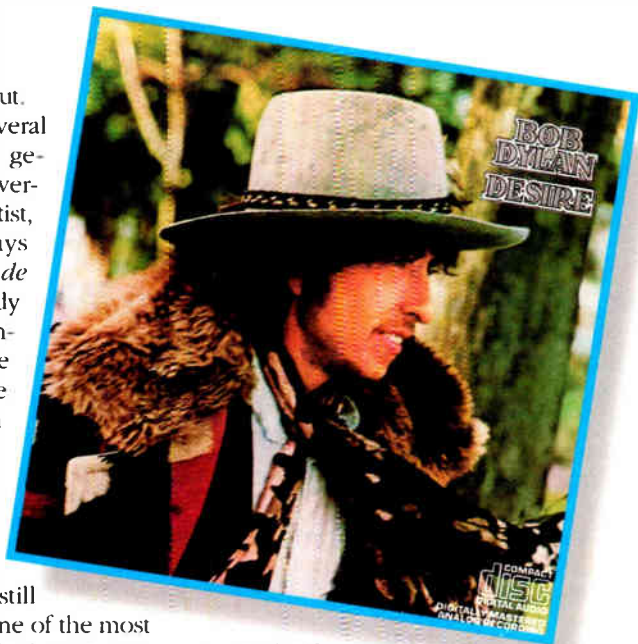
Dylan has enjoyed several periods of undisputed genius. Certainly his first several years as a recording artist, from his earliest folk days through *Blonde on Blonde* in 1966, represent a body of songwriting that is unequaled. These are the songs that changed the course of rock 'n' roll in the mid- and late '60s and turned the medium into a thinking person's artform. If he had never made another album after this, Dylan would still have to be regarded as one of the most influential musicians of all time. But Dylan was never one to sit back and soak in accolades, and that's one reason

he remains a vital talent nearly four decades after he first turned up in Greenwich Village coffeehouses. His creative restlessness always gets the best of him, and he's compelled to follow his muse wherever it leads him. It's like he sang in "Tangled up in Blue": "The only thing I knew how to do was to keep on keeping on like a bird that flew..."

After his incredible first five years, Dylan's next great period came in the mid '70s, when he produced *Blood on the Tracks* (then and now my favorite Dylan album) and *Desire*, an unusual but mostly

brilliant work unlike any other record he ever made. This month's Classic Track is the leadoff cut from *Desire*, which was recorded at CBS Studios in Manhattan in mid-1975.

There are a number of qualities that separate *Desire* from other Dylan albums of this era. Musically, the album is marked by the sinewy, gypsy-flavored violin work of Scarlet Rivera—a one-time street performer who fell into Dylan's world around the time he was writing the songs for *Desire*—and by the ragged back-



up vocals of Emmylou Harris and Ronee Blakely. This is also the only Dylan album where he used a collaborator on most of the lyrics: Jacques Levy was a veteran of New York's adventurous off-Broadway theater scene and had worked with Roger McGuinn on The Byrds' *Untitled* album. He and Dylan hit it off and spent several days at Levy's Manhattan flat and out at Dylan's Long Island retreat writing material for *Desire*, which ranged from "Joey"—a bizarre lionization of mobster Joe Gallo—to the evocative "Black Diamond Bay," which almost sounds like the denouement of some great adventure novel.

"We were both pretty much lyricists," Dylan said of Levy in 1991. "[We wrote] very panoramic songs because, you know, after one of my lines, one of his lines would come out. Writing with Jacques wasn't difficult. It was trying to just get it down. It just didn't stop, lyrically!"

"Hurricane" is an eight-and-a-half-



Engineer Don Meehan at the mixing console Columbia Records designed and built for him in the late '60s to mix pop singles and albums from 8- and 16-track masters. "Hurricane" was mixed on an MCI console.

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minute story-song about the murder conviction of boxer Rubin "Hurricane" Carter, one of the most popular and feared middleweights of the '60s. Dylan was inspired to tackle the subject after a screenwriter named Richard Solomon sent him a copy of Carter's memoir, *The Sixteenth Round*. Later, Dylan and Levy visited Carter in jail.

"When the Hurricane thing started," Levy recalled, "Bob wasn't sure he could write a song at that point. He was just filled with all these feelings about Hurricane. He couldn't make the first step. I think the first step was putting the song in a total story-telling

mode. I don't remember whose idea it was to do that. But really, the beginning of the song is like stage directions, like what you would read in a script:

'Pistol shots ring out in the barroom night/Enter Patty Valentine in the outer hall/She sees a bartender in a pool of blood/Cries out, "My God, they've killed them all!"/Here comes the story of the Hurricane...' Boom. Titles. You know, Bob loves movies and can write these movies that take place in eight to ten minutes, yet seem as full or fuller than regular movies."

Part short story, part documentary and part polemic, the song lays out a

scenario in which Carter was "obviously framed" and convicted for a robbery and triple-murder he did not commit. Dylan and Levy don't pull any punches—they accuse various witnesses of lying on the stand; the judge of tainting Carter's witnesses as "drunkards from the slums"; the media of blindly accepting the "pig-circus" trial; and society in general for having a system "where justice is a game."

Columbia staff producer Don DeVito was assigned to oversee the making of *Desire*, and DeVito brought in engineer Don Meehan to record the sessions, which began in mid-July 1975 in CBS' Studio E, which had been a broadcast studio originally. Meehan had been with Columbia since the mid-'60s, working in a number of different engineering capacities—tracking, mixing, mastering—and maintaining a highly successful career as a bassist and a backup and commercial singer on the side. He was at CBS when the label's studios made the transition from 3-track to 8-track, 16-track and beyond. *Desire* was cut on an MCI 16-track, through Studio E's 48-input MCI board.

"Studio E was a very small studio, about 30 by 30, with a little closet for a vocal room, and we had a little drum house in the corner of the room," Meehan says. "And Dylan came in with all these musicians; they were everywhere. I couldn't even tell you how many there were. It was kind of crowded, but it worked."

Meehan remembers the Dylan sessions as "very loose," and "with Dylan it had to be live with no overdubs; that's the way he worked." Though he found Dylan to be reasonably cooperative, "I had to follow him around the studio to set up a mic on him because he wandered all over the place. On one take, he might want to be over near the drums, on another over in some other place, so I had to be ready."

"I used a dynamic mic on him," Meehan remembers. "I would never use a condenser mic on anybody who was singing live in the studio like that because it would pick up everything. I asked him to work as close as he could to it to cut down the leakage. I probably used an RE-20, which is pretty good for most anything." Meehan also set up *two* vocal mics for Dylan because of the singer's habit of moving off-mic.

Even with an idiosyncratic singer like Dylan, Meehan always liked to carefully ride every lead vocal. "Being a singer I know that almost everybody drops off at the end of a word, but you



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want the end of that word to come up because it's got to be intelligible. So I'd work with my fingers and a limiter [usually LA-2As] and then limit again even in mixing."

Meehan recalls that bassist Rob Stoner was "the driving force behind the music," which was barely organized when the large group of players straggled into the studio. There were so many players on some songs that instruments had to be stacked three to a track in a few cases; hardly ideal conditions. The first version of "Hurricane," which has been described by some who have heard it as having an almost disco beat,

was cut on July 28 with a large band that included guitars, bass, drums, trumpet, bouzouki, accordion, fiddle and Emmylou Harris gamely trying to keep up with Dylan on tandem vocals.

"I didn't know her well," Meehan says. "She was following him around and didn't seem to know half the words. That pissed me off because I wanted to get it right, but that's the way they wanted it, so fine, we went with it."

Two days later, the group took a shot at more takes of the song, and by that time the tempo had veered away from the beat-heavy version of July 28 to a more flowing rhythmic feel an-

chored by Stoner and drummer Howie Wyeth. By the end of the session, Dylan was pleased with "Hurricane," and it seemed as though one of the versions from the 30th would make the album.

While all this was going on, Dylan was enjoying a huge surge of interest in his music. *Blood on the Tracks* was a commercial and critical smash, and in mid-'75, he authorized the release of a double-LP's worth of songs from the legendary 1967 Basement Tapes sessions with The Band. In the fall of '75, too, he and a loose amalgam of musical friends and fellow travelers put together the Rolling Thunder Revue, which played sporadic gigs in clubs, arenas and a few stadiums through the middle of 1976.

One night in late October 1975, Don DeVito got a call from CBS Records president Walter Yetnikoff informing him that for legal reasons, the master tapes for "Hurricane" would have to be erased. Apparently, Dylan and Levy had mistakenly placed a character at the murder scene who was not there, an error which certainly could be considered libelous.

"I got this call from Don telling me, 'You've got to get those tapes out and erase them!'" Meehan says. "I said, 'I can't do that, man!' He said, 'You've got to—everything with Emmylou on "Hurricane.'" So I pulled the tapes out but I just couldn't do it—I couldn't bring myself to erase all those 16 tracks. I ended up erasing the vocal tracks only, so at least the tracks would still be there. Those are probably still in the vault somewhere. But then, instead of just doing a new vocal, Dylan wanted to record the song again from scratch, so that's what we did."

On October 24, Dylan and a much smaller group—Stoner, Wyeth, Rivera, guitarist Steven Soles and conga player Leon Luther, with singer Ronee Blakeley (the star of Robert Altman's *Nashville* and part of the Rolling Thunder Revue) taking Emmylou's place—went into Studio E and laid down 11 takes of "Hurricane" with DeVito and Meehan, finishing up in the wee hours of the next morning. The version on *Desire* is believed to be a splice of two different takes from that marathon session. Meehan mixed the tune on the MCI board, using EMT plate reverb on much of it. Though Studio E was equipped with huge Altec A7 loudspeakers, Meehan says he liked to mix on 4-inch Lafayette speakers: "If I could get bass on those, I knew I could

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get it anywhere," he says with a laugh.

At one point on the October "Hurricane" session tapes, Dylan impatiently notes that he's anxious to get the song out on the streets, no doubt because he believed its release might affect Carter's status and win him a new trial. A single version—"Hurricane, Part One"—was rush-released in November and made it all the way to Number 33 on the Top 100 singles chart. And on December 8, the Rolling Thunder Revue touched down at New York's Madison Square Garden for a benefit concert for Carter, dubbed "Night of the Hurricane," attracting wide publicity for Carter's cause. The album was released in January 1976 and quickly shot to Number One on its way to becoming Dylan's first Platinum album.

Dylan's efforts were undoubtedly helpful in getting Carter a new trial, but the euphoria of his supporters was short-lived: Carter was convicted a second time. (Eventually, he was granted clemency. He's been free for a number of years, and he still turns up at Dylan concerts from time to time.) Despite acceding to the erasure of the original vocal tracks for "Hurricane," Dylan was sued by one of the principals in the case (Patty Valentine) anyway, and the litigation stretched into the early '80s.

Don Meehan would go on to record and mix Dylan's live TV special/album, *Hard Rain*, in October 1976, but he still views *Desire* as a career high point: "I consider that album the best I've ever done," he says. "My style was to get every bit of energy I could out of every track, and I think you can hear it on that album. I'd love to do another album with Dylan in that style." ■

—FROM PAGE 164, MICHAEL PENN

thing on this one. For about three-quarters of the songs, I had the arrangements pretty firmly in mind. I probably had about 15 songs going in, with a few others that needed to be reworked so they didn't wind up on the album."

Occasionally, however, Penn does feel the need for a multitrack demo. "It's like I've got a bunch of songs on acoustic guitar that I know exactly what they're gonna be and they're fine. Then I'll have a few other songs where I don't know, so I'll record an acoustic guitar and vocal thing on ADAT and maybe start figuring out the drums to see if that makes it work. You've got to try and make it work with the least; it had bet-

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ter work with just voice and guitar."

Assisting O'Brien in the tracking of *Resigned* was his longtime engineer of choice Nick DiDia. "I've never seen a more efficient team of producer and engineer," remarks Penn. "They have an amazing communication. Nick is just so familiar with the way that Brendan works, it's like there's a lot of mind-reading going on. Just the little pragmatic things that go on when they're making a record together that they have down."

Penn says that DiDia's expertise, and the extensive mic selection of Southern Tracks' owner Mike Clark, helped define the album's sound. Lead vocals

were mainly captured with a Neumann U47, but Penn was also fond of an AKG C-12 and even an "old reliable" Shure SM57. For the album closer, "I Can Tell," Penn sang into one of Southern Tracks' most curious vintage mics, a Neumann CMV 3.

"I'd never seen one before," Penn says. "It's an old '30s radio mic with this enormous cylinder which I guess is the mic pre, which is built into it. The mic itself looked like something that would be in front of Hitler in some documentary, so it was kind of scary that way, but it had an amazing sound. Mike is sort of fanatical about wiring, and the

studio is immaculately wired. It's the only place I've ever been where when you mic a guitar amp in the room and go back in the control room, it sounds like the amp in the room. Whatever he's done in terms of phase and polarity and everything else, it's paid off."

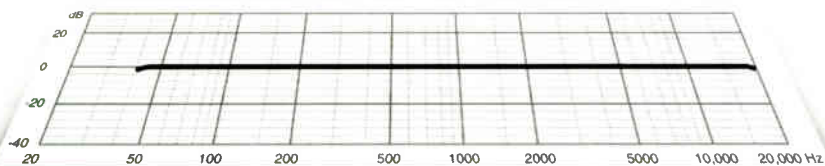
O'Brien's predilection for spontaneity and intuition combined with DiDia's telepathic engineering skills also paid off for Penn. "Brendan is really not a 'tech' guy as far as miking and stuff like that," Penn observes. "Sure, he knows what certain microphones are capable of, etcetera, but he's so much more about the moment. You'll be listening to a track and he'll say, 'Let me try something,' and he'll go out and grab a guitar and an amp and he'll say to Nick, 'Okay, put up a mic. Oh, what's already hooked up right there, that's fine.' Because he knows that if you start screwing around you start thinking too much—You know, that 1950 AKG might be interesting here; we haven't pulled that one out yet—by the time you get it set up [the inspiration] is just gone. So his priorities are much more about just getting it on tape."

One such moment occurred on the lovely ballad "Out of My Hands," a melancholy 12-string arrangement that needed an elusive kick in the mix. This time O'Brien's fuzz bass saved the day. "We had the arrangement down, but I was listening back to some of the earlier takes and thinking it was sounding too pretty, too precious," Penn says. "Then Brendan grabbed a fuzz box and we went out and cut it and that was it. Contrast is really important. When the bass was just playing clean, the bass wasn't speaking with that kind of variance of personality, even though Brendan has a lot of nuance to his playing. For some reason, when the fuzz was added to it, it not only thickened it up and brought it into the mix more, but it also gave it these sort of random noise things that helped. It just allowed it to breathe in a different way."

Penn notes that many of the most interesting sounds on *Resigned* weren't so much the result of experimenting in the studio as in the application of little things he'd tried over the years. Thus, he finally got to use his "kazoo guitar invention" on "All That That Implies"

"I've been threatening to use that sound for years, on just about every song I've ever written," recalls Penn who now shares the details of his invention with *Mix*. "That's the 'chunk, chunk' guitar in the 3/4 section under the hurdy-gurdy part. Basically, you

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take a guitar into a Heil Talk Box. Into the flange of the Talk Box you stick a metallic funnel with aluminum foil over the top of it. It's like the worst blown speaker sound imaginable."

Penn played all the guitar parts on the record, mostly using a 1962 SG Les Paul, with PAF pickups. He also employed an Epiphone Casino and a Rick-enbacker, often routed through a Vox AC30 or "the occasional Marshall and small Fender amp." For acoustic, Penn prefers his 1957 Gibson J-50 acoustic guitar for its "really cool sound, like it's got a compressor built into it."

Although most of the string sounds heard on *Resigned* come courtesy of Patrick Warren's Chamberlin and Mellotron, two of the album's 11 songs employed a real string section, with arrangements by Tommy Cooper. The strings were overdubbed in one session at Nashville's Money Pit studio.

Besides completing his first album in several years, Penn has also entered the world of film music, first scoring Paul Thomas Anderson's *Hard Eight* and, more recently, Anderson's critically acclaimed *Boogie Nights* (in which Penn also makes his acting debut as a music producer). Penn confesses that he was initially wary of the soundtrack business and that he actually had to be coaxed into doing his first score.

"I had never really been interested in pursuing art by committee, and I didn't want to have a bunch of people in the studio telling me what I was supposed to be doing," he says. "But Paul had done this film called *Hard Eight*, and he had his people call me insisting that I score this movie. I ignored his calls for a while, but apparently he was a big fan of mine and would not take no for an answer. So totally reluctantly, I went down and saw a screening and I thought it was really a terrific film and did the score. Then I did *Boogie Nights*, and while there's not more than 15 minutes of my music total, it was fun because I was allowed to address the subtext of the film as opposed to doing some wah-wah-infused porn music."

Still, Penn's first love continues to be making records: "My pet theory about record making and songwriting is that it's really about inventing. Some people come up with these things which are essentially basic patents that everybody builds off of. The Beatles, for instance, obviously came up with more than anybody. The goal is to hopefully come up with some basic patents of your own."



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—FROM PAGE 165, ROB MOUNSEY

have stayed in close touch but only recently decided to develop material for their current project.

"The fact that I have my own label means that Steve and I can record what we want, master it and be involved with distribution," Mounsey says. "That makes it easy for us to follow our muse, rather than the dictates of an A&R person at another label—God bless their souls!"

Khan, whose last solo album, *Got My Mental*, brought the guitarist together with jazz greats John Patitucci on acoustic bass and drummer Jack DeJohnette, concurs: "Collaborating is a very delicate matter. Getting a feel for another writer, and in the case of a jazz-oriented project like the record Rob and I are currently working on, which involves a lot of improvisation, being able to sense where the other person is going with the form of a piece, is a delicate balancing act. It requires fearlessness, trust and flexibility."

While Mounsey toiled over his Pro Tools workstation, cutting up snippets of phrases from Khan's extended soloing on the aforementioned "Clafouti," Khan whipped out a series of type-written notes he had compiled for each tune. It's not exactly a good-cop/bad-cop situation here, but it seems

the two have a comfortable relationship that resolves two distinctly different work styles. "Rob and I got together early on and developed very basic harmonic ideas for a number of pieces, which we dropped to tape," Kahn says. "Each of us would take a copy of these tapes and study them. At subsequent sessions, we developed and extended the forms of the pieces we felt were the strongest."

Khan doubled as session stenographer, noting which tasks each would be responsible for prior to their next get together. "I tend to contribute passages that are more active, [he points out a flurry of 16th notes on a score to embellish his point] while Rob senses the longer, more melodic lines."

Modern technology is the silent third partner in this collaboration. The two took a basic 8-bar phrase as the starting point for "Clafouti." Step two had Mounsey sequencing a simple drum loop. With Khan in an iso booth soloing on a Yamaha nylon string guitar and Mounsey out front comping on keys, the



Steve Khan (L) and Rob Mounsey collaborating on the sequel to their Grammy-nominated release *Local Color*.

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two went round and round, laying their extended jams onto a Tascam DA-88. Richard Alderson achieved an absolutely exquisite guitar sound using a pair of Josephson mics—wide stereo, but a nice center with no phase problems. The LaFont mic pre and TC Electronic M5000 multiband compressor that Alderson used to capture Khan's performance on the way to tape seems to have helped as well.

Mounsey and Khan then studied their performance and transferred the strongest parts to Pro Tools. "At this point, Steve and I have not determined the form of the piece," says Mounsey. "How good does it feel, for how many times around the loop? We'll build an arrangement, with new drum and percussion parts and synth and sample arrangements around the best elements of Steve's improvisation on the tune's basic changes, cutting and pasting the best bits of his work into a final performance."

Flying Monkey sports a pair of Quedest Monitoring Systems speakers and a set of Active Studio monitors as well. "I really like mixing in this space," Mounsey says. "It may not be the most hermetically sealed environment, but my ears are tuned to the room, and I like the monitors we use quite a bit."

Alderson, who first turned Mounsey's loft into a studio more than a decade ago, has reworked the room several times since. A comfortable, cozy series of flowing rooms, Flying Monkey has lots of exposed brick and open space. An Amek Angela sits at the heart of the mixing area, with a Mackie 1604 handling reverb returns. Outboard gear includes a pair of Yamaha SPX 1000s, two dbx 160x's, as well as the TC Electronic and LaFont pieces. Mounsey says he would feel naked without his ever-present Eventide H3000.

Pro Tools is central to Mounsey's work. "I currently have a core system of 16 tracks, using 4.0 software, but I plan on upgrading to the new Pro Tools 24 system. Digidesign's done a great job moving the technology along, and the contributions of third-party developers are great."

And you can add Mounsey's voice to the chorus of WAVES fans: "What can you say about the LI that hasn't already been said? It's a great piece of software. I also use the S1 [stereo enhancer] a lot, and the new Renaissance compressor achieves exactly what the WAVES people said it would—a great analog compressor emulation. I also really like the products that Arboretum is

turning out: Hyperprism is great; so is the Ionizer."

Sooner or later, Kahn and Mounsey's new album will be completed. What other plans do the two have? Mounsey, who produced an album for Eddie Daniels several years ago, says the two have talked about working together again. "I'd really like to record a true Afro-pop album with Eddie. There has to be a base of authentic African musicians in New York. I'll have to do some research. Hey Steve, you know everyone in town—where are the real African musicians located?" "South African or West African?" shouts Khan. When your current partner is a guy who's played with almost every local musician of note who needs the New York Public Library? ■

—FROM PAGE 165, HORACE SILVER

wanted to use were in town. *Everyone* loves working with Horace. The combination of the writing, the arranging—they all know they're going to have a ball.

"I was very excited about doing a quintet album with Horace," he continues. "This is really the first quintet album that he's done with a major label in the last 25 years or so. He did a few quintet recordings on his own small independent label, but the last one for a major was on Blue Note with the Brecker Brothers, too."

Although Li Puma and Silver have both known and worked with a lot of the same people over the years, surprisingly they only met recently. That was for Silver's debut recording on GRP/Impulse, *Hard Bop Grandpop*. "It's only been the last few years that we've gotten to know each other," LiPuma says, "but by the time we got to this album we had become good friends. He has a sense of what I'm able to contribute. He's more comfortable and more interested in my opinions. We hang and have dinner together when he's here in New York, and the same thing on the West Coast where he lives when I'm out there. We're both in our 60s and have a lot in common. That's what makes for making great music and being able to work with one another."

Silver says that he leaves nothing to chance when he goes into the studio to make a record. "I don't ever go into the studio unless I'm well prepared," he states. "I write the music, I arrange it, I

send the music out two weeks before to the session guys, so they can look it over and fool around with it. Then, when they come to the rehearsal they're that much further ahead. Then we go in the studio and do it.

"I usually do three takes per track, and hopefully I'll get what I like out of one of those tracks," he continues. "After those three takes, if it still doesn't sound like it's coming off the way I want it to come off, I usually will stop and go to the next tune. Then I'll come back later in the session and try it again."

"Horace is a very organized individual," LiPuma says. "Basically, what we did early on, several months prior to the session dates, on one of my trips out to L.A., was get together at his house. There we went through and agreed upon the strongest songs. From that point on, he laid out the charts/arrangements the way he was thinking about doing them. He did a demo with some friends. From there we finalized the list of compositions and figured out who we were going to have on the CD. The actual sessions took two days, and we averaged about five tunes a day. The mixing took another two days."

The sessions were recorded at Avatar—the old Power Station in New York—which remains one of LiPuma's favorite places to work. "For the most part, when I'm in New York that's where I do most of my recordings," he says. "We love studio A; it's a great room to record in. We did *Hardbop Grandpop* there, too. It has an old Neve 8000 series board which is very unique and musical. Avatar has three different rooms that are all configured the same. The only difference is the scale. 'A' is the largest room. It has a cone-shaped ceiling with two good-sized isolation booths against the far wall. We set up the drums in the left booth. In the right iso booth we had piano and bass. The horns were out in the main room. There was complete visual contact between everyone."

The technical details of recording in the studio were left in the very capable hands of engineer Jim Anderson, and at the mixing stage, Al Schmitt, who worked at the Village Recorder in L.A. "We recorded on 24-track, 30 ips with Dolby SR, but we certainly didn't use all 24 tracks," LiPuma says. "We had probably five to seven positions on the drums, stereo piano. We used direct and acoustic mics on the bass. Then one for the trumpet and one for the tenor. I have a couple of mics that I own per-

sonally that I usually use: a couple of Neumann 67s and a 251 Telefunken. We also used the EMT 250 reverb."

LiPuma says of his own production style, "I don't want to start jumping in and putting my fingers on the knobs. I have a sense of what things should sound like, and if I'm not hearing it I ask for it. I'm specific about what I feel is lacking. If something doesn't feel balanced to me, I want to get to the bottom of it. The most important thing for me is that my ears are tuned in to what's going on during the session. I want to focus on the music. My style of producing is that I don't stay in the

booth when the recording is going on. I'm in the room because I have a problem communicating through the plate-glass window and being 40 feet away from people. I have a set of earphones on with the music on a chair in front of me. I'm sitting there reacting and being able to respond immediately on a much more personal level."

LiPuma notes that engineer Jim Anderson "specializes in working on jazz products. He has a sense of the importance of getting acoustic sounds. Him being a musician helps; he's right there with you. He knows the element of the parts and the various sections. He



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brings a very relaxed quality to the date, too."

Having worked in countless recording situations through the years, Silver has seen the evolution of recording from mono to multitrack. Still, jazzier that he is, he likes to record live in the studio with a minimum of overdubs. An admitted technophobe, he comments, "They've got a lot more fancy equipment in the control booth these days. There a lot more things to deal with—automatic stuff. It ain't like what it was when I was doing it with Rudy [Van Gelder, the great jazz engineer]. Then, everything was done by hand. It's fascinating to see the guys work the boards now.

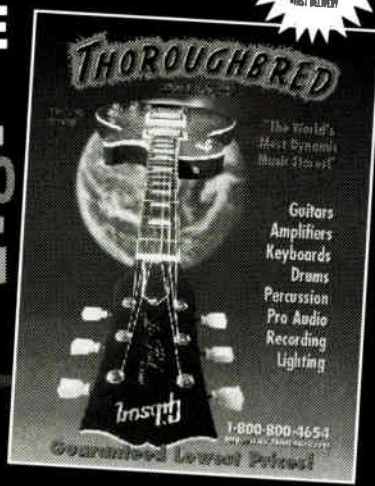
"But it still isn't easy," he continues, "I dread the mixing process. I love it and I hate it at the same time. It drives me nuts, because you work so hard writing the music, arranging it and recording it. It comes out good and you're happy with it. Then you get into mixing. You hear the mix back and sometimes it's 'Oh shit! This doesn't sound right. That doesn't sound good.' The mixing is hard. A lot of times I'm not satisfied and I want to do things over again."

Silver's trepidations notwithstanding, Al Schmitt, who has worked with LiPuma for more than 25 years, found the mixing chores for the Silver project trouble-free. "In general, it was pretty easy, pretty straight-ahead. Horace and Tommy are so cool to work with. They let me do my thing. Horace will let me know about anything that is near and dear to his heart. They let me do what I do, then they critique it. Then we do some fine-tuning. It's pretty acoustic what he does. It was mixed on a Neve 72-input console that was mixed down to an ATR Ampex machine. We used BASF 900 tape with no noise reduction. There were not a lot of gimmick things; very little limiting and very little EQ was used. We used really nice echoes. I used some of the old echo plates and some of the newer things, like the TC Electronic M5000.

"If it's recorded right, that's it," Schmitt concludes. "It's just a matter of where things are placed and getting the right balances. The setup was a little smaller than *Hardbop Grandpop* because of the quintet thing. But it's Horace at his best, playing and writing his great tunes. We work eight to ten hours a day mixing. We take a nice lunch. Usually when we're done we'll go out and have a nice dinner. All and all it's the kind of project you look forward to."

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MEDIA & MASTERING NEWS

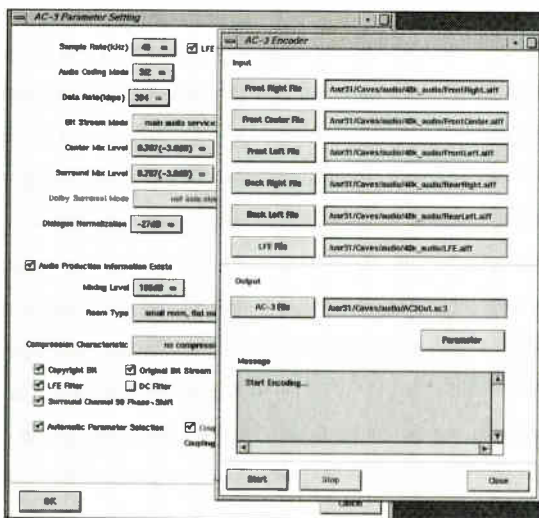
RIAA WAGES WAR ON PIRATES

The ever-increasing dominance of digital media has brought many benefits to both the producers and consumers of entertainment and information. But by minimizing the differences between masters and copies, new technologies have brought with them new threats of piracy—the unauthorized and uncompensated use of copyrighted music, video and software.

According to TTR Technologies, a company that markets equipment designed to make CDs harder to reproduce without authorization, the value of pirated media worldwide is \$11 billion annually. Piracy is often considered mainly as a problem in developing countries, where governments may be less than vigilant in defending intellectual property rights. But according to Steve D'Onofrio, anti-piracy director for the Recording Industry Association of America, "CD piracy in the United States is on the rise." The RIAA attributes the growing problem to increased competition for orders among replication plants.

The problem made the news most recently in relation to Americ Disc, a replication plant in Salida, Calif. The RIAA has filed a \$7 million lawsuit against the replicator and its Canadian parent, Disque Americ, alleging that the plant was involved in the manufacture of 75 unauthorized music titles, and claiming that the company "knew or recklessly disregarded the fact that many orders it accepted for pressing were pirate discs."

The RIAA's allegations have yet to be upheld in court, but the suit underscores the seriousness with which the record company trade group views the piracy threat. The RIAA has in place a CD Awareness program, which it says is based on "two simple rules for plant managers: Know your customers, and demand proof that they have legitimate authority to manufacture and distribute the sound recordings they are asking you to press."



Daikin's AC-3 encoder can create a Dolby Digital audio stream from six discrete audio files imported from Pro Tools.

Given the tremendous volume of CDs manufactured each year, it is unclear how closely the RIAA can monitor plants for compliance with its guidelines, but the group is promising to get tough with those it believes are disregarding the ownership rights of its members. "If pressing plants fail to implement effective safeguards," says RIAA lead attorney Steve Fabrizio, "we are committed to pursuing a campaign of litigation. The cost of accepting illicit business has just gone up."

If, as the RIAA asserts, U.S. copyright law clearly provides for strict liability for anyone pressing an infringing disc, one wonders exactly how far back the production chain that liability might stretch. Are mastering houses (and engineers) open to being sued if they produce masters without verifying the rights of their clients to use the material? What about recording studios where elements of previously recorded material may be thrown into a mix? It may be unlikely that the RIAA will pursue its campaign that far, but the issue raises some interesting questions about the responsibility shared by everyone in the industry to keep pirates from sinking the ship.

Meanwhile, some replicators are

moving to raise the barriers to piracy with modifications in their production process. For instance, according to TTR, the company's DiscGuard technology has been licensed by Nimbus CD International for use in the replication of CD-Audio, CD-ROM and DVD discs. DiscGuard works with the Mastering Interface System from Doug Carson Associates to place an "indelible digital signature" on optical media that can be read by CD players and drives but not duplicated by disc recorders or by remastering.

DAIKIN TO SUPPORT SDII FORMAT FOR DVD

Daikin U.S. Comtec Laboratories announced that its Scenarist II DVD authoring program now directly imports audio in Digidesign's Sound Designer II format. Daikin, which was the first company to offer a commercial DVD authoring tool, had originally teamed up with Sonic Solutions, whose DVD Studio product handled the preparation of audio (and video) for DVD. But last fall Sonic debuted its own authoring software, DVD Producer, and ties between the two companies loosened.

Because SDII files can be output by the Digidesign Pro Tools line, as well as Audiovision products from Digi's parent company, Avid (and

BY PHILIP DE LANCIE

many other Macintosh-based audio editors), the move allows Daikin to tap into a mature audio production platform with a broad user base. Pro Tools already has an established presence in the audio post market and includes the multitrack capabilities needed to create surround sound soundtracks.

Although it will now be easier for Pro Tools users to play a role in audio production for DVD, Pro Tools is not designed to handle the same production tasks as DVD Studio. For starters, Sonic Studio encompasses both audio and video capture and compression. Pro Tools provides an audio-only environment and does not offer DVD-specific audio compression capabilities, which will apparently be handled with in Scenarist or by other third-party products. And though the new Pro Tools/24 supports 24-bit audio, it is not currently capable, as DVD Studio is, of supporting DVD's high sample-rate options (up to 96 kHz).

MASTERING NOTES

Northeastern Digital Recording (Southborough, MA) announced that it has been awarded a contract to master Enhanced CDs of 120 film soundtracks from the archives of MGM. The Enhanced CDs, which combine standard CD-Audio tracks with multimedia material including trailers from the films, will be released by Rykodisc. ...Airshow Mastering announced the opening of a new facility in Boulder, CO. The complex includes two Sonic Solutions-equipped mastering rooms and an editing/production studio. Airshow founder David Glasser will head the new operation, while Charlie Pilzer will take the helm at Airshow's original location in Springfield, VA. ...Bernie Grundman Mastering (Hollywood, CA) reports that Ani DiFranco was in for mastering of her new release *Little Plastic Castle* with engineer Chris Bellman. ...Mediaforce, a



Ani DiFranco during mastering sessions for *Little Plastic Castle*

SADiE-equipped facility in New York City, had engineer Rick Rowe mastering projects for Thomas Moore, Blue Note Records and the Rock and Roll Hall of Fame. ...At Masterfonics in Nashville, Shania Twain's *Come on Over* became the first commercial release mastered with SADiE's Apogee UV22 plug-in, with Glenn Meadows behind the board. ...Music Lane (Markham, Ontario) announced the purchase of the 96kHz/24-bit upgrade to its Daniel Weiss mastering system. ...Joe Yannece of Trutone (Hackensack, NJ) celebrated the tenth birthday of client RMM Records by mastering the label's upcoming release of

an anniversary concert at the Meadowlands. The two-CD set includes performances by Tito Puente and Marc Anthony. ...At CMS Mastering in Pasadena, CA, Robert Vosgien mastered a set of Bush remixes called *Deconstructed*, *The Uninvited*, and the soundtracks for *Gattaca* and *Scream 2*. ...Ken Lee of Rocket Lab in San Francisco mastered albums for Ron E. Beck, Tony Lindsay and the *Fiesta Comes Alive* compilation from Slap A Ham Records. ...Boston's Soundmirror was the site of mastering sessions for Mario Vas, Epic Brass, the Rev. Hersey Lee Mitchell, Poptun, Shoeless Joe, Ron Barron and Revels. ■

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COAST TO

L.A. GRAPEVINE

by Maureen Droney

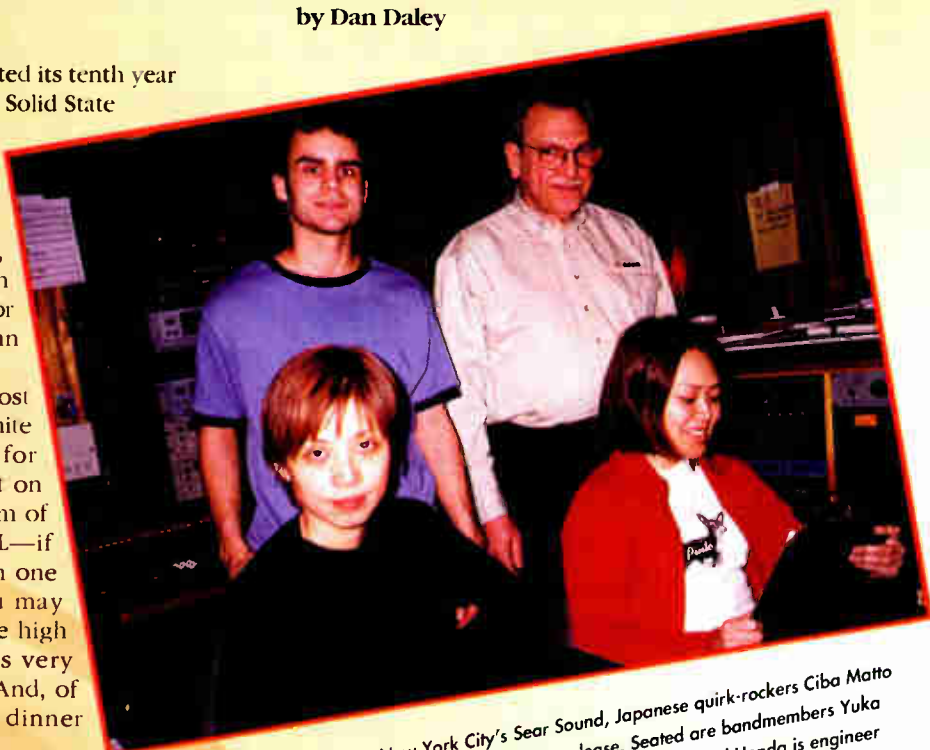
Studio City's Scream Studios celebrated its tenth year in business with the installation of a Solid State Logic SL9072 J Series console. I stopped by in mid-January to visit the inaugural session—regular Scream client and hit producer David Kahne (Sublime, Sugar Ray, Tony Bennett, The Bangles) was in mixing new English artist Lisa Hall for Warner/Reprise with engineer John Travis.

Kahne, who says he works almost exclusively on 9K boards, is a definite fan of the series. "They're great for mixing," he comments, "and I'll cut on them too. The board has the bottom of a Neve and the push of an SSL—if you're into SSL, once you work on one of these, you can't go back. You may have to work a little harder for the high end, but when you get there, it's very packed in and present—I love it. And, of course, you can also keep your dinner warm on the board."

—CONTINUED ON PAGE 184

NY METRO REPORT

by Dan Daley



In Control A at New York City's Sear Sound, Japanese quirk-rockers Ciba Matto tracked for their next Warner Bros. release. Seated are bandmembers Yuka Honda (L, who also produced) and Miho Hatori. Behind Honda is engineer Tom Schick with facility owner Walter Sear.



At the new SSL 9072 J in Scream Studios: producer David Kahne (L) and engineer John Travis, mixing Lisa Hall for Warner/Reprise

Twenty years ago, Lou Gonzales opened Quad Recording in Times Square. The facility's four rooms (the opening of a fifth is imminent) are not its namesake, however. When it opened in May of 1978, Quad was a one-roomer, named for the Quadraphonic multi-channel matrix system whose window opened and closed within a few years. "I named it for multichannel sound, and who would have thought it would have taken this long for that format to start to make it?" muses Gonzales.

Gonzales himself is a living monument to an era of studio ownership when the personality of the facility's founder was part and parcel of the studio itself, when studio owners built not only the studios themselves but much of their own equipment, as Gonzales did for his first studio. He also modified a 16-track Ampex MM1000 for 24 tracks, storing the additional electronics in a rack next to the machine.

—CONTINUED ON PAGE 187

COAST

NASHVILLE SKYLINE

by Dan Daley

Nashville is a recording Mecca, but now a once-dormant club scene is reinvigorating itself, and the two domains—live and Memorex—tend to complement each other. A healthy live music environment has been known to be a good thing for area studios. For those who are contemplating a trip to Nashville for either of the above reasons, this month we'll take a look at some of the more notable venues in town. Make the record and play a gig—why not?

The Exit Inn, which opened in 1971, is Nashville's longest-running rock venue. The room has gone through several ownerships and was recently sold yet again late last year to the Horton Group, which has stated its intentions of returning the place to its glory days. Funkiness, though, is part of the club's charm. The room is known for a tight low end and a remarkable sonic clarity that was present even as scores of rented P.A. systems passed through it before it settled on its own permanent system four years ago (installed, flown and wired by local sound engineer Kevin McGinty, who ran sound at the club several years ago). Four Renkus-Heinz CE3 trapezoidal boxes are

—CONTINUED ON PAGE 190

SESSIONS & STUDIO NEWS



PHOTOS: HAROLD LEAD PHOTOGRAPHY



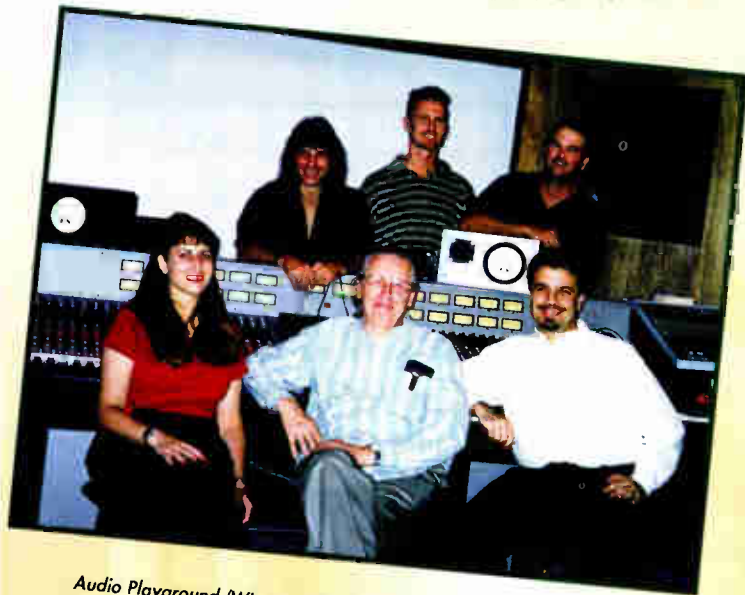
In business since 1969, Huff Recording's (Forest, Miss.) current facility was built from the ground up in 1984, with acoustic design by Steven

Durr. Control A, pictured, features a Neve 8068, an MCI JH-24 recorder, monitors including JBL 4430s and Auratones, and outboard and effects by Lexicon, Eventide, TC Electronic, Manley, Focusrite, API, UREI, Drawmer and others. Recent clients have included Leonard Williams, Philip Bailey and Tommy Simms.

SOUTHEAST

At the Sound Kitchen (Franklin, TN), Buddy Guy worked on a new release for the Jive label with producer/engineer David Z and second Todd Gunnerson. Also in was Gill Grand, mixing for Sony with producer Byron Hill, engineer Greg Droman and assistant Tim Coyle... The Nitty Gritty Dirt Band mixed for Rising Tide at Masterfonics (Nashville) with producers Emory Gordy Jr., Josh Leo and Steve Fishell. Steve Marcantonio engineered, assisted by Chris Davie. Lila McCann was in tracking for Asylum with producer Mark Spiro, engineer Jeff Balding and assistant Mark Hagen... The Thompson Bros. Band mixed for RCA with producer/engineer Rob Feaster and assistant Mike Purcell at Emerald Sound in Nashville...

—CONTINUED ON PAGE 191



Audio Playground (Winter Park, Fla.) recently hosted sessions for the band Cabalt Blue; system designer Bill Honley dropped in to lend a hand. Behind the Malcolm Toft & Associates Series 980 (with Optifile 3D automation) in Studio A were bandmembers Steve Salipante, Steve Bird and Eric Charles. In front are owner/studio manager Michele Rivers, Hanley and owner/chief engineer Joseph Rivers.

—FROM PAGE 182, L.A. GRAPEVINE

Randy Alpert, Scream's owner, acknowledged the need for an upgrade in air conditioning to accommodate the new desk. "It does run about two-and-a-half times warmer than our previous console—we knew our air-conditioning system had to be traded for a new five-ton one. We were concerned, because our clients are very happy with the sound of our room, and we didn't want to alter the acoustics at all. Luckily, we didn't have to take the main room apart; we only had to open up the ceiling, which we then replaced in the same way, with no acoustic changes. Meanwhile, we took the opportunity to re-sand and clean the wood in the control room and also to install new fabric."

Scream, although a bit of a well-kept secret, has always been a lucky studio; when it opened in October of 1988, its first client was Matt Wallace; the project was Faith No More's *The Real Thing*, and it gave both Wallace and the studio their first international hits. Soon after, two landmark albums were mixed at Scream: Nirvana's *Nevermind*, and the Don Gehman-produced and mixed

Cracked Rear View by Hootie and the Blowfish. Gehman, another regular client for more than four years now, also mixed and mostly recorded Tracy Chapman's *New Beginnings* album at Scream. That album included the single "Give Me One Reason," which was nominated for the Record of the Year Grammy in 1996. In '97, Scream also hosted the Top Ten mixes for Jewel's "Foolish Games," Sugar Ray's single "Fly" and album *Floored*, Sublime's *Sublime* and Hanson's "Mmm Bop," also nominated for a Record of the Year award.

Owner Alpert, a producer and songwriter (in 1997 co-writer on Notorious B.I.G.'s Number One song "Hypnotize"), shared some of his thoughts on the process of purchasing a new console: "It generally takes three to five months for the whole process," he says, "but we made the decision November 15 and did it in only eight weeks. It was time; our G Series was ten years old. The biggest decision to make was, 'Do we want an analog board?'—because I think the 9000 will be the last great analog board. The upcoming kids, who will be the hot mixers in five years, are all working in dig-

ital now, and are ready for it, but the producers and mixers of today are still into analog. I'm in business for those clients, and the feedback I got from them was that they love the console. I also listened myself and thought it was great. The center section is amazing—without the capacitors, the signal chain is so clean that even just monitoring a DAT playback you can hear the difference. You can crank the monitors all the way and hear no console noise. Another feature I like is that the small faders are automated, actually giving us 144 inputs.

"The purchase decision really came quite naturally," Alpert continues. "We've always been lucky at Scream to have three or four main clients who like a smaller complex that is state-of-the-art; we stay busy. Last year was one of our best, but I've been seeing the trend; there are a lot of G Series boards in town now, and there's a lot of rate undercutting going on—it became clear to me that I had to make a change or get out of the business. My staff is very important to me—I've only had three assistants in ten years, and Jeanne Moultrie, my studio manager, has been with me for all ten

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years. You can't have a good staff unless you take care of them, and you can't take care of them if your rates are too low.

"I think some of what has happened in studios is the same as what happened with record companies. They used to be run by music people, but now they are run by business people, and, in the case of recording studios, sometimes by not very good business people. They don't understand that if everybody held their rates up there'd be a level playing field—there really is enough business for all of us. But when you go down to \$1,200—well, this is a small business and everybody knows what's going on—it becomes impossible to get those rates back up. So, although our rates are not high, we made the decision to upgrade to keep our studio on a certain level of quality that can command rates high enough to uphold our standards."

In February, Magnitude 8 Post opened a DVD (5.1) and Dolby Pro Logic suite featuring mixing/remixing and audio sweetening for the home theater market. The new suite is centered around a D&R Cinemix surround sound console with dedicated surround panpots, moving faders, automated joysticks and "stems" modules. "The D&R is a Dutch board," says Magnitude 8 owner Les Claypool. "I chose it for the new suite because we've already been using a D&R Vision in one of our other rooms, and we really like it. For its price range, the D&R is a great value—it's an extremely quiet board with great EQ. Several of our clients who have heard a project mixed on the most popular eight-bus console and then on the Vision like the sound of the D&R better."

The new suite also includes a complement of high-end home theater equipment to simulate the end-users' environment accurately, including an M&K "THX" speaker system and ADA THX preamps, decoder and power amps. "For over six years," says Claypool, "we have been posting and mixing shows for laser disc and video release geared toward fans and collectors. These are shows that are purchased and viewed numerous times, and they leave little room for the hurried or sloppy editorial and mixing that can occur on shows where the product is viewed only once or twice by the consumer and then forgotten. The collectible nature of DVD puts it right at home with our perfectionist. Do it until

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it's right' attitude. Also, because our suites are small, they are very accurate for the medium—you aren't going to be misled like you may be in a larger mix room." Recent clients at Magnitude 8 include Sony, Pioneer, Manga Entertainment, Bandai and Jim Henson Productions.

Transplanted New Yorkers may be especially interested to know that Sam Ash Music Corp is going bi-coastal. A store opened in Westminster in December, and three more will open in the spring in Cerritos, Canoga Park and in the Virgin Megastore complex on Sunset Blvd. in West Hollywood.

Sam Ash, of course, is the quintessential one-stop shop, carrying everything from recording equipment, computers and music software, sound systems and disc jockey setups, to brass and woodwinds, digital electronic pianos, synthesizers, sheet music, instructional videos and even theatrical lighting. Sam Ash also offers mail order, repair shops and an educational services department that sells and rents product to schools, institutions and the military.

"We've always believed in investing in the customer, just as they are investing in the equipment that we are purchasing," says senior VP Sammy Ash. Customers are encouraged to play with displayed equipment and to bring in their own instruments and components to demo with new merchandise. Sam Ash also offers clinics featuring well-known artists and major manufacturers, and musical instrument purchasers have the option to sign up for four free lessons with their instrument.

"This is an exciting time for us," says Ash. "We've already expanded into Ohio, Pennsylvania and Florida, but this is a very big step. Some people don't realize that the L.A. basin is the largest market in the nation. We intend for our presence there to offer an alternative. We will be very in-depth with high-tech and hard disk, computer-based products, and with pro audio lines like Tube-Tech, Zoom and Lexicon, to name a few. Our Sam Ash Professional department, which serves clients like ABC, NBC, CBS and the film houses, has taught us how to bring pro audio into the stores, and we intend to be able to put together anything that our clients need." ■

Fax L.A. news to Maureen Dronney at 818/346-3062 or e-mail msmlk@aol.com.

—FROM PAGE 182, NY METRO REPORT

He had prepped himself for studio ownership with a combination of working at other start-up and well-established facilities, and typical New York chutzpah, as illustrated by how he got into the studio business in the first place.

"I was working as a broadcast engineer at WADO, and I wasn't all that crazy about that job," he recalls. "I was in the boss' office when he went to the bathroom. The phone rang and I picked it up and the guy on the other end said, 'This is Bob Goldman and I'm way behind on getting my

studio built. Can you help me out?' I said, 'I'll send over my best man.' I went over there and said, 'They told me to come over here and help you out.' That's how I got into the studio business."

Gonzales helped build Goldman's Mira Sound in the old Henry Hudson Hotel on West 57th Street. Several years later, Jerry Ragavoy hired him as chief engineer at The Hit Factory. Along the way, Gonzales worked on several other start-up facilities in the 1970s, experiences that lead up to his decision to open his own room in 1978. "At that time, there were a num-

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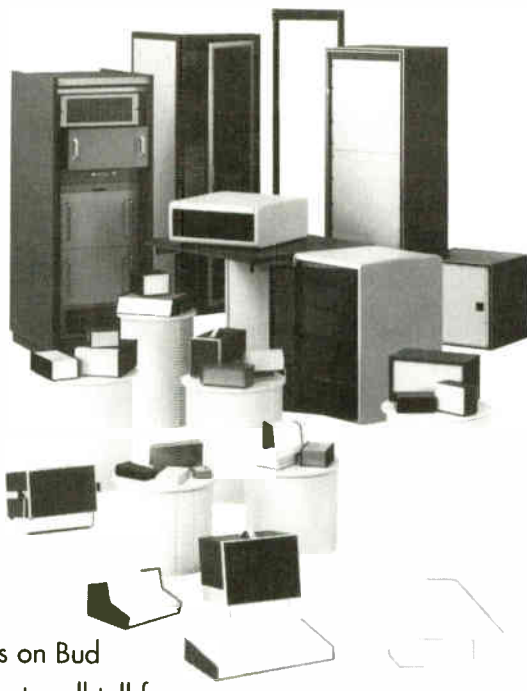
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ber of great studios in Manhattan," he says. "Regency, Media, A&R. They're all gone now. The only ones left from that era are Hit Factory, Electric Lady and me."

The defining moment when Quad entered the pantheon of New York's great studios was when it received its first Gold record, for Cameo's "Word Up." "That's what put us into a different league," says Gonzales. "It's like an actor in Hollywood getting his first big role—that's when everyone starts to want you. It's the same thing in the studio business. Once you get the first Gold record, then everyone wants to work where that record was made." Since then, it seems like everyone *has* worked there: artists including Mariah Carey, Michael Bolton, Billy Joel and Boyz II Men; producers such as Michael Brauer, David Kahne and Deric Angeletti. Quad also carved out a niche for itself by pioneering the restoration of deteriorating analog masters, restoring and transferring projects for John Lennon and Journey, among others. That experience, says studio manager Mark Springer, is going to be combined in the future with transfer and remixing of archived masters for surround mixes and DVD.

Quad continues to expand: A pair of SSL 4000s are complemented by two 9000J consoles, and the fifth room will likely be an all-digital one, and Gonzales isn't looking back. "You can't," he observes tersely. "The way the business is these days in New York, if you're not growing, you're losing. You cannot coast in this business anymore." In the 20 years since Quad opened, Gonzales has seen various trends manifest themselves in New York, from the transition from staff engineers to the almost completely freelance base of today—which Gonzales says has had a major effect on rate structures—to the trend of piecemeal recording rather than full projects. He remembers a time when there were no home studios. "Thank God I grew up before all that started," he says. "These days, anything smaller than a place like this is competing with people's home studios."

Notable beyond Manhattan: I've been writing about the proliferation of mastering facilities around the country in the wake of the indie record revolution. Though a few that have opened in town have been noted in this space, the trend is also burgeoning regionally. Silvertone Mastering in Albany is the Capitol district's first dedicated master-

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ing facility; it's a mid-level facility that also specializes in audio forensics and CD-ROM production. Owner/founder Larry DeVivo moved back to his roots near Saratoga Springs, about 30 minutes north of Albany, from the San Francisco Bay Area, bringing back with him an entire recording facility, including a Trident 24 console and Westlake monitors. DeVivo says he was tiring of beating against the home recording trend, which he says had dropped rates to \$20 per hour in the area. Instead, he found that a mastering niche was developing around the still-vital independent record trend there.

"The closest mastering to here is in Boston or New York City," he explains. "A lot of the local bands were skipping the mastering process altogether, or else sending tapes out of the area. I found I could compete nicely in mastering, where I would never have been able to do that in recording."

DeVivo charges \$65 per hour for mastering—about what the new generation of mid-level mastering facilities in Manhattan are charging—but he caps projects at \$650. As a result, he says, volume has increased; Silvertone did 50 CDs in its first year of operation last year, and DeVivo intends to expand from the 1,500 square feet of space he built into his home into a new ground-up facility sometime later this year. Like most studios, though, he is seeking additional markets: DeVivo has started Odditure Audio Rentals, and is pursuing audio archiving and forensics for the Albany's courts and private investigator businesses.

Silvertone's approach is to route a signal through a minimal but high-end series of analog devices, including a pair of Summit Audio EQF100s, a Dominator II and a TC Finalizer, and then into Pro Tools, monitoring through Hafler 9505 amps and Westlake BB5M 10 and Paradigm speakers. "That's pretty much the way I had learned mastering, from talking to people like Bob Katz and Glenn Meadows," he says. DeVivo intends to move to a Sonic Solutions system later this year, and he is awaiting the return of an old Class A discrete mixing console built in the '60s by Daniel Flickinger, which is being modified by Ken McKim of Retrospec. "I can't wait to get that back after the mods are done—it's a work of art," he says. ■

New York items? Fax to East Coast editor Dan Daley at 615/646-0102 or e-mail danuriter@aol.com.



David Byrne remixed live concert tracks at Kampo Audio/Video in New York City with Dave Robbins. Byrne (l) is pictured taking a break with studio marketing manager Arthur Steuer.

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Olivia Newton John began work on her forthcoming MCA Nashville release in Studio A at Emerald Sound (Nashville) with (from left) assistant engineer Chris Davie, producer Chris Farren and engineer Steve Marcantonio.

—FROM PAGE 183, NASHVILLE SKYLINE

arrayed above the center of the stage, with four R/H C2 subs on the stage itself. The system is wired for dual stereo, with a L/R mix aimed at about 45 out to either side from the center of the stage.

"With that setup, you don't lose the image when you pan hard left and right," explains Frank Sass, the Exit Inn's chief mixer for the past four years, who maintains a vantage point at the far left of mid-room behind the 32x4x2 Soundtracs Solo FOH console. He also runs the Peavey 24x8 Mark IV monitor mixer from the stage, which feeds five subgroup mixes through a Rane ME 60 EQ to the monitors, a combination of 15-inch EV-loaded Horizons and JBL Cabaret cabinets loaded with JBL 2226 speakers and a Renkus-Heinz horn. These are bi-amped using BGW 750A, 750B, 750C and 250D amps for lows and mids and a Rane MA-6S for the highs, which were scheduled to be switched over to Crown 2400 and 2600 amps. Adjacent to the FOH console is an Alesis ADAT XT, which is occasionally joined by a second one for live recordings via direct post-fader outputs on the console. A Jason & The Scorchers album was recorded live at the club in 1997—maybe the best club performance in Nashville for that year (in my opinion, anyway).

Caffe Milano on Fourth Avenue lured the legendary Chet Atkins out of semi-retirement and established itself as a force in a revitalized live music scene here. The 6,000-square-foot room has a small (15x20) stage at one end of an almost all-brick rectangle. The club

sound system consists of four Adamson MH121.5 (12-inch horn, 2-inch tweeter) speakers flown in double-bin clusters on either side of the stage, and a pair of Adamson B-318 subs on the stage edge. Crossover processing is via an Adamson DX4000. The main system is powered by a Crown M5000 for the MH121s and a Crown MA2400 on the subs. A JBL rear speaker in the restaurant is run off a delay line. The monitor system is four Adamson FM121.5 speakers (12-inch speaker, 2-inch horn) and a custom-made drum monitor powered with a pair of Crown MA2400 amps and EQ'd with a White 4001 1/2-octave graphic. House mics are garden-variety, including Shure SM57s, Audix OM-5s, an AKG D112 and an Audio-Technica 4031. Caffe Milano has one of the first production versions of the Mackie 40x8 live sound consoles, replacing a rented Crest Century console and installed last April.

House sound engineer Marcus de Paula noted the room's proclivity to get brighter as it gets louder, thanks to the brick walls. He says that one advantage the Mackie console offers is its four matrixed outputs, which interface with the four monitor feeds originally designed in by Russ Long and two of which are used as a stereo feed for regular live broadcasts on local Lightning 100 radio. The venue also offers three Betacam video cameras (at additional charge; acts are also charged for the use of sound equipment and personnel), whose video is also run from the Mackie matrixes. "It's a great room for music because of the combination of the

sound system and the vibe," says de Paula. "It can handle the volume, and that's something else Nashville's getting used to."

Sound for both Ace of Clubs and 328 Performance Hall is handled by Production Services Inc. Jim Wakefield, production manager for the cavernous, low-ceilinged 328 and system owner for the Ace's sound, says both clubs use similar systems—RCF-loaded proprietary bins, two flown 2x15/2x12/1x2 with 4x15 subs at Ace, and eight 2x15/1x10/1x2 with eight 2x18 subs at 328. Ace's FOH is a 32-input Soundcraft Spirit; at 328, FOH is a Crest GT with a Crest LM for monitors. All power is Crest. "Ace is a very tight-sounding room," explains Wakefield, "but because it's smaller, the stage volume has a tendency to compete with the P.A. At 328, it's a potentially great-sounding room, as long as you keep the volume under control." ■

Send Nashville news to Dan Daley at danwriter@aol.com or fax 615/646-0102.

—FROM PAGE 183, SESSIONS & STUDIO NEWS

SOUTHERN CALIFORNIA

Crunchmeister Terry Date mixed the A&M/Flip Records debut for Cold at Skip Saylor Recording (L.A.). Ross Robinson produced, and Ian Blanch assisted...At Larrabee North (Universal City), Bobby C. mixed the self-produced song "The One," the first single from his new Red Ant release, with engineer Rob Chiarelli and assistant Steve Durkee... Warner Brothers artists Nada Nuf remixed a single in Studio A at Ameraycan (L.A.) with producers Livio Harris and Doc Little and engineer Michael Nally...Canyon Studios in Laguna Beach had sax player Eric Marienthal in overdubbing on a release for Award Records artist Ola, with producer/engineer Mark DiLorenzo...

NORTHEAST

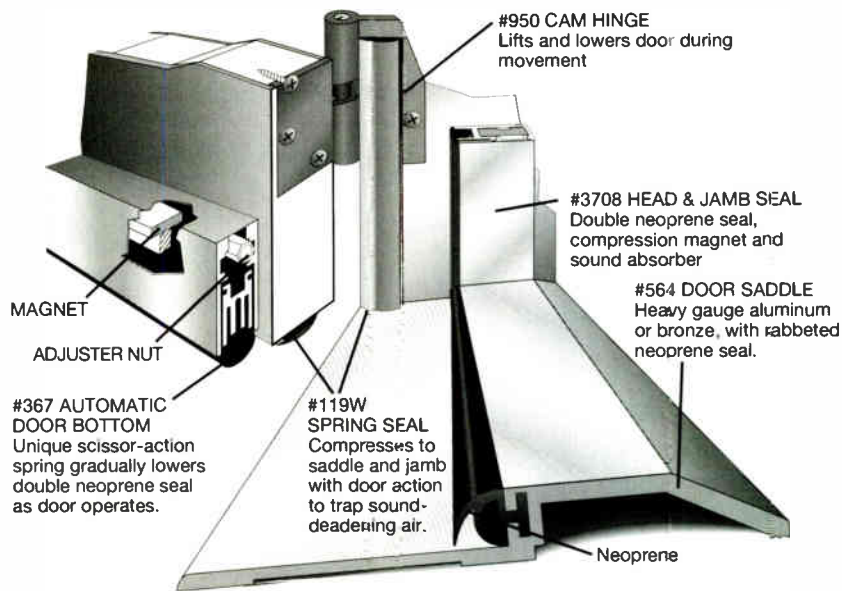
At Bopnique Musique (North Chelmsford, MA), Annette Kramer (formerly of Opium Den) overdubbed with Anthony J. Resta. Resta also worked on the next Mudhens CD...Universal artist Shadow mixed at Bear Tracks Recording in Suffern, NY, with producer Josh Thompson, engineer Earl Cohen and assistant Iain Fraser...Guster were in the SSL room at Sound Techniques in

—CONTINUED ON PAGE 201



Jim Belushi was in at Laughing Tiger Studios (San Rafael, Calif.) recently, adding Charlie Musselwhite and Huey Lewis to some tracks for his upcoming album on House of Blues Records. Pictured (L to R) are Belushi, Musselwhite, Lewis and producer Glenn Clark. Ari Rios engineered.

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THE FAST LANE

—FROM PAGE 20, MORE FOR LESS

Manufacturers have clearly learned that these maniacs want the most features and highest flash and confusion factors possible. Simply put, with all else equal, the boom box with the highest Videogame Factor will fly out the front door, while the ones with a few less spinning plasma CD animations or a slightly less intimidating color reverberant field display will end up being thrown out the back door. That seems basically acceptable to me in a sort of twisted, borderline way, but there is a second reality that just puts it over the top. The same holds when *all else is NOT equal*. Customers will pick the one with the highest flash factor over another that sounds much better...and they will pick the one with the highest flash factor over one that sounds better *and* costs less to boot. Weird but true.

So the More for Less path is as alive and well as ever. Moreso, in fact.

LESS FOR MORE

High end. Only 234 people buy it, but what a terrible world it would be without elitist, high-end tweaky audio gear. Less features—in fact, as few as possible. Less display—the absolute coolest gear has no displays at all. Less watts—but the ones that are there can butt-weld 1-inch steel plate with less than 0.1% total distortion. More money. *Lots* more.

The opposing path through the universe. Usually (but not always) my path of choice.

THE BALANCE OF POWER

Yin and Yang. A crucial balance of power. Without these two paths, the world would become unbalanced (kind of like New York, only bigger), flip on its axis and fly right out of orbit, eventually freezing or vaporizing whatever the dominant audio gear was that caused it all in the first place.

The advent of digital hardware, with its potential for both the elegant minimalism of a \$7,000 black block of aluminum and the blinding audio-visual assault of a \$345 component mini-system, has allowed these paths to distill and purify their respective directions to a level undreamed of mere years ago. But the advent of this hardware has also made it inevitable that this digital fork in the road also splits the audio itself.

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economics. Even as the world moves into 20-bit converters, HDCD, super-low jitter clocks, and dreams of 2-gigahertz sample rates, it offers Dolby Digital and other violently compressed audio data formats. The ol' Yin and Yang again.

And what are we to do? I gave up and got a DVD player at Christmas, at my friends' insistence, so that they could buy me inexpensive but impressive presents: media for \$19 a pop. Then two more HDCD press demos showed up. Then I took another serious listen to DTS. Boy, what a situation we have now.

When I first hooked up my new DVD player to the old Monster Home Theater system and put in my first movie, I was stunned by the 20 to 20k frequency response, the Earth-shaking sub, the amazing 360-degree imaging, the clarity, crispness and the smooth, seamless transition of sound from speaker to speaker. I was also immediately caught by the thin, lifeless, sterile nature of the whole thing. It was like a hologram—impressive as all hell, but weak and ghostly thin. It was all there, but not there. Certainly it blew the doors off of Pro Logic with its embarrassing mono rears, slurred image and psychotic steering. And Dolby Digital is serious fun. But it lacks body and soul.

And at the same time you can get HDCD and DTS—one an absurd and impressive over-the-top CD format that some can hear and some cannot, and the other a much more rational approach to the reality of (the Yin and Yang of) the commercial desire to achieve Mo' Betta Audio.

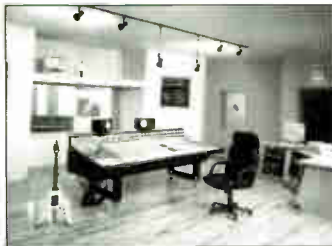
AND TOGETHER...

The interesting twist is that in the pursuit of this goal, the two ever-divergent paths have bent back upon themselves and are now intersecting. And this is producing the very conflicts and confusion that one would expect.

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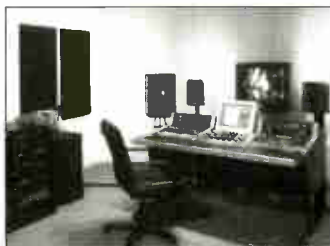
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- Choice of audio interface options



Audiomedia III™ Digital Audio Card

Available for both Macintosh and Windows OS systems, Audiomedia III will transform your computer into a powerful multitrack workstation. Compatible with a wide variety of software options from Digidesign and Digidesign development partners, Audiomedia III features 8 tracks of playback, up to 4 tracks of recording, 24-bit DSP processing, multiple sample rate support and easy integration with leading MIDI sequencer and other software programs.



PORTABLE HARD DISK RECORDING

Roland VS-880 V2

This new version of the popular VS880 incorporates powerful additional software functions that allow you to get the most out of this baby's incredible creative potential.

FEATURES-

- Auto Mixing Function records and plays back your mix in realtime
- Process the master output with a specific inserted effect such as total compression.
- Simultaneous playback of 6 tracks in MASTER MODE.
- 10 additional effect algorithms (30 total) including Voice Transformer, Mic Simulator, 19-band Vocoder, Hum Canceller, Lo-Fi Sound Processor, Space Chorus, Reverb 2, 4-band Parametric EQ, 10-band Graphic EQ, and Vocal Canceller.
- 100 additional preset effects patches
- In total, over 20 powerful and convenient features in editing/sync sections have been added. Some require the optional effects expansion board



Fostex DMT-8 VL

The latest in the Fostex HD recording family, the DMT-8 VL truly brings the familiarity of the personal multi-track to the digital domain.

FEATURES-

- 18 bit A/D, 20 bit D/A
- Built in 8 channel mixer, Ch 1 & 2 feature mic/line level.
- 2 band EQ and 2 AUX sends per channel
- Cut/Copy/Move/Paste within single or multiple tracks
- Built-in MIDI Sync, 6 mem locations.
- Dual function Jog/Shuttle wheel provides digital "scrub" from tape or buffer without pitch change. 1/2X to 16X.
- Divide the drive into 5 separate "virtual reels", each with its own timing information.
- NO COMPRESSION!



CD & CASSETTE DUPLICATION

marantz CDR615 / CDR620 Compact Disc Recorder

Both next-generation stand-alone write-once CD recorders, the CDR615 & 620 offer built-in sample rate conversion, CD/DAT/MD/DCC subcode conversion, and adjustable dB level sensing. They also feature adjustable fade in/out, record mute time & analog level automatic track incrementing. A 9-pin parallel (GPI) port, headphone output with level control and RG620 remote are also included. The CDR620 adds a SCSI-II Port, XLR (AES/EBU) Digital In/Out and Digital cascading, 2x speed record, Index Recording and playing and deletable copy prohibit and emphasis.



Telex ACC2000/ACC4000 Cassette Duplicators

Designed for high performance & high production, Telex duplicators offer easy maintenance and operation. The ACC2000 is a 2-channel mono duplicator while the ACC4000 is stereo. Each produces 3 copies from a cassette master at 16x normal speed & by linking additional copy modules, you can duplicate up to 27 copies of a 50 minute original in under 2min!

ACC2000XL / ACC4000XL

The XL Series feature "Extended Life" cassette heads for increased performance and wear characteristics. They also offer improvements in wow and flutter, freq. response, S/N ratio & bias.



STUDIO DAT RECORDERS

SONY PCM-R500



Incorporating Sony's legendary high-reliability 4C-D Mechanism, the PCM-R500 sets a new standard for professional DAT recorders. The Jog/Shuttle wheel offers outstanding operational ease while extensive interface options and multiple menu modes meet a wide range of application needs.

FEATURES-

- Set-up menu for preference selection. Use this menu for setting ID6, level sync threshold, date & more. Also selects error indicator.
- Includes 8-pin parallel & wireless remote controls
- SBM recording for improved S/N (Sounds like 20bit)
- Independent L/R recording levels
- Equipped with auto-head cleaning for improved sound quality.

TASCAM DA-20/DA-30mkII



- Multiple sampling rates (48, 44.1, and 32kHz).
- Extended (4-hour) play at 32kHz
- S/PDIF Digital I/O, RCA Unbalanced In/Out
- SCMS-free recording. Full function wireless remote
- DA-30mkII Additional Features-
- Variable speed shuttle wheel.
- Digital I/O featuring both AES/EBU and S/PDIF.
- XLR balanced and RCA unbalanced connectors.
- SCMS-free recording with selectable ID.
- Parallel port for control I/O from external equipment.

Panasonic SV-3800/SV-4100



The SV-3800 & SV-4100 feature highly accurate and reliable transport mechanisms with search speeds of up to 400x normal. Both use 20-bit D/A converters to satisfy even the highest professional expectations. The SV-4100 adds features such as instant start, program & cue assignment, enhanced system diagnostics, multiple digital interfaces and more.

Fostex

D-15TC/D-15TCR



The new Fostex D-15 is the least expensive timecode DAT on the market. It has a host of new features aimed at audio post production and recording studio environments. The D-15TC comes with the addition of optional chase and sync capability installed. It also includes timecode reading and output. The D-15TCR comes with the further addition of an optional RS-422 port installed, adding timecode and serial control (Sony protocol except vari-speed)

FEATURES-

- Hold the peak reading on the digital bargraphs with a choice of 5 different settings
- Set cue levels and cue times
- Supports all frame rates including 30df
- Parallel interface

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MICROPHONES



C414B/ULS

reputation for flawless performance & uncommon flexibility in the most demanding studio & concert sound applications.

Dual 1" Gold-spluttered diaphragms
 Flat on-axis response
 126dB dynamic range
 Switchable 10dB and 20dB pad
 20Hz-20kHz



E-300

Studio Condenser Microphone

multi-patterned side address mic that combines vintage capsule design with advanced head-amp electronics, the E-300 has an unusually wide frequency response (10Hz to 20kHz & an exceptional dynamic range of 137 dB. It also features extremely low self noise of 5B. Ideal for even the most critical studio applications.



own with optional ZM-1 lockmount

Unique powering of all Equisite Series microphones is accomplished with a pair of rechargeable call 9-volt batteries in combination with 48V phantom power. This eliminates inherent current limiting associated with most phantom power supplies & can supply 10x the current.



AT4050/CM5

Cardioid Capacitor Microphone

The AT4050 multi-pattern condenser expands upon the AT4033 in-set standard for studio performance.

FEATURES-
 capacitor elements
 cardioid, Omnidirectional, & Figure 8 polar pattern settings
 vapor-deposits of pure gold on specially-curved large diaphragms are aged through 5 steps to ensure optimum characteristics over years of use
 transformerless circuitry results in exceptional transient response and clear output at even near extremely high SPL conditions.



MD 421

For over 20 years, the MD 421 has been one of Sennheiser's most popular dynamic mics. Its large diaphragm, magnetic element handles high sound pressure levels, making it ideal for recording guitars and drums. The MD 421's full-bodied cardioid pattern, and 5-position bass control make it an excellent choice for most instruments, as well as group vocals, live broadcast announcers. One listener told you'll know why it's a classic.



MIXING BOARDS

MACKIE

Get on the 8-Bus!

Since its introduction, Mackie Designs' 8-Bus Series consoles have proven that excellent sonic quality, practical features and extreme durability can be affordable. All 3 versions offer extensive monitoring, 4-band I/O, accurate, logarithmic taper faders, and expansive headroom. The 24x8 and 32x8 can be expanded using Mackie's 24-E Expander console which consists of 24 input channels, and tape returns and may be daisy-chained to provide 128 or more total input channels.



Available in
16x8, 24x8, & 32x8 versions.

FEATURES-

- Each channel includes Mackie's well-known Mic pre-amp and a -10/-4 switchable tape return
- 8-assignable submasters and a L/R mix master
- 4-band, true parametric EQ

- Extensive routing capabilities
- Optional Meter Bridges available
- Optional 24-E Expander console available
- Rugged all-metal chassis
- In-line monitoring effectively doubles input channels

TASCAM M-1600

16 & 24 Channel 8-bus Consoles

Great for modular digital multitrack setups and hard disk recording, the M-1600 is part of Tascam's next generation series of recording consoles. It features multiple options for inputs and outputs and uses the same easy-to-install D-sub connector as Tascam's more expensive consoles, all in a compact design.



FEATURES-

- XLR Mic inputs w/phantom power on 8 channels
- Signal present/overload indicators on each channel
- Balanced & Unbalanced tape returns & Balanced Group/Direct outputs using D-sub connectors
- TRS Balanced Line Inputs on all channels
- 3-band EQ with sweepable mids
- 5 Aux sends (1 stereo)

- 4 assignable aux returns
- Perfect for use with DA-88 and ADAT setups

MINIDISC MULTITRACKS

TASCAM 564

Digital Portastudio

The Tascam 564 Digital Portastudio combines the flexibility and superior sound quality of digital recording with the simplicity and versatility of a portable multitrack. Using MiniDisc technology, the 564 has many powerful recording and editing features never before found in a portable 4-track machine.



FEATURES-

- Self-contained digital recorder/mixer
- Uses low-cost, removable MiniDiscs
- 2 AUX sends / 2 Stereo outputs
- 4 XLR mic inputs
- Channel inserts on inputs 1 & 2
- 5 takes per track, 20 matrices, 20 indexes per song
- Random access and instant locate

- Non-destructive editing features with undo capabilities include: bounce forward, cut, copy, move
- Full-range EQ with mid-range sweep
- S/PDIF digital output for archiving
- MIDI clock and MTC



SONY

MDM-X4 MD Multi-Track Recorder

MD recorders are here! Offering up to 37 minutes of high-quality 4-track digital recording, the MDM-X4 is truly the next generation of personal multi-tracks. With a built-in mixer, exclusive Track Edit system, and a Jog/Shuttle wheel for sophisticated editing with ease, the MDM-X4 will encourage you to flex your creativity.



FEATURES-

- Records on high quality, removable MD data discs
- 3.5-gen. ATRAC LSI for wide dynamic range
- 10 Input / 4Bus mixer
- 2 AUX sends, 3-band EQ • 11-point locator
- Random access memory for quick playback and record from anywhere on the disk
- Editing features include Undo, Redo, & Section Song editing for flying material between different tracks

STUDIO MONITORS

ALESIS

Monitor One

The Award-winning Monitor One provides the last critical link in the recording studio's signal chain, giving you an accurate reproduction of what is being recorded.



FEATURES-

- Excellent image and transient reproduction, powerful bass, and smooth, extended high frequency detail
- Exclusive SuperPort speaker venting technology
- Ferrofluid cooled 1" silk-dome driver

TANNOY

PBM 6.5II

The PBM 6.5 II is the industry standard for studio reference monitors. They provide true dynamic capability and real world accuracy.

FEATURES-

- 6.5" low frequency driver and 3/4" tweeter
- Fully radiused and ported cabinet design reduces resonance and diffraction while providing deep linear extended bass



JBL

4206 & 4208

The 4206 & 4208 studio reference monitors are 6" and 8" respectively. Both offer exceptional sonic performance, setting the standard for today's multi-purpose studio environments.

- Multi-Radial baffle ABS baffle virtually eliminates baffle distortion
- Superior imaging & reduced phase distortion
- Pure titanium diaphragm high frequency transducer provides smooth, extended response
- Magnetically shielded for use near video monitors



SPIRIT

Absolute Zero

Absolute Zero monitors maintain a wide frequency response at high and low listening levels, both on and off-axis for consistent results everytime.

FEATURES-

- High definition linear phase design
- Wide, controlled dispersion
- CAD optimized, low loss crossover
- Custom designed drivers
- Long throw 170mm LF driver
- 25mm soft dome HF unit on proprietary waveguide



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PORTABLE DAT RECORDERS

TASCAM DA-P1

- Rotary 2 head design, 2 direct drive motors.
- XLR mic/line inputs (w/phantom power)
- Analog and S/PDIF (RCA) digital I/O.
- 32/44.1/48kHz sample rates & SCMS-free recording.
- Built-in MIC limiter and 20dB pad.
- TRS jack w/ level control for monitoring.
- Includes shoulder belt, AC adapter, & battery.



PDR1000/PDR1000TC



The PORTADAT has fast become an industry standard location DAT machine. Popular for film and video production use, as well as ENG/EFP, the PDR1000 features a large backlit display, 4 motor transport and AES/EBU and SPDIF digital ins and outs. The PDR1000TC adds the ability to record, generate and reference to timecode as well as jam sync to convert absolute time to timecode.

FEATURES-

- 4 head Direct Drive transport
- XLR mic & line analog ins., 2 RCA line outs. Digital I/O includes S/PDIF (RCA) and AES/EBU (XLR).
- L/R channel mic input attenuation selector (0dB-30dB)
- 48V phantom power, limiter & internal speaker.
- Illuminated LCD display shows clock and counter, peak level metering, margin display, battery status, ID number, tape source status and machine status.
- Nickel Metal Hydride battery powers the PDR1000 for 2 hours. AC Adapter/charger included.

PDR1000TC Additional Features-

- All standard SMPTE/EBU time codes are supported, including 24, 25, 29.97, 29.97DF & 30 fps.
- External sync to video, field sync and word sync.

NEW Options-

- **MS1000 Master Sync module** ensures drift will be no more than 1 frame every 10 hours.
- **HM1000 Headphone Matrix** provides a rotary switch for selection of Stereo, Mono Left, Mono Sum, & M/S (mid-side) Stereo modes.

SONY TCD-D10 PROII

A reliable, high-performance DAT recorder, the portable TCD-D10 PROII is designed with rugged professional use in mind. It has many enhanced features including absolute time recording, allowing immediate use of the tapes as source material for Sony's PCM-7000 series DAT editing system.



Fostex PD-4 V.2

The second-generation portable, professional TC DAT recorder from Fostex. Version 2 software includes many features and functions for improved performance in the field.



FEATURES-

- 4-head design • Punch-in/out
- Pre or post stripping of SMPTE/EBU timecode
- 3 in X 2 output mixer with 3-position pan functions
- Selectable 48V phantom powering and variable low-cut filters

EFFECTS PROCESSING

Lexicon PCM-80 & PCM-90 Digital Signal Processors



A great combination for any studio owner with an ear for the best. The **PCM-80** delivers high quality multi-effects based on the legendary PCM 70, maintaining Lexicon's high standards for sonic clarity and extraordinary processing power. The **PCM 90** is a digital reverb with its roots stemming from the studio standard 480L and 300L effects systems. Reverbs from telephone booths to the Grand Canyon, the PCM 90 is incredibly realistic, an excellent addition to any rack mount arsenal.

**Buy a PCM-80 from B&H before
December 25th, 1997 and receive a
FREE Pitch FX Card & \$100 -
a \$350 Value!**

**Buy a PCM-90 from B&H before
December 25th, 1997 and receive a
FREE Dual Reverb Card & \$250 -
a \$500 Value!**

Lexicon MPX-1 Multi-Effects Processor



Lexicon's latest addition to their Digital effects family, the MPX-1 features top-quality effects in an easy to use, 1 rack space unit. With 56 Pitch, Chorus, EQ, Modulation, Delay, and world-class reverb effects accessible from the front panel, as well as TRS and XLR balanced I/O and complete MIDI implementation, the MPX-1 creates a new standard for cost and quality in a multi-effects device.

t.c.electronic

Wizard M2000 Studio Effects Processor



The M2000 features a "Dual Engine" architecture that permits multiple effects and 6 different routing modes making it a great choice for high-end studio effects processing.

FEATURES-

- 250 factory programs including reverb, pitch delay, chorus, flange, phase, EQ, de-essing, compression, limiting, expansion, gating and stereo enhancement
- 20-bit A/D conversion, AES/EBU and S/PDIF digital I/O
- "Wizard" help menus, 16-bit dithering tools, Tap and MIDI tempo modes.
- Single page parameter editing, 1 rack space.

SONY

DPS-V77 2 Ch. Master Effects Processor



Sony's latest effects processor, the DPS-V77 yields excellent sonic quality combined with realtime control, a digital I/O and many more features that will put a smile on the face of any discerning studio engineer.

FEATURES-

- 198 preset & 198 user-definable programs.
- Control up to 6 parameters in realtime via MIDI information and an optional foot pedal
- Use the AES/EBU & SPDIF digital I/O to link multiple V-77's together & when working with digital mixers
- 20-key pad input
- Shuttle-ring equipped rotary encoder allows for quick patch changing.
- A noise gate circuit is provided ahead of the input for guitar players and other instrumentalists who want top quality effects without sacrificing tone.

Roland

SRV-330 Dimensional Space Reverb



The SRV-330 provides exceptional sound quality, using proprietary Roland Sound Space technology to achieve three-dimensional spatial effects with conventional two-channel playback

FEATURES-

- Discrete stereo reverb algorithms for independent processing per channel
- 30-bit internal signal processing for a clear and accurate sound
- 300 preset and 100 user patches
- MIDI and realtime control via remote, control and expression jacks

PRO HEADPHONES



K240M

The first headphone

in choice in the

recording industry.

A highly accurate

dynamic

transducer and an

acoustically tuned

venting structure

produce a naturally

open sound.

• Integrated semi-

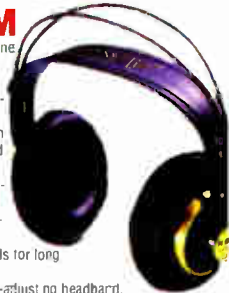
open air design.

• Circumaural pads for long

sessions.

• Steel cable, self-adjusting headband.

• 15Hz-20kHz, 60Ω



SONY MDR 7506

The Sony

7506's have

been proven in

the most trying

studio situations.

Their rugged,

closed-ear

design makes

them great for

keyboard players

and home studio

owners.

• Folding construction

• Frequency Response 10Hz

to 20K Hz

• 1/4" & 1/8" Gold connectors

• Soft carrying case

• Plug directly into keyboards



beyerdynamic

DT 770 Pro

These comfortable closed headphones are designed for professionals who require full bass response to compliment accurate high and mid-range reproduction.

• Wide frequency response

• Durable lightweight construction

• Equalized to meet diffused field requirements

• Padded headband ensures long term comfort



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 frequencies making it an ideal choice for the professional recording engineer.



CORPORATE ACCOUNTS WELCOME

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—FROM PAGE 191, SESSIONS & STUDIO NEWS

Boston mixing for Hybrid Recordings with producer/engineer Mike Shipley. Tina Morris assisted...Arabesque recording artist Paula Robison tracked her latest at EastSide Sound in December with producer Danny Criss, engineer Lou Holtzman and assistant Gary Townsley...Pianist Silvard Kool recorded for the Musical Mollusk label at Soundworks Studios in Watertown, MA. Monster Mike Welch was also in, tracking for his upcoming release on Tone Cool Records...At New York City's M.A.W. Studios, Luther Vandross tracked demos with the Masters at Work production team, engineer Dave Darlington and assistant Oscar Monsalve...Dean Batstone tracked for an upcoming Canadian release on 280 Records with engineer Doug Ford at Sweetfish Recording (Argyle, NY). In Studio B, Marc Fuller engineered a session with guitar phenom Larry Coryell...At Red Rock Recording (Saylorsburg, PA) alto sax giant Phil Woods cut tracks for the first in Blue Note's upcoming *Jazz Masters* series. On the session with Woods were Johnny Griddin on tenor, Cedar Walton on piano, Peter Washington on bass and Ben Riley on drums. Bill Goodwin produced, and Kent Heckman engineered...Marc Ribot and Los Cubanitos recorded for Atlantic with producer JD Foster, engineer

Andy Taub and assistant Wayne Dorell...At Kampo Audio/Video in New York City, Buddy Miles laid down drum tracks for a release on the Knitting Factory label...

NORTH CENTRAL

Cirrus artists Aleister Wild completed a new album with producer/engineer Cal Moore at Immortal Productions (Canal Fulton, OH)...Satellite Studios in Chicago had Uniform in tracking a new CD with producer/engineers Jack LeTourneau and Tomas Ford. LeTourneau and Ford also recorded a show for guitarist Andy Summers at local club Martyr's...

SOUTHWEST

Interscope artists Smash Mouth stopped in at SugarHill Recording (Houston) to overdub on a song for the *Half-baked* soundtrack with engineer Andy Bradley...

STUDIO NEWS

I want yooooo (to roll tape today): Peter Frampton installed a Studer A827 analog 24-track in his Nashville home studio, Nuages Recording...Crosstown Audio in Atlanta is completing renovation on its new space, adjacent to its existing studios. The new addition includes a new reception area, office suites, a conference room and more space for data storage. ■

—FROM PAGE 84, DONNA JEAN

it like cuttin' in your living room or a garage; it was real funky. I mean, the bathroom was next to the drum booth!"

Not surprisingly, Melton knows nearly all the musicians in town, including all the players on Donna Jean's album. "I've worked with these guys for so many years that I know how good they can get it," he says. "So if they ask me what I think of a performance, I'm not afraid to say, 'I think you can do it better.'"

The tracking was all relatively straightforward and was completed in just three days. Melton's miking scheme included, for drums, a 421 on kick, 57 on snare, 451 on hi-hat, 452 on overheads, EV 408s on the toms, and a couple of 87s in the room. He had baffles around the piano, which he recorded with a pair of Wright mics. McFarlane's guitars were captured at the amp with a Rode NT-2; the bass was direct and miked at the amp with a D12; the B-3 had two 57s on the cabinet and an SM 85 on the bottom. Donna Jean laid down a scratch vocal with the band and later put down keepers using a U47. A Groove Tubes mic was also used on some of the backup vocals.

"It was all real smooth," Melton says. "The band had a chance to rehearse quite a bit so they knew the tunes real well. It was three or four takes of most songs. Muscle Shoals is famous for first takes," he adds with a chuckle.

After the main tracking was completed, there were a few vocal and instrumental overdubs added at Donna Jean and David MacKay's ADAT-equipped home studio. Then, to get a fresh perspective, the tapes were turned over to Nashville producer Phil Naish and engineer Ronnie Brookshire for mixing on the Neve at Naish's Mole End studio.

The result is a record brimming with energy and hot musical performances. There's some gospel flavor on a few tracks, others are more rock 'n' roll. All in all, it's a strong statement from a woman who, in her late 40s, seems to finally be coming into her own. ■



PHOTO: DAVID GOGGIN

In session for his next album at Ocean Way (L.A.) Paul Westerberg (second from left) was accompanied by Shawn Colvin, guesting on vocals, dread-locked producer Don Was, drummer Jim Keltner and engineer Al Sanderson (R).

—FROM PAGE 28, GRACEFUL DEATH

buy one chip, not eight. But if one channel on that chip fails, there's nothing anyone can do to salvage the other seven.

Still, even doing repairs at the chip level has become rare: Most manufacturers don't want to have a bunch of proprietary replacement chips floating around outside their factory, where they could be analyzed by the competition. So whole assemblies, even if they're otherwise perfectly functional, end up being replaced.

A lot of this attitude, not surprisingly, is borrowed from the computer industry, which in the early '80s adopted the "don't-fix-it-replace-it" mentality so as to keep the costs of training field technicians down, and to keep tight control over crucial components like operating system ROMs. It has meant repairs can get done quickly (assuming the replacement boards are available), but it has also meant a lot of people end up paying for very expensive assemblies when a cheap diode or capacitor is really all that was needed. Unfortunately, it means really useful service manuals are becoming a scarce commodity, and quick and clean component-level repairs are simply not an option.

Other factors are at work, too. Product development cycles have become so short that there's no time for long-term failure testing, to say nothing of developing practical ways for users to respond to failures. Often, a service manual for a new device doesn't become available until long after the product is out there, as manufacturers are reluctant to invest in the creation of the service manual until they're sure they have a hit on their hands. How many devices do you have that display "error codes" that are explained nowhere in the documentation? One of the reasons that our esteemed editor George Petersen's book on modular digital multitracks has been a best-seller is that for a long time it was the *only* source of information about those codes for that incredibly popular family of gear.

On the software side, operating systems of desktop computers have become so complex, and users have so many options even with a computer as supposedly simple as a Macintosh, that real-world testing and meaningful diagnostic procedures for dealing with crashes and incompatibilities are extremely difficult to develop.

And even if we try to be cautious,

we're pushing our tools harder than ever. The video transport the MDM is based on was not originally designed to be constantly run at the high speed required for multitrack digital audio, and so component and head wear are accelerated, and tolerances must be tighter. The units are also caught in a kind of netherworld between professional and consumer—as video decks, they were originally designed to function both in professional environments (where one presumes they would be carefully maintained by trained technicians) and in consumer environments, where they would not be pushed very hard. But as audio decks, at least in the personal and project studios for which they were originally targeted, they often do not get the attention they need, while they are being pushed just as hard as if they were in a video-editing suite.

On desktop computers, we're asking for DSP and hard disk performance that few others in the industry demand. The video and graphics developers who use PCs as front ends for their systems are mostly smart enough to provide their own hardware to do the heavy lifting, but the trend in our industry is going the other way, to use as much "native" processing as possible, to keep costs down.

There's no easy solution to this problem. As long as we customers demand high performance at a low price, and as long as the manufacturers are obsessed with getting their next generation of product out the door ahead of the next guy's, the cost of field-serviceability, of usable real-world troubleshooting guidelines, and of "graceful death" will be too high to be included in the products we use. But manufacturers could do more to acknowledge that things do indeed fall apart and make more of an effort to address the problems that users will undoubtedly encounter. Could I teach a student to get a wayward tape out of a digital multitrack deck? I bet I could, but the maker of that deck has to let me in on the secret first, and also has to make it a little easier to get inside the thing. If more manufacturers were to trust us, cautious bunch that we are, to be able to deal with some of these problems on our own, there could be a lot less down time in our studios. Of course, then we'd only have to buy *one* of everything. ■

Paul Lehrman is trying hard to age gracefully. Meanwhile, he offers congratulations to Bill and Lisa, and thanks to his ever-suffering students for being such good sports.



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APPLE TALK

—FROM PAGE 74, THE FUTURE OF THE MAC

Mac, especially with OMS. But NT's time will come.

Froker: Professional customers generally pick the workstation they want, not caring much which platform it runs on. In this regard, the Mac is important mainly from the standpoint of "Does it allow Digi to implement the features and performance our customers want?" The Mac does well here. The PC is catching up and in some ways offers a few advantages, but also has more configuration headaches and operating system issues. The Mac is still probably easier to develop for.

How do you interpret Apple's decision to back away from cloning? What signal does it send to developers such as your company, and to your customers? What impact do you think that decision will have?

Zacai: In the past, Waves has experienced numerous difficulties in supporting clones, specifically with the need to support different systems and to provide compatibility solutions for the various clones. Apple's decision will be beneficial in terms of fewer compatibility issues, and will provide us with known and standardized hardware to which we can adjust our products in the best possible manner.

Doris: Apple's decision to eliminate clone products has very little impact on our market. Sonic products are typically used on the top-of-the-line Macintosh systems, and for the most part, our users have not been sensitive to the marginal advantage in the price of a completely configured system that a clone might offer. We believe that Apple's decision to eliminate cloning has little bearing on developers, other than to make them more confident in Apple's long-term financial wherewithal to continue to deliver state-of-the-art technology.

de Benedictis: As long as Apple makes fast, inexpensive machines that are easy to buy and configure, it should be okay.

Froker: Apple made a smart move to back away from clones. One of their biggest problems has been their lack of profitability. The clone-makers concentrated their marketing and products at the high end of the Mac market, thereby hurting seriously Apple's most profitable segment. So Apple did what any card-carrying capitalist would do: They killed their competitors.

How well do you feel that Apple's cur-

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APPLE TALK

rent leadership is handling the company's problems? Do you think they understand the needs and concerns of companies such as your own? What would you like to see them do that they are not currently doing?

Zacai: In order for Apple to continue to get strong demand in specialized professional markets such as audio and multimedia, as well as among audio enthusiasts in general, they should include some unique audio features and options

wakeup call. They are devoting their energies to making companies like Digi—those in creative businesses—happy.

Do you think the Mac can continue indefinitely as an "also-ran" platform in the overall PC market as long as demand is strong in specialized professional markets such as audio and multimedia, or do you expect to see the Mac go the way of the Beta VCR in the next few years?

Doris: We do not believe that the Macintosh can continue for long as an also-ran. Nor, we would suspect, does Apple. It's within that framework that

Bottom line, I think we will all be happier when Apple sells more systems and their market share moves above the 10 percent level once again. —Bob Doris

as part of the Mac OS.

Doris: Apple is making significant progress on many fronts. We are enthusiastic about the direction Apple's new leadership has shown in re-establishing the Macintosh as the platform of choice for multimedia authoring. Their direction is clear, and we believe they have a well-formulated strategy for making the Macintosh continue to be very relevant to our user base.

We know, as a fact, that Apple well understands the needs of companies like Sonic. Sonic is one of Apple's strategic partners in multimedia authoring, and they have proactively solicited our input on future directions and product features. We are confident that they are listening and taking what we offer to heart.

Bottom line, I think we will all be happier when Apple sells more systems and their market share moves above the 10 percent level once again. That will stop all of us from having to answer questions like these.

de Benedictis: Apple has a few people who are into music, but it would be nice to see more there. They should take a stand on music like they do on desktop publishing. The company should devote substantial resources to supporting current developers and users and advertise itself more. Also, adopting OMS as a standard would help.

Froker: I think Apple has heard the

their actions make the most sense: identifying key markets such as publishing and multimedia content development, and doing what it takes to achieve the dominant share. Apple may have a small share of overall desktop sales today, but in the markets they have targeted, that's certainly not the case. Our own research has shown that more than 85 percent of corporate groups interested in working with DVD production want to do so on the Macintosh. Typically, even though an entire company may have standardized on Windows NT or 95, the marketing communications groups are almost always Macintosh-based.

de Benedictis: Apple may end up being for high-end music users like SGI is for video. They may be able to have something that other platforms can't offer—which could be just paying attention to the music market. Microsoft doesn't seem to care much!

Froker: A number of companies in the computer business have a strong incentive to see Apple continue. Apple has an incredibly loyal core base of users. They have a decent strategy. Now they have to execute well. ■

Mix Media & Mastering editor Philip De Lancia is a mastering engineer, freelance writer and multimedia designer in Berkeley, Calif. He can be reached at pdcl@compuserve.com.

—FROM PAGE 78, ATLANTA POST

themselves with another video post facility. Instead, they added video capability of their own, and many of their audio clients followed. The Wolff Brothers Audio company houses two suites equipped with Yamaha 02R digital consoles and four Spectral workstations, and Burt Wolff says that the company's work for Turner, The Family Channel and other broadcast clients has been very strong. "Atlanta is a relationship-based town," he says. "As long as a producer is happy and wants to work with certain people, the size of the facility doesn't really matter. They'll go the extra mile to overcome the limits of size and technology. On the other hand, you have to offer clients as much as you can to make that easier, so we added some video capability."

Synchronized Sound has taken the symbiotic route, allying its three audio suites with an Atlanta video studio. Synchronized Sound had been an all Studer Dyaxis facility—"the Studer Museum of Natural History," jokes company president James Klotz, referring to the discontinued Dyaxis. The abrupt lack of support for the workstation caused the company to survey the workstation landscape, and the owners purchased two Fairlight MFX-3^{plus} systems and a Fairlight FAME console/workstation.

Upgrading technology presented Klotz with what he euphemistically calls a "rate challenge." "We have an all-inclusive rate structure here; we don't charge for extras," he explains. "We're going to have to up the rates in the FAME room because of the cost of the upgrade. And we know that a lot of traditional Atlanta clients have been resisting rate increases, especially since the [Time Warner/Turner] merger, which has cut budgets some. They need to make their bottom lines look better, and I understand that. They have not asked us to cut our rates, but they have indicated they would like to see them stay where they are rather than increase. And that's the challenge: You hope to make up the cost of the technology upgrades with more work at the same rates. Believe me, it's a challenge." So, Klotz is considering taking some equipment that he owns outright, specifically an Amek Big console, and creating a fourth, lower-cost room for overdubs and offline work. "That seems like the most sensible way to expand," he says, "because there is definitely plenty of work coming in—the rooms are constantly booked. But you have to deal with the costs of upgrading."

Crosstown Audio has also upgraded, adding a Euphonix CS2000 with film-mixing capability to one of its two suites. The new board sets Crosstown up for surround audio, which has not been a big issue in this broadcast-oriented city up till this point. It also helps Crosstown with the film market, which at the moment is pretty much based on independent documentary filmmakers, a market that the studio has tapped deeply in recent years. While not lucrative, that work is steady, says chief engineer Nick Ketter. The larger benefit is that it provides a film component to the client base, which helps Crosstown prepare for larger productions and/or be associated with a filmmaking community that could at any moment produce the next Hollywood *wunderkind*. Crosstown is also dabbling in multimedia audio work, using its pair of Sonic Solutions systems for file format conversion and sample rate reduction for game projects. The facility recently completed a demo in 5.1-channel sound that will go out with all IBM Thinkpad computers.

Ketter has felt resistance to rate hikes but says the addition of a new console (doubling the number of channels and adding "wow-factor") has helped. "But we know we can't sell that to documentary filmmakers whose work is going out on PBS," he acknowledges. "So we're also having to try to move more of our client base further upscale to help pay for technology upgrades."

Cat's Paw Productions has been in the catbird seat for a while now, says president/CEO/voice talent Doug Paul. Despite the proliferation of project-type post rooms and the fact that some clients are enhancing or expanding their own in-house capabilities, the six-room Cat's Paw has been able to raise rates slightly after installing an SSL Scenaria to complement its Post Pro and Dyaxis workstations. "There's a lot of corporate work coming to Atlanta that wants bells and whistles," says Paul, who exudes the fundamental optimism that characterizes Atlanta's post community. "They want performance as well as creativity and quality. There are more competitors in Atlanta, and that can cause deflation in the rates at some point. But the upgrading of facilities here is also attracting a lot more work from other parts of the region, like Greensboro and Charlotte, places with a lot of corporate activity. Atlanta is the gem of the region. It has the sizzle. And that's what they're coming here for." ■

Dan Daley is Mix's East Coast editor.

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FIELD TEST

—FROM PAGE 126, AMS NEVE VX/VXS

features the same multitrack routing push buttons as mono units, with left outputs being routed to odd-numbered buses and the rights to even. Phase of either channel can be inverted, and the two channels interchanged. Mono collapse and LR takeover are also featured, along with a built-in M-S (Mid/Side) decoder. Filters and insert points are essentially the same as those provided on the mono channel strips; as would be expected, EQ is dramatically simplified, and aux sends feature a balance rather than pan control. The mono module's dynamics section is replaced with a twin bar graph meter that can be switched to monitor levels at four points. A width control adjusts the width of the sonic image within a stereo sound field.

A standard stereo module has a single L/R balance control that can be switched out. Optionally, the module can be fitted with a front/back balance control that pans the stereo signal between stereo pair 1/2 and 3/4. (With normal models, you need to make use of an aux bus or spare multitrack for surround-channel assignments.) A Skew control works much like balance, except that it provides a mono-compatible signal by introducing crosstalk.

The optional Fader Direct Input module provides a very useful direct-to-fader input capability via the Channel section. The entire front end of the console can now be bypassed, enabling an alternative front end—maybe an outboard mic preamp—or off-tape signals to be connected directly to the fader without passing through unnecessary electronics or switches. Control of Fader Direct Input is via a bank of push buttons within the Monitor section; input switching can also be controlled as an event by Encore/Flying Faders automation.

VXS SURROUND MONITORING/RECORDING PANEL

The optional VXS panel provides surround-sound monitoring functions and access to record modes via film-style PEC/Direct paddles. In standard mode, the console features either four, six or eight mixdown buses; in Post/Scoring Mode, a group of switches configures the mixdown bus format to provide either eight mixdown buses (assigned via the panpot as odd/even pairs), four stereo pairs (for, let's say, stereo dialog, effects, music and ambience stems; a separate 8-into-2 mixer creates the final

stereo mix), or three stereo buses and one mono bus that serves as a hard center or dedicated mono surround. Each bus features both a pre- and post-fade insert, and individual trim controls.

Three eight-wide playback inputs enable monitoring of up to three recorders, while for post sessions, playback inputs can be used to return predubs into the mix buses, on into just the monitor. VXS consoles can be supplied in one-, two- or three-operator configurations.

A comprehensive 8x8 matrix section selects which channels are sent to control room/dubbing stage loudspeaker sources. As is to be expected, Solo accesses individual speaker buses via the monitor path's final output and is not destructive to any 2-track mix selected. A dedicated button routes the return from a Dolby DS4 insert to the left- and right-surround speaker buses. A unique Dialog On mode selects monitoring of a dialog track to either center Summer (mono) or left+right channels. Other modes enable the bus-monitor signal to be heard regardless of the state of the Bus/Return paddles, for example.

IN A NUTSHELL

The VX/S provides so many features that it is hard to summarize. The combination of Neve's sonic performance—now enhanced with some non-trivial circuit changes and tidying up of module wiring—and AMS's new Encore automation with optional Recall capabilities, makes the VX Series a serious contender for facilities looking for no-compromise performance.

My complaints are minor. The surface is a sea of knobs, with color coordination helping break up sections. However, some functions—particularly the dynamics section—can be hard to implement, simply because knobs are packed so tightly together. In contrast, the track assignment, aux-send and EQ sections are more spacious. Fader and switch automation are blindingly fast, easy to master and pack a lot of useful features. It's high-tech with an open, clear sound.

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



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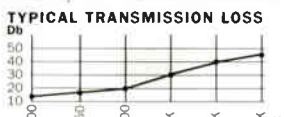
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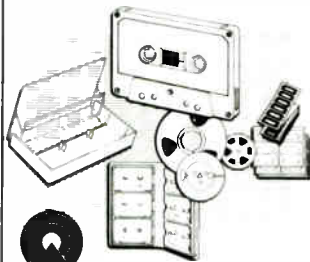
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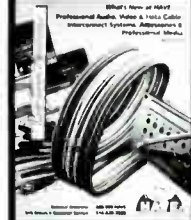
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The 901 is particularly useful on lead vocals, which sometimes



benefit from the use of all four sections:

Excess Proximity Effect: Use Band 1, set EQ frequency between 100 and 150 Hz. Select Shelf. Set Compression to about 10 o’clock, set Threshold switch for Above. Adjust Threshold to release when the artist moves about six inches off mic.

“Whisper” Presence Enhance: Use Band 3, set EQ frequency to about 2.5 kHz, set Expand at about 2 o’clock.

Shy Vocalist “Bass Enhance”: Use Band 1, set EQ between 150 and 250 Hz. Set Expand at 2 o’clock, Threshold switch Below and Threshold control about -10.

De-Essing: Use Band 4 (or 3). Set frequency to about 5 to 8 kHz (use Sidechain Listen to find the exact frequency). Set Compress to about 9 o’clock, set Threshold high and select Above switch. Set Release to Fast.

Frequency “Hot Spots”: Many singers have a hot spot in their range. Use Sidechain Listen to find the frequency range (typically Band 3) and use the same settings as for De-Essing.

Vocal Smoothing: With the filter defeated, use one of the mid sections as a broadband compressor to even out the vocal. Alternately, broadband expansion can minimize the “stage wash” picked up by a vocal mic in front of a band.

DOUBLE YOUR FUN!

The original DPR-901 (I own serial number 11) is a mono signal processor. Introduced in late 1995, the DPR-901 II can be split into two independent 2-band processors, which can be used on different signals. When using the 901 II in Split mode, remember that each EQ filter is sweepable over four octaves and overlaps adjacent section(s) by an octave. Channel “A” affects low

(40 to 320 Hz) and low-mid (150 to 1,600 Hz) filters, while Channel “B” controls high-mid (800 to 9k Hz) and high-frequency (1.6 to 18 kHz) filters. Of course, as Bands 2 and 3 can function in full-range mode, the 901 II may substitute for two compressor/expanders.

BASS EXPANSION

The 901’s low section can compensate for the nonlinearity of human hearing at different sound levels. A touch of mild expansion of low frequencies below a threshold can have a pleasing effect on the tonal balance (hence the “Loudness” control on most home stereo systems).

On bass guitar, some gentle use of the Band 1 will give the instrument more weight on quieter songs while not overpowering louder tunes. Switch the filter to shelving, and the effect is weighted toward the lowest frequencies, the way the ear responds. Or try processing across a subgroup of instruments with signal content below 100 Hz.

For live sound systems, the 901 can be inserted in the subwoofer signal chain. Band 2 can be used, with its filter defeated, as a broadband, above-threshold compressor, complementing Band 1’s below-threshold expansion and protecting the subs at high volume. Band 3 can be used to limit overenthusiastic thumb-snapping techniques.

A 901 across an entire mix can have a powerful effect, but with this much control, there is ample opportunity to make things worse. As you start experimenting with the controls, extreme settings will identify the sound of different types of dynamics processing, but modest adjustments provide more transparent and natural results. ■

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BY MARK FRINK

Pro Tools® 4.1 productivity breakthrough!

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HUMAN USER INTERFACE



A HUI™ GUIDED TOUR.

- 1 Assign Section.** V-Pot™ assignment control lets you configure Sends A thru E, pan and channel bus I/O functions.
- 2 Channel Strips.** Eight channels are considered the maximum human hands can handle at once. Stereo/mono LED meter bridge displays digital dBFS levels.
- 3 DSP Section.** Fluorescent display shows plug-in DSP parameters. Rotary V-Pots let you "tweak" settings with fingers instead of mouse.
- 4 Switch Matrix section** handles automation configuration and edit functions such as cut, paste, copy, delete, etc.
- 5 Control Room Section** controls I/O selection, master monitor level, and global muting.
- 6 Navigation Controls.** Scrub and shuttle wheel controls, timecode display, cursor controls, virtual "tape transport" buttons, window buttons for Pro Tools screens such as Mix, Edit and Transport; and keyboard shortcut buttons including Save, Undo, Edit Mode, etc.

THE CHANNEL STRIP DESCRIBED.

- All eight HUI strips can be soft-configured in Pro Tools® 4.1 as an aux return, group or main master or channel strip.
- 7 Record Ready** toggles track record.
 - 8 Insert** calls up DSP plug-ins.
 - 9 V-Pot™s and V-Pot function selectors** can act as pan pots or aux sends. Built-in LED display gives visual indication and displays recalled settings.
 - 10 Auto** toggles automation modes.



THE HUI REAR PANEL REVEALED.

- 15 Built-in power supply.**
- 16 Digital comm ports** including two parallel/thru ADB mouse and keyboard sockets, RS422/RS232 serial connectors, MIDI I/O, and expander port.
- 17 Trigger ports** add foot switches for Stop/Play/Punch, On-Air, external console solo, etc.
- 18 Analog Control Room I/O.** Three stereo pairs can be switched between six discrete signal paths for surround sound.
- 19 Discrete mic preamps** with gain controls and switchable phantom power. Balanced XLR inputs.
- 20 Inserts** for your favorite NON-plug-in (hardware) signal processors.

PRO TOOLS

Digital audio workstations need hands-on control. Not just a fader pack, but a whole

"cockpit" of controls that you can get your hands — and even FEET¹ — on.

Mackie's Human User Interface (HUI™) gives you 100mm faders to record and tweak level automation moves, virtual rotary controls for functions such as panning and adjustment of DSP plug-in parameters and dedicated function buttons for things like

muting, soloing, or "arming" a virtual Pro Tools 4.1 track. Then HUI lets you "touch update" levels as the motorized faders play back your automation sequence.

If we stopped there, we'd have beaten the we'd



conventional fader pack. But we also added a complete analog control room section and two of our renowned microphone preamps. For many post production applications, HUI provides all the mixer you'll need —

including discrete/mono switch, input source selection matrix, speaker/headphone assign, master monitor level control and built-in talkback microphone!

If you're a serious professional who makes your living running Pro Tools day in and day out, call us, or contact your Digidesign® vendor for more information on HUI.

Then get behind the jog/shuttle wheel of the ultimate workstation control surface and accelerate your productivity.

¹ See number 17 to left

HUMAN USER INTERFACE

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New multichannel formats are challenging old monitor concepts. While traditional stereo is still prevalent, 4, 5 or more channels are being monitored in modern production environments, daily. The LSR Family applies new technology to meet these requirements. By going beyond traditional design techniques with Linear Spatial Reference performance, JBL has literally redefined how a system is created. The LSR concept helps to dramatically expand the listening area, creating a larger, more accurate mixing space.

The LSR32 introduced the world to the Linear Spatial Reference philosophy. This 12" 3-way mid field monitor offers maximum performance in both vertical and horizontal configurations.

The LSR28P is an 8" bi-amplified near field monitor, ideal for multichannel mixing in small to medium-size production environments.

The LSR12P is a 12" powered subwoofer that easily integrates into a wide variety of stereo and multichannel formats, and complements both the LSR32 and LSR28P.

LSR12 Subwoofer (Vertical)



LSR28P



LSR32 (Vertical)
Mid field Reference Monitor



LSR32 (Horizontal)
Mid field Reference Monitor

For more information on the LSR Family
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