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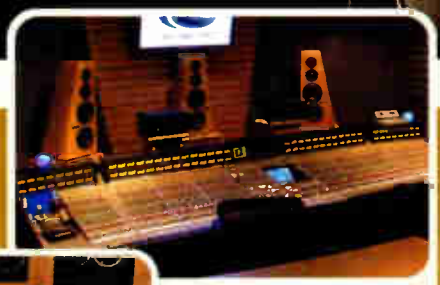

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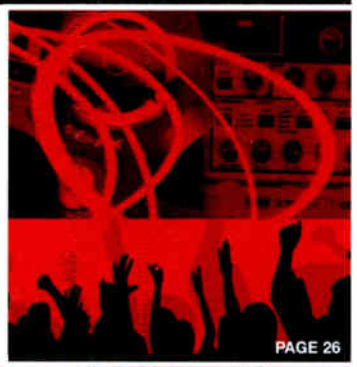
World Radio History

PAGE 48

PAGE 38


PAGE 26

PAGE 53

On the Cover: Conway Studios celebrated its 25th anniversary this year with the installation of a 72-input Neve 88R console in its Vincent Van Haaff-designed Studio A. For more, see story on page 14. **Photo:** Ed Colver. **Inset Photo:** Steve Jennings.

MIX

PROFESSIONAL AUDIO AND MUSIC PRODUCTION

November 2001, VOLUME 25, NUMBER 11

features

26 Beat by Beat: The Distinctive Spectrums of Loop-Based Production

Beck said, sometimes all you need is "two turntables and a microphone." Or maybe that was an Akai sampler and some attitude. Maureen Droney talks to the artists and engineers who have changed the face of pop music production.

38 So Many Plug-Ins, So Little Time

2001 has already seen a bumper crop of new plug-ins that can emulate almost every kind of hardware-based signal processor. Randy Alberts surveys some of the hottest new products.

48 35 Years With Ardent Recording

Happy 35th anniversary to the legendary Memphis facility that has hosted sessions with artists from Isaac Hayes to R.E.M. to Primal Scream to ZZ Top.

53 Audio Education, 2001

Once a year, *Mix* compiles a directory of audio education schools, seminars and programs. Budding engineers may also want to check out a feature article on Tempe's Conservatory of Recording Arts and Sciences (page 82), Eddie Ciletti's column, "The Tech's Files" (page 88), and reviews of five new pro audio books (page 92).

164 Club Sound Mixing Tips

Getting great sound in the clubs can be a frustrating assignment, requiring vast interpersonal skills as well as technical chops. Veteran mixer Buck Moore offers step-by-step methods that will benefit novice and seasoned engineers alike.

Check Out Mix Online! http://www.mixonline.com

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World Radio History

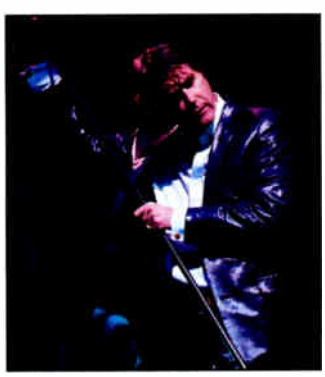
sections

SOUND FOR PICTURE

94 **Surround Mixing for "Band of Brothers"** *by Blair Jackson*
95 **American Roots on PBS** *by Rick Clark*
95 **Composer Spotlight:** Gary Chang *by Rick Clark*
106 **DVD Picks**

LIVE MIX

158 **Tour Profile:** Moby's Area:One *by Blair Jackson*
168 **Club Spotlights:** The Conga Room *by Maureen Droney* and First Avenue *by Barbara Schultz*
172 **All Access:** Roxy Music *by Steve Jennings and Chris Michie*
174 **Soundcheck**
176 **New Sound Reinforcement Products**



PAGE 172

RECORDING NOTES

178 **Buddy Guy** *by Chris J. Walker*
179 **System of a Down** *by David John Farinella*
180 **Classic Tracks:** The Staples' "Respect Yourself" *by Blair Jackson*
182 **Cool Spins:** The *Mix* Staff Pick Some Favorite CDs

COAST TO COAST

194 **L.A. Grapevine** *by Maureen Droney*
194 **New York Metro** *by Paul Verna*
195 **Nashville Skyline** *by Dan Daley*
195 **Sessions & Studio News** *by Robert Hanson*

technology

118 **New Hardware/Software for Audio Production**
120 **Preview/Hot off the Shelf**
124 **Field Test:** KRK V88 and S12 Powered Studio Monitors and Subwoofer
128 **Field Test:** Steinberg Cubase VST/32 5.0 Mac/PC Workstation

PAGE 154

136 **Field Test:** Waves Gold Bundle 3.2 Signal Processing Plug-in Collection
144 **Field Test:** Celemony Melodyne 1.0 Time- and Pitch-Manipulation Software
150 **Field Test:** Hafler M5 Compact Near-Field Reference Monitors
154 **Field Test:** Electrix Repeater Loop-Based Recorder OS Version 1.1
232 **Power Tools:** Steinberg Nuendo

PAGE 179

columns

16 **The Fast Lane:** End of the Yellow Brick Road *by Stephen St.Croix*
20 **Insider Audio:** The Column That Wouldn't End *by Paul D. Lehrman*
50 **The Project Studio:** The Spanic Boys' Lone Scout Studio *by Barbara Schultz*

PAGE 16

88 **The Tech's Files:** Calling All Educators *by Eddie Ciletti*
114 **The Bitstream:** The Wobblies *by Oliver Masciarotte*

departments

6 **From the Editor**
8 **Feedback:** Letters to *Mix*
10 **Current/Industry News**
14 **On the Cover:** Conway Recording, Los Angeles *by Maureen Droney*
202 **Studio Showcase**
206 **Ad Index/Product Info Card**
210 **Demo Room**
211 **Mix Marketplace**
219 **Classifieds**

World Radio History

9-11

Even three weeks after the horrors and carnage of September 11, 2001, the memories and images refuse to fade. Fortunately, in times of adversity, Americans are quick to rise into action. As hundreds of ordinary New Yorkers volunteered to help—whether passing tons of rubble through bucket brigades or converting nearby eateries into makeshift soup kitchens to feed emergency workers—the music community also jumped into action. Musicians have always been quick to reach out to support worthy causes, whether for events such as Live Aid or Farm Aid, or fundraising records like "We Are the World" or "Candle in the Wind."

The hugely successful "America: A Tribute to Heroes" telethon raised more than $150 million (plus more to come from CD sales) and was put together with less than a week's notice—a major accomplishment for an event coordinating multiple artists in London, New York and Los Angeles, and airing on 30 networks in 210 countries worldwide.

A week ago, producer Nile Rodgers and a variety of artists (ranging from Limp Bizkit and Orgy to the Pointer Sisters, Patti LaBelle and others) gathered at L.A.'s Record Plant to record a new version of "We Are Family," to benefit the American Red Cross and the NYC Firefighter's Relief Fund. And many more are planned, from another star-studded tribute headed by Michael Jackson, to countless local projects. In fact, Disc Makers has offered a 25% discount on manufacturing of discs where the profits are earmarked for charity relief stemming from the events of September 11. As with all noble efforts, the phrase "think globally, act locally" has never been more appropriate. Get involved. Do your part.

Of course, one way we can all help is by injecting normalcy into our daily routine. AES was correct in rescheduling—rather than canceling—this month's convention. Besides the financial devastation to the airline and financial industries from the terrorist attacks, the everyday tourist trade—hotels, restaurants, cabs, entertainment, etc.—in the Big Apple has also taken an enormous hit. By supporting an AES in the world's greatest city, we all benefit.

At the same time, we have to put everything in our lives into perspective. While billions around the world live in impoverished conditions and untold millions of children fall asleep every night accompanied by hunger's lullaby, the arguments about analog vs. digital seem pretty meaningless.

I'd like to encourage *Mix* readers to read Stephen St.Croix's "The Fast Lane" this month. Over the years, in debating the virtues of cars, audio and technologies of every sort, Stephen has stirred the emotions of the entire pro audio community. This month's column has little to do with audio but much to do with life, and rarely have so few words said so much as what you'll find on page 16.

Perhaps too many of us—myself included—get too wrapped up in the intricacies of technology, when the simple act of listening to waves crash or watching the movement of white clouds against a blue summer sky offers a wonder that's infinitely more complex than any bank of ICs and ROMs could ever summon.

Get involved. Find your own perspectives. And let's make this the best AES ever.

See you there!

George Petersen

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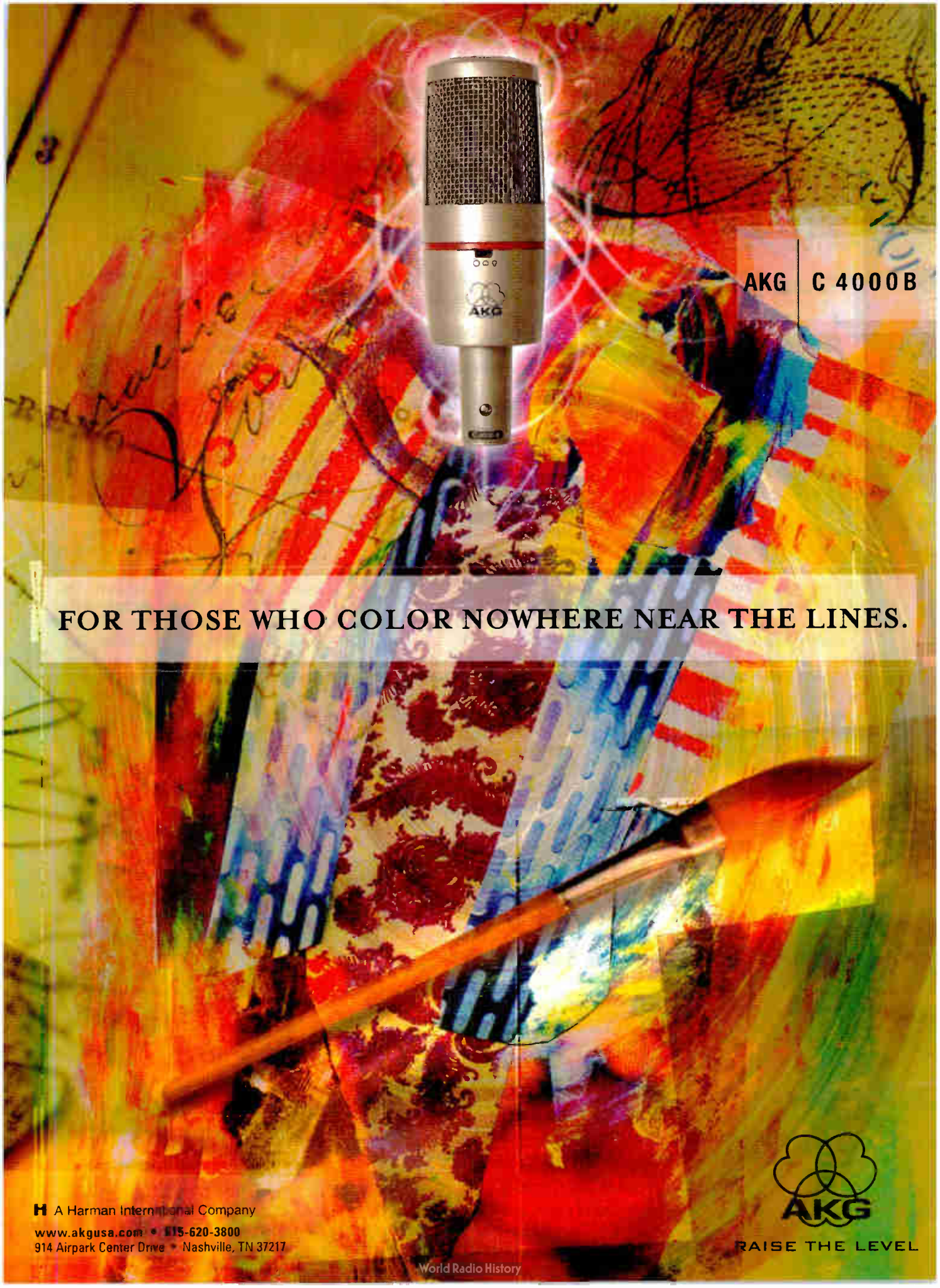
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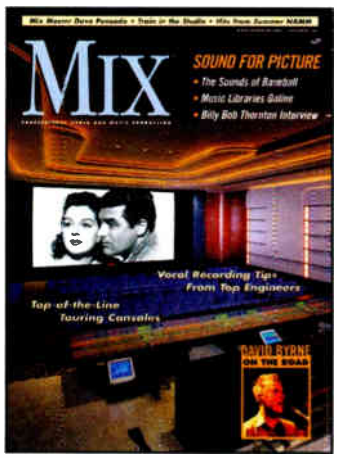
Letters to Mix



KICK THE CAN

I'm writing regarding "Production Music Libraries" (September 2001 issue). As the article began, "When *Mix* looked at production libraries two years ago," I suddenly remembered that I meant to write to you then.

What possesses you, as purveyors of information on the production of music, to promote, glorify or even discuss the concept of prerecorded, i.e., canned music? The argument you used back then was that the use of this "music" saves time and expense in the studio for producers. Excuse me? I thought the idea of having a studio was to capture and create music ourselves, not just paste together generic chunks that someone else did.

You need to teach people the value of making sounds and music that solve the unique problems of each project. You need to honor the talent of a composer and challenge the skills of the studio engineer to bring the best and appropriate sounds to our ears.

At a time when studio bookings are decreasing and customers are already discovering that they, too, can paste together CD-quality sound on their own home computers, don't you think this is the time to promote the special, important features of professional recording in professional settings?

Ken Jacobs
San Rafael, Calif.

NOBODY'S PERFECT

Eddie Ciletti's recent "Which Witch" article in the September issue was very informative and provocative! I have only one thing to add: The thing that gets me every time about antique/vintage/stone-age tech, and/or the "Macrobionic" designs (and that could represent two soup cans and a string!) is not the way they sound, so much as the way they make you produce music. These items are very limiting. This can be really positive toward the outcome of the finished recording.

Let me set up a scenario for you: Your studio for a new project consists of piles of old German mics and 10 or so SM58s, an old drum kit, a bad upright piano and a '70s Twin. You've got two limiters, a plate reverb and some EQ, an old 8-track deck and a 16-track console.

First off, there is no way you can even contemplate working with talent that isn't extremely talented. Second, what the band sounds like is what you get. You can't fix it later, so they have to get it right. Little mistakes get left in. I mean, you give a guy Pro Tools to futz with and—unless he's working with Beck or Ween, who are really making fun of all the new, meaningless choices—he will waste time tweaking stuff that isn't worth tweaking.

I think what people frequently mean when they say "warmth" is actually "human"; that is, lots of mistakes.

Ted Moniak and El Jackson
Via e-mail

WEB RADIO HIGHLIGHTS

I appreciated Paul D. Lehrman's commentary ("It's Still Rotten Sound to Me," July issue) on the generally poor state of streaming audio on the Internet. It is true that the vast majority of online stations have horrible audio quality and that most of the Internet-only stations have no personality and worse programming.

However, I feel compelled to point out that not all is doom and gloom on the Internet audio front. Shoutcast (www.shoutcast.com) is notable in allowing people to create their own self-programmed stations and stream them (fairly reliably) at multiple bit rates to thousands of listeners. I've never had any problems connecting to a station there because of too many subscribers, and they stream in standard MP3 format that any computer should be able to handle. Many of the stations stream at speeds of up to 128 kbps, and some go even higher.

One in particular that is worthy of mention is Radio Paradise (www.radioparadise.com), which is self-described as "eclectic, intelligent rock." Every hour of the day is uniquely programmed by a DJ who left the regular radio business because of the stifling nature of the business, and it's a treat to spend my working hours listening to everything from Ani DiFranco to XTC to Josh Joplin and everything in between. Remarkably, it's being supported by listener's donations and by money from listeners' CDNow purchases. In addition, the Radio Paradise Website has a thriving community of commentary and ratings based around a constantly updated playlist. Try it, you'll be surprised by how good it is.

Tupshin Harper
Berkeley, Calif.

THE TECHNICAL IS POLITICAL

I look forward each month to *Mix* for its industry insights, gear reviews and bleeding-edge technological coverage. The editorials can be fun too, even if my opinion or experience with gear is contrary to the writer's. What I don't like is when someone strays from his area of expertise and offers ill-informed, misleading opinions on things he is clearly unqualified to talk about.

A case in point is Paul D. Lehrman's "Insider Audio" column. On more than one occasion, he has used his editorial position to espouse his left-wing liberal agenda. In July's issue, he was doing fine discussing the problems with streaming audio until he ventured into the politics of the industry's struggle to increase bandwidth. I will gladly bow to his expertise in the technology, but I'm not interested in his political views. For him to assume he understands enough about the cause-and-effect relationships in economics to account for the impediments to progress in this field is arrogant at best. Economists from varied schools of thought make it their business to analyze policies and regulations that lead to "monopolies" and other stifling industry practices. (And few would be in agreement with Lehrman's assessment.) But they spare us their non-expert opinions about audio technology.

I'd be happy to discuss and debate these issues with Mr. Lehrman, but I don't think *Mix* is the appropriate forum. Nor do I think it's very professional for the magazine to give him that much latitude.

Chuck Winegar
Via e-mail

Although we are technical people, we don't operate in a political or moral vacuum. Economics and politics infuse all that we do professionally, and as creators and purveyors of entertainment and marketing messages, what we do makes an impact in those spheres. For you to disagree with my views is healthy. For us to ignore the realities of the world we operate in is not.

—Paul D. Lehrman

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CURRENT

NEW YORK, SEPTEMBER 11, 2001

Following the horrific events of September 11, the Mix office received numerous e-mails detailing the impact this tragedy had on the pro audio community. We open with a letter from Bongo Bob, the backline tech for 'N Sync.—*The Editors*

'N SYNC CREW MEMBER AMONG VICTIMS

"The 'N Sync family has lost someone very close to us. On Tuesday, September 11, Danny Lee was one of the passengers who lost his life while flying home mid-tour to be at his wife's side during the birth of their second child. Danny was a carpenter on our tour (he was with the Backstreet Boys for the past few months) and someone that when you saw him, always had a smile on his face, a quick joke or the latest game for your PC. He was someone who just made you feel good about being a part of the family.

"A few years back on another tour, me and a few other friends started a little thing called the BLB (back lounge boys), the place where most of us really meet for the first time, where we get to sit down after a long day's work, unwind, and tell the tales of what we have been through and where we have been. You have a few drinks, you stay up, you listen and you talk, and it's where friendships and camaraderie are formed, lifelong friends are made, and where our road families are born.

"As a symbol of the BLBs, we wore safety pins over our hearts. After a tour or two, the BLBs grew in numbers, and we all decided to keep wearing the pins as a symbol of our family.

"So I would like to ask everyone this one small favor. As a sign of our love for our road families, and a show of our love for and in remembrance of Danny, to wear a safety pin on your lanyard. Wear it and let others know what it is about when they ask, and ask them to wear one, too. They say that in the real world, there are six degrees of separation between any two people whom you pick at random. Well, in our world of touring, we know that it's more like two."

—*Bob "Bongo" Longo*

[Editor's Note: A fund has been established for Danny Lee's wife and daughters, to be split between a college fund for the children and living expenses for all three. Donations should be made out to: The Daniel Lee Family Fund, c/o Tom Whitford, 731 Clifton Ave., Erie, PA 16505.]

Danny Lee with daughter

IN MEMORY OF...

Avid Technology lost **Doug Gowell**, director of new market development, in the attacks on New York City's World Trade Center. Gowell was aboard one of the planes that crashed into one of the World Trade Towers. He is survived by his wife, son and daughter. David Krall, president and CEO of Avid, said, "Words simply cannot describe the grief we feel for Doug's family and all those who were close to him as a professional colleague—and a personal friend."

Also lost was **Robert Hayes**, VP of sales and marketing for replication equipment supplier Netstal Machinery Inc. He, too, was aboard a plane that crashed into one of the World Trade Towers.

A STREET-LEVEL VIEW

From **Steve Rosenthal, Magic Shop Recording Studio:** "When I came to the studio, the area was deserted and under armed guard. I needed ID to get past the police and soldiers. Most people walking the streets were wearing masks to protect them from the dust and debris still coming from the Towers. It was like a ghost city."

"Through it all, John Agnello was here braving the dust and the chaos, mixing his new project, *34 Satellite*. I will always admire his courage and determination not to be pushed away from what he needed to do. Last night [September 14], we had a benefit show at the Living Room arranged by Jenifer Jackson for the Red Cross, and on Saturday afternoon [September 15], 20 Living Room artists came together, courtesy of Leslie Nuchow, and sang songs at all of the various important recovery and hospital sites around the city."

THE SPIRIT OF GIVING

Musicians and Hollywood celebs gathered at **Record Plant Recording Studios** on Sunday, September 23, to join music producer Nile Rodgers' 9-1 New York City Disaster Relief Project. Members of Limp Bizkit and Orgy sang alongside the Pointer Sisters, Patti LaBelle, David Hasselhoff and Montel Williams, among many others, lending their voices to a new version of "We Are Family." Parallel sessions were held in New York, and both Record Plant and **Avatar Studios** donated the day rate. Proceeds from the record will be donated to the American Red Cross and the NYC Firefighter's Relief Fund. "We hope that this song and this event will help to bring people together and remind them that we have to stand strong as a family," Rodgers said in a statement.

World Radio History

AES SHOW POSTPONED

In an official statement released on September 12 2001, from Roger Furness, AES executive director, the AES 111th convention has been postponed to Friday, November 30 through Monday, December 3, 2001.

Directors of AES met with Javits Center management on September 12, learning that the New York City Mayor's Office of Emergency Management and the Federal Emergency Management Agency (FEMA) had taken over large portions of the center for use in coordinating emergency services for an undetermined amount of time.

"This, obviously, makes holding the event as planned impossible," read the official statement. "However, we were able to reschedule the convention, rather than just cancel it. Most of the people who contacted us hoped that this would be the solution."

For updated information, visit www.aes.org or www.mixonline.com.

TEC AWARDS RESCHEDULED

The Mix Foundation for Excellence in Audio has announced that the 17th Annual Technical Excellence & Creativity Awards, which honor outstanding technical and creative achievement in professional audio recording and sound production, has been rescheduled for December 1, the second night of the AES convention, at the Marriott Marquis.

BEHIND THE SCENES AT THE TELETHON

On Friday, September 21, all major broadcast networks and countless cable and radio outlets donated two hours of commercial-free air time to a star-studded telethon that raised more than $150 million for the families of the victims of the terrorist attacks. The show was produced out of Sony Music Studios in New York and CBS-TV in Los Angeles. Effanel handled the audio remote in New York, with John Harris mixing in one of the Sony rooms for the more intimate settings, and Jay Vicari of *Saturday Night Live* mixing the larger ensembles out of the Effanel truck; Biff Dawes of Westwood One mixed the L.A. segments.

"The day after the attack, I ran into Skip Kent on the street, and like all New Yorkers, we wished we could be doing something to help out," said Randy Ezratty, owner of Effanel and a resident of 22nd Street. "A week-and-a-half later, we were both at Sony Music, we looked at each other and we nodded. We were doing something.

"I'm not even sure who the producer of the show was—the coalition came together so quickly," Ezratty added. "On many of these types of shows, there are egos on both sides of the camera, but that night, it was eerie—tension was nonexistent, and the spirit was unbelievable. Our client paid us full rate, and each of us who worked that night gave 100 percent to charity. It was a special night."

CORRECTION

A number of readers have pointed out that *Disraeli Gears* ("Classic Tracks," September 2001) was actually produced by Felix Pappalardi, not Tom Dowd as stated in the article. Dowd, however, was the engineer. *Mix* regrets the error.

Industry News

With 20 years of pro audio experience, **Chris Pelzar** joins **Euphonix** (Palo Alto, CA) as president of sales for North America...**JBL Professional** (Northridge, CA) announced three new VPs: **Doug Daniel** and **Tom Weeber** have been promoted to VP of international sales and VP of U.S. sales, respectively; and **Jeffery Groenke** joins the company as VP of operations...Actor/musician/recording engineer/educator/innovator **Chris Coan** has been appointed to VP of education at **Ex'pression Center for New Media** (Emeryville, CA)...Former soundware engineer **Daniel Fisher** has accepted the associate professor of music synthesis position at **Berklee College of Music** (Boston)...New York City-based **Avatar Studios** welcomed new owner and president **Kirk Imamura**...**Telex Communications Inc.** (Burnsville, MN) appointed **Dave Egenberger** as product manager and **James Lupino** as product support specialist for wired and wireless microphones...Percussion educator **Dennis DeLucia** is the newest **Yamaha** (Grand Rapids, MI) percussion, consultant and clinician. The company also welcomed **Reed Larrimore** into the position of district manager for the Pro Audio & Combo divison, where he will oversee retail accounts in the Pennsylvania, New York and northern New Jersey markets...**Truth Audio** (Santa Rosa Beach, FL) named **Wave Distribution** (Ringwood, NJ) as exclusive worldwide distributor of Truth Audio's loudspeaker products...**SSL's** (Oxford, UK) post-production customers in eastern U.S. and Caribbean Islands can now contact **Curtis Drake**, new post-production sales...**Pro Sound Inc.** (Orlando, FL) purchased a new 5,000-plus-square-foot office/warehouse at 6622 KingsPointe Parkway, Orlando, FL 32819; 407/816-9300; fax 407/816-9400...Manufacturer of high-end analog signal processors and mic pre's, **Focusrite Audio Engineering Ltd.** (High Wycombe, England) promoted **Giles Orford** to the marketing manager position...**Karl Seglins** has been promoted to **Fairlight's** (Sydney, Australia) senior management team as VP of worldwide marketing...Joining **EAW's** (Whitinsville, MA) marketing staff is **Linda Seid**, public relations coordinator...Wandering the halls of **beyerdynamic North America** (Farmingdale, NY) is new director of marketing **Paul Froula**...Now coordinating all public relations for **Crawford Communications Inc.** (Atlanta) is **Sonya Dennis**...Straight from the marketing department of Symetrix, **Kim Cahail** brings her talent to **Lake Technology's** (Rocklin, CA) marketing manager position...**Behringer** (Willich, Germany) news: **Torsten Notzke** will coordinate public relations from Behringer Spezielle Studiotechnik in Willich, Germany...Keeping **Tascam's** (Nashville) Website up and running, **Brian Moakley** has been hired as the company's Webmaster.

Chris Pelzar

Chris Coan

World Radio History

CURRENT

ON THE MOVE

Who: John Lancken
What: president of Fairlight
Main Responsibilities: Providing direction of our Sydney operation where we have our manufacturing, R&D, product management and Australian sales. I also have the responsibility of managing our overseas sales and marketing divisions, which are located in Los Angeles, New York, Berlin, London and Paris.
Previous Lives:
- international sales manager at Fairlight, January 1991
- pro audio sales at Amber Technology, April 1989
- professional musician, 1981-1989

What made me want to work in the pro audio industry: During my years as a musician, I had spent a lot of time in large recording studios. Soon, I became interested in the recording process as I was in the performance part. I started to learn how to use it, and here we are today.
Having just celebrated 25 years, what I plan to do at Fairlight to continue the company's success is: Fairlight has just announced a complete new range of digital recorders, editors and mixers that have been in development for the past three years. The product family name is DREAM, and it addresses the challenges of dealing with multiformat, multichannel and multistandard audio, which is a real problem for the pro audio industry today. We just announced that we have acquired a majority shareholding in Lightworks.
My most memorable moment in this field: Working in Los Angeles from 1996 to 2000, and seeing Fairlight grow in the USA.
The first album I ever bought was: Supertramp's *Crime of the Century*.

Currently in my CD changer are: A lot of Miles Davis albums, including Miles' *Live Around the World*, *Milestones* and *In a Silent Way*. You would also find Frank Sinatra's *Live at the Sands*.
The last great movie that stirred me: An oldie directed by Bruce Beresford called *Breaker Morant* which I just got on DVD.
I enjoy...when I'm not in the office: Anyone who knows me will tell you I enjoy a game of golf more than anything...but I'm not very good at it.

EXPANDING YOUR MIND

LDI 2001 will be held in Orlando, Fla., November 2-4, 2001. Areas of interest include entertainment lighting, professional audio, architectural lighting, staging, rigging, pyrotechnics, lasers, software, special effects and much more. More than 440 companies will be exhibiting.

For exhibitor, attendee and conference information, visit www.ldishow.com or call 800/288-8606.

The **Avid World & Pro Tools Conference**, which was to begin October 7, has been rescheduled for December 9-12, 2001. The event will still be held at the New Yorker Hotel; the Early Bird Registration discount has been extended to November 2. Visit www.avidworldeast.com for more.

EVERYTHING ZEN AT THE VILLAGE

This fall, Bush released their fourth studio album, *Golden State*—their first on Atlantic Records. The band tapped **Dave Sardy** (Marilyn Manson, Red Hot Chili Peppers) to produce their latest effort and Greg Fidelman to engineer. The album was recorded at **The Village** in Los Angeles.

Pictured here are, L to R, engineer Greg Fidelman, Bush frontman Gavin Rossdale, producer Dave Sardy and assistant engineer Jim Monti.

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Conway Recording

By Maureen Droney

Conway Recording Studios, which first opened its doors on Melrose Avenue in Hollywood in 1976, is currently celebrating its 25th year in business. Known for its world-class rooms, dedicated support staff and a landscaping theme that evokes a tropical paradise, Conway has attracted a wide range of recording artists; credits include the Dave Matthews Band's *Everyday*, Blink 182's *Enema of the State*, Christina Aguilera's self-titled album, Hole's *Celebrity Skin*, Marilyn Manson's *Mechanical Animals*, Beck's *Odelay*, Fleetwood Mac's *The Dance*, Bonnie Raitt's *Luck of the Draw* and U2's *Rattle and Hum*. Conway has also hosted sessions for many feature film scores and soundtracks, including *Sleepless In Seattle*, *Toy Story* and *Beavis and Butthead Do America*.

Most recently, Conway installed a Neve 88R large-format analog console in Studio A. Staff training on the 72-channel 88R was completed in early August, and Italian pop singer Laura Pausini was in Studio A the following week, recording her new album for Warner Bros.

PHOTO: ED COLVER

Conway Recording Studios co-owner Buddy Brundo and studio manager Alyssa Romano at the Neve 88R

Conway co-owner Buddy Brundo displays an almost paternal pride when discussing the 88R, the first all-new AMS Neve large-format audio console in nearly 20 years, and the first to be installed in the U.S. "I've been doing this a few years now, and I look for certain criteria in a console," says Brundo. "We have always really liked Neves, especially the old ones, and we've been talking to Neve for five years about what we'd really like to see in a new one." The hybrid analog/digital desk features digitally controlled remote mic preamps and Encore automation, and is designed to offer classic Neve sound in a full surround format.

Studio A is used for both tracking and mixing, and remote mic preamps were a high priority on Brundo's wish list. "I love classic mic pre's like the 1081s and the ones that were built for Montserrat and George Martin," he explains. "But when you have a low-level signal from a mic going through a hundred feet of cable to get to the preamp, you lose a lot. When you put the mic pre right near the microphone, it really comes alive. Of course, if the preamps are in the studio, you have a problem in how to control the gain. With the 88R, we have 24 digitally controlled remote mic pre's—12 of the new/old 1081s and 12 of the Montserrat style—all hand-built exactly like the original ones. The digital controller has nothing to do with the audio, but simply allows you to control the mic pre level at the console."

Another feature that Brundo requested was motorized small faders, making for a total of 144 automated faders that can feed the stereo and surround buses, while still keeping the footprint of the in-line console relatively small. "On big, 100-input consoles, people often end up returning echo, effects and other things that don't need to be equalized on the big faders," he notes. "But you don't need a whole channel strip for them, you just need automatable level. On this console, you can plug things like that into the small faders, and we could keep the console 72-in, which makes the size of the working surface much easier to handle. The footprint of this console is gorgeous; because there is no rack below it, the bottom end in the room really comes alive."

Other features of the 88R include five stereo main mix buses and an LCR bus with splittable main and aux buses to permit film-style stems. The board also offers eight aux sends, full dynamics on every channel, 4-band Formant EQ and multifunction PPM/VU LED bar graph meters.

"Although the automation is far more comprehensive than our previous system, the new interface makes the system easier to use," notes Conway chief engineer Dave Hecht. "Sonically, the 88R is a huge improvement over the VR. It has a sound very reminiscent of the old 80 Series Neves, with all the facilities of a modern console."

No other changes were made to the Vincent Van Haaff-designed Studio A, where the control room, like all of Conway's, features natural lighting and a view of the complex's lush gardens. "Studio A has always been a great-sounding room, and we didn't want to change anything," says Brundo. "Neve did a wonderful installation; they took care of everything." The three-room Conway complex also houses an SSL 9072 J Series and a MadLabs-modified 72-channel VR; each of the three rooms are outfitted with Neve 33609 J compressors and 1081 mic preamp/equalizers.

Conway's overall client roster remains eclectic. In the past year, the facility has played host to acts ranging from R. Kelly, 'N Sync and Blackalicious to Paul Anka and Neil Diamond. According to studio manager Alyssa Romano, sessions for Seal, Amanda Ghost and Korn are already booked for the new console. ■

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END OF THE YELLOW BRICK ROAD

PERSONAL REFLECTIONS ON OUR LOSS OF INNOCENCE

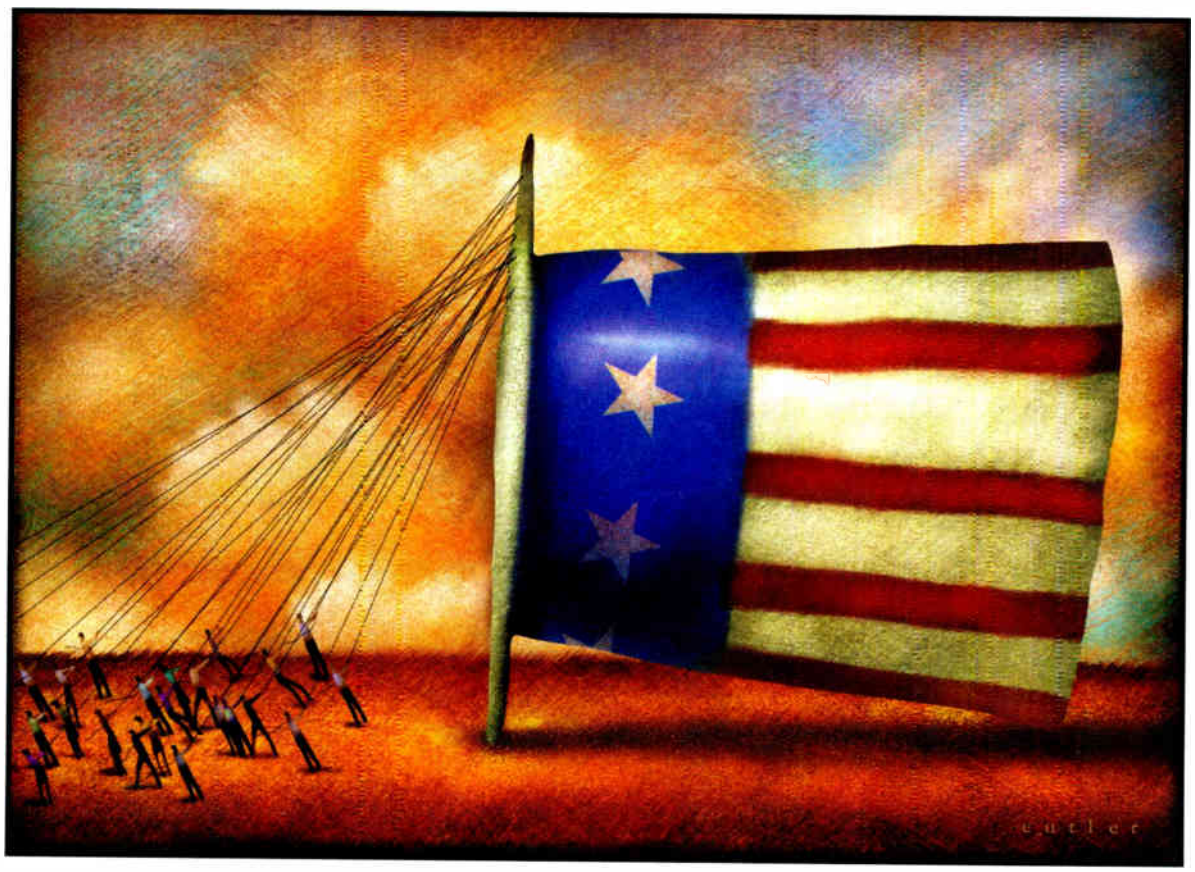

ILLUSTRATION: DAVE CUTLER

PART ONE: MY STORY

The time has come—suddenly—for me to tell you about myself and my life. Then, I will tell you something else—something about September 11.

A little over a year ago, I was your typical longhaired, surfer-hippie-biker musician. I was healthy and happy (save for some damage from a bike crash that impressed the 400 hard-core bikers who witnessed it); life was comfortable.

I had not really changed much in the past 30 years. Why should I? Surfboards get shorter every year, and tech toys get smarter, but, otherwise, everything stays the same. Catch a wave. Or two. For a few months. Do an album. Build a bike. Take it on a ride through Mexico alone for two months. Do a movie. Write a column. Pick up some irrational Italian car, see if it really goes 200 on the 405. Do two albums. Go to the islands. Design some software. Buy a bigger gun. Chrome another HD. Fly.

I flew from Maryland to John Wayne to catch waves at the Wedge and Sushi in Laguna Beach 50 times in one year. That's one coast-to-coast surfing vacation a week. And I still got all my work done *and* found time to lift hard enough in the gym to take home a few trophies in bodybuilding, the most superficial, self-centered and irrelevant "sport" on Earth. I loved it. It was a game of concentration, discipline and results. I slept like the proverbial baby, was never sick, always felt great.

BY STEPHEN ST.CROIX

So, back to a little over a year ago. I had just re-finished the guitar-shaped pool in terra-cotta tiling and was happily designing a movie theater addition to the house. The cars were stupid, and the bikes were *insane*. One custom alcohol-burning Harley had show trophies as tall as me, and I rode it every day. None of my guitars were broken. My studio had no mystery hums or buzzes, and the room was dialed *big time*. I didn't even have any jacks that needed to be cleaned.

Then, one day, I started feeling more than a little strange, and eventually found a place on the left side of my head that didn't seem quite right. It wasn't. I will spare you the long and graphic details, but I will give you this advice: If someone

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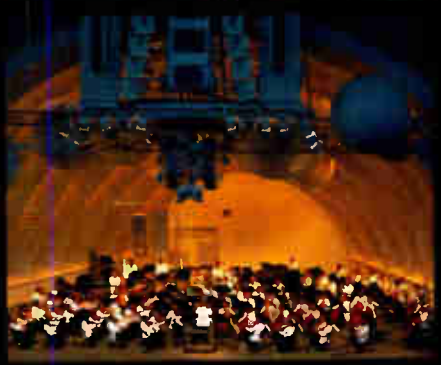

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comes up to you on the street and offers you cancer, even at a really good discount, just say no.

Doctors disassembled the left side of my head and several places on my neck, and left me to many months of slow and impressively painful introspection. As they had completely transected the muscles in my neck that held my head up, my first day back on the Harley was accomplished with the help of our omnipresent friend, duct tape. I taped some 12-inch slabs of wood to my shoulder and head to hold it up so that I could ride. This scared small children and impressed the locals. What more could you want?

Okay, to get our point of reference here, I went from a strong, healthy, tan, blonde, six-foot-two, surfer-biker muscle dude who took over any room he entered with confidence, arrogance and a loud guitar, who had the money to pay but nobody ever asked, to...

Well, I *had* bucks, but then I apparently donated them to someone on the other end of the stock market. I had my health—hell, I was 6% body fat even when I wasn't competing.

But then, one day, I changed classes from a healthy person to a cancer patient. I still can't lift over 15 pounds. Imagine what that is like for the ego of a bodybuilder.

But my spirit wasn't broken. Had these things happened a few years earlier, I would have been enraged and devastated. But I had spent time in recent years working on inner peace, mellowing out just the smallest bit, my desire for self-improvement fueled by a dawning awareness that the arrogant asshole act might not be the way I wanted to spend my adult years, should they ever arrive.

So, money and health gone, I went to bed one night in the not-too-lame home that I still had in Maryland, sleeping stitch side up as I had been forced to learn to do. At 5:35 a.m., I found myself airborne, three feet over my bed, unloading a couple of rounds of .40 caliber Black Talons as the world caved in around me.

We need to take a very deep breath and plan our next move carefully. The whole world is watching.

An 86-year-old, 150-foot-tall oak had decided to take a fall, and it took my home with it. It crushed one end of my house, broke over the center, and the bough came through the bedroom roof at the other end, breaking the three center beams that held up a 25-foot-tall ceiling. One of the beams and a 13-inch branch slammed *through* the bed, reducing it to rubble, before the rest of the ceiling came down on top of me. The beam clipped my left jaw (almost painlessly, as it was still numb from nerve damage caused by the cancer surgery) and cracked it.

And as one of those freaky side-notes, the woman who normally sleeps on that side of the bed was away that night, thereby escaping death by impalement as the beam went through the bed.

Then it rained. Sixteen giant blue tarps just don't do that good of a job of replacing a roof. The rain ended up in the studio. You know where this is going.

And I can't even ride to take my mind off my troubles, because the garage door

—CONTINUED ON PAGE 201

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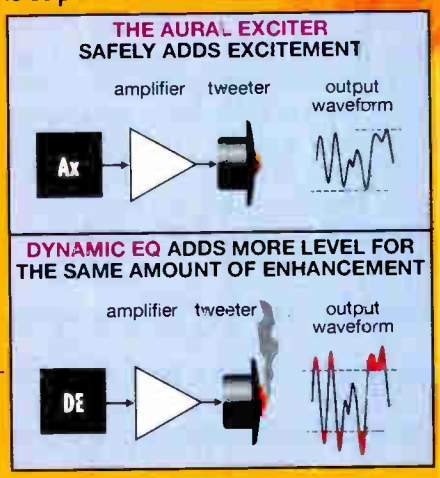
Why the Aphex Model 204 is superior to other "Enhancers"

Aural Exciter vs. Other Sonic Enhancers

The Aural Exciter adds dynamically related harmonics to the signal at very low levels and these harmonics add little, if any, level to the signal. Because of the intelligence in the Aural Exciter side chain, the effect is useful over an extremely wide input dynamic range.

Dynamic EQ boosts a part of the frequency spectrum when the input is above a threshold. If the input is already high, the additional equalization can result in overloading the amplifier, speakers or both.



Big Bottom vs. Other Bass Enhancers

A speaker's excursion increases with low frequency peaks. If those peaks are increased by a Dynamic EQ and/or a Subharmonic Synthesizer the speaker, at the very least, will fatigue more quickly. This will also increase the danger of the speaker jumping the gap or literally coming apart.

Big Bottom adds little or no peak energy to the signal. Instead, it adds density (persistence of a low peak-to-average ratio). This additional bass density adds presence and punch, even in less than powerful playback systems.

Dynamic EQ boosts a part of the frequency spectrum when the input is above a threshold. If the input is already high the additional equalization can result in overloading the amplifier, the speakers or both.

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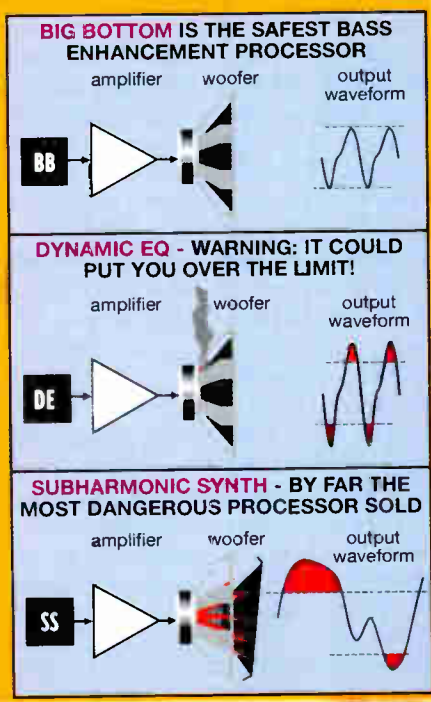

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THE COLUMN THAT WOULDN'T END

ABOUT THE PROJECT THAT WOULDN'T END

Last month, I was describing a video project from Hell: a short documentary film that I was producing and writing that should have taken six weeks, but was soon entering its fourth month. Thanks to the quirks and bugs in a video editing program called EditDV, my coproducer and academic colleague, Howard Woolf, and his three student editors were tearing their hair out trying to get the thing done, while I sat on the sidelines and thought about the bad old days of the first music and audio software—which I was now living again.

If you forgot (or never read) the first part, then do go back and read it now, because the background will be helpful. If you don't have the print magazine handy, then look for the article on www.mixonline.com.

Before we proceed, some definitions of acronyms: DV stands for Digital Video. ASA stands for the Acoustical Society of America, the folks who had commissioned the film in the first place. AES stands for the Audio Engineering Society, the group, not the convention.

When we last left our intrepid heroes, they (that is, we) had, after much pain, sent off a DV copy of the film to the ASA, which was planning to show it two days later at their annual convention in Southern California. The night after we shipped it, I looked at a VHS dub Howard had made for me and discovered, to my horror, that there was visual timecode prominently printed on it. Because we had no way of knowing whether the DV tape we sent had the SMPTE numbers burned in, we made another DV dub the next morning and sent it out FedEx Same Day Delivery, so it would get there by nightfall, in time for the next morning's convention session. Now, let's pick up the story...

The next day, I came home to a lovely message on my answering machine from the chairman of the panel at the ASA meeting, thanking me for the film. There was also a message from a friend at Yamaha, whom I had dragooned into introducing the film, assuring me that the timecode numbers were nowhere to be seen on *either* DV tape we had sent. So, for a change, something had come out right.

But the film was still very much unfinished. Most of the effects and cool transitions that Howard wanted to put into it weren't there, a lot of the stills still had "vibrating" problems and the audio tracks were a mess: levels all over the place, channels switching at random, and big silent holes in the narration where there should have been room sound. Perhaps we should have cut our losses and stopped right there, but then I got another bite: The local chapter of the AES wanted to screen the film, too, at their annual banquet. Never one to pass up an opportunity to promote a project (or get a free meal), I accepted the invitation.

Now we had another deadline. Fortunately, it was five months away, and Howard was confident that the problems could be fixed. I made a special vow to clean up the sound—this was, after all, the AES, and I really didn't want to be horribly embarrassed, especially because this time I was going to be there in person.

What made Howard particularly sanguine was that there was now finally a 3.0 Version of EditDV, which he was sure would took care of the earlier version's limitations and bugs.

Once again, the software screwed us. This time, it was the simple fact that the bright, shining new version of the software didn't work.

BY PAUL D. LEHRMAN

Media100, the company that was now making the software (having bought up Digital Origin, which was a reincarnation of Radius), claimed that they had broken the 2-gigabyte, 9-minute barrier that had encumbered previous DV editing programs: In Windows' native format, you can't address a file larger than 2 gigabytes. "This was geared to the music market," Howard told me, "especially concert shooting." Panning and zooming of stills—the "Ken Burns effect"—was now built into the program so that you didn't have to export files to a compositing program like AfterEffects to do those types of tricks. There was a History feature, like Photoshop's, that allowed you to go back and undo multiple layers of edits. And you could work on several versions of a program simultaneously using a new Composition feature; previously, you had to have multiple iterations of the software running to do that, which was, according to Howard, "an invitation to crash. One student lost all of his files that way."

For my part, I had some doubts. Media100 had renamed the program Cinestream. Why? Because it had new features that were oriented toward the Web: You could insert a Web link into a video, which would allow you to, say, click on the cool jacket a character in a streaming cartoon was wearing and order it on the spot from Walmart. This wasn't exactly something the mainstream video market was screaming for. "Video producers were very upset that they might no longer be able to

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output to tape," Howard told me, "but the company assured them that wouldn't change." Also, word had gotten around that two of the top engineers at Media100 had left for greener pastures at Adobe to work on Premiere 6. It was true: After that program came out, Howard said, "You could see their fingerprints all over it."

But Howard went ahead and moved his EditDV files into Cinestream and started to work on them, in the hopes of creating a smooth, new version for the AES banquet. We also planned a showing at a student film festival at Tufts University (which, you may recall, paid for it, because the ASA didn't give us any money) a few weeks before the AES banquet, at the beginning of May. In addition to cleaning up the film, Howard wanted to try a new approach: He wanted to take out my on-camera narration (we both agreed I looked terrible) and hire an actor to read parts of my narration, and then fill in some of the information by interviewing me on camera. We shot the interview in about three hours in his living room (it looked fine), and he recorded the narration in an evening.

All seemed well until the end of April, as we started to get close to the date of the banquet. I was busy wrapping up my classes for the year and preparing for a bunch of performances, so I wasn't paying much attention to the fact that I hadn't heard anything from Howard about viewing a rough cut, or helping him with the audio. I called him from time to time, and he was always noncommittal, telling me he was "working on it."

Howard's a great guy, but at this point, I should have noticed an odd smell emitting from the phone whenever I spoke to him. The evening of the Tufts showing arrived, and I still had not seen his cut. (This will sound familiar if you were paying attention last month.) There were about 60 people crammed into the lecture hall where we were going to show it—but no Howard. Finally, he came in and, offering a vague apology for being late, put a tape into the projector. To my great surprise, what I saw was essentially the same film I had seen back in December, the major difference being that about 10 minutes of footage, which had been taken out to meet the ASA convention's time limit, had been restored. I was still the narrator, I still looked awful, there were still editing problems and vibrating stills, and the audio still sucked.

What had happened to Howard's new cut? Once again, the software screwed us. This time, it wasn't a spectacular crash like last time. This time, it was the simple fact that the bright, shining new version of the software didn't work.

Media100, in its haste to get the product out the door before the competition (Adobe) got Premiere 6 out, had screwed up, and worse, had lied about it. "The nine-minute thing didn't happen," Howard told me a few days later. In fact, as of this writing, it still hasn't happened. "The pan-and-zoom feature looks terrible. It puts these rolling horizontal or diagonal lines into the picture that look like analog tape dropout. The company at least put a disclaimer into the box about not implementing the nine-minute feature, but they didn't say anything about the problem with pan-and-zoom."

There was more, much more: "Whenever you close the program, you get an error message, because it's not clearing itself completely out of memory. Sometimes the computer hangs, and if it doesn't, then when you relaunch the program, it crashes. But this only happens if you're hooked up to a video deck." Presumably, the developers never tested it that way.

Two different gentlemen at the banquet approached me after the screening and whispered, "I could help you with the sound mix."

"The History feature is inconsistent, and it's hard to figure out what's remembered and undo-able, and what's not," he continued. There's a Video Dissolve function, but it gives you no control over pre- and post-fade times: "If there is a hard cut in the original program material, and the preprogrammed fade time happens to overlap the cut, you get ghost frames from what's on the other side of the cut." That's why there were all those weird flash frames and jumpy edits. "The only way to do controlled dissolves is to double-process the tracks. It's like going twice around the block to get next door." But this wasn't a bug; it was a feature. "It's an idiot-proofing device designed to make it easier for people who don't really understand what's going on when they create a dissolve. So it's been in EditDV from the start, and it didn't change in the new version. I guess they figured everyone was used to it or had developed work-arounds."

Howard also showed me why he couldn't get the audio to cooperate. Any kind of processing applied to a clip, whether it's video or audio, is called "filtering." Audio processes, like stereo placement and gain change, are grouped incongruously with video dissolves, fades and wipes. But the audio filtering is all "offline": To use any of the features, you first have to manually create an "fx" track, which the processed audio gets laid onto, then set your parameters (with no aural feedback, not even Premiere's clunky Preview feature), apply the process (called "rendering") and then listen to it—and hope you did it right. "It's totally hit or miss," according to Howard.

There are graphical tools like level meters for audio, but they are, for the most part, useless. "If you go for a consistent level on the meters, the result is that the levels are all over the place," he said. There is rubber-band editing for audio levels, but besides the fact that the visual display is tiny, there is that long pause for the audio to render before you can hear what you've done, which takes all of the intuitiveness out of it. And there is audio waveform drawing, but it is, according to Howard, "ridiculously slow. I tell my students *never* to use it. And it's not interruptible once you start. Unfortunately, the tiny arrow that tells the program to draw the waveform is right next to the tiny arrow that lets you visually collapse tracks—and if you hit the wrong one, you might as well go out for lunch."

Synchronization issues that had been in EditDV 2.0 still hadn't been worked out. "Out of nowhere, the sync goes away," he explained. "You often have to slide audio tracks around by trial and error. Deleted parts of the track still have some kind of data in them, and that knocks the sync off. The program would be telling us that the video and audio were 18 frames off, but they'd play in perfect sync. There's no way that DV itself can go out of sync, since everything's recorded in the same datastream, so they're doing something wrong with the data. There's also a problem when you're playing the audio through a soundcard—there's latency. The company insisted it was a glitch in QuickTime, but then they put out a patch that advances the playback audio by eight frames."

One of the worst aspects of the new program, and the one that was causing Howard's already fragile hairline to move back even further, was that in the middle of an edit session, the filtering func-

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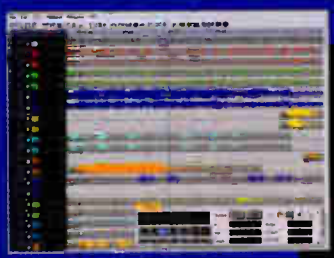

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tions—both audio and video—would just stop working. "Any time you render any track and then do something *else* to the track, the program will just ignore you. It won't do anything at all." There was no information available from the manufacturer's tech support about this, so it was up to an online user group to spread the word of a work-around: "Before you render anything, you have to first cut *all* tracks that have effects on them and paste them back in. Then you can re-render. That's really scary!"

But the absolute worst "feature," the one that should have the programmers and marketers deported to a remote desert island where their modems will only work at 300 baud and their power will go off at random times during the day (wait a minute, that sounds like California!) is this: Files created, or even just *opened*, in Cinestream could not be opened in EditDV 2.0. "The company didn't tell anyone that files were not backward-compatible," Howard sighed. "Once you opened up a video program, even if you haven't touched it, you can't open it again in EditDV. If you didn't like it, you were stuck with it. So once we started working with the new software, there was no turning back, as much as we might have wanted to.

"It's been one heart attack after another," Howard continued. "You should see what people are saying on the user group bulletin board." As to why he hadn't shown me a rough cut, it was because he didn't have one. And he feared that if he told me he was making so little progress, I would have bitten his head off.

By the time the AES banquet rolled around nearly a month later, Howard was able to clean up some of the jumpy edits, but the stills were still shaking. He was able to implement some of my suggestions about the audio, so it was not quite so egregiously bad, but I was still a long way from happy with it. To my great embarrassment, two different gentlemen at the banquet approached me after the screening and whispered, "I could help you with the sound mix."

As I write, three months later, I have still never seen Howard's new cut or any of the interview footage we shot in his living room incorporated into the film. He has abandoned Cinestream, and is slowly but surely moving the original files onto a new, faster disk and converting them from QuickTime to Windows AVI format. His plan is to reassemble the program in Premiere 6.0.1, with the help of a new video card, the DVStorm made by Canopus. "I just finished a little project with it, and it's wonderful," he says. "I don't want to give Premiere too much credit, because what makes it stable are the plug-ins and drivers that Canopus has written for their hardware. It doesn't crash; it just works. It renders on-the-fly, so you can see what you're doing in real time. And it handles sound much more nicely." The only thing slowing down the process is that he has to convert the files one at a time—there are no batch converters that can do what he needs to do.

Another friend of mine, also a video editor, when I told him this story, replied, "Why did you go with EditDV? Everybody knows it's dead." Yeah, but unfortunately we didn't know that when we started.

So I've been through the wringer on this project, and it's not over. Hopefully by abandoning the platform that once seemed so promising, Howard and I can put all these problems behind us and finish the film, and then go on to the next step: convincing someone to give us money to do a 60-minute version and sell it to the broadcast market. We think the

—CONTINUED ON PAGE 229

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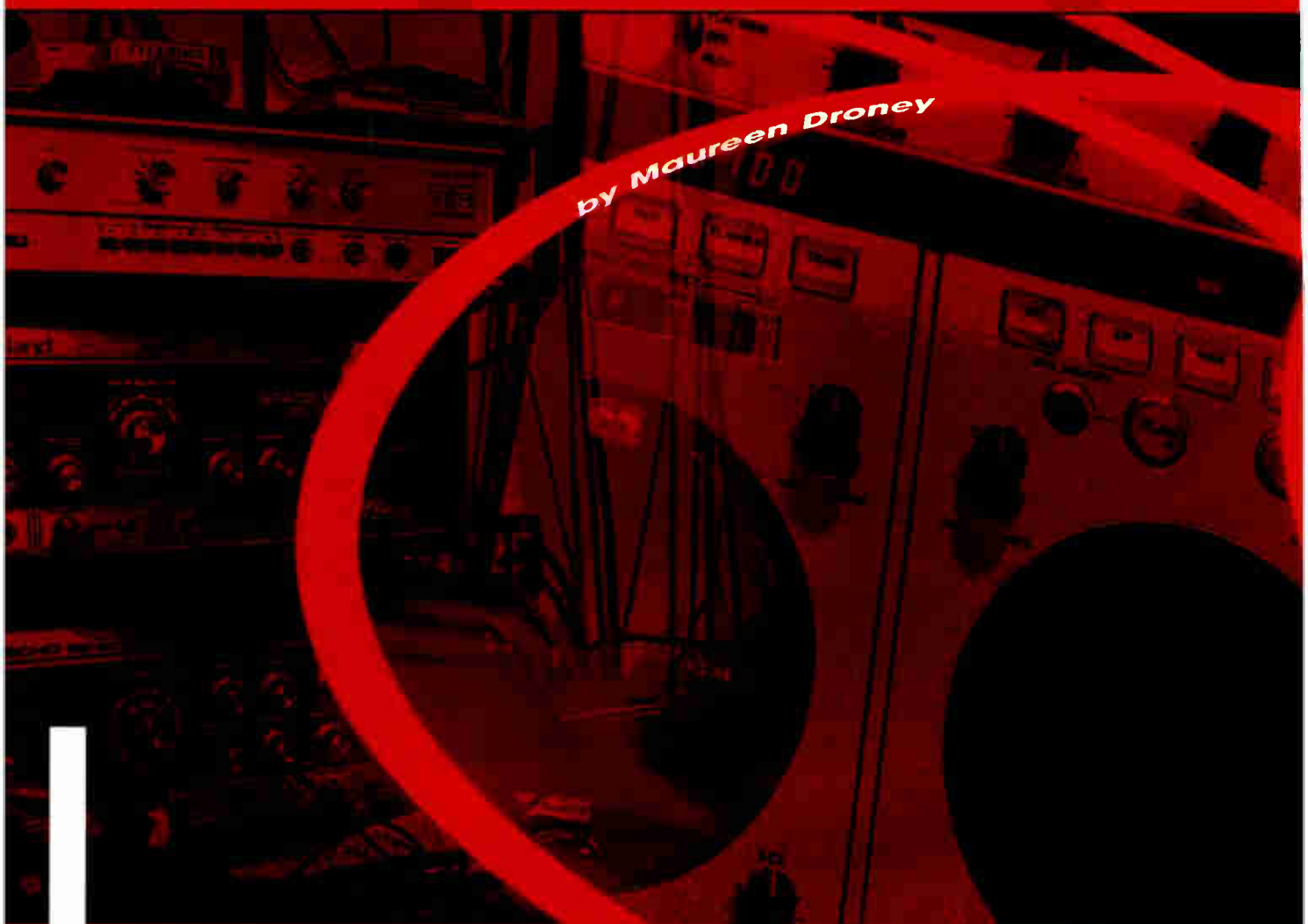
beat by beat



by Maureen Droney

Loop-based music: It doesn't sound like a big deal. But the truth is, it's a noisy revolution—a virtual democratization of music. More than modular digital recorders or fix-anybody pitch changers, loops and drum machines have changed the face of pop music production forever. Anybody with a creative vision and the ability to record a snippet of noise from one machine to another and program a sequencer or drum machine is now in the running to write and produce tracks for the stars. Because, as Beck said, sometimes all you need is "two turntables and a microphone." Or maybe that was an Akai sampler and some attitude.

The earliest use of loops is shrouded in the haze of recording studios past. Back in the day, any engineer

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The Distinctive Spectrums of Loop-Based Production

Illustration by Mike Cruz

worth his salt knew how to edit 2-inch tape, punch in manually without the safety net of "undo" and make a tape loop. Magnetic tape strung from machine to machine, and sometimes around the room on mic stands, doorknobs...whatever. Who knows how many great songs this technique was used on? Pink Floyd's "Money" is notable. Toto's "Africa" is said to have used a tape loop of drums run partly around a paint roller. And, of course, The Beatles used loops. The revered Mellotron played tape loops of actual flutes and strings, and probably holds title as the first loop-based instrument. But all of these techniques required expensive studios and knowledgeable engineers. The real revolution began when the first digital samplers hit the street.

World Radio History

beat by beat

The heady days of wildly sampling anything that caught one's fancy and incorporating it into your own music are long gone; copyright protection and just plain innovation have led producers down different paths. Loops have become accepted and expected groove components, found in everything from rap to rock. Here, *Mix* checks in with a few mix/remix specialists, all artists in their own right, and all known for their creative work in the genre.

SPLICING ASBESTOS

A veteran composer and the sound sculptor behind Meat Beat Manifesto, Jack Dangers has the rep of being consistently innovative with his work. In addition to MBM's multiple releases, he's worked with Public Enemy, Nine Inch Nails, Bush, David Bowie and David Byrne, to name a few. His label (with partner Ben Stokes), Tino Corp Records, has released such innovative records as DHS' *Mind Control* EP and Bo Square's *Sizing Things Up*. Checking in with this techno guru at his Marin County home studio, we found him in his most recent phase, working with—no way—analog tape loops!

"It's true," he laughs. "I've just done a new 10-inch called *Tape Music* that is all done with tape manipulations, rather than with samplers. You can do different things with tape: For one thing, you can slow it down a lot more than you can digital information—when you tune down a sampler, it just breaks up. And you can feed things back into a tape machine. If you've got like four reel-to-reel tape machines going into a desk, you can feed them into each other and do some amazing things.

"In the same way, you can do things with a razor blade that are kind of random, that you wouldn't even think of doing if you have it all on a screen in front of you. I wouldn't want to do it all the time—cutting tape is terribly time-consuming. But sometimes old technology is more effective for sculpting and molding sounds than just pushing a mouse around."

On 1998's *Actual Sound + Voices*, Meat Beat Manifesto's most recent full-length, all-new album, Dangers also made use of older technology, recording some San Francisco Bay Area luminaries playing live at Toast Studios as the basis for several of the songs, among them "The Thumb."

"Some of that album was improvised live," he recalls. "I just collected it together and chopped it up. 'Thumb' was a huge, extended jam over two days—I was playing bass and Lynn [Farmer] was playing a drum kit with a tambourine strapped to the kick drum. Then we had Bennie Maupin and Patrick Gleeson, who have both worked with Herbie Hancock—Bennie on wind instruments and Patrick on synthesizers."

The band played to a loop that Dangers had programmed into his Akai 3200 sampler. Room mics picked up ambience, and Toast's EMT plate was used to good effect. The end results went to Danger's home studio for "carving and whittling."

Dangers pulls sounds from everywhere: live tracks, his own creations and, yes, vinyl. "I like scouring record shops and finding rare breaks. It's working more in a hip hop/DJ style than the techno way of sitting in front of a computer and making beats. I do that as well, but I really like the discovery of obscure things."

Dangers' publishing company handles clearances for any significant bits of other recordings that end up on his projects. "If it's a spoken-word sample, of course, we clear it," he states. "But I really feel that it's a pop art, Andy Warhol way of working—taking something that's already there and making it into something completely different. There are levels of what's acceptable, and you've got to do the right thing. If you're sampling a lyrical line, that's different than sampling a bass note from a dub record. I've certainly been sampled enough times, and no one's ever had a problem from me. I can't turn around and sue them if my work is sampling other people's work! It really is an art form; it's 'Musique Concrete.' French composer Pierre Henry went over all this 40 years ago with 'La Reine Verte.' He combined his music along with other artist's sounds and made his own unique piece, and it's brilliant."

Sometimes, as on a recent remix for Freddy Fresh, Dangers starts out with a loop supplied by the artist. "It was a big disco loop, which they did clear because it was a huge chunk," he observes. "I worked a beat around it with a Roland HPD-15 drum machine. Then I added a different bass line, and took the keyboard sound off and introduced it earlier on in a different key.

"It's always different. It can start from the bass line or from a vocal sample from someone's track that they want included. A lot of times, things totally change by the time I'm done. Sometimes when it gets going, all the original stuff ends up muted on the desk."

Dangers *always* monitors on Genelec 1031s. His main creative tools, along with four 2-track Studer PR99s, include Emagic's Logic Audio, which he runs on a Macintosh 950 computer. He uses Pro Tools for recording and editing—Recycle is a favorite program of his. Dangers'

PHOTO: STEVE JENNINGS

Jack Dangers inside his home studio in Marin County, Calif.

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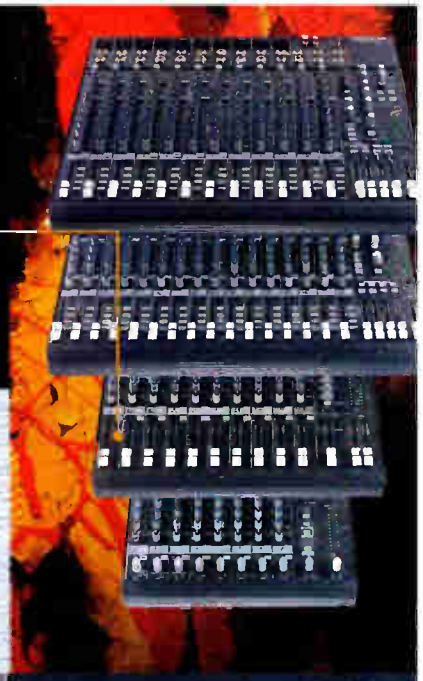

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synth collection combines old and new, including rare modulars: an ARP 2500 and 2600, a Synthi AKS "briefcase," a Synthi 100, a Roland 100M, an E-mu and some Electronic Music Lab modular systems. Keyboards are normalled to a Mackie 8-bus mixer, but most mixing is done with a mouse rather than faders.

"I like using digital technology like Pro Tools and some of the plug-ins, but I like combining them with analog gear, like a Roland Space Echo and a spring reverb, to put warmth into the music," he notes. "Some sounds haven't been emulated—they can't be."

Other favorite effects include a tube Echoplex tape echo, Lexicon PCM 70 and 80, an Eventide DSP4000 and "loads of plug-ins," including favorites by GRM. "GRM are really cool—strange, morphing, mutating things. They're made by the French company started by Pierre Schaeffer and the group of musical researchers who actually created 'Musique Concrete' back in the '50s."

It's a fine line between a great groove and a boring one; staying fresh is key to the game. While he's always searching out the new, Dangers gets much of his fundamental inspiration from the past. "The idea of looping a beat break is nothing new," he says. "A composer named Anthony Gnazzo experimented with looping breaks at Mills College back in the '70s. It was a pop art kind of thing. All electronic music really stems from those experimental, avant-garde composers of the '50s and '60s. I've definitely gotten into all that, because it's the roots."

Rhys Fulber, Delerium's other half

RECYCLING THE SILENCE

It wasn't easy to catch up with Rhys Fulber. Although the Canadian-born artist/producer/writer's main workplace is in Los Angeles, Fulber, known for his work with his own bands Delerium and Front Line Assembly, as well as with Fear Factory, Skinny Puppy and Sarah McLachlan, spends much of his time in Europe. We finally found him one evening in Amsterdam. He'd spent the day creating tracks for a new artist debuting on Epic Records and was preparing to head to London the next day to record them.

Fulber coined the phrase "digital adaptation" to describe the work he did with Fear Factory. It was a pivotal collaboration; until Fulber hooked up with FF, they were known for straight-ahead, hardcore metal. "The term fit because I was taking their tracks and putting them into a sampler, getting the songs ready to be changed," he recalls. "That was before

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KORG

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beat by beat

I was using computer-based audio—it was just an Atari and a sampler. They were a metal band, but they were very progressive and they wanted to push in an electronic music direction. We were on the same label, and one of the A&R people suggested that we work together. The stuff I'd done with Front Line Assembly was hard electronic dance, so it wasn't too much of a stretch."

Some might see a wide swing between his hardcore work with FF and the ambient and ethereal projects he's done with Delerium and Sarah McLachlan, but to Fulber, the process of creating the tracks is the same. "The source material is different, but the creative process isn't," he explains. "It's instruments, loops, phrases and building up from there."

Dave "Rave" Ogilvie inside the main control room at Trent Reznor's Nothing Studios.

In his work with Front Line Assembly, Fulber was known for his use of samples, including bits from horror and sci-fi movies. These days, he prefers to create sounds from his own sources. "Back when we were making those records, we weren't exactly selling a lot of copies," he says with a laugh. "We would literally sample anything and manipulate it. Nowadays, you can't do that. And I've grown beyond it. Now I come up with original source material for everything."

That source material comes from his own library of sounds, culled from recording projects—his own and ones he's produced—commercial sample CDs and his own synthesized bits. "I grab drum phrases from wherever," he admits cheerfully. "Just not off other people's records! The source material might be anything—a remix I did three years ago, for example. I'll pull a 2- or 4-bar loop, then take all the hits, cut them into pieces and rearrange them into something new. It's mix and match. To get a big, rolling drum groove, it's really about layering. One little bit may not sound like much, but when you layer four or five tracks together, you start to get something.

"Five years ago," he continues, "I'd use more straight loops—pull a sample, loop it and that was it. But now everything is chopped into individual hits that I can manipulate. I'll start with a 2-bar drum loop—sometimes even a straight kick/snare program I've made. Then I'll use Steinberg's Recycle program to chop everything into individual hits—every little tick and hi-hat and snare—and move them around. I use Logic Audio as my main workspace—kind of like a graphic editor. If you just layer four loops together, a lot of times it just sounds like a mess. The difference is, when you have control over every hit, you can move them all around until they play off each other and make sense."

In the beat-making process, it doesn't hurt that Fulber started out as a drummer. "Initially, I was in bands," he says, "When I got a drum machine and a synth, it became, 'Oh, I can do everything by myself now—this is way better.' I do know music theory, etc. I'm not a great keyboard player but I can play chords and basic stuff well enough to do what I do."

According to Fulber, "Logic Audio is my world." And recently, this bi-continental producer has gone fully mobile, loading Logic, his Emagic sampler and some synthesizer programs into a G4 Powerbook. "When I'm in Europe, I like to travel to different places—like Turkey and Cypress. Now I can bring my Powerbook and my little Genelecs and make tracks in a fairly professional standard. Before, I had to lug all this equipment. Now I can just show up with a Powerbook. I use Absinthe from Native Instruments and the TC Works synthesizer, which are both excellent."

Back at his main L.A. studio, Fulber routes his keyboards through a Yamaha 03D digital mixer and records into Pro Tools using Sound Designer. Other main tools include an Emulator 4 sampler and modular synthesizers—Nords and a Doepfer A100. "I like making sounds with old-style, patch cable, analog synth modules," he notes. "You have to build everything up step by step, and you get cool things along the way. If you're using modern synths, it's all arranged for you—you just turn the knobs. With the modulars, where the EQs and filters are all broken down to the basic elements, it may take you all day to get a sound, but it's great when it comes together. You have to visualize what you want to do, and you're always going to get something different."

More and more, Fulber finds his skills in-demand for pop music projects. "What was considered outside and experimental is now becoming mainstream," he observes. "That's what happens. But for me, I just follow what got me involved in this in the first place. I do what I do, and if it comes around, that's great."

TWITTERING MACHINE

Dave "Rave" Ogilvie has engineered, produced and "manipulated" for artists from Nine Inch Nails and Marilyn Manson to Skinny Puppy, Mötley Crüe and the legendary Einstürzende Neubauten. A longtime collaborator of Trent Reznor's,

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Ogilvie is acknowledged to be a master of the heavy groove. The question is, with the kind of "been there, done that" credits he's accumulated, how does he keep from getting jaded?

"The fact that technology has made everything accessible to almost everybody makes it very rare that you hear something exciting," he admits. "It's so easy that it gets boring. A lot of people think they've established a groove that's happening by just grabbing a loop out of *Future Music* magazine and repeating it over and over. They think they've gotten to the end already—but that's just where it starts! For me, it has to go to the edge. I like bands like Squarepusher or Aphex Twin—some of the more edgy artists who take it to the extreme and turn it into something new."

A recent project that's sparked Ogilvie's enthusiasm is Japanese band Mad Capsule Market. "What they're doing with loops and guitars is very innocent, very repetitive," he comments. "It's brilliant because it's bordering on silly, and that made it a lot of fun for me.

"They had rhythm-based loops, then they had guitars on top that were played live, then turned into loops. But the drive from the rhythm wasn't there. It's a problem when you're working with loop-based rhythms with walls of noisy guitars on top of them—the guitars will overwhelm any sort of subtleties. I didn't want to reprogram, so the issue was how to bring out the power that was there."

To rework the loops and bring out their punch, Ogilvie used one of his favorite tools: multiband processing. It's been an Ogilvie trademark for some time; before multiband gear was available, he routed it on his own using live gig P.A. crossovers. These days, he relies on a Brookes Siren DSS901 and a Waves C4 plug-in.

"If you just work with EQ on a loop, you'll change its quality and integrity," he notes. "Okay, maybe the loop was lo-fi to start with, but that's its attraction. And if you're EQ'ing to try to bring out the snare drum, or to get rid of a tambourine that was far too loud, well, all of a sudden the loop itself doesn't sound the same. Given that it was a lo-fi sound to begin with, it can actually get destroyed. Hence the attraction of multi-

JOSH WINK PUTS HIS FINGER BACK ON THE BUTTON

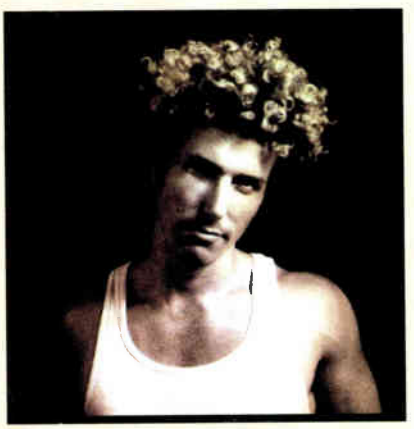
Josh Wink is a prolific American artist/DJ/producer who consistently tops the Euro dance charts. Working out of his bedroom studio in Philadelphia, he's managed to amass several monster club hits including "Liquid Summer," "I'm Ready," "Don't Laugh" and the Platinum "Higher Stage of Consciousness." His Ovum Recordings imprint features his own releases, along with those from Goldie and Sylk 130, and he's done remixes for Moby, Skinny Puppy, Njoi and Lenny Kravitz, among others.

As Wink puts it, he's always trying to "get the most use out of the dance floor." To that end, he's recently changed his musical production style, eschewing computer-based sequencing for a return to his programming roots. "I went back to sequencing on old drum machines," he explains. "Then I got an [Akai] MPC2000 and started using that as my sole sequencer and composer. I'm not even using an interface—just a CV sync box and old-style MIDI in, out and thru to trigger both digital and analog keyboards and other gear. It's fun, and it brought me back to how I originally started making music. I'm working solely with four, eight or 16-measure loops. I sample into the MPC and sometimes I'll re-sample with the Roland VP-9000—the variphrase processor. That's a very interesting tool for time compression and shifting, and for processing things in general. I create a loop on the MPC, dump it into the VP and process it using the onboard effects."

The MPC's outputs come up on Wink's Mackie 32.8 mixing desk. He records a 15- or 20-minute pass of the loop to either DAT or Roland VS-1880, making changes—punches, EQ and effects on-the-fly—as if he were DJ'ing live in a club. The mix then gets dumped into Emagic's Logic Audio to edit and resequence on his Macintosh Powerbook computer. "It's a combination process that's working for me lately," he comments. "I get the groove and the feel of doing it live, and then I get to polish it in the computer."

Other Wink studio equipment includes a Doepfer MAQ 16/3 sequencer and MS 404, a Korg KMS30, tons of Roland gear from a JD-800 and 990 to a TR-808, -909, a Juno 106 and a Super Jupiter, and more...a Prophet 5, an Akai S6000, a Novation Super Bass Station and Drum Station, an Ensoniq DP4 and an Alesis QuadraVerb.

Because Wink gets a big sound and his tracks have plenty of bottom, you'd expect to find that he works on big speakers in a large room. Instead, his studio is in a row house, connected to other dwellings on both sides. Consequently, he listens quietly on KRK K-Rok speakers with 7-inch woofers, as well as on Sennheiser Linear headphones.



"To me, a lot of engineering is based on mathematics," he says. "When you know your equipment, you know by looking at the knobs what's what. Also, I now have a frequency-analyzer program; when I drop my tracks into the computer, it can show me if I'm lacking some frequency—I have a digital cue."

Like Fulber, Wink spends a lot of time travelling, both in the U.S. and internationally. These days, he spends his flight time doing post-production on his laptop. "I used to do a lot of my reading and sleeping on planes," he says a bit ruefully, "but now with my laptop and all my programs burned into it, I don't get any more sleep; I'm always doing music."

—Maureen Droney

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band dynamic processors: You're able to find the exact frequency you're looking for and EQ and compress it without changing the character of the loop. It's a very powerful tool—my savior, really. Basically giving me volume control over everything in the loop."

Rather than chopping loops into bits and rearranging the sounds, Ogilvie prefers to work with combinations of loops, piling them up and adding new, programmed sounds on top. Those new sounds generally come from the library he's amassed over the years.

"I started keeping sounds in 1985, and I've maintained a bank of everything I've ever had," he says. "Originally, it was on Akai S900, and it's gone through PCM digital tapes, etc. I keep converting and, generally, now it's on CDs. It's hard though, because things you were using three years ago are obsolete; it's like 'Oh yeah, I have those sounds on...uh oh, nobody here has one of those.' And if you're in New Orleans and they have to spend a day getting that format from L.A., well...So, now I'm into getting it all onto one drive and backing up to CD.

"Also, while it's true that I have a massive library, it's also true that I use maybe 20 percent of it. Because, depending on the application, the sound totally changes. What you use on one project will sound completely different on another. That's the art of it."

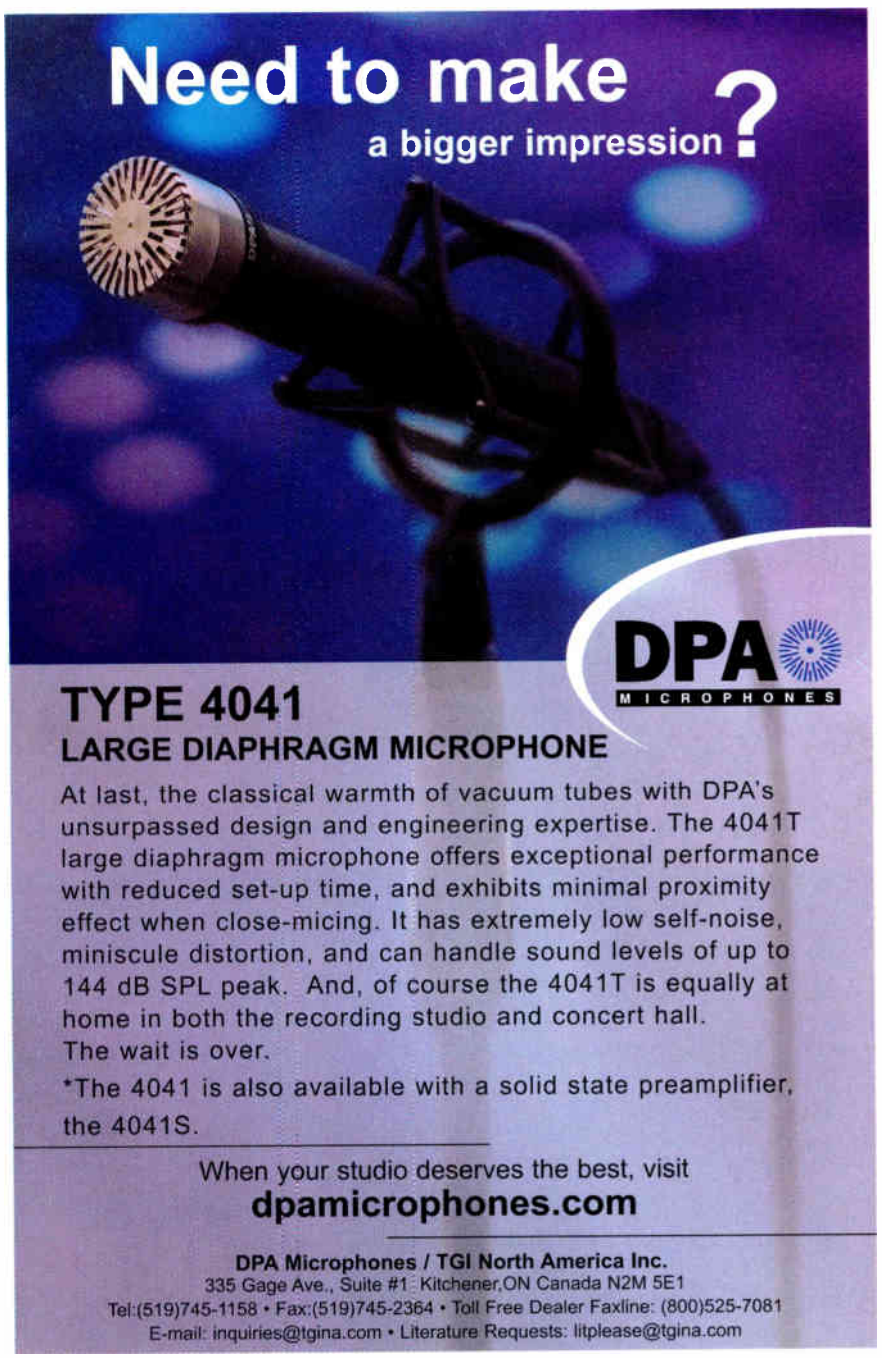
While some projects still require to be transferred to Emulator 4 or Akai files, Logic Audio's ESX24 sampler is becoming a frequently used system. "The Logic sampler is really handy because of its portability and ease of use," Ogilvie notes. "Once you put something into the hard drive, which for me is my Powerbook, it's all sitting there. You don't have to carry lots of stuff with you or worry about what format you're going to need for the project when you get there."

Ogilvie's main setup now is based on his portable Powerbook, but back at his home studio, outside of Vancouver, B.C., he also has a Macintosh G4 that he uses with Pro Tools. Not yet content with the sampling options available for Pro Tools, he switches to Logic Audio for sampling applications. He's also fond of Emulator gear, especially the E-4 and E-6400. "I like the way they handle drums and guitars," he says. "It's a representation thing. Some other samplers sound good on their own but don't hold up in the track like Emulator stuff does. The E-4 is a fantastic line, its got ease of use and it's very musical."

Other favorite gear includes Nord Micromodular and Lead keyboards, a Korg MS2000, and an Eventide DSP4000 and H3000. Ogilvie also likes sampling with the now-antique AMS DMX 1580. "To this day," he observes, "the way that box digitizes is great; whether it's a loop or a bass sample, it's amazing how when you put it in the AMS, it adds a little life and presence.

"I don't like to listen to trends or to copy what other people are doing," he concludes. "It's not about, 'Wow, I heard this record that's fantastic, and I want to sound like that.' Where the fun of it is, and what excites me, is to make something different. It might not be what's going on at this date in time, but it's about making something that I enjoy listening to. The way I look at it, you can make music or manufacture music, and I'm far more on the making music side." ■

Maureen Droney is Mix*'s L.A. editor.*



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So Many Plug-Ins, So Little Time

NEW SIGNAL PROCESSING PLUG-INS

by Randy Alberts

2001 has already seen a bumper crop of new plug-ins—no less than 55 new signal processing packages have been released since Winter NAMM in what one busy software developer has called "a slow year for plug-ins." Some of the innovative new audio tools described here demonstrate that there is little in the way of audio processing that cannot be done with a DAW and a range of plug-ins. Today's plug-ins can emulate almost every kind of hardware-based signal processor, from tube mic pre's to vintage compressors, from graphic EQs to pitch shifters, from reverbs, delays and flangers to panners and mastering processors. And the new plug-in "shells" that allow for cross-format use of otherwise incompatible plug-ins multiply the audio possibilities exponentially.

Our latest listing of signal processing plug-ins includes new products released this year, listed alphabetically by manufacturer. While instrument-based plug-ins fell outside our listing criteria, many software-based synthesizers are capable of processing external and internally bused signals with a wide range of filters and envelopes. And, because this article was written before the postponed AES convention, more exciting plug-ins will no doubt become available before the end of the year.

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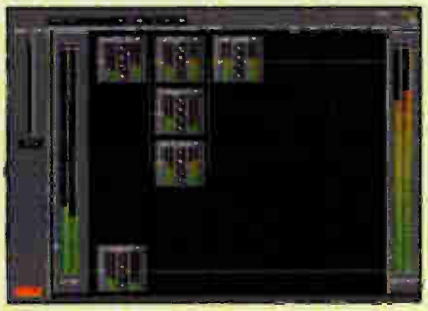

BIAS Vbox

AudioEase Altiverb

CreamWare SMM 166

Antares Audio Technologies Auto-Tune 3

CEDAR DeCrackle for SADiE

Auto-Tune 3 from Antares Audio Technologies is an updated version of Antares' popular pitch-correction software. The new version now supports Mac TDM, RTAS, MAS, VST, PC RTAS and DirectX host plug-in platforms, and the user interface has received a noticeable facelift—it now includes a new Graphical mode for displaying mouse-drawable pitch envelope curves of any recorded performance. A new Automatic mode uses a revised core pitch detection algorithm to correct vocals or solo instruments in real time, and pitch correction is now phase-coherent in stereo tracks. Several new source-specific detection and correction algorithms include presets for soprano voice, alto/tenor voice, low male voice, instrument and bass instrument. Auto-Tune has also been ported to the Mackie Digital 8-Bus platform. Prices are $539 for TDM; $359 for RTAS/MAS/VST versions.

If "seeing" a plug-in preset helps visualize its sound, then take a look at AudioEase's Altiverb. This 1, 2 and 4-channel sampled acoustics reverb processor for Digital Performer/MAS host environments displays a photo of the actual room a preset is based on, and comes with additional software for creating JPEG pictures of user-sampled acoustic spaces. Taking full advantage of the G4 Altivec Velocity Engine co-processor, Altiverb works in real time, produces up to 40 seconds of reverb decay, and includes presets ranging from the Amsterdam Concertgebouw to the back of a Ford Transit van. Price is $495 direct from AudioEase.

BIAS' Vbox is a real-time control environment for VST plug-in effects that combines, re-patches and mixes any of hundreds of available third-party VST plug-ins. Bundled with numerous, free VST plug-ins, Vbox employs a matrix grid for combining multiple individual plug-ins per channel in series, parallel, or series and parallel. Each plug-in's input/output levels can be controlled

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So Many Plug-Ins, So Little Time

without leaving the Vbox Control window. Vbox is priced at $129.

Five new processing plug-ins have been released to date from **Bomb Factory**. The moogerfooger 12-Stage Phaser ($249) and Analog Delay ($249) plug-ins emulate the signature sound of Dr. Moog's Big Briar hardware modules; ditto for the Bomb's plug-in emulation of Joemeek's SC2 Compressor ($399) and VC5 Equalizer ($249.)

Bomb Factory moogerfooger phaser

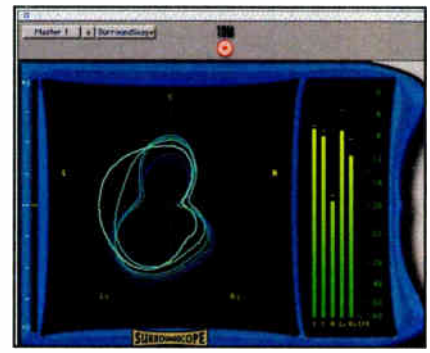
The SC2 is based on Meek's photo-optical compression circuitry, while the VC5 is a faithful recreation of a treble and bass circuit with sweepable mid, also based on circuitry developed by Joe Meek. Rounding out Bomb Factory's new releases is the Pultec EQP-1A ($399), a digital EQ plug-in that captures every sonic nuance of its analog predecessor.

The **BBE** Sonic Maximizer ($129; $99 for registered Cakewalk users) is now available exclusively from Cakewalk. Based on BBE's Sonic Maximizer hardware audio processor, this DirectX plug-in restores the presence of recorded music with clearer highs, natural brilliance in the midrange and harmonically rich lows. The BBE plug-in makes digital keyboards sound more realistic and helps vocals and guitars rise above a muddy mix.

BBE Sonic Maximizer

Available only from **CreamWare**'s online shop are three new Pulsar and SCOPE platform plug-ins. Surround Tool ($455) from zplane.development in Berlin enables users to pan up to 16 movable sound sources among up to 16 speakers under mouse or MIDI control. Surround Tool also offers a Grouping function, a Doppler effect and distance-dependent volume automation. The 16-channel Surround Mixer SMM 166 ($80) supports Dolby 5.1 and uses a graphical X/Y matrix and separate control for LFE (Low-Frequency Effects) in each of the 16 channel strips for mixing to six surround channels. The new 24-channel Recording Mixer RMR 242 ($45) can be used as an alternative to standard Pulsar mixer modules and/or as a submixer. Channel pairs can be coupled, and, like the SMM 166, the RMR 242 can be remote controlled and automated via standard MIDI controllers.

New from **Digidesign** this year is the SurroundScope surround metering plug-in ($295) for RTAS and TDM host environments. Providing a visual display of up to eight channels' signal levels within the Pro Tools multichannel sound field, SurroundScope supports all standard multichannel formats (stereo, LCR, LCRS, Quad, 5.0, 5.1, 6.0, 6.1, 7.0, 7.1). SurroundScope's handy Lissajous phase meter also displays full-spectrum signal coherency for Pro Tools TDM and LE users alike.



Digidesign SurroundScope

INA-GRM's GRM Tools have been used by musicians and sound designers for years, but a new distribution channel through the Electronic Music Foundation and CDeMusic and a serious new TDM bundle are newsworthy '01 items. Designed and developed by the Groupe de Recherches Musicales de l'Institut National de l'Audiovisuel (INA-GRM) in Paris, GRM Tools TDM ($459) and GRM Tools RTAS ($349) bring a host of comb filter, phaser, delay, Doppler, bandpass, pitch, freeze, EQ and other effects modules under one roof. The TDM version, which comes bundled with all eight plug-ins, including a shuffler for rearranging audio fragments, supports Pro Tools 5.1 and earlier on the Mac, with PC versions expected by AES/New York.

INA-GRM RTAS Doppler

Originally released as a TDM plug-in by its subsidiary Kind of Loud Technologies, **Universal Audio** recently announced the development of the SmartCode Pro line of software encoders for Mark of the Unicorn's MAS plug-in format. SmartCode Pro DTS-DVD ($1,495) is targeted for those encoding prior to DTS-format DVD duplication; the DTS-CD version ($495) is used in creating 5.1 preview masters with standard CD burners; and SmartCode Pro Dolby Digital ($795) creates AC3 DVD masters. Also new from UA in '01 are the 1176 and LA-2A Vintage Compressors that join a host of new powered plug-ins based on the company's UAD-1 DSP card ($995), the latter also bundled with the RealVerb Pro and CS-1 Control Strip plug-ins.

Those recording and mixing with a Mackie Digital 8-Bus console can now make use of plug-in audio effects. Sold through **Mackie** direct and supporting the company's new V. 3.0 OS, each third-party plug-in's processor card is easily plugged into an available rear panel slot on the D8B's CPU box. Delay Factor ($199) from **Acuma Labs** allows users to drag-and-drop 16 delay taps while simultaneously editing delay time and output panning controls, each tap filtered through a fourth-order high- and lowpass filter. **Antares**' Auto-Tune ($499) is now available for pitch-correcting voice and solo instruments on the D8B. **Drawmer**'s ADX100 ($399) is a frequency-conscious gate, limiter, expander and compressor plug-in based on the company's successful hardware analog dynamics processors. Developed by George Massenburg's new **Massenburg DesignWorks** group, the MDW2X2 ($599) is a high-resolution parametric EQ that can be configured as four mono 5-band or two stereo 5-band parametric EQs. **TC Electronic**'s TC FX II is bundled free with Mackie's D8B UFX card ($499), and incorporates fully automated versions of many of TC's effects algorithms, including those found in the TC Electronic M2000.

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World Radio History

So Many Plug-Ins, So Little Time

McDSP's MC2000 Multiband Compressor was released in 2000. New for 2001 is McDSP's Analog Channel plug-in ($495) for Digidesign's Pro Tools DAW. Physically modeled after high-end analog tape machines, consoles and channel strips from Studer, Ampex, Otari, MCI and others, Analog Channel's AC1 module acts as a digital preamp for up to 24 mono or 16 stereo channels on a single MIX card. The plug-in's AC2 module emulates standard analog tape machine parameters and the effects of different bias, playback speed and IEC 1/2 equalization.

McDSP AC1 module

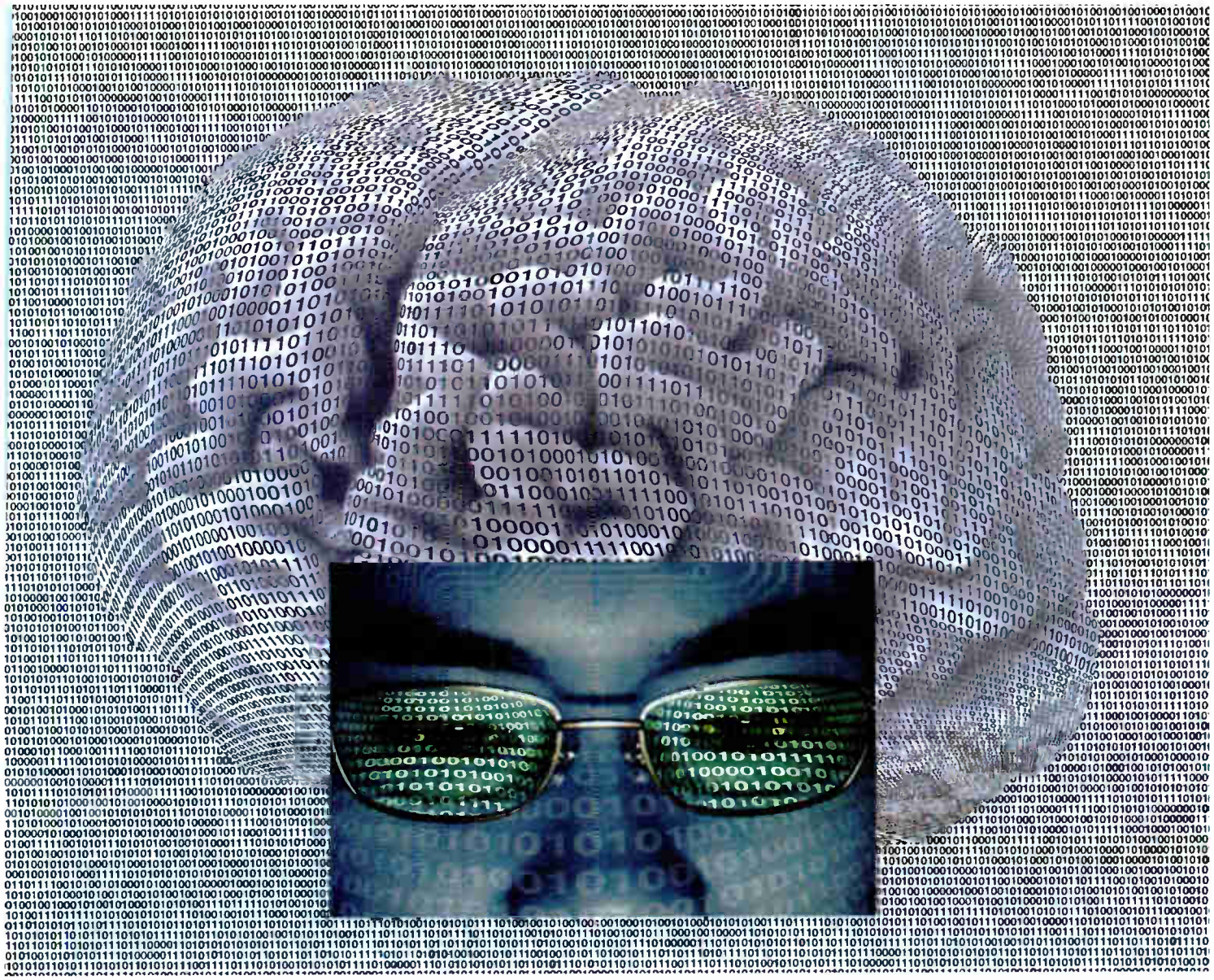
Mark of the Unicorn added four new surround plug-ins to its flagship Digital Performer 3 platform. ArcPanner provides a large, high-resolution surround panning "dish" display for flying sounds around, and n-Panner provides customary surround panning via Cartesian coordinates on a square-grid display. The new TriPan plug-in gives users a three-knob positional panning control with graphic three-way divergence, and allows users to make precise panning maneuvers along a signal's diagonal path using mirror, parallel, asymmetric, balance and mono panning modes. DP3 also now supports the Mac OS Input Sprockets protocol for connecting a compatible USB joystick to a Power Macintosh to control any MOTU or third-party surround panner.

MOTU Surround for DP3

A licensing agreement between Antares and Gibson this year has produced **Oberheim's** OB-Tune Pitch Correction plug-in ($49.99). Based on Antares' Auto-Tune technology, OB-Tune is an easy-to-use, DirectX plug-in that implements Auto-Tune's Automatic mode of pitch correction. Countless presets available in OB-Tune include major, minor, equal-tempered chromatic, and a host of historical scales such as Greek diatonic, just intonation and the Ling Lung scale from 2700 BC China.

PSP (Professional Sound Projects) of Piaseczno, Poland, has added PSP MixTreble ($30) to the company's PSP MixPack bundle of VST plug-ins ($100). MixTreble is designed for processing a range of treble frequencies, and includes a hiss removal tool and a transient section designed for stimulating flattened transients. Also included with MixPack are MixBass, MixSaturator and MixPressor; new to MixPack are additional mono versions of the plug-ins to be used in host applications that require single input and output plug-ins as insert effects for mono tracks. The company also planned to announce PSP VintageWarmer (price TBD), an analog-

World Radio History



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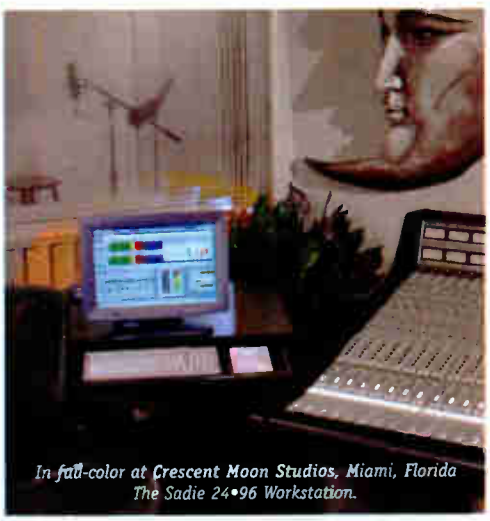

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World Radio History

So Many Plug-Ins, So Little Time

like limiter and tape recorder emulator plug-in, at the upcoming AES convention.

Two new CEDAR for SADiE plug-ins were introduced in recent months, both available in 44.1/48kHz and 88.2/96kHz versions. (The latter includes 44.1/48kHz capabilities.) DeCrackle and DeCrackle 96 ($2,495 and $3,295, respectively) remove audio degradation and many forms of impulsive buzzes and amplitude distortions. DeThump and DeThump 96 (same pricing as DeCrackle) remove unwanted low-frequency energy bursts (thumps) in an acoustic signal without significantly degrading the underlying signal. DeThump uses the data in and around a thump to build up a picture of a signal's original low-frequency data.

SEK'D has released DeClicker and DeCrackler, additions to the Audio Restoration Suite ($1,299) of DirectX plug-ins, originally developed for the company's Sequoia workstation. DeClicker removes clicks and crackling from audio source material, and eliminates transient noises and spikes originating in old vinyl recordings, digital switching and static discharge. DeCrackler may then be used to reduce any remaining small clicks, crackles and surface noises without signal degradation or loss of ambience.

Serato Audio Research expected to announce the release of the Pitch 'n Time 3 plug-in ($799) at AES. This Mac- and PC-based AudioSuite, RTAS and MAS pitch and time-compression/expansion tool now also sports a new stand-alone version for offline batch processing. The plug-in also now has separate real-time pitch-shift and time-stretch modules and a new formant control. Also expected at AES are Serato Scratch and Serato Scratch Pro ($125 and $250, RTAS, MAS and VST), two new plug-ins that allow users to record vinyl scratching, back-spinning, varispeed, stabs, stops and other turntablist performances that can then be controlled from a hardware turntable.

Another built-in signal processing plug-in added to an existing DAW platform is Wavehammer from Sonic Foundry. Included with Sound Forge 5, Wavehammer combines two mastering tools for putting the final touches on a project. Volume Maximizer can be used to boost the overall level of a signal without clipping or distorting the sound or limiting a signal's peak amplitude. Compressor limits the dynamic range of source audio mate-

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Digidesign
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INA-GRM
www.emf.org;
www.cdemusic.org

Kind of Loud Technologies
www.kindofloud.com

Mackie Designs
www.mackie.com

Mark of the Unicorn
www.motu.com

McDSP
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Oberheim
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PSP
(Professional Sound Projects)
www.pspaudioware.com

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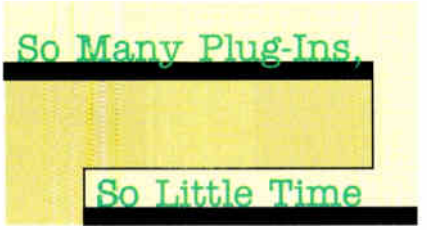

rial while adding punch or creating analog-type distortion for effect.

3DPanner Studio ($95) from **SpinAudio** is a PC VST and DX plug-in (Mac version expected soon) that incorporates an expandable and flexible 3-D positional audio engine. The plug-in supports multiple HRTF sets with distance zones for future expansion and HRTF subsets for performance tuning. 3DPanner Studio's positional

SpinAudio 3-D audio engine

engine uses Intel's NSP library and takes advantage of SIMD extensions of PIII and P4 processors. The user-friendly intuitive interface makes it easy to fly sounds by the seat of your pants.

Four new plug-in offerings from **Steinberg** include Voice Machine ($149), TC Works' Native Surroundverb ($699), Nuendo Surround Edition 1.5 ($1,299) and Nuendo Dolby Digital Encoder (price TBA). Voice Machine, with its intuitively handy voice-generator keyboard display, is a real-time pitch processor that can create up to four additional voices via MIDI note on/off events. The special Nuendo Mac version of TC Native Surroundverb provides Nuendo users with TC-quality 5.1 reverb smoothly integrated into the Nuendo environment. Nuendo Surround Edition is a collection of six real-time surround plug-ins with up to 8-channel capability and includes an 8-channel surround compressor, 8-channel loudness maximizer and 7-band parametric equalizer. Nuendo Dolby Digital Encoder, expected to ship in fall 2001, will allow Steinberg Nuendo projects to be encoded into Dolby Digital.

TC Works has released Spark FXmachine SE ($29.95 online direct only), an easy-to-use plug-in interface that employs a 4x5 routing matrix for combining up to 20 combinations of VST effects plug-in within any VST-compatible host. Also able to load any VST plug-in to MOTU's Digital Performer DAW, Spark FXmachine serves as a sort of plug-in clearing house, each automatically "hard-wired" into the FXmachine matrix to ensure that audio paths are never disconnected. One Spark FXmachine provides processing of up to four split-frequency bands, each with its own chain of up to five plug-ins that can then be saved as a global multi-effect preset integrating 20 VST plug-ins.

SoundToys (price TBD) from **Wave Mechanics** is a mega-effects processing plug-in shell for Pro Tools environments. SoundToys carries on the company's tradition of emulating classic high-end hardware processors and includes 13 combinable plug-ins. In addition to phasing, filtering, delay and ring modulation, SoundToys plug-ins include Distort-O-Matic, Huff-N-Puff, Decapitator, NoiseBoy and SexFilter. ModBox is a modular effects processing rack that combines up to eight SoundToys, and all modulation rates and delay times of combined SoundToys can be synchronized with MIDI beat clock or tap tempo.

Waves recently announced Windows RTAS support for the company's Waves Version 3.0 shell and has added five new plug-ins/bundles this year. The Restoration bundle ($1,200) for Native PC and Mac platforms is a suite of noise and transient-elimination tools for post-production, remastering and forensics applications. Restoration includes X-Noise, X-Click, X-Crackle and X-Hum plug-ins. The L2-Ultramaximizer ($1,200) for Mac-based Pro Tools 24|MIX TDM systems uses the exact same algorithms found in the company's hardware-based L2, including a proprietary brickwall look-ahead peak-limiter algorithm with Waves' IDR (Increased Digital Resolution) dithering. Renaissance Vox, part of the Renaissance Collection 2 bundle ($400 TDM; $200 native), is the first in a series of Waves' plug-ins that uses a simple one-knob interface for optimizing vocal tracks. Also included in the bundle are Renaissance DeEsser and Renaissance Bass, the latter plug-in employing Waves' second-generation MaxxBass psychoacoustic algorithm technology. ■

Randy Alberts is a writer and musician living in Pacifica, Calif. His first book, TASCAM: 25 Years of Recording Evolution, *is available through Hal Leonard Publishing.*

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BLUE Microphones is proud to announce the birth of our newest and most affordable microphone to date, the Baby Bottle. Following in the footsteps of our acclaimed tube Bottle mic system, the Baby Bottle is truly a chip off the old block. Each and every part of this solid-state, class A discrete condenser has been hand selected to insure nothing short of a stellar performance. Enclosed in a Lollipop spherical grille is a precision-machined, gold-sputtered capsule with a fixed cardioid pattern. In the tradition of our award-winning microphones, the Baby Bottle employs the styling, attention to detail, and hand-crafted quality for which Blue has become famous. The Baby Bottle is ideal for recording vocals, percussion, or any acoustic instruments, and comes nestled inside a velvet pouch protected by a beautiful cherrywood box. You've heard the buzz and read about us in all the pro audio circles. Isn't it about time you tried one for yourself? Experience the next generation of Blue microphones; experience the Baby Bottle. Contact your local BLUE microphone dealer for a demo.

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World Radio History

35 YEARS WITH ARDENT

Top: John Fry (at the desk) with Rick Ireland at Ardent, 1966. Right: Ardent control room, circa 1967.

L to R: James Alexander (Bar-Kays), John Fry (Ardent Studios owner), Maurice White (Earth, Wind & Fire) and Isaac Hayes at Ardent Studios, the '80s.

It seems that about every five years we check in with Ardent Studios, the legendary Memphis facility owned by John Fry. Maybe it's because of the simple fact that they've survived for 35 years outside of a major market. Or maybe it's because of the classic music that has come out of Ardent, going way back to Sam and Dave with "Soul Man," to ZZ Top's "Cheap Sunglasses," to R.E.M.'s "Orange Crush," to last year's Platinum work with 3 Doors Down and "The Better Life." Throw in Led Zeppelin, Al Green, Big Star, Gin Blossoms, Robert Cray, B.B. King, Steve Earle, Primal Scream, Coco Montoya...it's quite a legacy.

Fry has always preached the vibe, the technology and the talent, in whatever order suits the project. From his humble 1966 beginnings in a garage to his present three-room-plus-a-mastering-suite facility, Fry has learned to survive and thrive. He's relied on and learned from top-level producers and engineers such as Terry Manning, John Hampton, Pete Matthews, Skidd Mills and Matt Martone. And in his humble manner, he's always given the proper credit.

So, after 35 years, a hearty congratulations to Fry and his team at Ardent.

Right: ZZ Top's Billy Gibbons, Frank Beard and Dusty Hill help to celebrate Ardent Studios' 20th anniversary, 1986.

World Radio History

L to R: John Hampton (engineer), Al Berry (bass), Stevie Ray Vaughan, Larry Aberman (drums), Nile Rodgers (producer) and Jimmy Vaughan.

Right: R.E.M.'s Green session: L to R: Jay Healy (engineer), Bill Berry, Peter Buck, Michael Stipe, Mike Mills, Scott Litt (producer), Jody Stephens, Tom Laune (assistant engineer, kneeling) and Harold the dog, July 1988.

Left: Primal Scream session: Jeff Powell (engineer), Bobby Gillespie (band) and Tom Dowd (producer) in Studio A during the recording of Give Out But Don't Give Up, 1993.

Above, L to R: Robert Cray, producer Dennis Walker and engineer John Hampton move it and shake it during the mixing of Midnight Stroll in Studio B, 1990.

Left: 3 Doors Down goes Platinum and gets the key to the city. Making the presentation is Jerry Schilling (president of the Memphis and Shelby County Music Commission) and Jody Stephens (Ardent Studios manager). L-R: Matt Roberts, Chris Henderson, Todd Harrell, Brad Arnold, Jody Stephens and Jerry Schilling. Photo taken at the Beale Street Music Festival, Memphis, May 2000.

World Radio History

LONE SCOUT STUDIO

KEEPING IT IN THE FAMILY

Lone Scout Studio is the home of the Spanic Boys, Milwaukee's hardest-rocking father-and-son band. The Spanics have made eight guitarrific, smart roots-influenced albums, the most recent of which is *Torture* (on Checkered Past Records, reviewed in May 2001 *Mix*). They've been moving toward recording in project studios since starting the band in the late '80s.

"We did our first album in 1987, when I was like 17, and [recording technology] always interested me," says Ian Spanic, the younger and more gear-oriented member of the family. "I always paid attention to what was going on. I learned from engineers and eventually started a smaller studio, and it just grew.

"There used to be a really big studio out in Lake Geneva; it used to be Royal, and then it became Music Head," he continues. "It was an SSL room. When that went out of business, it kind of freed up some of the [engineers], including one of the people I worked with on the last album, Trevor Sadler. He has a lot of knowledge and has really helped us."

Lone Scout's 20x16-foot, wood-floored tracking room and control room are built into the basement of a large house. The studio also includes two guitar closets and an isolation area. "They're not huge rooms, but we have about 8-foot ceilings, so it's a nice, open space—nice-sounding rooms. We designed it ourselves, though we didn't do all the actual building work. It's all double 2x6 walls, and it's really soundproof. Most people don't even know it's there."

Ian says that, for him and his dad, an appreciation for recording gear is a natural extension of their focus on guitars. "We really have a love for vintage guitars and amps," he explains. "Only a 1956 Fender sounds like a '56 Fender amp to me, and I think it's the same with the gear.

"When we're doing vocals, I use a U47 for mine and I use a Telefunken ELAM 250 for my dad. We sing at the same time. I face the mics toward each other, and we sing live. When you're harmonizing like that, it's a lot easier when you can see each other's lips, and I found using the ELAM has a different top end to it. And the harmonies sound different than if we both used the same mic. The 47 is kind of midrange-y, which I like for the part I do.

The Spanic Boys (in father-and-son glasses) in their Lone Scout Studio with engineer Trevor Sadler (seated), bassist T-Bone Wolk and drummer Brad Elvis.

"Almost all of our mics are older mics," he continues. "I got some RCA ribbon mics from a collector, and they were all original-owner pieces. There was an older studio in town that had been built in 1951, I think, and when the fellow died in the '80s, his wife just sealed it up. I got a lot of our Pultecs through that. They were also all original-owner: Pultecs and RCA compressors and things—with the original owner manuals. It's nice when the gear hasn't been around a lot and fooled with, and these things had just kind of sat there—no changed parts, all of it was really original.

"I have to say I'm also a big fan of the B.L.U.E. Bottle mic. That's one of the new mics I'm really impressed with. I was hesitant to buy a new mic. I'm so happy with the way it's built, and I use that mic quite a bit."

Lone Scout's control room is built around a 32-channel Soundcraft DC-2000 console with Flying Faders that's been upgraded with a DC2020 computer. Tape machines include Otari MX-80 24-track 2-inch analog with CB124 remote, 32 tracks of Alesis ADAT XT20s with BRC, and, one of Ian's favorite pieces of gear, an ATR 102 half-inch that was fully restored by Mike Spitz of ATR Service. The *Torture* album was recorded to ADAT and mixed to the ATR.

"We used Telefunken V72s for guitar, bass and vocals," Ian says, "and API mic pre's for drums and acoustic guitars. I often use a Manley ELOP for vocals, and 1176s for bass and drums. I also like to use an RCA 44 on the room when tracking drums or a Western Electric 639. I mike the guitar amps with U47s for the most part."

Since amassing such a unique collection of gear, the Spanics have begun attracting outside artists to their facility. Under the name Spanic Productions, Ian has produced roots rock releases by The Riptones and David Todoran, an album by local blues harmonica player Jim Liban and Celtic-influenced recordings by fiddler Susan Jeske-Dermody. At the time of this interview, Ian and his dad, Tom, were back at work on their next Spanic Boys release.

"Dad likes microphones," Ian says, "but he's more interested in the music side. I kind of geek out on the technical stuff, and he definitely knows what's going on, but he leaves it to me, which is nice." ■

BY BARBARA SCHULTZ

World Radio History

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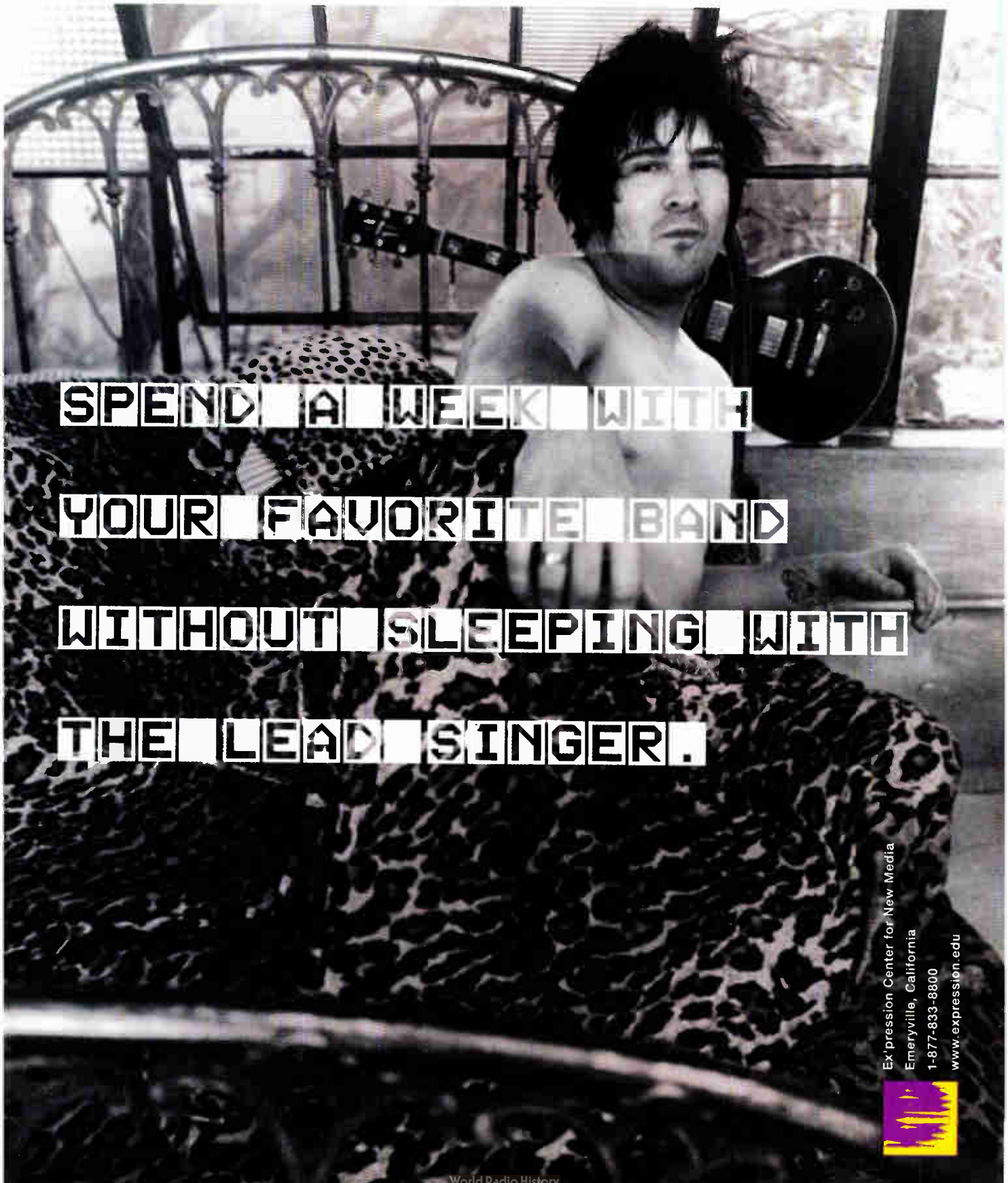

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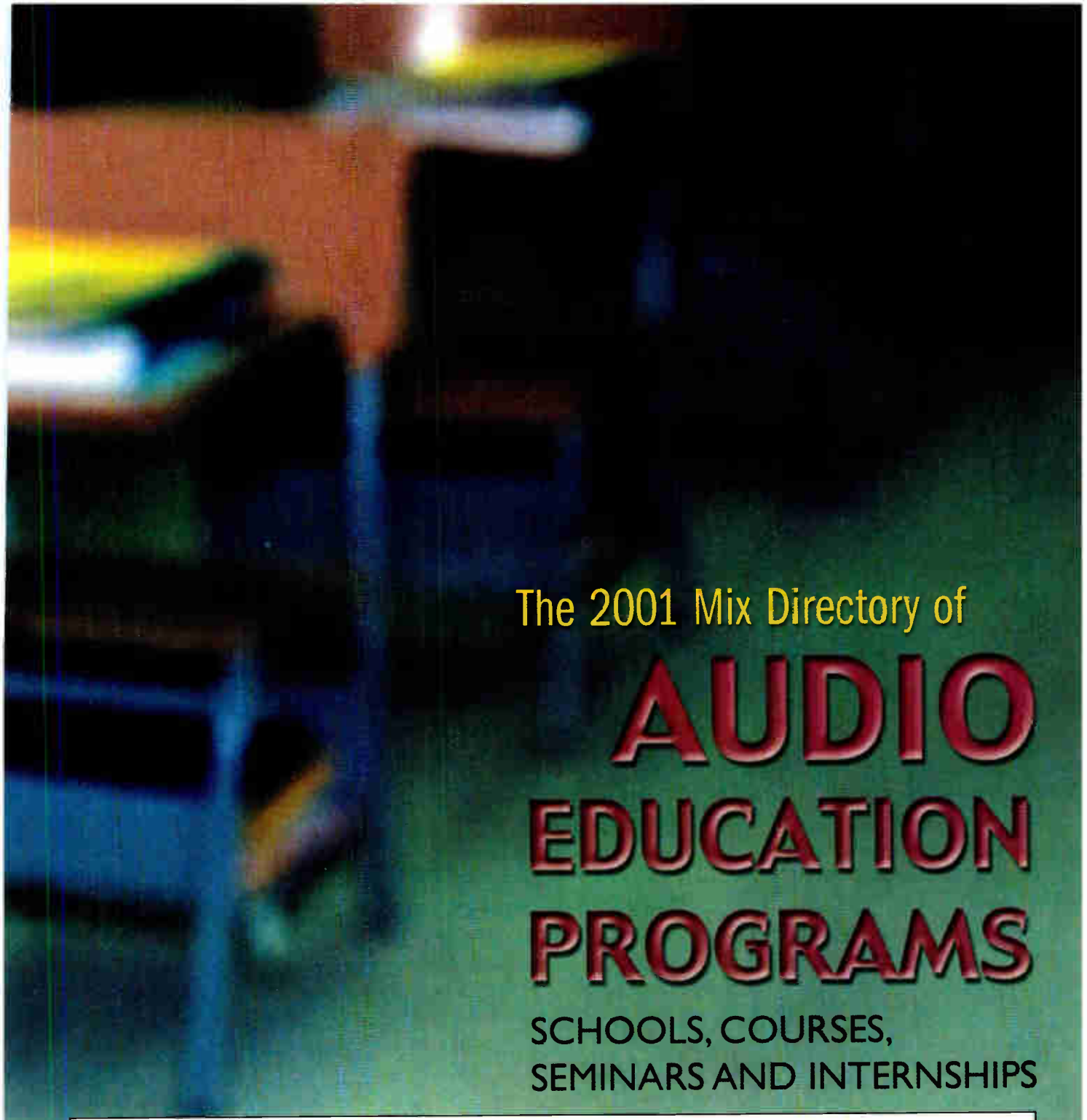

The 2001 Mix Directory of AUDIO EDUCATION PROGRAMS

SCHOOLS, COURSES, SEMINARS AND INTERNSHIPS

Every month, *Mix* editors receive dozens of phone calls from prospective students (and their parents) asking how to find a suitable program. As we've told many of you on the telephone, *Mix* cannot recommend specific education programs. This is partly because in order to choose a school, the applicant must research the programs in-depth. That means visiting schools, checking out their facilities and finding out all you can about what the program offers. And the main reason we can't tell you where to apply is simply that we're not you. The school that's right for you will be the one that fulfills your needs, teaches what you want to learn, costs what you can pay, etc.

After you review the directory, we strongly suggest that you then request brochures and course catalogs—or visit their Web-sites—from the schools that interest you, and visit the ones you're seriously considering. Schools may also be able to get you in touch with former students who can give you a first-hand account of their experience.

And as you wade through all of this material, keep in mind the 15 points on page 54. —*The Editors*

World Radio History

THE SCHOOLS

When using this directory, please note that only North American programs have been included. All of the information presented here was supplied by the schools. Specific programs may change, so contact the school/program for up-to-date information.

EASTERN SCHOOLS

American University

4400 Massachusetts Ave. N.W., Washington, DC 20016-8058 Phone: 202/885-2746 Fax: 202/885-2723 E-mail: benji@american.edu Website: www.american.edu/physics Degrees/Certificates Offered: four-year B.S. in Audio Technology. Program and Facilities Description: Housed in the Department of Physics, the Audio Technology program concentrates on the art and science of music and audio production, of electronic recording, and of computer and electronic systems. The main control room features a 24-track analog studio with hard disk recording capabilities. The electronic music studio has various analog and digital synthesizers, sampler, and is well-equipped to perform a variety of artistic and production functions.

Art Institute of Philadelphia

1622 Chestnut St., Philadelphia, PA 19103 Phone: 215/567-7080 Fax: 215/246-3339.

Audio Recording Technology Institute

4525 Vineland Rd., Suite 201B, Orlando, FL 32811 Phone: 407/543-2784 Fax: 407/423-2784 E-mail: arti@digital.net Website: www.audiocareer.com Degrees/Certificates Offered: 45-week Audio Engineering certificate. Program and Facilities Description: Students prepare for employment in the audio production industry, including music sequencing, hard disk recording, editing sound for video and film, Internet advertising design, sound design, sound effects design, radio and TV audio production, project master engineering, CD mastering, multitrack recording studios, audio for video, broadcast and post-production facilities. Emphasis is on hands-on training. Class size is limited to five students.

Barton College

Barton College Station, Wilson, NC 27893 Phone: 800/345-4973 Fax: 919/237-4957 E-mail: grose@barton.edu Website: www.barton.edu Degrees/Certificates Offered: B.S. in Recording Technology. Program and Facilities Description: Hands-on training in a 32-track digital recording studio and

12-workstation computer music lab. Curriculum includes acoustics, electronic music, sound synthesis, music business management, sound reinforcement, live and studio recording. The studio has a Soundcraft Sapphyre LC console with Optifile Tetra automation; four Tascam DA-88s; Mac with Pro Tools, Sound Designer, Master Tracks Pro 5 and Finale; Kurzweil K2000S with VAST system; Yamaha SY-88; and Roland JV-80. Each workstation in the lab has a Mac with Master Tracks Pro 5 and Finale, and Yamaha SY-35 synth. There is also a Yamaha Disklavier in the lab.

Belmont University Curb School of Music

1900 Belmont Blvd., Nashville, TN 37212 Phone: 615/460-5504 Fax: 615/460-5516 E-mail: hamiltonp@mail.belmont.edu Website: schlbus.belmont.edu Degrees/Certificates Offered: four-year Bachelor's degree in Business Administration focusing on three major areas: general education core; a business base, consisting of basic tool and core subjects; and four music business emphasis specialization areas: product development, recording technology, marketing and managing. Program and Facilities Description: The 9,000-square-foot Center for Music Business provides music business students with facilities reflecting the advances in music industry technology. The Center currently features three state-of-the-art recording studios and control rooms, four iso booths, a MIDI pre-/post-production room, four writer rooms, a digital/analog (hybrid) 16-track project studio, a studio-equipped classroom, an engineering shop and offices for the intern and placement coordinator and manager of the Center.

Berklee College of Music

1140 Boylston St., Boston, MA 02215 Phone: 800/421-0084, 617/747-2222 Fax: 617/747-2047 E-mail: mp&e@berklee.edu Website: www.berklee.edu Degrees/Certificates Offered: four-year Bachelor of Music Degree or Professional Diploma. Program and Facilities Description: The Music Syn-

CHOOSING THE RIGHT SCHOOL

1. **Length and purpose of program.** Will you be in school for seven weeks, three months or four years? Are you committed to earning a degree, or will a certificate do?

2. **Accreditation.** You most likely can trust a school that's accredited by a reputable body—a state or federal Department of Education, the National Association of Schools of Music (NASM), the National Association of Trade & Technical Schools (NATTS) or the National Trade School Congress (NATC). But just because a school isn't accredited doesn't mean it's a "fly-by-night" operation.

3. **Prerequisites.** Entry to in-depth electronics courses often requires a solid, formal background in math and physics. A short program may require some recording experience.

4. **Program philosophy.** Does the educator first teach the academic, theoretical side of recording, or head right for the faders? Does the school offer a balance of book/lecture teaching and hands-on training? What's the ratio of studio time to class time, and how often does the school let you use the equipment? Does the school expose students to audio's past, present and future? Does the school teach equipment maintenance and troubleshooting techniques?

5. **Interdisciplinary opportunities.** Does the school delve more into music composition and production, or music recording? Audio for video? Radio production? Soundtracks for film? Multimedia? Live sound and location recording? Corporate and industrial uses of audio? How much time is devoted to each area? The more facets of audio covered, the better your chance of finding a job in this age of studio diversification.

6. **Job placement opportunities.** Does the school assist the student in the agonizing weeks following graduation—offering help with resume writing or providing real job leads or the names of facilities that have hired other graduates?

7. **Track record.** What percentage of graduates have found work in recording, production or a related field? Will the school provide names so you can call them to discuss the program?

8. **Real-world exposure.** Does the school provide students with the chance to record live sessions, for instance, where you meet with local musicians, set up in the studio, record basics, do overdubs, mix and premaster?

9. **Teaching devices.** Do educators use "the real thing," textbooks, technical audio journals and or audio-visual aids? Do they teach theory using a book or using a book and equipment? Does the school have its own multitrack studio, or do students travel to professional facilities where the school buys session time?

10. **Internship program.** Does the school require students to work in a studio as an intern (great experience, no pay)? Few studio managers will hire graduates who haven't enjoyed the real-life experiences offered by an internship. If the school requires an internship, must you find your own internship—which gives you job-hunting chops—or does the school set it up?

11. **Financial considerations.** Will paying for your education leave you bankrupt? Does the school grant scholarships, offer loans or otherwise help students secure financial aid?

12. **Business and management courses.** Does the school expose students to the business of recording or economics of studio management?

13. **Private or public institution?** State-owned schools are sometimes better funded than private ones, but it takes longer for them to acquire new equipment: Red tape and magnetic tape don't always mix very well.

14. **Location.** If the school or program is close to a thriving audio/music or video/film production marketplace, the employment potential will be relatively high if you choose to stay in the area.

15. **Reputation.** A well-known, well-connected school tends to attract the attention of equipment manufacturers that are willing to set up mutually beneficial relationships with the school, thereby allowing students to learn the ropes on specific (and usually popular) types of systems and gear.

World Radio History

thesis and Music Production and Engineering departments provide hands-on experience in engineering, production and use of synthesizers and computers in sound design and multimedia productions, as well as composition and performance. Our faculty members are active music industry professionals. Classes, studios and labs are supplemented by year-round lectures and clinics by visiting artists. Facilities include 10 multitrack acoustic/project/post-production studios, three synthesis labs with 34 digital workstations, two MIDI-equipped ensemble rooms, and one multimedia recital hall for mixed media instruction and student/visiting artist presentations.

Cayuga Community College

197 Franklin St., Auburn, NY 13021 Phone: 315/255-1743 Fax: 315/255-2117 E-mail: keeler@cayuga-cc.edu Website: www.cayuga-cc.edu; www.telcomcayuga.org Degrees/Certificates Offered: two-year A.A.S. in Audio Production, two-year A.A.S. in Telecommunications Technology, two-year A.A.S. in Radio/TV Broadcasting. Program and Facilities Description: Cayuga is a unit of the State University of New York. The college's facilities include a 32-track audio recording studio, FM radio station, television studio and remote truck, and a digital media lab. Industry internships are required. In-state tuition is $2,500 per year.

City College of New York—Sonic Arts Center

The Sonic Arts Center at the City College of New York, Shepard Hall Room #72, West 140th and Convent Ave., New York, NY 10031 Phone: 212/650-8288 Fax: 212/650-5428 E-mail: sonicart@crow.admin.ccny.cuny.edu Website: http://sonic.arts.ccny.cuny.edu Degrees/Certificates Offered: four-year Bachelor of Fine Arts in Music (Audio Technology Concentration). Program and Facilities Description: Seven-studio facility including one 32-track studio, four 24-track studios, one sound lab and one isolation room. In addition, two adjacent sound stages for acoustic recording are available. Six hours of lab time per course, per week.

Finger Lakes Community College

4355 Lakeshore Dr., Canandaigua, NY 14424 Phone: 716/394-3500 Fax: 716/394-5005 E-mail: admissions@snyflcc.fingerlakes.edu Website: www.fingerlakes.edu Degrees/Certificates Offered: two-year A.S. Music Recording Technology degree. Program and Facilities Description: The recording facility contains two recording rooms and a spacious control room. Single instruments to a full symphony orchestra can be accommodated in the 2,000-plus-square-foot recording room. Installed in the control room are a Mackie digital 8-bus console and 24 tracks of Tascam DA-88s. Editing and mastering are done on hard disk via a Mark of the Unicorn 2408 using Samplitude Studio. Final mixes can be recorded onto DAT, MD or CD-RW.

Five Towns College

305 North Service Rd., Dix Hills, NY 11746 Phone: 631/424-7000 Fax: 631/424-7008 E-mail: admissions@ftc.edu Website: www.fivetowns.edu Degrees/Certificates Offered: Bachelor of Music degree in jazz/commercial music, with major areas of concentration in performance, composition/songwriting, musical theater, audio recording technology, music business and video music. Bachelor's degree program in music education. Bachelor of Professional Studies (B.P.S.) degree program in business management, with major areas of concentration in audio recording technology, music business, video arts and theater arts. Program and Facilities Description: The college is equipped with eight, 16, 24 and 48-track world-class recording studios. The college is also equipped with a television production facility and soundstages of various sizes. The Dix Hills Center for the Performing Arts has been described as acoustically perfect. The Five Towns College library consists of over 30,000 print and nonprint materials and has a significant collection of recorded music.

Full Sail Real World Education, Recording Arts

3300 University Blvd., Winter Park, FL 32792 Phone: 800/226-7625 Fax: 407/678-0070 E-mail: admissions@fullsail.com Website: www.fullsail.com Degrees/Certificates Offered: Associate of Science degrees in Recording Arts, Show Production and Touring, Film and Video Production, Digital Media, Computer Animation and Game Design. Program and Facilities Description: Full Sail offers hands-on training in a state-of-the-art 43-studio multimedia complex. This complex is anchored by two studios featuring the SSL 9000 J console and two studios featuring the Amek 9098i console. The curriculum includes courses in Multimedia Audio, Recording Engineering, Audio Post-Production, Sound Reinforcement and Concert Lighting, MIDI, Digital Audio Workstations and Advanced Recording. Career placement assistance is provided, and financial aid is available to those who qualify.

Future Media Concepts

305 E. 47th St., New York, NY 10017 Phone: 212/883-6314 Fax: 212/888-7531 E-mail: info@fmctraining.com Website: www.fmctraining.com Degrees/Certificates Offered: Manufacturer's Certificate of Merit. Courses range from five days for the two-part introductory course, to 10 days for the master class. Program and Facilities Description: Future Media Concepts is New York's, Boston's and Philadelphia's premier digital media training center, providing manufacturer-authorized training in nonlinear audio and video editing, 3-D animation, Web page development, 2-D compositing and desktop publishing. Quality is monitored by the software manufacturer to ensure the highest level of training. Trainers are certified, award-winning professionals. FMC is the authorized training center for Digidesign Pro Tools, Avid, Softimage, Adobe, Discreet, NewTek and Macromedia. Small class size, state-of-the-art equipment, and weekday, weekend and evening class schedules. Financing available

Hampton University

Department of Music, Hampton, VA 23668 Phone: 757/727-5237 Fax: 757/727-5084 E-mail: robert.ransom@hamptonu.edu.

Harris Institute for the Arts

118 Sherbourne St., Toronto, Ontario, Canada M5A 2R2 Phone: 416/367-0178 Fax: 416/367-5534 E-mail: harrisi@interlog.com Website: www.ampsc.com/~harris Degrees/Certificates Offered: one-year Producing Engineering Diploma, one-year Recording Arts Management Diploma. Program and Facilities Description: Harris Institute offers 76 courses on the business, technical and creative aspects of the music industry. The diploma programs, Recording Arts Management (RAM) and Producing Engineering Program (PEP) are taught by a faculty of 54 active industry professionals and a wide range of guest lecturers. The 2,500-square-foot facilities include Pro Tools in the audio post-production suite, Apple and PC computers in a MIDI/multitrack suite and 24-track digital multitrack in a music recording control room.

Institute of Audio Research

64 University Place, New York, NY 10003 Phone: 212/777-8550; 800/544-2501 Fax: 212/677-6549 E-mail: iarny@aol.com Degrees/Certificates Offered: Diploma in Recording Engineering and Production. Program and Facilities Description: Program transfers as approximately one year toward Bachelor's degree. Intensive six-month program exposes students to every facet of state-of-the-art audio and recording technology. Coursework includes acoustics and sound, editing techniques, music business, sound reinforcement, loudspeakers and microphones, audio signal processing, analog and digital tape storage, digital processing technologies, recording workshops, mixing techniques, post-production, MIDI and music synthesis. 20,000-square-foot Greenwich Village facility. Professional industry internships and graduate job placement assistance provided. Financial aid for eligible students. Licensed by NYS Education Department, accredited by ACCSCT.

Lebanon Valley College of Pennsylvania

Department of Music, Annville, PA 17003 Phone: 717/867-6285 Fax: 717/867-6390 E-mail: hill@lvc.edu Website: www.lvc.edu Degrees/Certificates Offered: four-year Bachelor of Music in Music Recording Technology and B.S. in Music Business. Program and Facilities Description: LVC combines a strong, traditional music curriculum with industry-related courses and experiences. Studies include traditional and jazz theory, history, performance, studio production techniques, digital audio recording and editing, MIDI, post-production and multimedia. NASM accredited. Facilities include a 24-track analog studio, a digital multitrack studio/classroom and computer labs with Macintosh/Windows NT workstations for digital audio and video, CD mastering, Web page design, CD-ROM development and MIDI.

Miami-Dade Community College School of Entertainment Technologies

11380 N.W. 27th Ave., Miami, FL 33167 Phone: 305/237-1696 Fax: 305/237-1367 Website: www.mdcc.edu/north/set Degrees/Certificates Offered: Television Production (A.A., A.S. and certificate), Film Production (A.A. and A.S), Music Business (A.A. and A.S.), Sound Engineering (A.A. and A.S.), Theater and Entertainment (A.A. and A.S.) and Computer Animation (A.A. and A.S.). Program and Facilities Description:

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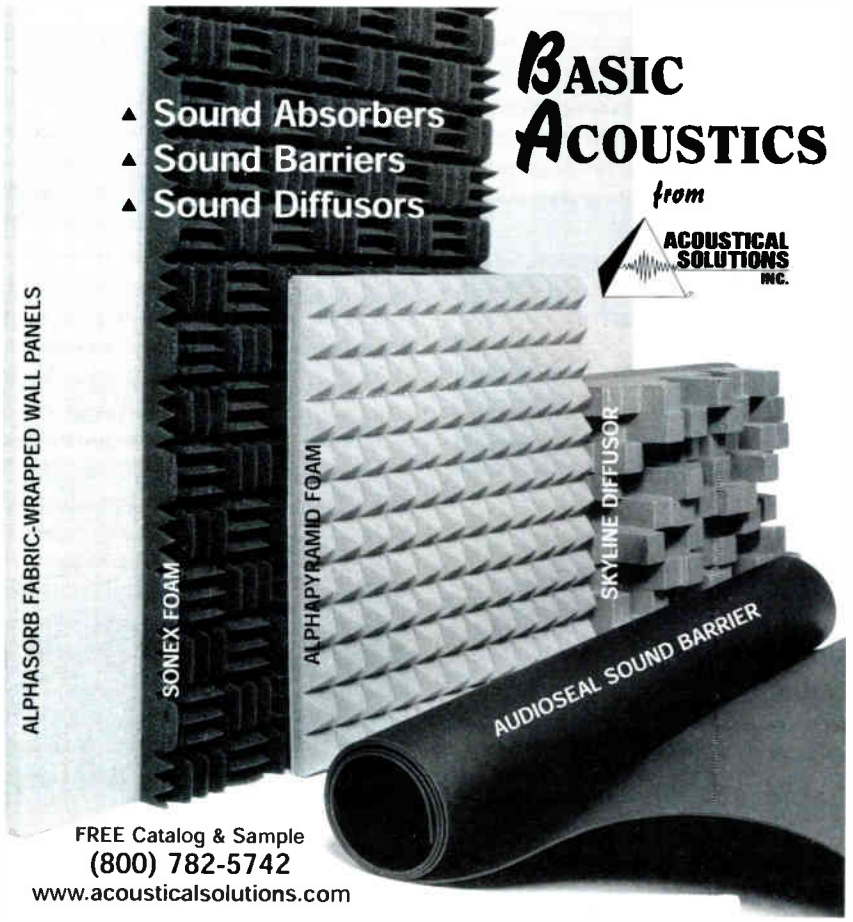

RECORDING ENGINEERS AVAILABLE

Located in Dix Hills, Long Island, NY, Five Towns College trains students in world-class facilities both on and off-campus. Designed by the multi-TEC award winning Walter-Storyk Design Group, the College's studio complex houses several professional audio studios, featuring the SSL 4048G console with a G computer. Students also work with various state-of-the-art digital technologies, including ProTools and Media 100 Workstations.

Five Towns College graduates know all phases of audio production, and receive advanced training in MIDI, mixing, and post-production. Most graduates have interned at a major New York City studio as part of their professional preparation.

Five Towns College offers associate, bachelor and master degrees in music, theatre, business and liberal arts. Graduates from the Music Department are also professional musicians with skills in arranging, composition, and conducting; while Business Department graduates have strong training in management, marketing, finance and accounting, as well as audio and/or film/video.

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www.fivetowns.edu

Audio Education Programs

Eastern Schools

The School of Entertainment Technologies offers a kaleidoscope of programs geared toward exciting industries such as movies, TV, music and more! We offer an array of choices in television, film, radio and production. You can specialize in theater and entertainment production, sound engineering, or commercial and music business. Prepare for the digital revolution by learning computer animation, sound effects and editing. The unique aspect of all areas of this school is that each student receives hands-on experience and exposure to local industry, while doing related course work.

McGill University

Faculty of Music, 555 Sherbrooke St. West, Montreal, Quebec, Canada H3A 1E3 Phone: 514/398-4535 Fax: 514/398-8061 E-mail: wieslaw@music.mcgill.ca Website: www.music.mcgill.ca/mmt Degrees/Certificates Offered: two-year Master's of Music degree in sound recording; Ph.D. degree. Program and Facilities Description: The graduate sound recording program combines practical and theoretical training in studio techniques, microphone selection and placement, digital sound processing and related subjects. Also included are technical ear training to improve auditory perception and hands-on experience working with musicians, ranging from solo performers to full symphony orchestras. Three fully equipped control rooms, four performance venues, three post-production editing studios, a separate four-studio suite for electroacoustic music, multichannel audio research lab and two computer labs.

Middle Tennessee State University

PO Box 21, Murfreesboro, TN 37132 Phone: 615/898-2578 Fax: 615/898-5682 E-mail: record@mtsu.edu Website: www.mtsu.edu/~record Degrees/Certificates Offered: Bachelor of Science in Recording Industry with two emphasis choices: Production and Technology or Music Business. Program and Facilities Description: The curriculum includes 43 courses covering all aspects of the industry. Minor options in Music, Electronics, Business Administration, Entrepreneurship, Marketing, Film Studies, Computer Science, Electroacoustics, Theatrical Design, Mass Communication and Entertainment Technology. Facilities include three studios, all with automated consoles and 24-track digital and analog recorders. One studio is equipped with 5.1 surround sound mixing. Facilities also include a hard disk/post-production studio, a MIDI lab, Tascam digital audio lab, a maintenance lab and a 5.1 channel screening room.

Musitechnic Educational Services Inc.

1717 Rene-Levesque East, Ste. 440, Montreal, Quebec, Canada H2L 4T3 Phone: 514/521-2060 Fax: 514/521-5153 E-mail: info@musitechnic.com Website: www.musitechnic.com Degrees/Certificates Offered: Computer-Assisted Sound Design (one year), Attestation of Collegial studies. Program and Facilities Description: The program is designed to familiarize students with computer-assisted music technology. A thorough exploration of the technical and artistic facets of current hardware and software will permit students to create, perform and record artistic projects using the latest technological tools. Moreover, the program seeks to provide knowledge of data processing principles, MIDI synthesis, digital sound reproduction and computer-assisted sound design, enabling students to work in contemporary studios and MIDI workshops.

Nassau Community College

One Education Drive, Garden City, NY 11530 Phone: 516/572-7446 Fax: 516/572-9791 E-mail: musoff@sunynassau.edu Website: www.sunynassau.edu Degrees/Certificates Offered: one-year certificate in Studio Recording Technology. Program and Facilities Description: This three-semester pro-

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Andy Waterman, President, The Bakery, Burbank

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Audio Education Programs

Eastern Schools

gram is designed to introduce students to music and recording technology, provide a broad perspective of the music industry and acquaint students with musical structures (both intellectually and aurally). Technical skills and internship training will be acquired in a professional recording studio (at an off-campus location). The program is designed for those wishing to establish independent recording studios. It can also prepare students for degree programs that enable them to gain entry-level positions in the recording industry.

New York University

School of Education, Department of Music and Performing Arts Professions, 35 West 4th Street, Room 777, New York NY 10012-1172 Phone: 212/998-5422 Fax: 212/995-4043 E-mail: kp3@scires.nyu.edu Website: www.education.nyu.edu/music Degrees/Certificates Offered: four-year B.A. in Recording Arts, two-year certificate in Music Business, four-year Bachelor's of Music, two-year Master's of Music in Music Technology. Program and Facilities Description: NYU's premier Music Technology program teaches composers, performers, recording engineers and others to use tools of technology to realize their ideas. The program's breadth supports applications to film scoring, multimedia, computer music, tonmeister studies, interactive performance, and collaborations involving experimental and traditional music. Our intense musical approach supports research and artistic production around the world. Facilities include 12 sophisticated recording and computer music studios. Special programs: Scoring for Film and Media, Tonmeister Studies (summer only) and internships.

Northeastern University

Department of Music, 351 Ryder Hall, Boston, MA 02115 Phone: 617/373-2440 Fax: 617/373-4129 E-mail: bronkin@lynx.neu.edu Website: www.music.neu.edu Degrees/Certificates Offered: four-year B.S. in Music Industry; four-year B.S. in Music Technology; four-year B.A. in Music Literature and Performance; four-year B.S. in Multimedia Studies.

NY Institute of Forensic Audio

PO Box 189, Colonia, NJ 07067 Phone: 732/574-9672 Fax: 732/381-4523 E-mail: owlmax@aol.com Website: www.owlinvestigations.com Degrees/Certificates Offered: Video Authenticity Certification, Audio Authenticity Certification, Voice Identification. Program and Facilities Description: Fully equipped lab that enables hands-on experience for all participants. Audio enhancement and authenticity, video enhancement and authenticity, voice identifications are all offered. Evidence procedures, legal questions and courtroom testimony related to the above specialties will also be discussed.

Ocean County Vocational Technical Schools

Audio Recording for Electronic Media Career & Technical Institute NAWC, Lakehurst, NJ 08733-1125 Phone: 732/657-4000 Fax: 732/657-4500 E-mail: Dbourke@mail.ocvts.org Degrees/Certificates Offered: one- and two-year Audio Engineering certificate. Program and Facilities Description: This program was started three years ago and was offered to high school and post-secondary students—the first one of its kind offered at the high school level in the state of New Jersey. Four hundred fifty hours per year, emphasis on hands-on recording by students. Upgraded program facilities include three control rooms (two 24-track MDM and one hard disk-based). Combined with the new Ocean County Vocational Tech Schools Performing Arts Academy.

Omega Recording Studios School of Applied Recording Arts and Sciences

5609 Fishers Lane, Rockville, MD 20852 Phone: 301/230-9100 Fax: 301/230-9103 E-mail: omega@omegastudios.com Website: www.omegastudios.com Degrees/Certificates Offered: Certificate programs approved by the Maryland Higher Education Commission. Program and Facilities Description: The Omega Studios school functions within the facilities of Omega Recording Studios (a four-studio complex). Omega offers five separate and innovative programs, including Recording Engineering and Studio Techniques; Electronic Synthesizers and MIDI; Sound Reinforcement for Live Performance; Audio Production Techniques; and Essentials of Music Business and Artist Management. A free brochure is available upon request at 800/93-OMEGA.

Ontario Institute of Audio Recording Technology

502 Newbold St., London, Ontario, Canada N6E 1K6 Phone: 519/686-5010 Fax: 519/686-0162 E-mail: inquiry@oiart.org Website: www.oiart.org Degrees/Certificates Offered: one-year, college-level diploma in Audio Recording Technology. Program and Facilities Description: North America's first and longest-running integrated immersion program (since 1983). A full-time faculty and a 5:1 student/instructor ratio allows well-qualified students from around the world to thrive on creative development while acquiring a genuine skill set. Within five studios equipped with professional-level gear, students learn problem-solving through signal flow, in addition to how and why things work. The 1,300-plus hours are all in-studio, with more than 50% dedicated to student hands-on.

Peabody Institute of The Johns Hopkins University

1 East Mount Vernon Place, Baltimore, MD 21202 Phone: 410/659-8110 Fax: 410/659-8102 E-mail: apk@peabody.jhu.edu Website: www.peabody.jhu.edu/recording-arts Degrees/Certificates Offered: five-year Bachelor's degree in Recording Arts, two-year Master's degree in Audio Recording and Acoustics. Program and Facilities Description: Comprehensive math/science/music-based degrees in recording arts. Fully automated digital facilities. See Website for additional information.

Recording Arts Canada, Ontario

PO Box 11025, 984 Hwy. #8, Stoney Creek, Ontario, Canada L8E 5P9 Phone: 888/662-2666 Fax: 905/643-7520 E-mail: admissions@recordingarts.com Website: www.recordingarts.com Degrees/Certificates Offered: one-year Audio Engineering & Multimedia Production diploma. Program and Facilities Description: Recording Arts Canada is a unique school that offers students the opportunity to learn and work in a creative and progressive environment. By studying in one of the best-equipped audio schools, you will learn the skills and technologies about audio, music and multimedia production professionals use every day. Our internationally renowned facilities feature classic Neve recording consoles. We provide sophisticated technology, quality theoretical instruction and extensive practical activity within a small-group format.

Recording Arts Canada, Quebec

34 Chemin des Ormes, Ste-Anne-des-Lacs, Quebec, Canada J0R 1B0 Phone: 514/224-8363 Fax: 514/224-8064 Website: www.sympatico.ca/inst.enreg Degrees/Certificates Offered: one-year diploma programs in Audio Production and Computer-Assisted Sound Design. Program and Facilities Description: A private college, offering two collegiate programs of study in audio production and sound design. School-owned, world-class facilities with three classic Neve consoles and all the latest digital and multimedia tools from Digidesign, Avid, Focusrite, Adobe, Director, etc. Located in the beautiful Laudentian Mountains, 40 minutes north of Montreal.

SAE Institute of Technology

269 W. 40th Street, 2nd Flr., New York, NY 10018 Phone: 212/944-9121 Fax: 212/944-9123 E-mail: saeny@cybernex.net Website: www.sae.edu Degrees/Certificates Offered: nine-month/18-month Audio Technology Diploma (full-time/part-time), seven-and-one-half-month/12-month Multimedia Producer Diploma. Program and Facilities Description: SAE Institute of Technology is the largest audio and multimedia institute in the

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Introducing DREAM by Fairlight — Digital Recording, Editing And Mixing — a radically new suite of modular digital production and post-production systems heralding the dawn of a new era in digital audio for all film, video and multimedia applications. Compatible with Fairlight's widely acclaimed audio platforms and featuring the world-beating QDC Technology engine at its core, the DREAM family delivers higher performance, greater system integration and lower cost of ownership. Designed to work as a team or independently, DREAM systems deliver 24-bit, 96kHz performance in multiple multi-channel, multi-format configurations and are all MediaLink networking ready. Furthermore, Fairlight's DREAM systems are based on an expandable open-architecture framework that can grow with your business.

DREAM Satellite

DREAM Satellite is Fairlight's new digital audio workstation, engineered to streamline and simplify the processes of audio acquisition, editing and track laying to a degree previously unobtainable. Expanding on the intuitive operation and ease of use of Fairlight's MFX generation, DREAM Satellite offers up to 48 tracks of pristine 24-bit, 96kHz digital audio quality. Designed for use with a studio's existing analog or digital mixer, DREAM Satellite is available in 16, 32 and 48 track configurations with a choice of analog and/or digital inputs and outputs.

DREAM Station

DREAM Station is a comprehensive digital audio recording, editing and mixing environment, capable of delivering final mixes in any format up to 7.1 surround. Station incorporates all the functionality of a 48-track Satellite integrated into a full specification, fully automated 56/16 mixing system. With third-party plug-ins rounding out the effects processing capability, and all the bussing, sub-bussing and monitoring facilities required for a vast array of post-production tasks, DREAM Station is all a studio needs for full production and mixing of the majority of short form, commercials and radio projects. Station may be further expanded with optional Sidecar bays in blocks of 8 faders and external metering options are available to enhance the high-precision on-screen meters.

DREAM Console

Representing the peak of performance for full-scale recording, editing, production and mixing of the most complex multi-format audio projects, DREAM Console is not simply a powerful mixing system but a complete recording and editing environment equipped with the degree of functionality and processing found only in dedicated large-format digital consoles. A fully configured DREAM Console offers 48 tracks of Binnacle™ editing seamlessly integrated with 192 channels returned to 48 mix busses, with 6-band EQ and filtering and two stage dynamics processing on 96 of these inputs, plus 48 returns with 2-band EQ, and 48 short fader paths that can share EQ and Dynamics with their associated full channels. The bus structure of the DREAM Console has been expressly designed for multi-format projects for the simultaneous generation of multiple, multi-channel formats up to 7.1 with individual level trims for each independent mix. The extensive automation system encompasses every parameter of every onboard function, including processing, routing and third-party plug-ins. With the same recording, editing and mixing capabilities as DREAM Station, but on a much larger scale, the DREAM Console delivers resources which have been hitherto unavailable on any system, at any price, and puts them within reach of any facility aiming at serious production and mixing work.

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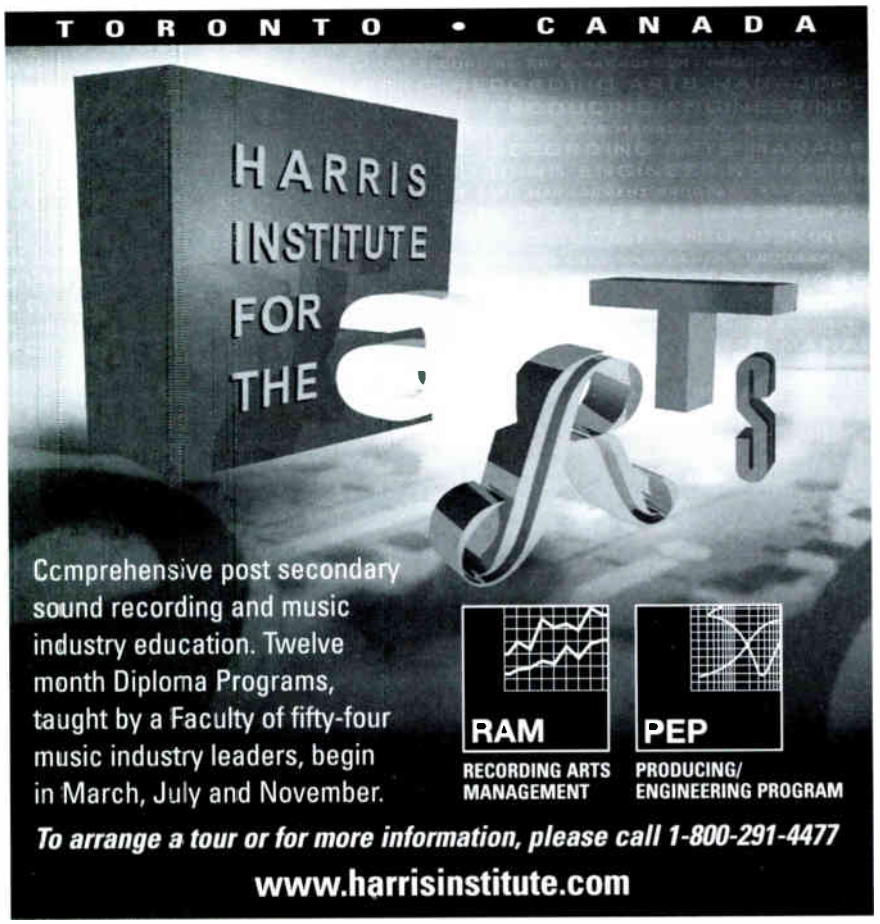

Audio Education Programs

Eastern Schools

world, with more than 12,000 students in 28 schools in 15 countries on four continents. SAE is now in the United States, with campuses in New York City and Nashville and more to come! Our students have the advantages of 25 years of audio and multimedia education experience, state-of-the-art equipment and a paid internship in Audio Technology with Walt Disney Entertainment.

Select Sound Studios

2315 Elmwood Ave., Kenmore, NY 14217 Phone: 716/873-2717 Fax: 716/873-2719 E-mail: select sound@cmp-express.com Website: www.selectsound.com Degrees/Certificates Offered: Recording Technologies One: 12 weeks, three credits; Recording Technologies Two: 10 weeks, three credits; Recording Technologies Three: 10 weeks, three credits; MIDI Production: 10 weeks, three credits; Digital Editing and Mastering: 10 weeks. Program and Facilities Description: Select Sound Studios is a full-service recording facility specializing in education. Four production rooms offer students the opportunity to work in 24-track analog studios, 64-track digital studios, a digital mastering suite and a real-time duplication room. Topics include the history of recording, physics of sound, studio acoustics, the recording chain, microphone techniques, and operation of tape recorders and mixing consoles. The programs are designed to give students hands-on experience.

Sheffield Institute for the Recording Arts

13816 Sunnybrook Rd., Phoenix, MD 21131 Phone: 800/660-9519; 410/628-7260 Fax: 410/628-1977 E-mail: sheffield@sheffield.com Website: www.sheffieldav.com Degrees/Certificates Offered: Certificate approved by Maryland Higher Education Commission. Audio-Works: 290 hrs/six-month full-time audio engineering program. Video-Works: 232 hrs/five-month full-time video production program. Program and Facilities Description: Solid State Logic facilities and instructors with Grammy, Emmy, TEC and Monitor-award nominations and a huge list of recording credits. Audio-Works: basic audio engineering, advanced audio engineering, advanced audio lab, MIDI, nonlinear digital audio editing and live sound/remote recording. Video-Works: basic video technology, lighting, camera, paintbox, Scribe and Avid. Equipment: SSL 4000 EG consoles, Sony 3324 digital, Otari MTR-90 MkII analog multitracks, Ampex switchers, Sony Betacam, Quantel Paintbox, Cyron Scribe, Avid 1000.

Shenandoah University

1460 University Drive, Winchester, VA 22601 Phone: 540/665-5567 Fax: 540/665-5402 E-mail: goneill@su.edu Website: www.su.edu Degrees/Certificates Offered: Bachelor of Music, Commerical Music emphasis. Program and Facilities Description: Shenandoah University offers a Bachelor's of Music degree in Commercial Music located in a new, state-of-the-art facility featuring an SSL 4000 G Plus console with automation. Students receive hands-on training and experience by recording over 300 concerts, student and faculty recitals, along with internal and external projects every year. In addition to the SSL, we have world-class mic preamps, processing gear and a large selection of pro-

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1146 Mason Hall, Fredonia, NY 14063 Phone: 716/673-4634 Fax: 716/673-3154 E-mail: gottinger@ait.fredonia.edu Website: www.fredonia.edu/som/srt Degrees/Certificates Offered: Four-year B.S. in Sound Recording Technology. Program and Facilities Description: Program operated from within the School of Music. Accredited by NASM. Modeled after European Tonmeister training: Competence in playing a musical instrument and in natural sciences must be demonstrated through scheduled audition. High placement rate: Internships at leading facilities are available on a regular basis. Five studios, including 24-track analog and digital facilities, MIDI/sampling labs. Additional classes taught by professionals. Students receive a minimum of 650 hours in-studio experience.

Trebas Institute, Ontario

410 Dundas St. East, Toronto, Ontario, Canada M5A 2A8 Phone: 416/966-3066 Website: www.trebas.com Degrees/Certificates Offered: one-year diploma programs in Audio Engineering, Recorded Music Production, Music Business Administration, Film/Television Production, New Media Development and 3-D Animation. B.A. degree in Sound Technology (two years, following one-year diploma in Audio Engineering) in partnership with the Liverpool Institute for Performing Arts. Admission to B.A. program highly competitive. Program and Facilities Description: Established in 1979 to help students acquire knowledge and develop skills and professionalism for entry into fields of music business, audio, record production, film/TV production, post-production, interactive multimedia and computer animation. Outstanding instructors. High-tech studios and labs. Focus on preparing grads for real-world careers. Government loans. Internships. Lifetime national job search assistance. Grads with major entertainers, studios, companies worldwide. Resource center. Authorized training center for Cubase and Macromedia.

Trebas Institute, Quebec

451 Saint Jean St., Montreal, Quebec, Canada H2Y 2R5 Phone: 514/845-4141 Website: www.trebas.com Degrees/Certificates Offered: one-year diploma programs in Audio Engineering, Recorded Music Production, Music Business Administration, Film/Television Production, New Media Development and 3-D Animation. B.A. degree in Sound Technology (two years, following one-year diploma in Audio Engineering) in partnership with the Liverpool Institute for Performing Arts. Admission to B.A. program highly competitive. Program and Facilities Description: Established in 1979 to help students acquire knowledge and develop skills and professionalism for entry into fields of music business, audio, record production, film/TV production, post-production, interactive multimedia and computer animation. Outstanding instructors. High-tech studios and labs.

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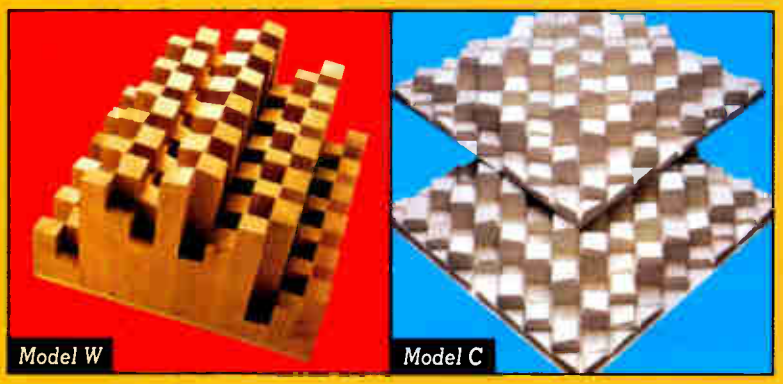

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Unity Gain Recording Institute
1953 Ricardo Ave., Fort Myers, FL 33901 **Phone:** 941/332-4246 **Fax:** 941/332-4246 **E-mail:** Aiannucci@unitygain.com **Degrees/Certificates Offered:** Certificate of graduation upon completion of the 48-week Audio Recording Comprehensive Program. **Program and Facilities Description:** Since 1989, Unity Gain offers a fully comprehensive, four-level program to all people interested in a state-of-the-art two-studio facility. Class size is limited to provide a semi-private instructional environment to all students. The hands-on approach in learning reinforces the student's understanding in analog and digital recording, production skills, audio for film/video, sound reinforcement and MIDI. Call or e-mail for a school catalog.

University of Hartford, College of Engineering
200 Bloomfield Ave., West Hartford, CT 06117 **Phone:** 860/768-4792 **Fax:** 860/768-5073 **E-mail:** celmer@mail.hartford.edu **Website:** uhavax.hartford.edu/acoustics **Degrees/Certificates Offered:** B.S. Engineering (B.S.E.), B.S. Mechanical Engineering, Optional EE minor. **Program and Facilities Description:** There are two ways to incorporate acoustics into an undergraduate engineering degree: Acoustics and Music B.S.E. program, which combines an engineering degree program emphasizing acoustics and vibrations with course work at the Hartt School of Music; and the Mechanical Engineering B.S.M.E. with Acoustics Concentration program. Graduates have been employed at Bose Loudspeakers, QSC Amplifiers, Steinway & Sons, Lucas Film-THX Sound, and numerous acoustical consulting firms or graduate schools in acoustics. Facilities: Anechoic chamber, B&K dual-channel FFT/RTAs, Modal Analysis/CADP2 software, DAT, portable SLMs, three studios with 4, 8 and 16-track analog/digital recording, Pro Tools.

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Walk into a music store and you'll encounter a whole wall of 15-inch, 2-way speakers — including our S500. Check out the price tags and your reaction may be, "Where does Mackie get off charging 20-25% more?"

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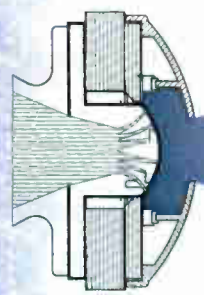

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Audio Education Programs

Eastern Schools

University of Maine at Augusta

46 University Dr., Augusta, ME 04330 Phone: 207/621-3267 E-mail: richard@mail.caps.maine.edu Website: www.uma.maine.edu/academics/ucadjazz&contemporarymusic.html Degrees/Certificates Offered: Bachelor of Music in Jazz and Contemporary Music (audio concentration). Program and Facilities Description: UMA has the only music program in Maine with a state-of-the-art recording studio. Recording commercial music and advertisements is a significant part of the music industry in Maine. Our internships are a student's best link to employment. This concentration integrates the studio into other music concentrations.

University of Massachusetts-Lowell, Sound Recording Technology

One University Ave., Lowell, MA 01854 Phone: 978/934-3850 Fax: 978/934-3034 E-mail: william_moylan@uml.edu Website: www.uml.edu/dept/music/srt Degrees/Certificates Offered: Bachelor of Music in Sound Recording Technology. Program and Facilities Description: The primary program, the B.M. in SRT, prepares students for production-related careers in the recording industry through studies in music, EE, computer science, math and physics, and a minimum of nine courses in the art and technology of recording. SRT minors prepare students for technology-development career paths. Supported by eight control rooms: 24-track, MIDI/synthesis, 8-track, video/post, maintenance/repair, critical listening, hard disk recording, entry-level room.

University of Memphis, Commercial Music Program

232 CFA Building, Campus Box 526546, Memphis, TN 38152-6546 Phone: 901/678-2559 Fax: 901/678-5118 E-mail: cmusinfo@memphis.edu Website: www.people.memphis.edu/~cmusweb Degrees/Certificates Offered: Bachelor of Music in Commercial Music with concentrations in Recording Technology, Music Business. Program and Facilities Description: Programs stress thorough understanding of fundamental concepts, yet place equal emphasis on developing student's ability to adapt to new practices, technologies and creative directions. Instructors actively involved in industry. Studio B extensively renovated and now features an AMS Neve Libra digital console and improved acoustics. Students enjoy generous lab access where hands-on training is stressed. Memphis community offers diverse cultural opportunities, rich internship possibilities. A commitment to personal attention and quality instruction requires enrollment be limited. NASM accredited.

University of Miami, School of Music

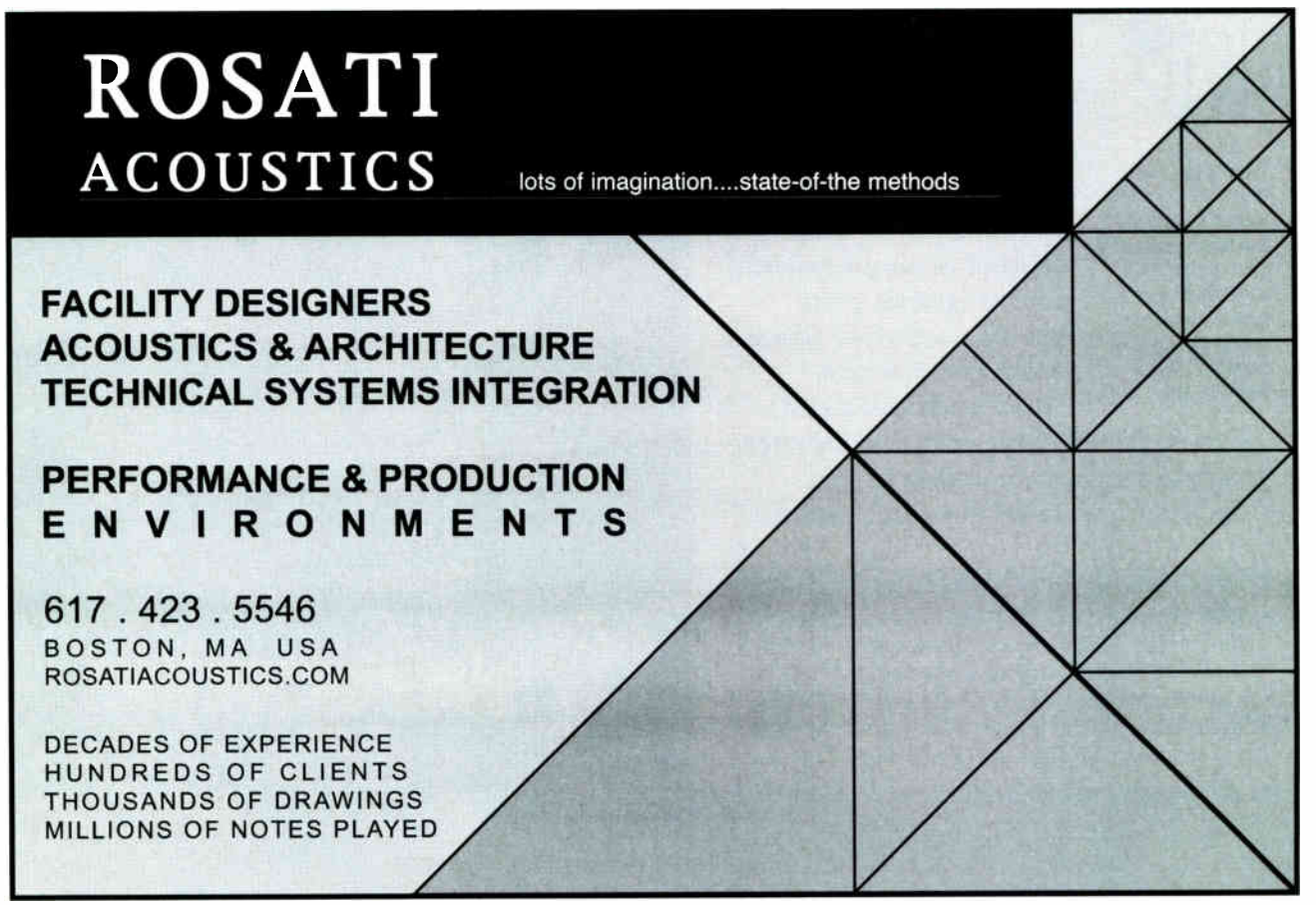
PO Box 248165, Coral Gables, FL 33124 Phone: 305/284-6913 Fax: 305/284-6475 E-mail: kmoses@miami.edu Website: www.music.miami.edu Degrees/Certificates Offered: Bachelor of Music in Music Engineering with minor in Electrical Engineering, Bachelor of Music in Music Engineering with minor in Computer Science, Master of Science in Music Engineering. Program and Facilities Description: The Music Engineering program accepts undergraduate musicians who desire careers in music recording, audio engineering, audio equipment hardware and software design, sound reinforcement and broadcasting. By combining music and music engineering studies with a minor in electrical engineering or computer science, students enjoy diverse professional opportunities. Graduate students who have completed their undergraduate electrical engineering degree engage in research in DSP programming, psychoacoustics and synthesis. Our facilities and faculty are known for their excellence.

University of New Haven

Music and Sound Recording Program, 300 Orange Ave., West Haven, CT 06516 Phone: 203/932-7101 Fax: 203/931-6097 E-mail: menelaos@charger.newhaven.edu Website: www.newhaven.edu Degrees/Certificates Offered: four-year B.A. in Music and Sound Recording; four-year B.S. in Music and Sound Recording; four-year B.A. in Music Industry; four-year B.A. in Music; minor in Multimedia Authoring. Program and Facilities Description: The Music and Sound Recording Programs instruct students in three interrelated areas: music history, theory and aesthetics; musicianship; and sound recording methodology and technique. Music Industry adds courses in copyright law, contracts, accounting, marketing and management. The multimedia curriculum integrates graphic design, audio production and video. The new professional recording facility features 4, 8, 16, and 40-track studios and workstations, as well as a digital mixing room and multimedia studio.

University of North Carolina at Asheville

Music Department, One University Heights Asheville, NC 28804-8510 Phone: 704/251-6432 Fax: 828/251-6841 E-mail: cmcknight@unca.edu Website: www.unca.edu Degrees/Certificates Offered: B.S. in Music Technology, B.A. in



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Audio Education Programs

Central Schools

Music with a concentration in Jazz Studies, B.A. in Music (general music studies). Program and Facilities Description: The B.S. in Music Technology was established in 1982. It is a small and highly selective program taught in UNCA's recording studio featuring 24-track analog and 16-track digital capabilities. Our MIDI production facilities and computer labs give students hands-on experience with the latest audio technology.

University of South Carolina

School of Music, Columbia, SC 29208 Phone: 803/777-4371 Fax: 803/777-6508.

Yale University School of Drama

222 York Street, New Haven, CT 06520 Phone: 203/432-8825 Fax: 203/432-1588 E-mail: david.budries@yale.edu Website: www.yale.edu/drama/academics/AdmissionsReq/sound.html Degrees/Certificates Offered: three-year M.F.A. in Sound Design and one-year internship in Sound Engineering. Program and Facilities Description: The Sound Design Program trains eligible applicants in the theory and practice of professional sound design. Coursework covers script interpretation, compositional elements of design, introductory sound design theory and practice, advanced problem solving, the fundamentals of sound technology, sound delivery systems, advanced digital sound and music technology, design master class and practical design thesis. Qualified students will have numerous opportunities to design for student and Yale Repertory productions.

CENTRAL SCHOOLS

Alexander Magazine

14071 Stephens, Suite #A-5, Warren, MI 48089 Phone: 877/683-1743 E-mail: administrator@alexandermagazine.com Website: www.alexandermagazine.com Degrees/Certificates Offered: Recording Institute of Detroit Theory Completions for Pro Audio Specialist, Recording Techniques 1 and Associate Recording Engineer programs, reducing campus attendance requirement by as much as 75%. Program and Facilities Description: Online program study with lessons, reference materials, audio demonstrations and interactive quizzes. Online final exams & certification. Many additional advanced study articles & postings. Free CD-ROM for high-speed study (U.S. only). Worldwide job/intern placement assistance. Study for Recording Institute of Detroit and other recording programs.

Aspen Music Festival and School

2 Music School Rd., Aspen, CO 81611 Phone: 970/925-3254 Fax: 970/925-3802 E-mail: school@aspenmusic.org Website: www.aspen.com/musicfestival Program and Facilities Description: The Edgar Stanton Audio Recording Institute is an intensive four-week, full-time seminar/workshop. The goal is to provide a background in the basics of audio production and prepare students for a career as a recording engineer. A wide range of recording and guest lecturers are noted representatives of the recording and broadcasting industries. The session is limited to 10 students to ensure maximum individual attention.

Audio Engineering Institute

6610 Buffalo Hills, San Antonio, TX 78256-2330 Phone: 210/698-9666 Website: www.audio-eng.com Degrees/Certificates Offered: Basic and Advanced Audio Engineering classes, each lasting 10 weeks. Program and Facilities Description: Classes are taught by Gold and Platinum record winner Marius Perron III. Students are trained with part hands-on equipment, part lecture. Basic class covers theory, microphones, consoles, tape recorders, live band recording and mixing. Advanced class covers signal processors, hard disk recording, MIDI, synthesizers and samplers, drum machines and sequencers, audio-for-video, computer-assisted mixing, real-time analysis and studio equipment maintenance. The advanced course is structured around an apprentice engineering program for students interested in working as second engineers at studios in San Antonio.

Brown Institute

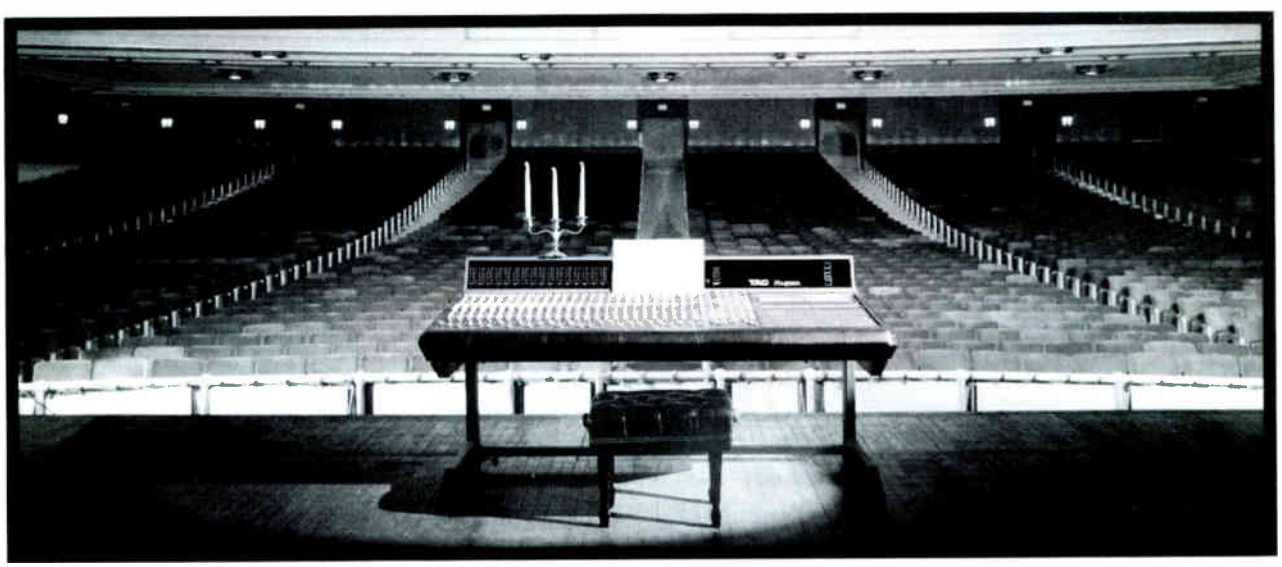
1440 Northland Dr., Mendota Heights, MN 55120 Phone: 612/905-3400 Fax: 612/905-3550.

Cleveland Institute of Music

11021 East Blvd., Cleveland, OH 44106-1705 Phone: 216/791-5000 Fax: 216/791-1530 E-mail: cimadmission@po.cwru.edu Website: www.cim.edu Degrees/Certificates Offered: Bachelor of Music in Audio Recording as a four-year degree or a double major (along with an instrument or Composition major) in five years. Program and Facilities Description: Courses cover digital audio; DSP/editing systems; audio-for-video post-production, surround sound, CD-ROM and Web-based multimedia; microphone techniques; synthesis/sampling; and acoustics. Equipment includes Tascam DA-98, Pro Tools, Sonic Solutions, Yamaha 02R digital multitrack recording/mixing; Lexicon, TC Electronic, Yamaha, etc.; DSP; Macintosh and Sony computers; Audio-Technica, Neumann, Sennheiser, Schoeps microphones; Millennia Media preamps. Professional faculty features multiple Grammy winner Jack Renner (Telarc International), Dr. Peter D'Antonio (RPG Diffusor Systems), Thomas Knab and Mark Tessi (CIM and Telarc) and Timothy Callahan. Program emphasizes hands-on experience, music and digital media production.

Columbia College Chicago

600 South Michigan, Chicago, IL 60605-1996 Phone: 312/482-9068 Fax: 312/482-9083 E-mail: bkanters@pop



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Audio Education Programs

Central Schools

mail.colum.edu Website: www.colum.edu Degrees/Certificates Offered: four-year accredited Bachelor of Arts degree with a major in Sound Technology. Program and Facilities Description: The Columbia College Chicago Sound Program includes extensive course offerings in the fields of music recording, concert sound reinforcement, sound design for video and film, sound contracting and acoustics. Columbia's Audio Technology Center includes multitrack music and voice-over recording and mix studios, film/video post-production suites, digital audio production suites and classroom laboratories for analog/linear and digital/nonlinear production, audio system analysis and acoustical design and analysis labs.

Cros-Lex Audio-Video Classes

5580 Peck Road (M-90), Croswell, MI 48422 Phone: 810/679-8149 E-mail: Gfitzpatrick@webtv.net Degrees/Certificates Offered: high school classes. Program and Facilities Description: Teaching of using audio and video machines for recording music and for movies with camcorders (hooking up an audio studio).

Dallas Sound Lab

6305 North O'Connor Blvd., Bldg. 4, Ste. 119, Irving, TX 75039 Phone: 972/869-1122 Fax: 972/869-1135 E-mail: Info@dallassoundlab.com Website: www.dallassoundlab.com.

DePaul University School of Music

804 W. Belden Ave., Chicago, IL 60614 Phone: 773/325-7444 Fax: 773/325-7429 E-mail: rbeacraf@wppost.depaul.edu Website: music.depaul.edu Degrees/Certificates Offered: four-year Bachelor of Science degree in Music. Program and Facilities Description: The DePaul Sound Recording Technology program is designed to prepare students for a career in the rapidly expanding audio industry. SRT students take classes in analog and digital microelectronics, computer science and calculus, in addition to the standard undergraduate music curriculum. Recording classes and student practicum take place off campus in a 48-track SSL studio where students have access to state-of-the-art equipment. On campus, students develop their skills at Studio DePaul, a fully digital 24-track facility featuring video, synthesis and surround sound capabilities.

Elmhurst College

190 Prospect, Elmhurst, IL 60126 Phone: 630/617-3500 Fax: 630/617-3738 E-mail: kevino@elmhurst.edu Degrees/Certificates Offered: B.M. in Music Business, B.S. in Music Business, B.M. in Music Education, B.A. in Music. Program and Facilities Description: Elmhurst College is a nationally accredited institution that offers both a B.S. and a B.M. in Music Business. In addition to classwork in music business and business of music, students get hands-on industry experience through internships, industry speakers and course tours. Resources include a state-of-the art 24-track digital studio, courses ranging from music theory to MIDI, recently expanded practice and recital facilities and an artist faculty of over 50. Industry support is provided in the form of scholarships from trade organizations such as NAMM and NARAS, corporate sponsorship, a student chapter of MEIEA and an intern/job bank.

Grand Valley State University

1 Campus Drive, Allendale, MI 49401 Phone: 800/748-0246 Fax: 616/895-2000 E-mail: go2gvsu@gvsu.edu Website: www.gvsu.edu Degrees/Certificates Offered: Electrical Engineering with Music minor. Program and Facilities Description: Grand Valley State University has a unique program for students who have the talent and interest to combine engineering and music. This program has the potential for a career that can span the entire audio and music industries from hardware design and manufacturing to performance.

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Audio Education Programs

Central Schools

Houston Community College

1060 West Sam Houston Parkway North, Houston, TX 77043 Phone: 713/718-5621 Fax: 713/718-5635 E-mail: gehman_s@hccs.cc.tx.us Website: www.hccs.cc.tx.us/nwcollege/audt/main.htm Degrees/Certificates Offered: certificate in Audio Engineering, one year; certificate in MIDI/Electronic Music, one year; certificate in Video Production, one year; two-year A.A.S. Degree in Audio Engineering; one-semester Enhanced Skills Certificate in MIDI/Electronic Music or Video Production. Program and Facilities Description: Unlimited hands-on experience via eight fully equipped studios. Studio IV: Foley

stages, Pro Tools|24 MIX Plus, Panasonic DA7 for tracking, mixing, video post and scoring. Studio V: 48-track DA-88s/2-inch, Sony 3036 console, UREI, Lexicon, Eventide, ADR, Aphex processors; Telefunken, Neumann, AKG microphones. Studios II, III, IV: Alesis X2 consoles, ADAT XT20 recorders, CD-Rs, Akai, Alesis, E-mu, Korg, Peavey, Roland, Yamaha synthesizers. Studios I, VII: 30 Power Mac/Korg workstations. Studio VIII: linear and nonlinear video editors.

Indiana University School of Music

Bloomington, IN 47405 Phone: 812/855-1087 E-mail: bejrober@indiana.edu Website: www.music.indiana.edu/som/audio Degrees/Certificates Offered: A.S. in Audio Technology, B.S. in Audio Recording. Program and Facilities Description: Training in audio recording, reinforcement and media production, multitrack studio techniques emphasized (A.S.), classical music engineering and producing emphasized (B.S.). DAT, SC-88, hard disk editing and 16-track analog, full range of professional microphones. Students record CD projects and performances ranging from solo and chamber music through symphonies, jazz ensembles and opera. Twelve hundred performances produced annually in four concert halls. University financial aid and some work scholarships available. Departmental assistance offered in job placement.

International College of Broadcasting

6 So. Smithville Rd., Dayton, OH 45431 Phone: 937/258-8251 Fax: 937/258-8714 Website: www.icbroadcasting.com Degrees/Certificates Offered: Associate Degree program in Applied Science of Communication Arts in Television and Radio, Associate Degree program of Applied Science in Video Production/Recording, Audio Engineer Diploma program in Recording Audio Engineering, Diploma Program Broadcasting I. Program and Facilities Description: ICB is a small, private college. Enrollment invitations are based on prospective students touring the facility and demonstrating commitment and desire to be part of the broadcasting and recording fields. Smaller class sizes ensure more individualized attention. Programs offer combine theory and hands-on training.

Madison Media Institute

One Point Pl., Ste. 1, Madison, WI 53719-2809 Phone: 608/829-2728; 800/236-4997 Fax: 608/829-2661 E-mail: mmi@madisonmedia.com Website: www.madisonmedia.com Degrees/Certificates Offered: Recording and Music Technology, Multimedia Technology, Radio and Television Broadcasting. Program and Facilities Description: The objective of the recording and music technology program is to train students to acquire skills in engineering and sound production. The program is equipped with 15 MIDI/synthesizer workstations, 16-track Digidesign Pro Tools. Fully equipped 48-track digital and 2-inch analog.

Millikin University

1184 W. Main St., Decatur, IL 62522-2084 Phone: 217/424-6300 Fax: 217/420-6652 E-mail: swidenhofer@mail.millikin.edu Website: www.millikin.edu.

Music Tech College of Music and Recording Arts

Phone: 800/594-9500; E-mail: dsandridge@musictech.com Website: www.musictech.com Degrees/Certificates Offered: Associate of Applied Science Degree in Music: Emphasis, Music Production (four semesters); Associate of Applied Science Degree in Recording Technology (four semesters); Diploma programs in Recording Engineer Course/Engineer Major and Production Major (three semesters). Program and Facilities Description: Highly selective, in-depth courses for career-oriented students. State-of-the-art facilities in the heart of the Twin Cities' music industry. Nationally recognized faculty. Accredited institutional member of the National Association of Schools of Music. Waiting list for some programs. Please apply early.

Northeast Community College

801 East Benjamin Ave., Norfolk, NE 68702 Phone: 402/644-0506 Fax: 209/254-8282 E-mail: northeastaduio@yahoo.com Website: www.northeastaudio.org Degrees/Certificates Offered: two-year Audio Recording Associates degree. Program and Facilities Description: Located in Northeastern Nebraska, Northeast Community College's Audio Recording pro-

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Candace Horgan
Mix, April 2001

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David Darlington
HomeRecording, June 2001

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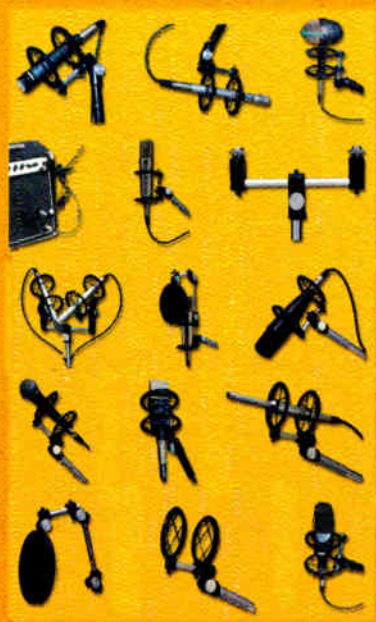

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Audio Education Programs

Central Schools

gram combines thorough academics with hands-on training in both live and studio environments. Facilities include two control rooms, recording studio, concert stage and isolation rooms. Equipment includes Otari, Soundcraft, Yamaha, Digidesign Pro Tools and MOTU MIDI. Northeast Community College offers quality education at a price you can afford.

Oberlin Conservatory of Music

TIMARA Department, Oberlin, OH 44074 Phone: 440/775-8413 E-mail: Gary.Nelson@oberlin.edu Website: www.timara.oberlin.edu **Degrees/Certificates Offered:** four-year Bachelor of Music (major in Technology in Music & Related Arts); four-year Bachelor of Arts in Visual Arts with an emphasis in Digital Media. **Program and Facilities Description:** Based at one of the nation's top-ranked conservatories of music, the TIMARA Department has excellent facilities for computer music, performance technology and new media. There are seven studios, including a recording studio (16-track digital tape, 16-track Pro Tools); two computer music studios; a digital media room with a Media 100 system; and a computer music lab with multiple Macintosh-based workstations/samplers. The program is highly competitive and admits fewer than 10 students per year.

Ohio University School of Telecommunications

9 South College St., Athens, OH 45701 Phone: 740/593-4870 E-mail: tcomschool@ohiou.edu Website: www.tcomschool.ohio.edu **Degrees/Certificates Offered:** Bachelor of Science in Communications. **Program and Facilities Description:** The Audio Production Sequence requires the student to choose between three tracks in audio production, music recording, media production or audio post-production for moving image. Each track incorporates coursework within the school of Telecommunications, as well as coursework in music, theater, electronics, film and business, among others. Additionally, the music recording track requires students to complete a minor in Music. Facilities include an Amek Big 28x24 console with SuperTrue Automation; 24-track Tascam MX-2424 digital recorder; several Digidesign Pro Tools digital audio workstations; a wide assortment of mics by Neumann, Sennheiser, AKG, Audio-Technica, Shure; and processing gear by Lexicon, Yamaha, dbx and Rane. The school is also equipped with both Avid and Media 100 video workstations, as well as a 13-station Macintosh G4 MIDI/digital audio lab. Additionally, the school is one of three schools with access to a 32-station Macintosh G4 multimedia lab that includes a variety of high-end audio, graphic and video multimedia software including a Sonic Solution DVD-Authoring system.

Recording Institute of Detroit

14611 9-Mile Rd., Eastpointe, MI 48021 Phone: 800/683-1743 Fax: 810/772-4320 E-mail: administrator@recordinginstitute.com Website: recordinginstitute.com **Degrees/Certificates Offered:** Recording Engineer Certificate: 37-40 weeks/258 clock hours, Recording Engineer Certificate: 36 weeks/305 clock hours; Associate Recording Engineer Certificate: 11-20 weeks/106 clock hours. **Program and Facilities Description:** Operating since 1975 with extensive training in recording and music production. Students attend programs 5-12 hours per week, completing three recording courses, one music course and an internship, with lab and interactive in-school study as needed. We have three major studios, dedicated student control room plus student workstations. We use SSL and 02R and Tascam consoles, PC & Mac computers, plus 48-track digital & analog recorders. Small classes (8-10), relaxed and comprehensive. Web training reduces campus time and cost. See Alexander Magazine entry.

Recording Institute of Detroit Saginaw Annex

707 Federal Ave., Saginaw, MI 48607 Phone: 888/683-1743 E-mail: recordeq@aol.com Website: www.wagnermusic.com/rid.html **Degrees/Certificates Offered:** Recording Technician Certificate 7-19 weeks/83 clock hours. **Program and Facilities Description:** Open since 1997, the Annex offers initial training in recording and music. Students can complete RID full programs by transferring to the main campus for complete advanced training. Facilities include a complete 40-track, all-digital control room with DA-88 format and cascaded 02R consoles and large studio room. A student lab station and video viewing facilities round out the facilities.

The Recording Workshop

455 Massieville Rd., Chillicothe, OH 45601 Phone: 800/848-9900 Fax: 740/663-2427 E-mail: info@recordingworkshop.com Website: www.recordingworkshop.com **Degrees/Certificates Offered:** Recording Engineering and Music Production Program Certificate, five weeks/200 clock hours. Studio Maintenance and Troubleshooting Program Certificate, five days/40 clock hours. Advanced Recording Engineering and Music Production Program Certificate, seven days/60 clock hours. NewTech Computer-based Audio Production Program Certificate, five days/40 clock hours. **Program and Facilities Description:** Founded in 1971, the Recording Workshop offers effective and affordable short-term training that has helped thousands of audio professionals get their start. From the very first day of class, our students get in the studios. In less than two months, Recording Workshop students get more real in-studio experience than at some other schools that last much longer. Our students work in small teams of three to six, with a total student body of 96. We have eight studios full of the latest gear, along with a lecture hall and computer lab. Affordable on-campus student housing, job placement assistance and financial aid are among the services we provide.

Ridgewater College Audio Technology Program

2 Century Ave., Hutchinson, MN 55350 Phone: 800/222-4424 Fax: 320/587-9019 E-mail: digl@ridgewater.mnscu.edu Website: www.ridgewater.mnscu.edu **Degrees/Certificates Offered:** two-year diploma in Audio Technology, two-year A.A.S. Degree in Audio Technology. **Program and Facilities Description:** The Audio Technology department offers a diverse program in audio, ranging from studio recording to live sound, system design and installation. Students also achieve a strong electronics and computer applications background, which makes our graduates extremely valuable to future employers. Students will work with Pro Tools MIX Plus and DAL V8 Digi-

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02

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Audio Education Programs

Western Schools

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South Plains College

1401 College Ave., Levelland, TX 79336 Phone: 806/894-9611 x2276 Fax: 806/894-5274 E-mail: smoody@spc.cc.tx.us Website: www.spc.cc.tx.us Degrees/Certificates Offered: Associate Degree in Sound Technology. Program and Facilities Description: Two 24-track recording studios, one 16-track demo studio. Consoles include Sony MXP-3036 36-channel, AMEK Mozart 34-channel, Mackie 8-bus 32-channel, fully equipped MIDI lab with Vision/Pro Tools, MOTU Digital Performer/Macintosh G4 digital audio workstation, complete video production facility. The Sound Technology Program at South Plains College was founded in 1980 and modeled after the program at Belmont University in Nashville. South Plains College offers a professional audio education at an extremely affordable price.

Southwest Texas State University

601 University Dr., San Marcos, TX 78666 Phone: 512/245-8451 Fax: 512/396-1169 E-mail: me02@swt.edu Website: www.swt.edu/music Degrees/Certificates Offered: Bachelor of Music with an emphasis in Sound Recording Technology. Program and Facilities Description: SWT is the only university in the state to offer a bachelor's degree in the field of Sound Recording Technology. SWT owns and operates the Fire Station, a multipurpose recording facility housing both analog and digital 24-track recorders, a 36-channel automated console, and numerous professional microphones and outboard devices. Students participate in commercial recording sessions while pursuing their degrees. Students also have access to a desktop music production lab, a desktop video production lab, two additional 24-track recording facilities, a multimedia content creation CD-ROM mastering lab, an audio mastering lab and several computer labs. The curriculum emphasizes recording, music, digital media, math/science and an internship.

Synergetic Audio Concepts Inc.

8780 Rufing Rd., Greenville, IN 47124 Phone: 812/923-0174 Fax: 812/923-3610 E-mail: brenda@synaudcon.com Website: www.synaudcon.com Degrees/Certificates Offered: SynAud-Con "Week of Audio Training" includes "Setup & Optimization" and "System Design." Program and Facilities Description: "Setup & Optimization" allows you to learn how to

properly interface and calibrate audio equipment. "System Design" allows you to achieve optimum sound system performance before installation. "Hands-On" allows you to apply the principles taught in the "Setup & Optimization" seminar. Continuing education units are given with the week-long seminar. Owned and operated by Pat and Brenda Brown.

Fred N. Thomas Career Education Center

2650 Eliot St., Denver, CO 80211 Phone: 303/964-3075 Fax: 303/964-3004 Degrees/Certificates Offered: Public high school program. Program and Facilities Description: This is a program for junior and senior high school students in the Denver metro area. There are two courses: Audio 1, beginning fundamentals of sound recording; and Audio 2, an advanced production class in which each student makes a CD of a band or artist. Students have access to a 24-track studio with a good complement of outboard gear and microphones.

University of Cincinnati Conservatory of Music (CCM)

PO Box 210096, Cincinnati, OH 45221-0096 Phone: 513/556-5462 Fax: 513/556-3399 E-mail: Michael.Hooker@uc.edu Website: www.uc.edu/www/ccm/tdp Degrees/Certificates Offered: B.F.A. in Theater Design and Production, emphasis in theater sound; M.F.A. in Theater Sound Design. Program and Facilities Description: CCM's sound design programs encompass a broad array of areas within the performing arts. Coursework includes sound technology and production, theater aesthetics, critical listening, music, digital audio, recording, reinforcement and sound design. CCM offers a diverse season of shows including large musicals, operas, dance and dramas. Facilities include three well-equipped theaters, a sound design studio and extensive reinforcement and playback equipment. Entrance is by on-site portfolio review.

University of Colorado, Denver College of Arts and Media

Campus Box 162, PO Box 173364, Denver, CO 80217-3364 Phone: 303/556-2795 Fax: 303/556-2335 E-mail: roypritts@aol.com Website: www.cudenver.edu/public.cam Degrees/Certificates Offered: four-year B.S. in Music: Music Engineering or Music Industry Studies; sixth year, Master of Humanities or Engineering or Learning Technologies; seventh year, Ph.D. in Information and Learning Technologies. Program and Facilities Description: Music technology, engineering, business, music with general university core studies, four control rooms, five studios with music recording, audio sweetening (surround), electronic music (MIDI) production, student section of the Audio Engineering Society (AES), SPARS, MEIESA chapter, national internship program, 16-track analog and 24-track digital control rooms, signal processing, maintenance and calibration.

University of Michigan Dept. of Media and Music Technology

1100 Baits Dr., Ann Arbor, MI 48109-2085 Phone: 734/763-7558 Fax: 734/763-5097 E-mail: samuel@umich.edu Website: www.music.umich.edu/departments/pat/index.html Degrees/Certificates Offered: Bachelor of Music, Music Technology; Bachelor of Fine Arts, Music Technology concentration; Bachelor of Fine Arts, Media Arts with concentrations in Sonic Arts, Visual Arts or Engineering; Bachelor of Science in Music, Sound Engineering. Program and Facilities Description: The department seeks to advance the aesthetics of technology-based arts through performance, the development of emerging technologies and research. Collaboration and creativity are components of the interdisciplinary study of music, dance, theater, engineering, art and video.

University of Missouri, Kansas City

4949 Cherry St., Kansas City, MO 64110 Phone: 816/235-2964 Fax: 816/235-5367 E-mail: mardikest@umkc.edu Website: www.umkc.edu Degrees/Certificates Offered: Master of Fine Arts (M.F.A.) in Theater Sound Design. Program and Facilities Description: This three-year training program teaches students to create sound scores for the living theater through five main components: design—interpretation, collaboration and idea development; technical skills; mastering tools of production with 24-track analog and Pro Tools; history—research, text analysis and dramatic history; production—artistic merging of design, history and technical skills through the experiences of numerous and varied productions; entrepreneurship—study of the business of the profession and career growth.

University of Nebraska, Lincoln

206 Avery Hall, Lincoln, NE 68588-0511 Phone: 402/472-2258 Fax: 402/472-4732 E-mail: krnu@unlinfo.unl.edu Website: www.jet.unl Degrees/Certificates Offered: four-year Bachelor of Journalism degree in Broadcasting. Program and Facilities Description: The College of Journalism & Mass Communications houses the broadcasting department with audio and video production facilities and the University's FM radio station, KRNU. Courses are devoted to audio field and studio production as it relates to broadcast/cable operations and audio/video production careers. Extensive digital audio and video gear. The college is moving to its own dedicated building in 2001.

University of Texas

Department of Radio, Television and Film CMA 6.118, Austin, TX 78712 Phone: 512/471-6695 E-mail: vmh@mail.utexas.edu Website: www.utexas.edu/coc/rtf Degrees/Certificates Offered: B.S., M.F.A. and Ph.D. degrees in Radio, Television and Film. Program and Facilities Description: Please see Website.

University of Wisconsin, Dshkosh

Music Department, Recording Technology Program, Oshkosh, WI 54901 Phone: 920/424-4224 Fax: 920/424-1226 E-mail: messner@uwosh.edu Website: www.uwosh.edu Degrees/Certificates Offered: Bachelor of Music with emphasis in Recording Technology. Program and Facilities Description: Students are trained in a 32-track digital, 16-track analog studio, using a 62-channel Total Audio Concepts console with automation, a wide array of signal processing gear, full video lock, and multitrack hard disk recording and editing. The studio is also tied to its own MIDI lab. Students entering program must audition on primary instrument for entrance acceptance. The final semester of enrollment is spent as an intern at a professional audio facility, with placement throughout the U.S. and Europe available.

Woodland Studios Engineer Training Program

1011 Woodland St., Nashville, TN 37206 Phone: 615/262-2222 Fax: 615/262-5800 Program and Facilities Description: A unique program that offers intense, hands-on training, including basic electronic classes at Nashville Tech, a variety of weekly seminars with industry leaders such as: Tom Clark, Quantegy Tape; Steve Durr, studio designer; and Fred Hill, Neve guru. We accept four students per year. All students work daily on sessions at the position of assistant engineer, supervised by our engineering staff. Some recent projects have included Tonic, Indigo Girls, Days of the New, Robert Cray, Faith Hill, Patty Loveless, Wynonna, Salt-n-Pepa, Johnny Cash and George Jones.

WESTERN SCHOOLS

Alta Center for Communication Arts

9014 N. 23rd Ave., Suite 1, Phoenix, AZ 85021 Phone: 888/729-4954 Fax: 602/749-5418 E-mail: info@thealtacenter.com Website: www.thealtacenter.com Degrees/Certificates Offered: Diploma in Digital Audio Recording—a unique program created specifically for project studio owners/engineers/producers and independent musicians. Program and Facilities Description: Our five-week Digital Audio Recording program is an innovative program designed by an award-winning engineer/producer and founder of The Conservatory of Recording Arts & Sciences. Learn all the professional techniques for high-quality recording (including DVD mastering & production), utilizing current project studio gear and software. Only eight students per class. The Alta Center also offers a diploma program in Multimedia Production, including: Computer Animation, Digital Graphics, Video/Audio Production and Website Development.

Art Institute of Seattle Audio Production Department

2323 Elliott Ave., Seattle, WA 98121 Phone: 800/275-2471 E-mail: dyert@aii.edu Website: www.ais.edu Degrees/Certifi-

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Audio Education Programs

Western Schools

cates Offered: two-year Associate of Applied Arts in Audio Production. Program and Facilities Description: The Institute offers an accredited six-quarter audio program in a hands-on environment taught by industry professionals, with emphasis in studio production and audio for digital media. The facility features three 24-track studios, a full digital post-production studio, multiple DAW workstations. The school also offers Video Production and Multimedia/Web Design degrees, with labs including a BetaSP online, Avid, Premier and Media 100. Assistance in obtaining internships and employment is available.

Audio Institute of America Audio Recording School

814 46th Avenue, San Francisco, CA 94115 Phone: 415/752-0701 Fax: 415/752-0701 E-mail: audioinst@earthlink.net Website: www.audioinstitute.com Degrees/Certificates Offered: Diploma in Recording Engineering. Program and Facilities Description: Home study course for professional careers and home recording studios. Join our successful working graduates or learn how to build and operate your own home studio. AIA has students in 100 countries around the world. This licensed school specializes in the art of digital and analog recording techniques.

The Banff Centre for the Arts

Box 1020, Stn. 28, Banff, Alberta, Canada T0L 0C0 Phone: 403/762-6180 Fax: 403/762-6345 E-mail: studios@banffcentre.ab.ca Website: www.banffcentre.ab.ca/music Degrees/Certificates Offered: Audio Assistant and Associate Work/Study programs. One to three terms. Program and Facilities Description: Financial assistance and weekly stipend available. Audio engineers refine their skills in an international, multidisciplinary environment. The audio program runs alongside internationally renowned music programs with prominent faculty and musicians. Guest audio faculty have included John Eargle, Bob Ludwig, George Massenburg and Dr. Wieslaw Woszczyk. Activities include learning equipment, software and advanced recording techniques, involvement in CD, concert and studio recording, individual research and experimentation, and audio-for-video. Facilities include recital hall with adjoining control room, digital multitrack recording studio, Pro Tools audio-for-video post-production suite, Sonic Solutions editing suite.

California Recording Institute

1137 Howard St., San Francisco, CA 94103 Phone: 650/324-0464; 800/9000-MIX Fax: 415/861-1613 E-mail: virtmixr@hooked.net Website: www.CaliforniaRecording.com Degrees/Certificates Offered: two-year Audio Producer Associate Degree Program; three- or nine-month Recording Arts and Technology Certificate Program. Program and Facilities Description: Hands-on intensive program with a wide array of complementary classes. Four studios (24-track 2-inch, ADAT, MIDI, Pro Tools 4, Digital Video Editing Suite and The Virtual Mixer) per 18 students. The Virtual Mixer uses 3-D visuals of the mix to teach mixing theory. Gibson's book "The Art of Mixing" is used as the primary text. Serious internship program and placement assistance. Classes include the Art and Technology of Production, Equipment Maintenance, Music Theory for Engineers, MIDI, Computers and Hard Disk Recording, the Music Business, Live Sound Reinforcement, Audio-for-Video, Audio for the Internet, Video Production and Multimedia. Call, write or e-mail for free brochure.

California State University, Chico

Department of Music, Chico, CA 95929-0805 Phone: 530/898-5500 Fax: 530/898-4082 E-mail: kseppanen@oavax.csuchico.edu Website: www.csuchico.edu/mus/rcrd Degrees/Certificates Offered: four-year B.A. in Music with an option in Recording Arts; four-year B.A. in Music with an option in Music Industry.

California State University, Dominguez Hills

1000 E. Victoria St., Carson, CA 90247 Phone: 310/243-3543 E-mail: dbradfield@dhvx20.csudh.edu Website: music1.csudh.edu/Music Degrees/Certificates Offered: four-year B.A. Audio Recording; four-year B.A. Music Synthesis; Certificate Audio Technology. Program and Facilities Description: CSUDH has a fully equipped analog and digital studio in addition to its synthesizer studio. Completely renovated in 1999, the new equipment includes: Mackie and Panasonic Digital 5.1 mixing consoles, 48 tracks of DA-98 and ADAT format multitrack recording, Pro Tools and Sonic Solutions DAWs and high-res mastering equipment.

Conservatory of Recording Arts & Sciences

2300 East Broadway Rd., Tempe, AZ 85282-1707 Phone: 800/562-6383 Fax: 408/829-1332 E-mail: cras@crass.org Website: www.audiorecordingschool.com Degrees/Certificates Offered: Master Recording Program. Program and Facilities Description: The MRP-II is a 37-week-long comprehensive audio engineering program. Classes are limited to 12 students. This is the only accredited recording school in the U.S. authorized by Avid/Digidesign to certify its graduates on Pro Tools courses 135 and 235, and it is the only program that requires and procures an internship for its students. The program utilizes state-of-the-art gear, including SSL, Tascam, Otari, Lexicon, TC Electronic and Neumann. Financial aid available to those who qualify.

Ex'pression Center for New Media

6601 Shellmound St., Emeryville, CA 94608 Phone: 510/654-2934 Fax: 510/658-3414 E-mail: Doreen@xnewmedia.com Website: www.xnewmedia.com; www.expression.edu Degrees/Certificates Offered: 14-month (four-year) diploma program in Sound Arts, Animation and Modeling, Web Design and Development. Program and Facilities Description: The Sound Arts Program at Ex'Pression Center for New Media is a total immersion, educational experience designed to bring the graduate's level of knowledge to the professional level. The 14-month program of study connects students with some of the best practitioners and latest equipment in the industry. Graduates are prepared to immediately assume sought-after jobs in the sound arts and high-technology centers around the world. Semester begins January, March, May, July, September and November each year. Private financial aid is available to qualified students.

Fullerton College Music Department

321 East Chapman Ave., Fullerton, CA 92832-2095 Phone: 714/992-7296 Fax: 714/992-7327 Website: www.fullcoll.edu Degrees/Certificates Offered: A.A. in Music; Certificates in Piano Pedagogy and Recording Production.

Long Beach City College

4901 East Carson St., Long Beach, CA 90808 Phone: 562/938-4309 Fax: 562/938-4118 Website: www.lbcc.cc.ca.us Degrees/Certificates Offered: A.A. with emphasis in Commercial Music, 10 certificates in Music, Radio or Television—each requires three to five semesters. Program and Facilities Description: LBCC offers job placement as well as intern positions. Most instructors are active in the professional field. Facilities include seven studios equipped with digital audio and/or analog multitrack, 42 individual MIDI workstations, three camera online video facilities, as well as three offline editing rooms. Studio use is available first semester; all students get hands-on experience during their first semester. Equipment includes ADAT, Fostex DMT, MCI 24-track, Soundcraft, CAD, Sound Workshop, Pro Tools, Music Shop, Vision.

Los Angeles Recording Workshop

5278 Lankershim Blvd., North Hollywood, CA 91601 Phone: 818/763-7400 Fax: 818/763-7447 E-mail: larw@idt.net Website: idt.net/~larw Degrees/Certificates Offered: seven-month Recording Engineer Certificate, seven-month Audio-Video Production Certificate. Program and Facilities Description: Located in North Hollywood, close to more than 1,300 studios, we offer hands-on training in our 17,000-square-foot, 16-studio facility, featuring Solid State Logic 4000 G+ with Ultimation, four-station Pro Tools Lab, four-station AVID 1000 Lab, and four-station Silicon Graphics Lab. Students learn audio, video and film techniques in small-group, hands-on workshops. Internships and job placement assistance for life. Financial aid and dorm-style housing are available. Tours available Mon.-Fri., 11 a.m. to 4 p.m.

Los Medanos College

2700 East Leland, Pittsburg, CA 94565-5197 Phone: 925/439-0200 Fax: 925/427-1599 Website: www.losmedanos.net Degrees/Certificates Offered: two-year Recording Arts Certificate or Associate Degree. Program and Facilities Description: The most comprehensive community college recording program in the country. Courses in digital and analog multitrack formats, sound reinforcement, jingle production, music business, session producing, employment strategies, MIDI, audio-for-video, digital editing and related subjects. Two well-equipped multitrack studios, 10 MIDI stations.

Mills College

Phone: 510/430-2191 Degrees/Certificates Offered: B.A.s can specialize in composition with an emphasis on technology. M.F.A.. degrees in composition can specialize in electronic music and recording media. Program and Facilities Description: Mills College is an undergraduate women's college and a co-educational graduate college. Our studios include 24-track analog (with Dolby SR) and Pro Tools workstation.

MiraCosta College Music Department

One Barnard Dr., Oceanside, CA 92056 Phone: 760/757-2121 x6527 Fax: 760/795-6817 E-mail: ccoobatis@mcc.miracosta.

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Audio Education Programs

Western Schools

cc.ca.us Website: www.miracosta.cc.ca.us/info/acad/music/default.htm Degrees/Certificates Offered: A.A. in Music. Program and Facilities Description: All certificates are two-year programs: Recording Arts/Record Production Certificate; Sound Reinforcement Certificate; Certificate of Achievement—Guitar; Computerized Audio Production Certificate; Certificate of Achievement—Music Technology; Certificate of Achievement—Performance Technician. Programs in commercial music, choral, piano, guitar, as well as general transfer-level courses.

Mt. San Jacinto College

1499 North State St., San Jacinto, CA 92583 Phone: 909/487-6752 x1577 Fax: 909/487-1452 E-mail: music@msjc.cc.ca.us Degrees/Certificates Offered: Audio Technologies Certificate (18 units) Associate Degree, Audio Technologies. Program and Facilities Description: The MSJC program features both hands-on and theoretical instruction. Plus, the MSJC program uses the same professional equipment the audio industry does with names like Soundcraft, Yamaha, Pro Tools, Lexicon, Otari and QSC. Additionally, we offer both digital and analog recording. The $2 million facility features five studio floors and three independent control rooms. Also computer music lab. California resident enrollment fees are $11 per unit. Out-of-state fees are higher. Financial aid is available.

Music Video Products

9030 Eton Ave., Canoga Park, CA 91304 Phone: 818/709-5809 Fax: 818/709-7846 Website: www.musicvideoproducts.com Program and Facilities Description: Music instruction videos for all ages and instruments. Use as a supplement for face-to-face lessons. Excellent beginning primer for band or lessons. Economically priced.

Musicians Institute

1655 McCadden Place, Hollywood, CA 90028 Phone: 323/462-1384 Fax: 323/462-6978 Website: www.mi.edu Degrees/Certificates Offered: Musicians Institute offers a Bachelor of Music in commerical music (Recording Artist program), Journeyman Certificate in music (Recording Institute of Technology and Guitar Craft Academy), and Professional Certificate in Music: Bass Institue of Technology, Guitar Institute of Technology, Keyboard Institute of Technology, Percussion Institute of Technology and Vocal Institute of Technology. Non-certificate training in music: Encore. Program and Facilities Description: Musicians Institute is over 25 years in the business of music education, and we are commited to high-quality training of musicians for careers in commercial music. When MI set out to create a recording program, the first decision we made was that it had to reflect the same philosophy as MI's other programs. It had to offer hands-on, performance-oriented preparation for the real world of the professional recording studio. The Recording Instute of Technology (leading to a Journeyman Recording Certificate) furnishes engineers and producers with the day-to-day encounter as professionals. The success of this approach can be measure both by the ability of RIT graduates to work in the recording industry and by the number of artists waiting to record in MI's studio.

Recording Connection

8033 Sunset Blvd., Ste. 4042, Hollywood, CA 90046-2427 Phone: 800/295-4433 Fax: 310/826-8064 E-mail: musicbiz@earthlink.net Website: www.recordingconnection.com Program and Facilities Description: Recording Connection is a 15-year-old accredited program that has a worldwide network of over 5,000 recording studios throughout the United States and Canada. The company signs on new affiliates each month. We provide on-the-job training in major recording studios, record companies, and radio and TV stations. Available in every city or town. Call for free video or CD-ROM.

Sacramento City College

3835 Freeport Blvd., Sacramento, CA 95822 Phone: 916/558-2111 Fax: 916/558-2441 E-mail: donyg9999@aol.com.

San Diego City College

1313 12th Ave., San Diego, CA 92101 Phone: 619/230-2522 Fax: 619/230-2212 Website: www.sd.ccd.net Program and Facilities Description: See Website.

San Francisco State University

1600 Holloway Ave., San Francisco, CA 94132 Phone: 415/338-1111 Website: www.sfsu.edu Degrees/Certificates Offered: Broadcast & Electronic Communication Arts Dept.: B.A. and M.A. four-year degree program; Music Recording Industry program, College of Extended Learning: Certificate Program. Program and Facilities Description: Facility is a fully equipped studio with 2-inch analog multitrack, automated console, misc. signal processing equipment and digital audio workstations; B.A. program includes multitrack recording for music, audio-for-visual media and sound design components.

Santa Barbara City College

721 Cliff Dr., Santa Barbara, CA 93109-2394 Phone: 805/965-0581 Fax: 805/963-7222.

Santa Monica Academy of Entertainment and Technology

1900 Pico Blvd., Santa Monica, CA 90405 Phone: 310/434-3700 Fax: 310/434-3709 E-mail: cook_maria@smc.edu Website: http://academy.smc.edu Degrees/Certificates Offered: two-year Computer Animation certificate; two-year Interactive Media certificate. Program and Facilities Description: The Academy of Entertainment and Technology trains students in interactive media, traditional animation and computer animation. A program in audio engineering is in development. We offer hands-on training with industry-standard software, including Maya, Dreamweaver, Director, Flash, Pro Tools 24 MIX, Sound Forge, Premier and PhotoShop. Facilities include NT, Macintosh and Unix. Classrooms have a computer at every desk. Our mission is to develop flexible professionals who can adapt to a variety of projects and roles in rapidly changing fields.

SF Audio Net

39 Gilbert St., San Francisco, CA 94013 Phone: 415/863-6883 Fax: 415/863-8419 E-mail: info@SFaudio.net Website: www.SFaudio.net Degrees/Certificates Offered: two-month Music Production certificate; 10-week Post-Production certificate; non-degree granting status registered with the California State Bureau for Post-Secondary and Vocational Education. Program and Facilities Description: SF Audio Net provides a combination of training and hands-on experience in an immersion-style educational program. Training sessions are held in a commercial facility and taught by working professionals in the industry. Commercial projects are used as training tools to demonstrate the practical applications of the skills and theories being taught. These workshops provide an educational and networking resource for both professionals and students in the field of digital audio production for both commercial post-production and music recording applications.

Sound Master Recording Engineer School Audio/Video Institute

10747 Magnolia Blvd., North Hollywood, CA 91601 Phone: 323/650-8000 E-mail: engrsnd@aol.com Degrees/Certificates Offered: Recording Engineering Certificate, 10 months (720 clock hours). Program and Facilities Description: The school offers comprehensive training in Record Engineering, Audio/Video Post-Production, Film Scoring, Digital Mastering, Synchronization, MIDI and Technical Maintenance. Job placement is given upon graduation. Sound Master is proud of its graduates' achievements in the industry. Many of the school's graduates hold key positions in top music/recording companies. Student grants and loans are available for those who qualify. Day or evening classes are available. Approved for foreign students.

Trebas Institute, British Columbia

112 East 3rd Ave., Vancouver, BC, Canada V5T 1C8 Phone: 604/872-2666 Website: www.trebas.com Degrees/Certificates Offered: one-year diploma programs in Audio Engineering, Recorded Music Production, Music Business Administration, Film/Television Production and Film/Television Post-Production; B.A. in Sound Technology (two years, following one-year diploma in Audio Engineering) in partnership with the Liverpool Institute for Performing Arts; and B.A. in Enterprise Management (two years, following one-year diploma in Music Business Administration). Admission to B.A. Degree program highly competitive. Program and Facilities Description: Established in 1979 to help students acquire knowledge and develop skills and professionalism for entry into fields of music business, audio, record production, film/TV production, post-production, interactive multimedia and computer animation. Outstanding instructors. High-tech studios and labs. Focus on preparing grads for real-world careers. Government loans. Internships. Lifetime national job search assistance. Grads with major entertainers, studios, companies worldwide. Resource center. Authorized training center for Cubase and Macromedia.

UCLA Extension Entertainment Studies

10995 Le Conte Ave., Room 437, Los Angeles, CA 90024 Phone: 310/825-9064 Fax: 310/206-7435 E-mail: espa@unex.ucla.edu Website: http://uclaextension.org/entertainmentstudies Degrees/Certificates Offered: Certificate Program in Recording Engineering takes approximately one year to complete. Program and Facilities Description: A rigorous training program that prepares the student in both the art and science of sound recording. Drawing on the talent and studio facilities of Los Angeles, UCLA Extension has created a curriculum of required and elective courses that cover both theory and practice in audio technology, equipment, musicianship and business practice. All classes are taught by working professionals. The objective of the program is to enable future engineers to acquire vision and problem-solving techniques that meet the challenges of rapidly evolving technology and a dynamic sound recording market. State of California-approved program of significant educational accomplishment in a professional field.

University of Oregon, School of Music

1225 University of Oregon, Eugene, OR 97403 Phone: 541/346-3761. E-mail: lgoren@oregon.uoregon.edu (undergraduate); gradmus@oregon.uoregon.edu (graduate). Website: http://darkwing.uoregon.edu/~fmo. Degrees/Certificates Offered: B.S. Music Technology Option, Master of Music in Intermedia Music Technology (final approval pending). and Intermedia Music Technology as a secondary area for doctoral students.

University of Southern California School of Music

Music Industry/Recording Department, Los Angeles, CA 90089-0851 Phone: 213/740-3224 Fax: 213/740-3217 E-mail: scmusind@usc.edu Website: www.usc.edu/schools/music Degrees/Certificates Offered: four-year B.S. in Music Recording; four-year B.S. in Music Industry; Bachelor of Music in Music Industry. Program and Facilities Description: All classes taught by full-time faculty and local L.A. professionals. Music industry class lecturers/instructors include Mark Goldstein, Jay Cooper, Jeff and Todd Brabec, Donald Passman, Mark Isham, Chris Stone. Recording arts classes taught in SSL/Studer-equipped classroom by instructors/guest lecturers Ed Cherney, Steve Krause, George Massenburg. ■

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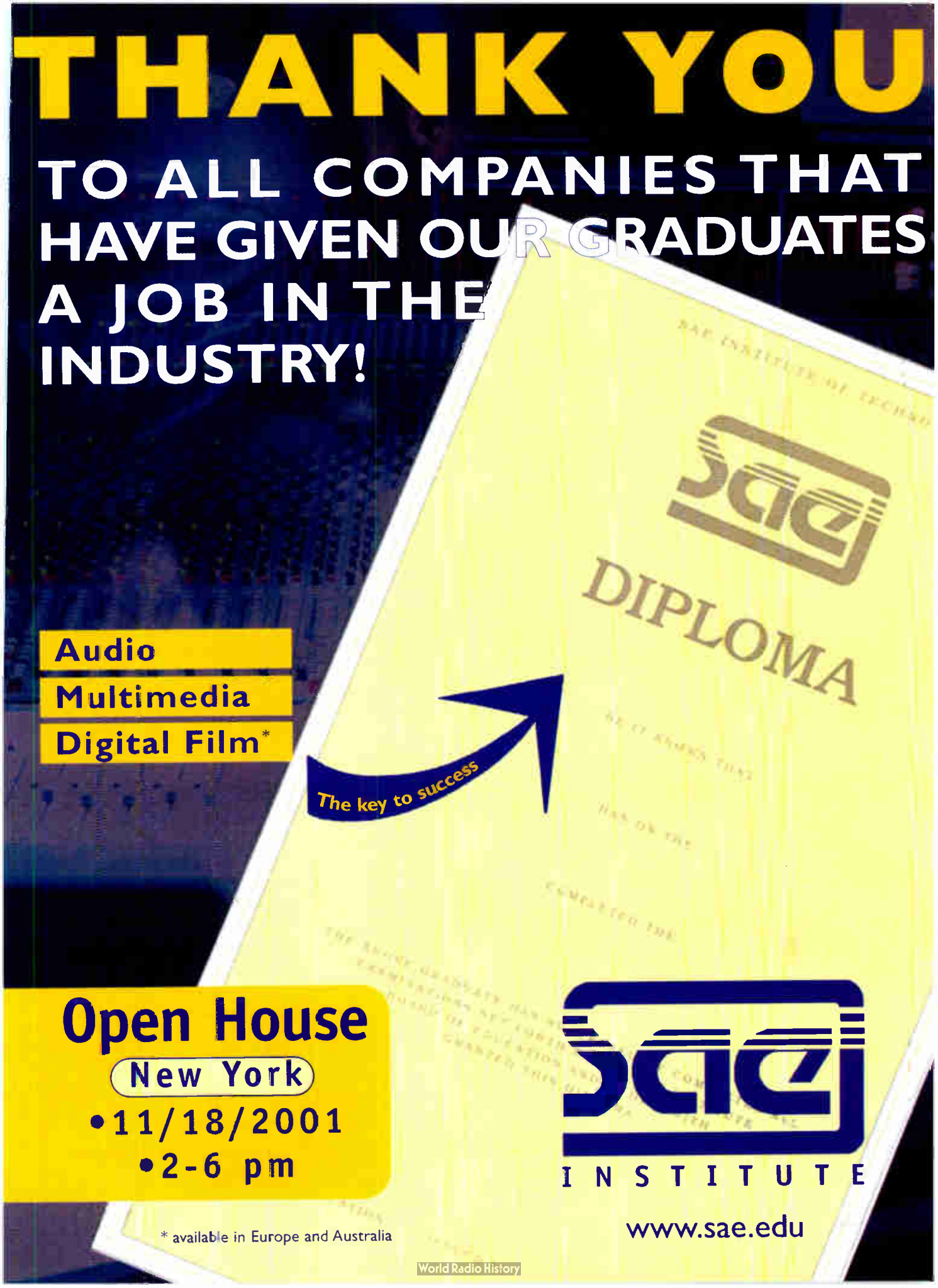

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TEMPE'S CONSERVATORY OF RECORDING ARTS AND SCIENCES

Studio C, with its Neve VR console, shares a tracking room with Studio B.

Studio D is geared for surround sound and has a Mac G4 running Pro Tools 5.1.

BY RON SIMPSON

Over the past decade, many new recording schools have opened their doors for business. With very few exceptions, these institutes of higher learning fall into one of two categories: the specialized trade school or a dedicated recording program within an existing college or university. This trend appears not only to be a reflection of the industry's need for trained audio professionals, but to mirror the desire of many aspiring musicians, producers and recording engineers who are chasing their dream to work in the recording industry—a textbook case of supply and demand.

On the downside, a degree in audio engineering does not guarantee a job and may not give the graduate all of the skills that he or she needs to be employable in the real world. The key that unlocks this door is a school that has demonstrated its ability to interface with the industry and offers a curriculum that covers not only recording basics, but training that addresses the specialized needs of the state-of-the-art, 21st century facility as well. An innovative and effective internship and job placement program is also an important factor in choosing a school. Enter the Conservatory of Recording Arts and Sciences in Tempe, Ariz.

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The Conservatory (henceforth known as CRAS) is one of the schools that has emerged from the pack, receiving accolades from its students, graduates and from the pro audio community at large. Without a doubt, CRAS *has* come a long way in the past decade. While enrollment at CRAS is relatively small (currently no more than 400 students a year) in comparison to other recording schools, this is not necessarily a bad thing, and, in fact, it helps to create a sense of community that is shared by the students, instructors and administrators.

Students in Studio A work at the 48-in SSL 4056 G Plus board.

MY DAY AT CRAS

Being an audio professional in the Phoenix metro area, I had heard a number of stories over the years (both good and bad) about CRAS and decided that the best way to check it out was from the inside. About the same time I began this article, an old friend of mine asked me to pinch-hit for him and substitute teach his Web audio class at CRAS. I was to teach two four-hour classes of 12 students each who were just finishing up the program and getting ready to head off to their seven-week internships. These two groups were my best shot at finding out the good, the bad and the ugly of the school's curriculum. This was also my opportunity to find out what the students had learned during their time at CRAS, and I was interested to see if their career aspirations had solidified or changed at all.

After wrapping things up with each class, I explained that I was writing an article about CRAS and I wondered if they had any input for me. I was really surprised that there were no major complaints about the program and that every student I spoke with considered the time spent at CRAS a positive experience. Okay, one guy whined a little about the Conservatory's lack of internship contacts in Kansas, and there was a general consensus among the students who I spoke with that there were not enough CD burners in the Pro Tools lab, but that was about it. Another student suggested that the best way for them to show me the depth of their CRAS experience was to play their final projects for me. As I listened to each of their demos (tracked and mixed on an SSL, no less), I was afforded the rare opportunity to see, hear and feel what they had learned at CRAS. There were definitely a few instances of musical taste being on vacation, but it was obvious that the majority of the students were well on their way to becoming audio professionals.

THE ADMINISTRATOR

When Kirt Hamm took over as administrator of CRAS in May of 1992, there were three students attending classes in a 500-square-foot facility. Fast-forward to 2001, and the Conservatory's campus has grown to 14,500 square feet with a capacity for as many as 400 students per year. Today, CRAS is among the best-equipped and designed recording facilities in Arizona, if not the entire Southwest, and through Hamm's vision and administration, it has become one of the most successful recording schools of its kind in North America.

As of this writing, there is a 12-month waiting list to attend CRAS, and during my informal tour of the campus, I posed the question of expansion to Hamm. "Although our students are patient and willing to wait to receive the best education, we would prefer that they didn't have to," he said. "We have always been very cautious about expansion, but believe that the time has finally come to make it happen. In my mind, change equals opportunity, and I insist upon capitalizing on opportunity to make our program even better. That's really all I'm willing to say at this time, but there will be announcements detailing our expansion plans in the not-so-distant future."

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Desert Bloom

TAKING THE TOUR

Outward appearances can be deceiving, and there is no place where this is more evident than at CRAS. At first glance, the CRAS campus could easily be mistaken as a medical/dental office building in Any City, USA. But once you step into one of the Conservatory's classroom/studios, the lack of exterior flash is no longer an issue.

The current curriculum at CRAS (now known as Master Recording Program II, or MRP II) is a 30-week program broken down into 10 three-week cycles, followed by a 280-hour internship that must be completed to graduate. Students are in the classroom for a combination of lecture and hands-on training four hours a day, five days a week, with some weekend

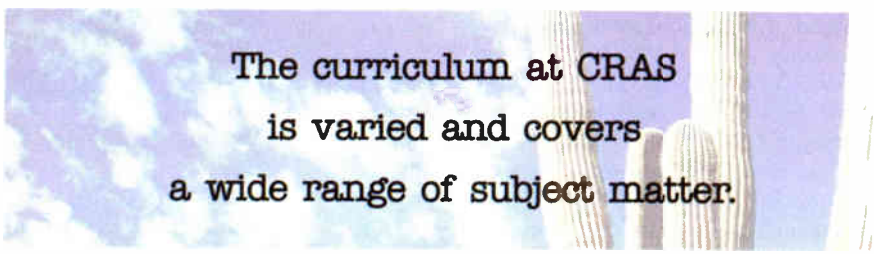
Administrator Kirt Hamm

classes as well. Also, the facilities are available to the students on a 24/7 basis. This not only allows the students time to work on their class projects, but it also gives them the opportunity to familiarize themselves with the extensive array of outboard and computer gear found in the studios and classrooms.

The curriculum at CRAS is varied and covers a wide range of subject matter, such as studio maintenance, networking and Internet applications, and a variety of valuable music business subjects, including studio and session etiquette. With computer literacy becoming a necessary skill in the modern recording facility, students at CRAS are also taught trouble-shooting and maintenance for the Macintosh platform as well as basic sequencing skills. By interfacing with pro audio manufacturers, CRAS is able to offer certification programs for Waves plug-ins, SIA Smaart Sound and TC Electronic. Also, as of this writing, CRAS is the only proprietary recording school in the U.S. that is an Avid Authorized Education Center offering the Pro Tools 135 and 235 class and certification.

Each studio at CRAS was designed by Jerry Davis of Jeremiah & Associates, with additional input coming from the various instructors and staff members. Studios A through C have a traditional live-end/dead-end design and have dedicated machine rooms to keep the heat and extraneous noise out of the classroom.

The heart and soul of Studio A is a 48-input SSL 4056 G Plus console and a Studer A827 24-track (analog 2-inch) machine. Add to that a Tascam DA-98, two DA-38s and a number of Tascam 24-bit hard disk recorders and you have a wide assortment of work formats. Outboard gear includes equipment from Lexicon, TC Electronic, Eventide, Manley, Teletronix and UREI. This is the room where each student's final project is tracked and mixed. The only complaint I've heard about this room comes from some of the students: They want it all to themselves. So do I.



Studio B shares a joint tracking room with Studio C and they are, for all practical purposes, acoustically identical. Some of the differences between the two rooms include a Neotek Elite (32-input) console in Studio B and a Neve VR 48 with flying faders in Studio C. Both rooms have their own Otari MTR-90 24-track (2-inch analog) machine, with three Tascam DA-88s and lots of outboard gear. During my official visit, the joint tracking room was being used for a scoring session, with a small acoustic ensemble of local musicians supplying the talent.

Studio D is a 5.1 surround sound classroom equipped with a Mac G4 (running Pro Tools 5.1) and two Tascam TM-D4000 digital mixers cascaded together. The surround monitoring in Studio D is via five Hafler TRM-8 speakers and two 12-inch subwoofers. The Macintosh G4 in this room also shares space with a Windows computer running several audio applications.

The Pro Tools Lab features six Macintosh G4 computers with Pro Tools 5.1 (TDM) and Digidesign interfaces (882 and 884/24) supplying the AD/DA conversion.

The Digital Recording Lab is equipped with six Macintosh G3 computers running the latest version of Logic Audio and Cubase. Each workstation also has a Tascam DA-38, a Tascam TM-D1000 digital board, and a Korg 01W synthesizer installed in an Omnirax Workstation.

The Live Sound classroom has two Soundcraft Spirit 40 input consoles and loudspeaker arrays from Community. The Live Sound curriculum at CRAS was designed by noted mixer Robert Scovill, but for the past two years, it has been taught exclusively by CRAS instructor Keith Morris. The classroom was designed to create a realistic concert stage environment for the purpose of familiarizing students with real-world situations that they're likely to encounter. The only experience missing from the live sound classroom at CRAS is the typical 22-hour workday.

The Studiomaster classroom/lab is equipped with six workstations, each containing a Studiomaster MDC8 24-input console and three Alesis XT-20 ADATs. There is the requisite outboard gear and an Otari MX-5050 ¼-inch half-track (analog) for mixdown.

The music business classroom includes an extensive reference library that gives students access to general music business information. The Music Business curriculum at CRAS covers publishing, copyright law, contracts, studio business, and much more. There are a total of 48 classroom hours devoted to this area.

THE INTERN PROGRAM

There's a reason that CRAS is proud of the success of their Intern program. Many Conservatory graduates end up as employees at the facilities where they completed their internship. Hamm states, "It's part of our master plan to have our students become such an integral part of the facility that they're interning at, that when the seven weeks are up, they're asked to

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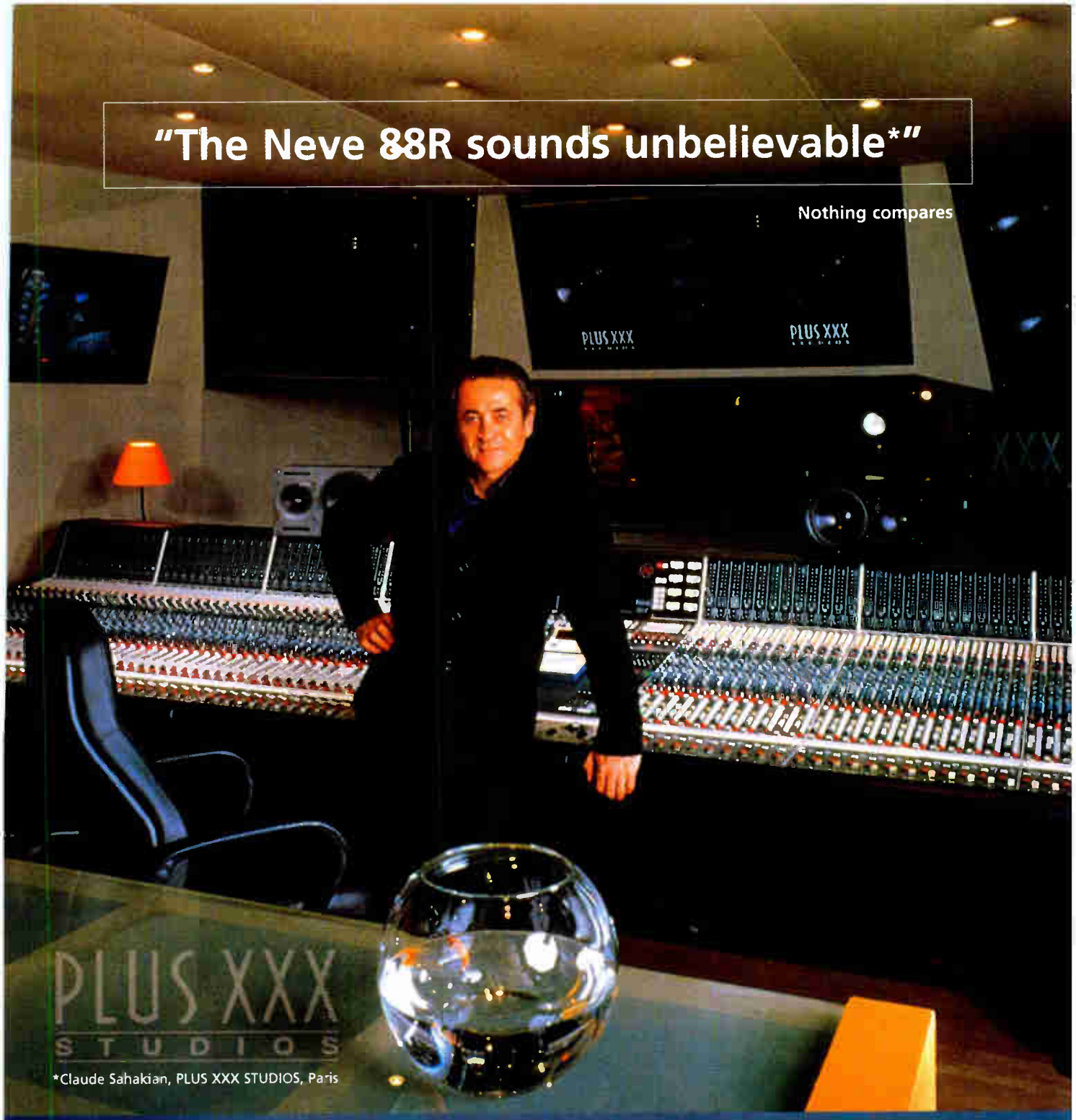

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Studio B is equipped with a 32-input Neotek Elite console.

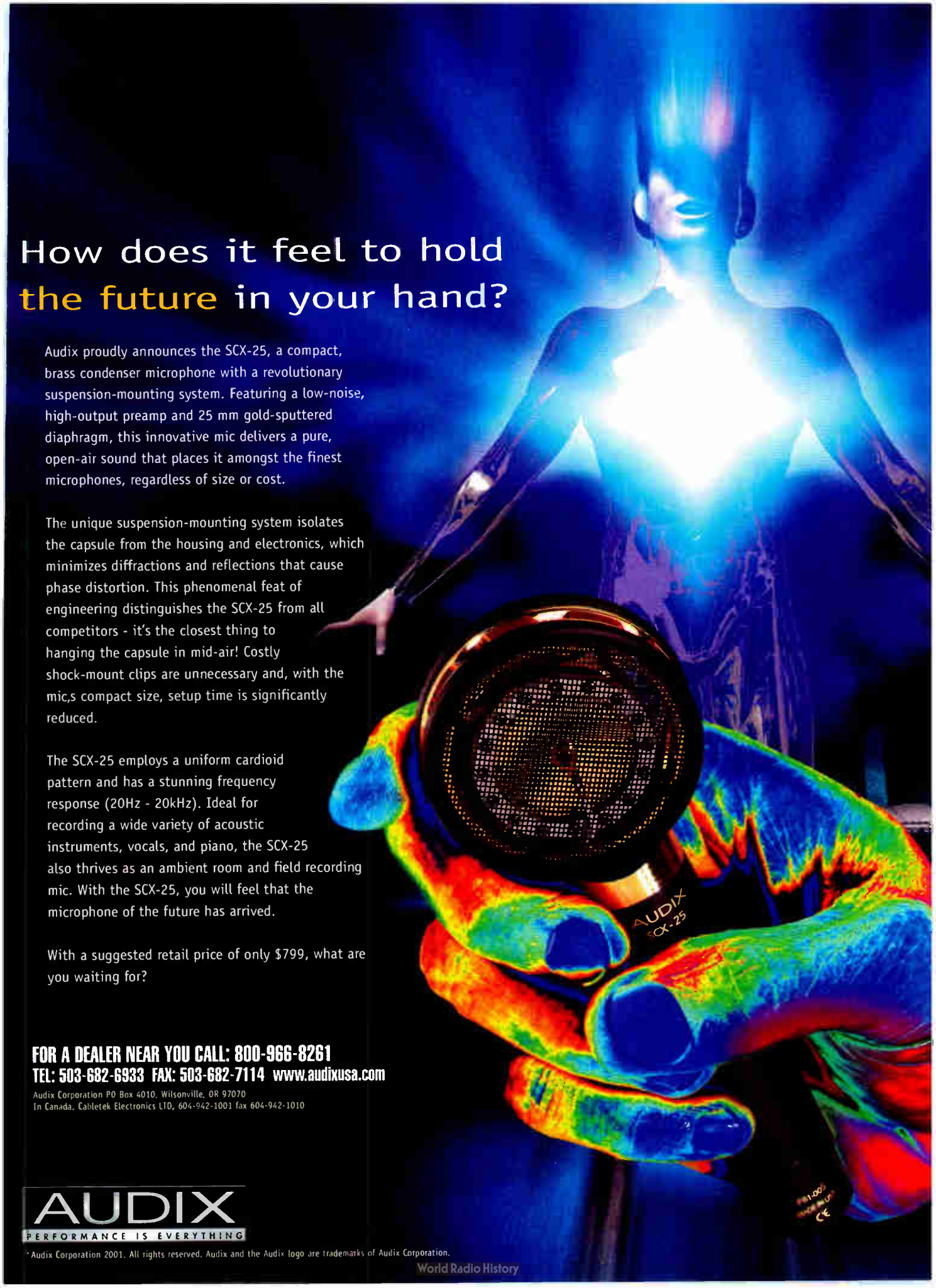
stay on as an employee." Over the years, CRAS has forged strong relationships with a number of recording facilities in Los Angeles, New York and Nashville, and has used these connections to place their interns for the last phase of their training. According to Hamm, "It's not unusual to have a studio contact us and ask for an intern that can fill a specific need."

In many cases, applying for an internship is like applying for a job, and the staff at CRAS are intent on teaching their students the necessary interviewing skills that will help them to land a job. This includes teaching students to create an effective resume and how to have the right attitude. Regardless of their level of skill and talent, no one likes a cocky intern, and even more to the point, not many potential employers would hire one. CRAS students head out the door for their internship knowing their place on the studio food chain. CRAS graduates are employed in all areas of the recording industry including six at Tascam, two at Waves and *nine* at The Enterprise in Burbank, Calif.

The program at CRAS is intense, fast-moving and, in comparison to other proprietary recording schools, quite affordable. Many of the soon-to-be CRAS graduates who I spoke with felt that they were more than ready to pursue entry-level positions in the recording industry, and that their time at CRAS had prepared them for future challenges. There was also a consensus among the students that their education at CRAS had given them a good idea of which areas of pro audio they would specialize in and, ultimately, a leg up in regards to advancement. ■

Ron Simpson is a freelance writer and Web audio technologist based in Phoenix, Ariz.

World Radio History



World Radio History

CALLING ALL EDUCATORS

ADDRESSING THE ISSUE OF "HOW TO BECOME A GEEK"

ILLUSTRATION MAE LABORIS

In a magazine that targets people who are already "in the biz," it is important to acknowledge the future geeks-in-training, owner/operators, managers and engineers who enter our industry and eventually find or create a niche. Some are self-taught, others go to school, and there are those who change majors midstream, starting off as an engineer and later getting into geekdom—the more lucrative (and mostly recession-proof) maintenance path. In some cases, the opposite is also true: Job-seeking engineers with a strong technical/repair background will find that studio doors are wide open for candidates with such skills.

So how might a geek "wannabe" train for a career in the multimedia environment? The last two words are clues. It's not "just" about audio anymore, but about the integration with other disciplines. Is school an option? Considering the range of technical topics—from the current interest in retro technology to computers and networking—"recording schools" face a serious challenge. In fact, it is the very nature of geek-types to pursue their own course of study, especially with computers being integral to all processes.

All institutes of knowledge must constantly evolve to remain in sync with their respective industries, anticipating student needs and offering choices—all the while "maintaining" the fundamental concepts that transcend technological advances. Setting aside the needs of technical personnel for a moment, there are many self-taught *users* who now have all the right questions and really should take a little time to fill gaps in their knowledge. There is nothing wrong with being self-taught; you hit the ground running and hopefully make no life-threatening mistakes. But once in business and in debt, the need to survive sometimes precludes taking time out to learn. The need for quick information is obscured by the glut of misinformation and begs for an interactive class, a book or an e-subscription that can dispel some of the more obnoxious audio wives tales.

APPLICATION-SPECIFIC

Twenty years ago, multiroom facilities with an in-house technical staff were the norm. In many cases, a mentoring system was also in place. All of this diminished with the arrival of the project environment, nudging someone with an entrepreneurial inclination into the freelance repair biz. In the '80s, I became one of the many "geeks with tweaks in sneaks with tools on wheels and no squeaks." The difference, then and now, is serviceability. Then, even affordable analog consoles were modular. Now, the "modules" are beneath a common front panel so that a considerable amount of disassembly is required to change simple parts or clean faders.

Paul Lehrman wrote of the challenges of the repair business back in the March issue's "Insider Audio." Mass production makes some products "disposably" affordable. Rather than pay the price of repair—the bulk of which is labor—people are more likely to tolerate a few problems, postponing service until a replacement can be justified. This is not a career path for any service technician with overhead. Such products are like old cars that are donated to high school shop classes for a tax deduction.

Where once a handful of op amps, logic ICs, transistors and magic capacitors might cure common ailments, Large-Scale Integration (LSI) and Application-Specific Integrated Circuits (ASICs) put a new obstacle in the path for *all* product categories. Not only are special tools required to remove these surface-mount devices, there are too many expensive parts to keep in stock. All of these issues raise the question, "Exactly what can or should be taught?"

HATS 'R' US

New York, like other large metro areas, has no shortage of technicians and experiences to train them. But not all schools have access to people with such a knowledge base. The convenience of on-site tech support brings a fast response to problem solving. Without it, a studio must rely on at least one technician who is familiar enough with the facility to help diagnose by phone. If not, the job falls to whomever on staff is wearing "the hat," and no one likes the transition from creative mode to geek mode—certainly not in the middle of a session!

Whether you're an engineer, studio owner or technician, the key to success is to be overprepared. In the most organic sense, this means understanding your gear and having it installed in the best way possible within your budget. Understanding signal flow and having the ability to patch around a problem does not require a degree in electrical engineering. It does require that both analog and digital patchbays can be ruled out as possible suspects 99% of the time. (This is not necessarily the case with user-assembled, off-the-shelf patchbays and wiring harnesses.) In fact, the essential course of study for geeks and sonic artists alike is

BY EDDIE CILETTI

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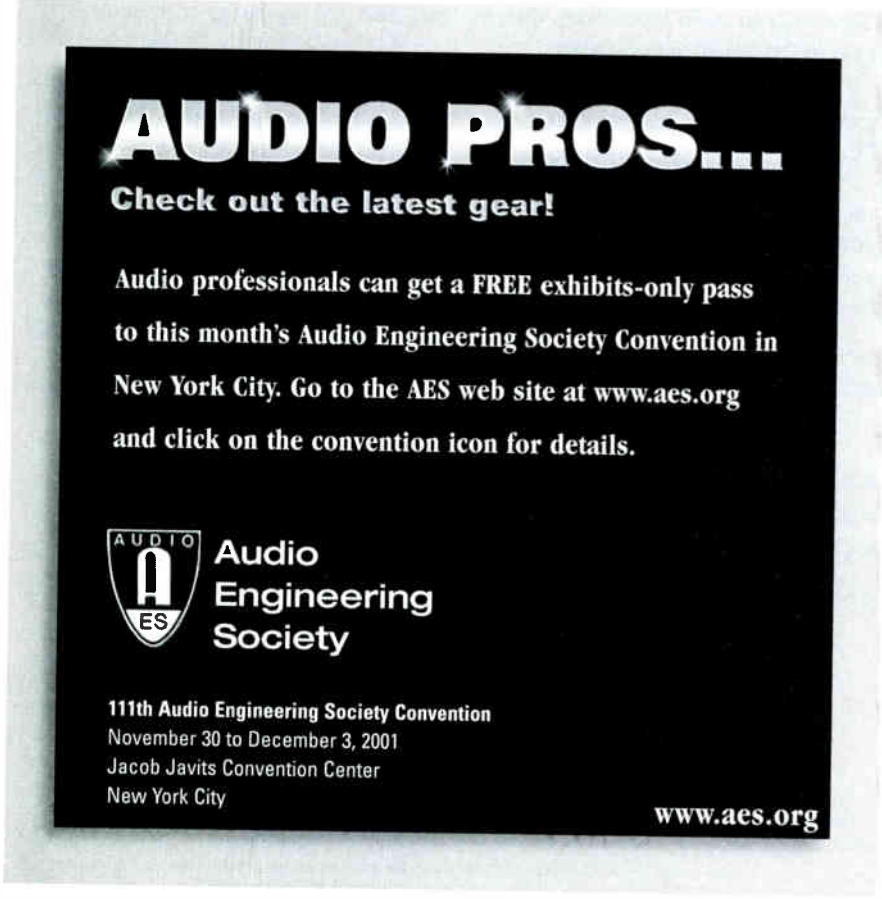

the Fine Art of Troubleshooting. In the event of a crisis, maintaining a calm demeanor and comforting bedside manner will inspire co-workers, as well as soothe the clients. This suggests that a psychology course might also be in order.

TOOLS OF THE TRADE

Worth repeating, basic troubleshooting skills apply to users and geeks alike. The best analogy is a modular analog console. Got a dead module? You can patch around it, swap it with another or swap any ICs that are in sockets. Beyond this, essential test equipment includes a multimeter, soldering iron, tone oscillator, oscilloscope and—of course—the knowledge of how to use them.

To justify adding a specific course of study, educators must see or create student interest, itself a moving target. People don't walk out of any school automatically employable unless they went in curious, asking plenty of questions and expect to work for a living. The geek path is not paved for your convenience, but there should be classes to smooth the road for users who can help themselves—basically anyone who has ever needed to upgrade software, replace a fader, install a module or update a drive. This means knowing how to use a screwdriver, observe static precautions, and deal with the many varieties of miniature connectors and wiring harnesses—all without doing further damage.

One step above troubleshooting is basic electronics, which, as part of a hardcore "audio" maintenance program, is either included, a prerequisite or integrated with equipment-specific maintenance challenges. Soldering skills and good vision are more important than ever. Of course, most geeks-in-training should already have their feet wet before jumping into the electron pool. A little experience before entering any school will help aspiring students get the most from their classes. If recognized by the instructor or guidance counselor, course selection can be tweaked to student needs.

In order to continue this theme throughout the coming year, educators, students and employers should e-mail edaudio@tangible-technology.com with their challenges, thoughts and needs. I look forward to your comments. ■

Eddie Ciletti answers good, bad and ugly questions at www.modernrecording.com and www.tangible-technology.com, sometimes for a small fee.

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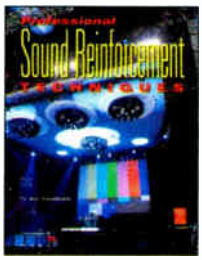
Recommended Reading

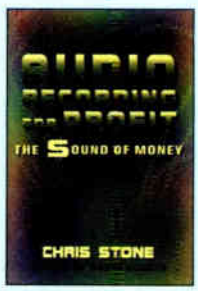


***PROFESSIONAL SOUND REINFORCEMENT TECHNIQUES*, by Jim Yakabuski (MixBooks, www.artistpro.com)**

Dozens of technical books have been written on sound reinforcement, but this one's different. Based on his years of touring with major acts such as Van Halen, Aerosmith, Julio Iglesias, the Gin Blossoms and many more, author/engineer Yakabuski covers the bases of live sound—pre-production, load-in, setup, room tuning, soundcheck and showtime. Like a master teaching the inside tricks to an apprentice, Yakabuski offers realistic solutions to common live sound problems, using an anecdotal, fun perspective that's an ideal real-world complement to all those ("ho-hum") theoretical treatises in other texts. Awesome!

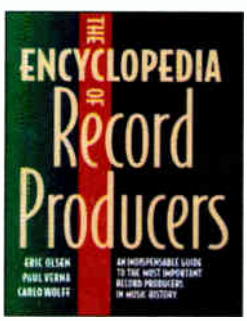
—George Petersen

***AUDIO RECORDING FOR PROFIT: THE SOUND OF MONEY*, by Chris Stone (Focal Press)**



The co-founder of the legendary Record Plant studios, former SPARS chairman, head of the World Studio Group and a longtime studio business columnist for industry magazines, Stone is well-qualified to write a book about making money in recording. Brisk and clearly written, the book offers many no-nonsense suggestions on thriving in the always fickle recording business. They range from the general—knowing how to find and manage employees—to the minutely specific. It includes examples of forms that can be found and/or computer-created to make your studio run smoothly. It also provides a cogent overview of the current state of the industry.

—Blair Jackson

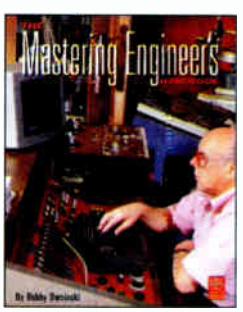


***THE ENCYCLOPEDIA OF RECORD PRODUCERS*, by Paul Verna, Eric Olsen, Carlo Wolff, Eds. (Billboard Books)**

There are many books on music producers, but no other can match the scope of this compendium, created by three top music writers. Each brief bio has an overview of the individual producer's (or production team) career, with personal insights from the host of writers contracted to assemble the material. More than 500 producers are represented, across all genres, though the emphasis leans toward rock and R&B. Includes an introductory definition of the role of the producer, along with a detailed index. My only complaint? The comprehensive discographies are arranged alphabetically by artist; I'd rather they were chronological to chart the progression of each career. That said, the entries are updated and searchable at www.mojavemusic.com. Check it out.

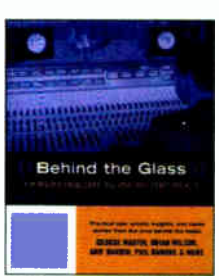
—Tom Kenny

***THE MASTERING ENGINEER'S HANDBOOK*, by Bobby Owsinski (MixBooks, www.artistpro.com)**



For the first time, a book delves into the mysterious art and science of mastering, filled with detailed explanations of the technologies and tips to make your next release as good as possible. No aspect is ignored, from vinyl, cassettes and CDs, to CD-R, SACD and DVD formats, and four chapters are devoted to prepping materials for surround release. Owsinski is a highly regarded writer and engineer, but he takes the book to the next level with interviews and tons of down-to-earth advice from leading practitioners of the craft, such as Greg Calbi, Bernie Grundman, Bob Ludwig, Dave Collins, Glenn Meadows, Doug Sax and others.

—George Petersen



***BEHIND THE GLASS: TOP RECORD PRODUCERS TELL HOW THEY CRAFT THE HITS*, by Howard Massey (Miller Freeman Books)**

This collection of interviews conducted over the years by writer/engineer Massey for *Musician* and *EQ* illuminates the techniques and personalities of many of the leading engineers and producers of our time. from seasoned veterans such as Arif Mardin, George Martin, Eddie Kramer and Phil Ramone, to young(er) turks such as John Leckie, Thom Panunzio and Jack Joseph Puig. The 40 or so folks interviewed cover a broad range of methods and styles, and the book as a whole works nicely as a mini-history of mainstream recording over the past 50 years. A good—and educational—read from beginning to end.

—Blair Jackson

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Surround Mixing for "Band of Brothers"

HBO Takes the 5.1 Plunge

by Blair Jackson

Sometimes it seems as though HBO can do no wrong. The network's ongoing original series, including *The Sopranos*, *Sex and the City*, *Six Feet Under* and *Curb Your Enthusiasm*, have earned nearly universal critical plaudits and excellent ratings. And, over the past few years, HBO has produced a number of fine films that have blurred the difference between theatrical features and made-for-cable movies.

The network's latest triumph is also its most expensive and ambitious yet: The 10-part World War II epic miniseries *Band of Brothers*, which tells the true story of Easy Company—a unit of the 506th Parachute Infantry Regiment of the 101st Airborne Division—from their first training exercises in Georgia, to their adventures in Normandy during the D-Day invasion, through the Battle of the Bulge and the capture of Hitler's infamous Eagle's Nest headquarters.

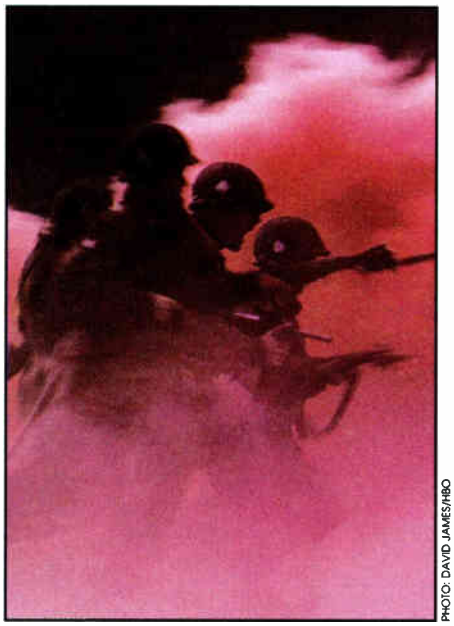


PHOTO: DAVID JAMES/HBO

Easy Company in battle.

Based on the book of the same name by eminent historian Stephen E. Ambrose, *Band of Brothers* is a sprawling yet surprisingly intimate tale that couldn't possibly have been told in a conventional film; it needed the length a miniseries affords. With hundreds of speaking roles and dozens of locations required, it also took a significant budget—probably in the neighborhood of $120 million, the most expensive production for television ever. But with the names Steven Spielberg and Tom Hanks attached to the top of the film as executive producers, *Band of Brothers* had the built-in credibility and cachet to command such a large budget. Hanks had previously helmed the successful HBO miniseries about the U.S. space program, *From the Earth to the Moon* (which, at $65 million, was quite an undertaking, too), and Spielberg, of course, had already directed two of the greatest contemporary films about World War II—the holocaust drama *Schindler's List* and his D-Day masterpiece *Saving Private Ryan* (the story of which was also drawn, in part, from the book *Band of Brothers*), which starred Hanks. Who's going to say no to those two?

Shot mostly at Hatfield Studios near London, with audio post-production taking place at Shepperton Studios, *Band of Brothers* is the latest in a wave of HBO productions that is being broadcast in the Dolby Digital 5.1 surround format. "In my opinion, there aren't any real differences between doing a surround mix for television and one for a feature film," says re-recording mixer Mike Dowson, who has worked at Shepperton for the past 15 years on productions ranging from grand-scale films such as *Full Metal Jacket*, *Elizabeth* and *Schindler's List* to smaller works such as *Snatch* and *RKO 281*, the HBO film about the war between Orson Welles and William Randolph Hearst over *Citizen Kane*, which earned Dowson, Mark Taylor and Clive Derbyshire an Emmy in 2000 for sound mixing. "Economies of scale and economies of production come into it because, quite often, TV productions don't have the same kind of money as feature films do. However, on this particular project, HBO has spent a lot of money and time, and as far as I can tell, they're very keen to promote 5.1 and high-definition in the home. So it was quite important for us to give them something really good, even if only 30 people in America are going to hear it the way it should be," Dowson says with a laugh, referring to the paucity of people who have adequate surround setups in their homes.

PHOTO: DAVID JAMES/HBO

Easy Company during a rare lull.

The project was extremely challenging for the sound crew because of its length, its wide scope and the fact that nine of the 10 episodes had a different director. Though certainly Hanks and, to a lesser degree, Spielberg had a lot to do with the overall look and feel of the series, Dowson says that from his perspective, co-producer Tony To (pronounced toe; he was an executive producer on *From the Earth to the Moon*) was the principal architect of *Band of Brothers*: "When you have a series such as this, it's very important to get one man's vision of it, and that person has been Tony To. It's essentially his baby, although obviously there are many, many other people involved in it. He's the major creative force in it in terms of setting the style and the look and

—CONTINUED ON PAGE 96

World Radio History

American Roots on PBS

by Rick Clark

It's a great time for American Roots music. With the multi-Platinum success of the soundtrack for *O Brother, Where Art Thou?* and accelerating interest in Americana artists like Lucinda Williams, Steve Earle, Gillian Welch, Alison Krauss and others, it's clear that the public is hungry for something besides factory-tooled mainstream country, lightweight boy bands and Britney-pop.

On October 29, PBS presented the first program in a 4-part television series called *American Roots Music*. The series covers folk, gospel, country, blues, Tejano, Cajun, Zydeco and Native American music, and features an impressive collection of historic film clips together with new live performances from a huge list of influential artists.

The series was produced by Jim Brown's Ginger Group Productions, in collaboration with Sam Pollard and Jeff Rosen. According to three-time Emmy Award-winner Brown, whose credits include *We Shall Overcome, Child of Mine, A Vision Shared: A Tribute To Woody Guthrie* and *The Weavers: Wasn't That a Time!*, the project grew out of his realization, during the early

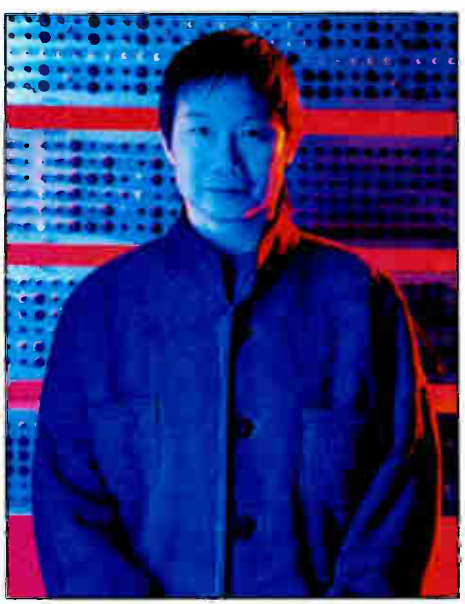
—CONTINUED ON PAGE 100

The all-star session band for American Roots. *Ricky Skaggs, center, is flanked by Earl Scruggs, left, and James Cotton.*

Composer Spotlight

Gary Chang

by Rick Clark



Gary Chang

Film composer Gary Chang has always had an active interest in ambient and minimalist music and the possibilities of expanding the potential of the recorded musical soundstage. But until recently, he has been limited to the use of reverb and delay, signal processing gear and mixing techniques. Today, he has the ability to visualize his compositions from the outset as surround pieces and single-handedly produce and mix them in 5.1.

"Since the '70s, I have had an active interest in ambient music," Chang says. "In much of my film music, I have tried to employ this spatial sensibility, but it has been a daunting task until recent 5.1 developments."

Chang, whose credits range from films with John Frankenheimer (*The Island of Dr. Moreau*) and Emmy-winning cable features (*George Wallace* and *Andersonville*), to working with critically acclaimed artists such as the Turtle Island Quartet and Robbie Robertson, has just completed *Rose Red*, a six-hour ABC miniseries that was written and produced by novelist Stephen King. The made-for-TV movie comprises three feature-length episodes, with each broken into seven acts. The sound was done in 5.1 surround, so Chang was able to create a much more dimensional soundtrack.

"The very nature of *Rose Red* being about a haunted house requires a certain amount of Bernard Herrmanesque music—classic film scoring," Chang

—CONTINUED ON PAGE 106

World Radio History

Larry Blake is on vacation this month and will return in December.

—CONTINUED FROM PAGE 94, "BROTHERS"

sound of the show." To also directed an episode, as did Hanks.

Just as *Saving Private Ryan* used sound in bold and unusual ways, mixing a nearly documentary style with some exaggerated and almost hallucinatory sound moments, *Band of Brothers* dares to be different, as well: It features long stretches where the most prominent sounds are those of breathing or feet marching or distant gunfire, without music to color the emotion of the scenes. (Michael Kamen scored the series but, Dowson says, "There isn't that much music for a show this long.") "We used quite a bit of location sound—more than I would have predicted, actually," Dowson notes, "but, of course, there's also lots of ADR and lots of effects; Campbell Askew was the effects supervisor and he did a great job coming up with a nice variety of sounds and textures."

PHOTO: DAVID JAMES/HBO

Firing on a German tank

Shepperton engineer Mark Taylor was the effects mixer; he and Dowson often work as co-mixers. Together, they had to balance the dramatic and semi-documentary approaches to making the series.

Dowson says, "There's an absolutely stunning sequence in Episode Two where the guys jump for the first time into Normandy behind the lines; it's really something to behold—both the sound and the visuals are fantastic. They had a special screening at Normandy for some veterans—they actually built cinemas on the beach there—and after showing Episode Two, a number of vets came up and they were raving about the sound inside the planes, and the sound of the flak took them right back there; they thought it was very authentic. A lot of the camera shots are very personal, almost documentary-style, and to try to capture that, especially when we had scenes with a lot of ADR, and to try and get a rough and ready feel about it but still have control of everything was very difficult. So, at times, you're trying to make it a bit rough, make it slightly difficult for people to hear certain things, but knowing that if you really do need to hear a line, you can. We spent a lot of time doing that. We've been careful of what Tony calls 'the filmmaker's hand'—we've tried to keep it fairly real at times, but if it's just begging for 'Hollywood,' then it gets that, too."

What do you do to muddy a track? "I get the dialog editors to troll the tracks for any kind of shitty movement that you get, because sometimes that adds an

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authenticity—especially to ADR—that makes it slightly less clinical-sounding. The other major thing we did on this series is we predubbed the dialogs last, whereas it's normal for people to predub dialog first. We knew there would be quite a lot of ADR, and we felt if we mixed backgrounds and Foley and hard effects first, then when we came to mix the dialogs, we knew what we had to do. We had to make the dialogs work their way through this noise. What happens is, if you mix it the other way around, you set down your dialogs and then you shape your effects around there, and you have to make a bit of a compromise if you're trying to describe reality."

Shepperton Studios is one of the oldest and most respected film and post facilities in England, with credits going back more than half a century and including such diverse titles as *The Third Man, Oliver, Alien* and *101 Dalmatians*, among scores of others. But technologically, the studio has always been right up-to-date. The room in which *Band of Brothers* was mixed "is like a small cinema essentially," Dowson says. "I mixed *Snatch* in this room, *Elizabeth* and various other projects. It's got a wonderful Harrison MPC desk," fully automated, with 136 inputs, 72 on faders and 64 on predubs, with 48 main output buses and 24 re-assign buses. Dowson is quite keen on the room's JBL 4675A cinema speaker system—"a three-way system that uses XTA digital crossovers, which are very important because all the room correction is done in those crossovers and then it's time-aligned, which across a speaker of that size—maybe six or seven feet high from the lowest bass end to the top—is crucial. There's also about 13 and a half kilowatts of Crown amps in here.

"The thing I find when I'm mixing my release formats here is that the scale of everything is very important, so if I'm mixing something with a large picture image, as I'm looking at now—I've got a TV picture up on my screen, which is maybe 25 or 30 feet diagonal—it's quite important that you listen to that with large speakers behind the screen in their correct positions. If I mix with a TV monitor—and we sometimes refer to a monitor—it's important that we have speakers that are in the same scale as that and in similar positions. Although it's true that the brain adapts itself to where it hears sound from—you can have a speaker 20 feet away from a monitor and eventually if you stare at the monitor enough, you'll start to hear sound from the monitor. But the illusion is broken instantly as soon as you lose concentration. But you want the mix to translate well across the different sizes, so the scale of things is important. Monitor levels are also very important—that you keep a constant monitor level as something that you refer to every time."

Dowson says, "This particular show has been almost entirely post-produced using Pro Tools. The film was cut using Avids so they could run EDLs and OMFs and what have you, so Pro Tools worked well for them. Effects editors use Pro Tools a lot, dialog people might use something else. [The production dialog was recorded on DAT with a Nagra backup.] But mostly it was Pro Tools all the way until it got to us, and then we would play off the tracks and mix them onto Akai DD8 systems. We have a whole stack of those and would then record the premixes. It's a good, mature product and we're not wanting much more from it. We get excellent support from Akai here. The major change for us with the system normally is when a new kind of drive comes out—like we're just trying out 9.1-gig

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magneto-optical drives with them and that looks very promising to us."

The series was shot both outdoors and on giant soundstages at the Hatfield Aerodrome, "which offered *Band of Brothers* an enormous piece of land on which they could build a fantastically huge set; it's quite stunning. If you've seen any of the scenes that are in trees and in snow, that was a set *inside*. There was a lot of CGI work, which was frustrating for us at times, and we had to work around it, but it looks so impressive."

Working in 5.1, part of the challenge for Dowson and Taylor was to make the outdoor scenes that were shot indoors *sound* like outdoors, and to put enough information in the rear speakers to make the mix interesting but not gimmicky or distracting. "We spread some stereo ambiences to make you feel like you're outside or inside or whatever," Dowson says. "We also used it for proper surround reverbs on dialog when we could, and with this subject matter, it's been used for panning various things around—bombs fly over you, planes fly over you, debris flies over you when there's a big explosion on the screen; so it's a myriad of things rather than one particular thing."

Because of his background in mixing films, Dowson sees the center channel in 5.1 as a vital element—"It gets used the same as left and right. It has dialog, effects, music. It's a complete fallacy in the home that you can get away with small center speakers. Everyone thinks left and right are the main speakers. But the most important speaker in a Dolby surround or a 5.1 system is the center, and the vast majority of mixers working in film or television will tell you that if you take away the center speaker, you take away 80 or 90 percent of the mix. Most of the dialog comes from that center speaker, though it's not really accurate to call it the 'dialog speaker' as some people do. I know that in the home, it's sometimes sort of limited in terms of its position around a TV, but I think it's important to have those voices similarly to the left and right—if you're expecting smooth pans to work from left to center to right, you've got to have similar speakers to do that. And it's got to be in the same plane, as well; at least the tweeters should be in the same plane."

I asked Dowson if in mixing he used the subwoofer differently in this production, which is filled with bombs, rumbling engines and plenty of low-frequency information, than he did in a film such as *Elizabeth*. "I can't say I consciously used the sub any differently for this," he says, adding with a laugh, "You know, the front section of *Elizabeth* had that enormously loud sequence of people being burned at the stake—there was a lot of sub going on in that. I think sub-bass is there to enhance the kind of fears that people have. Low, bassy sounds are not really natural to humans, and I think that's why they tend to make us feel the way they do, which is slightly scared or uneasy. Sub-bass as an effect channel is rarely put there to make something feel satisfying or reassuring. We don't put everything to the sub, obviously, but if we feel it needs that extra octave and something can be slightly more impressive by doing it, then down there it goes. I don't have any set ways of working. I treat each project differently, and they all have their own problems and their own quite unique solutions."

Dowson is well aware that most people seeing *Band of Brothers* won't be hearing his work in all of its glory, but he insists that it's important to not make too many concessions to the reductive qualities of television sound. "I can't worry about it; I want it to sound as good as I can make it," he says. "I suppose it's a

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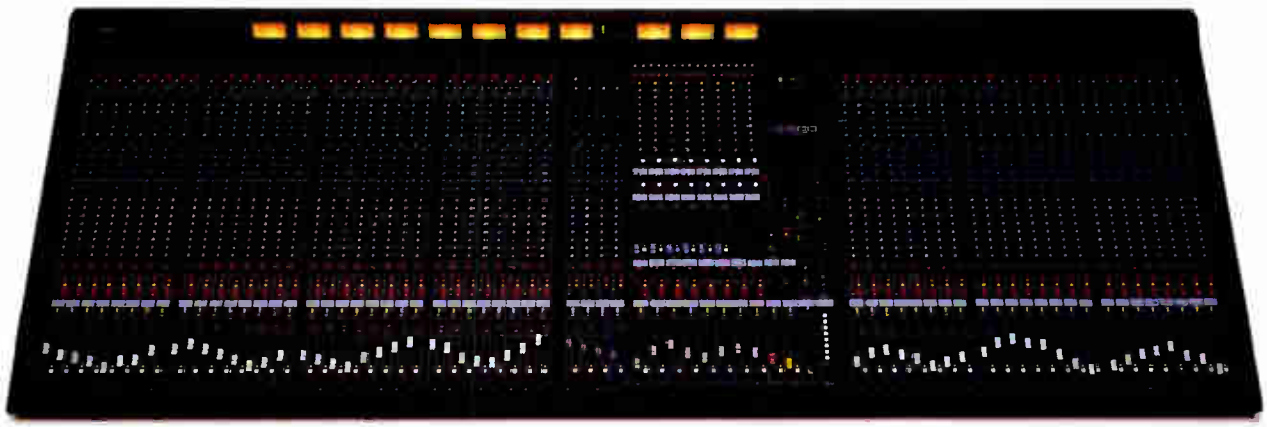

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quart into a pint pot at the end of the day, but essentially what we've done is treated it like 10 one-hour feature films. When you've got something of the scale that we have here, there's only one way to mix it: You mix it as a full-scale feature film and then you downsize from there. That way, you get the detail in there. And the 5.1 mix will go and be broadcast pretty much as we mixed it. Then, in the home you're deciding what kind of dynamic range you want with the show, really. From that 5.1 master, I'll make a Lt-Rt master, which is in Dolby surround, and that, in turn, will be downsized into mono. Dolby E is being used on the high-definition video masters because most digital video machines used in the professional world have four digital tracks on them and, of course, we need at least six tracks to run this, so what they do is carry the stereo mix on tracks 1 and 2 on the digital machines, and 3 and 4 contain the Dolby E-encoded tracks, which is the 5.1 mix and maybe another 2-track on that as well."

Besides its showings on HBO, *Band of Brothers* has been sold to the BBC for airing in Great Britain, and up the line it will, of course, make its way to both videotape and DVD. "Whether or not people have the proper systems at home to hear this as it's intended," Dowson says, "we've done our job and it's there on the shelf, and it can demonstrate to people that there's a valid upgrade to go from stereo or Dolby surround into 5.1 listening. And certainly there will be a DVD release and people can take advantage of that, even if they don't have high-def in the home; they will still hear quite an extraordinary difference." ■

—CONTINUED FROM PAGE 95, "AMERICAN ROOTS"

'90s, that there did not exist a comprehensive collection of the filmed performances of the important movers and shakers of American Roots music. Urged on by his friend William Ivey (who later became chairman for the National Endowment for the Arts), Brown began the research necessary to locate these films.

"When Bill [Ivey] said, 'Why don't you put together a think tank,' we immediately began thinking of all the institutions in America that had expertise in music," says Brown. "Even though radio and records helped cause all of this music to flower and blossom and progress, there was another technology involved, and I was absolutely astounded at how many of these pioneers of music got filmed over the years. These tapes are all over the place, and there really are only a handful of us who have some sense of how wide this [field] is and where the stuff is. That really was the genesis."

Brown's collaborators soon included Emmy- and Peabody Award-winner Sam Pollard, whose credits include the docu-films *I'll Make Me a World* and *Four Little Girls*, and Jeff Rosen, who produced Bob Dylan's *Biograph* and *Miles Davis: The Columbia Years* box sets, plus *The Bob Dylan 30th Anniversary Tribute* and *Sweet Home Chicago*.

Rosen became a valuable source for archival music film, in part because he has worked with Bob Dylan's organization for years. "Dylan loves to watch this stuff in the bus, and I knew that he had this big private collection," says Brown. "Jeff [Rosen] said, 'Whatever it is that you need, I'll copy stuff off for you.' During the first couple of years of researching this, I realized that Jeff knew the ground pretty well. It was a labor of love for him. He just wanted this music preserved, and they opened their collection to us."

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Besides Rosen's and Dylan's organization, Brown also drew on the private archives of experts throughout the country, and the series also includes material sourced from The Library of Congress, The Smithsonian Institution, The Rock & Roll Hall of Fame, The Country Music Hall of Fame and The Experience Music Project.

James Cotton shows Earl Scruggs how to play banjo.

REMASTERING ACROSS THE DECADES

Alan Silverman, who specializes in audiophile restoration and mastering, handled the restoration, remastering and some of the mixes for the new recordings. "Something like this is challenging from the mastering standpoint, because there are so many sources and genres of music spanning many decades," says Silverman. "There are so many levels of recording quality, ranging from field recordings to newsreel recordings to new studio recordings. Some stuff came off of old TV shows from the '60s.

"The trick for me was to try and focus on the voice and get as much continuity as possible in the sound and level of the voices," explains Silverman. "What I try to achieve is a warmth and a fullness, even on some of the thinner and most distorted sources."

For equalization, Silverman used a Weiss Linear Phase Equalizer. "I think it is probably the best EQ that has ever been made," he notes. "That allows me a lot of latitude, in terms of equalizing the selections so that they play consistently. I find that the Weiss unit is a savior, because you can do things that aren't possible with other EQs. The penalty is almost nil, so if you want to do something extreme, you can do it without the noise suddenly becoming so phase-shifted and gnarly-sounding that it is more of a detraction than an improvement. I'm also using a really nice tool kit from a company called Algorithmix from Germany. It is a series of software tools that do de-clicking and de-noising that are very high-quality." Silverman also made use of a Crane Song HEDD unit, which he describes as "a harmonic-manipulating device that allows you to work with the harmonic structure of tracks to fatten or clarify things without using EQ.

"You can't really change the character of these things—nor would you want to," notes Silverman. "But when you start to put the music into sequence, there has to

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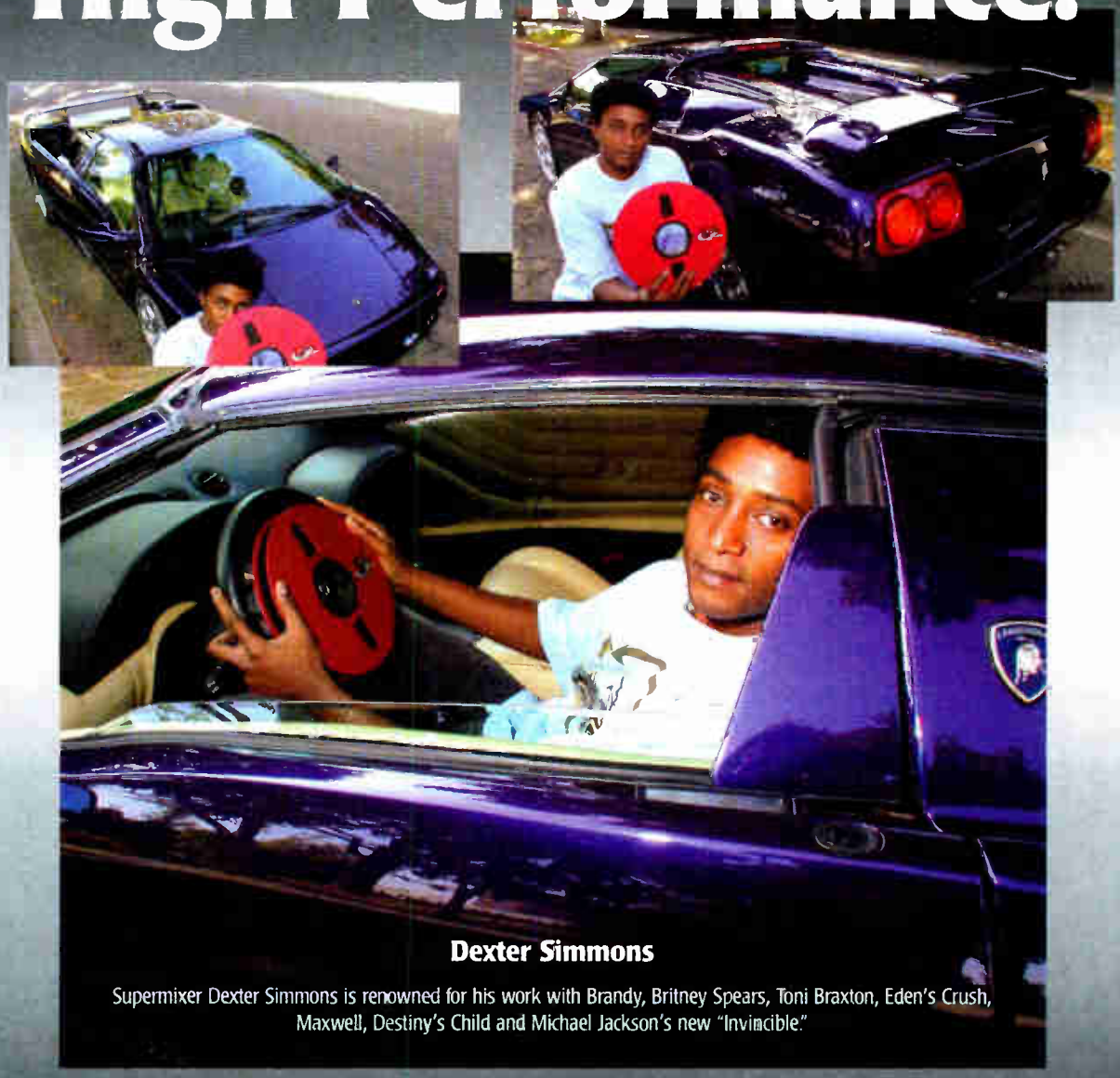

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be some kind of continuity for the listener to enjoy it. It needs to sound like a record that stands on its own, rather than a documentary amalgam." Silverman made all of the A/D transfers in the 96kHz/24-bit format via a Weiss SFC2 24-bit synchronous sample rate converter and listened to playback over Dunlavy Aletha monitors.

Palm Pictures will be putting out a 2-DVD set, which will probably include some performances not seen on the TV show. Palm also will be releasing a 4-CD set featuring the music that is showcased in the special. It is programmed by genre: a country disc, a blues disc, a disc that contains gospel and folk, and a fourth disc that contains Cajun, Zydeco, Tejano and Native American.

"It is really a beautiful set," says Rich Bauer, compilation producer/executive producer on behalf of Palm. "We are very careful that everything that we selected for the box was actually part of the show. About a third of the tracks on the program are classic recordings, another third are historic film sources, and about a third of it are contemporary new recordings that the producers had recorded while they were out researching and shooting and interviewing for the show.

"Just being able to see footage of artists like Howlin' Wolf and Sonny Boy is incredible," enthuses Bauer. "You've heard about them and heard them, but you never really got to watch them play, and seeing the performances is amazing! But then again, you only get to see and hear 30- to 45-second chunks of it. On the box set, you will get to hear the entire performance."

Ricky Skaggs

SCORING WITH SKAGGS

The depth and breadth of familiar and rediscovered performances featured in the 4-part special is extraordinary. Film footage and/or recordings feature such blues giants as Bessie Smith, Robert Johnson, James Cotton, Son House, Howlin' Wolf, Muddy Waters, B.B. King and Robert Lockwood Jr. Country legends who appear in the series include Roy Acuff, Gene Autry, Bill Monroe, Ernest Tubb, the Carter Family, Bob Wills, Ralph Stanley and Hank Williams. Representing gospel and folk are the Golden Gate Quartet, Sister Rosetta Tharpe, Woody Guthrie, Leadbelly, The Weavers, the Staple Singers and Mahalia Jackson. Tejano, Cajun/Zydeco and Native American artists featured include Clifton Chenier, Narciso Martinez, Lydia Mendoza, Flaco Jimenez, Floyd Red Crow Westerman and Navajo recordings from the early 1900s.

To complement this diversity, producer Jim Brown enlisted country music and bluegrass legend Ricky Skaggs to create a multifaceted musical theme that would reflect the broad range of musical genres and personal styles onscreen. According to remastering engineer Alan Silverman, blending various genres into a common theme helps provide a thematic continuum for the series. "It sort of reflects a Jim Brown trademark of his music films,"

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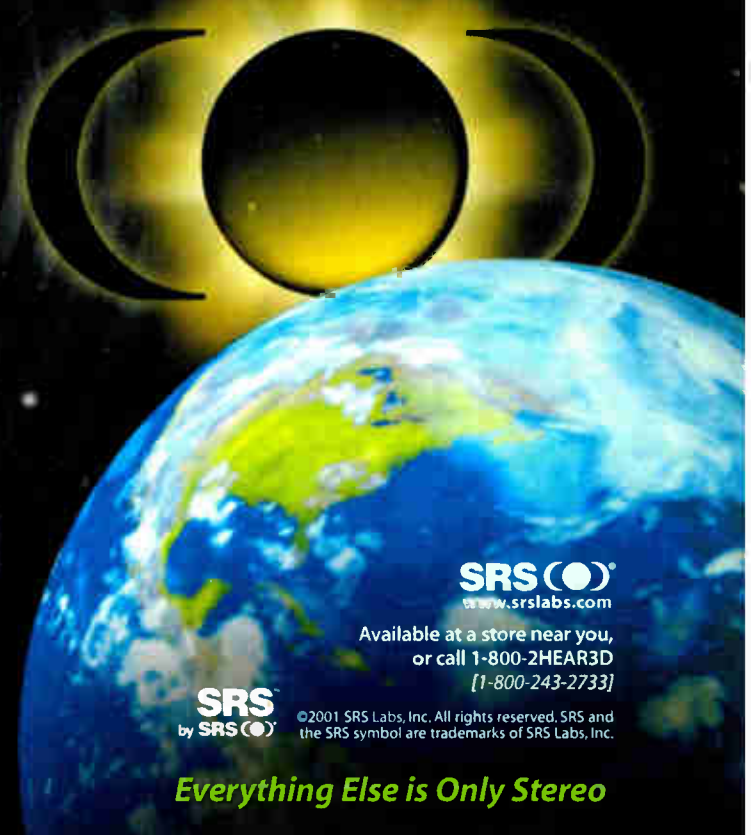

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says Silverman. "If you have seen any of his classic films, like *We Shall Overcome* or *Child of Mine*, what he'll do is pick a song that reflects the tone of the project and record each of the guest artists doing that song, and then kind of do a continuous montage from one artist to the other. With Skaggs' theme, Jim [Brown] had a bunch of the newly recorded artists get together in the studio and trade off—so it is kind of like an overture in a sense. It gives you a taste of some of the artists to come on the set, and it is really nicely done."

Skaggs recorded the theme at his own studio in Hendersonville, Tenn., with an all-star band that included many of the artists featured in the TV series. In addition to Skaggs, the lineup included Earl Scruggs and Stuart Duncan, blues legend James Cotton, Cajun stalwart Mark Savoy and many others.

"This is not a group that probably would've gotten together normally, and yet they totally enjoyed each other's music and there was a pretty common thread through it all," comments series producer Brown. "Too often, we think of these music genres as being finite. In fact, until I did this project, I had always thought that blues was the forerunner to jazz. That is true to an extent, but they are really on parallel tracks. You get somebody like Lonnie Johnson, who was playing with Armstrong—he heard those solos and began playing single-note solos, which really wasn't too prominent [a feature of guitar blues at that point]. So jazz was inspiring blues as much as blues informed jazz. I think that was absolutely the same with country music—especially with Bob Wills and Texas music."

By organizing and preserving many of the seminal musical performances of the 20th century, the PBS series makes an important contribution to the nation's culture. "I once worked a lot with Harry Belafonte, and he taught me that music is like the front porch of a culture," explains Brown. "It is often where people first look and see each other. America has been looking for ways to explore its multi-ethnic culture, and to me, I think the best way to do that is through the music. I think this is as important as learning about the Constitution or learning about the Civil War. This really rich, incredible music history couldn't have happened any place else but America, and only in the 20th century. It exploded from almost nothing. It was really an incredible set of events." ■

—CONTINUED FROM PAGE 95, "GARY CHANG"

explains. "When our group of psychics meet a ghost in the mirror library, I placed the 'score' in its classic position, front LCR. Meanwhile, the ghost motifs, ethereal and soft, 'appear' in the room, where they are not competing with the movement of the orchestra. I placed quieter musical passages in the back, while louder, traditional stuff played at the front. The result is a sort of disquieting effect, like someone whispering in your ear that your shoe is untied, while in front the starter is about to start the race."

Chang draws from a number of sound sources to augment the tracks, including a large collection of exotic percussive instruments—Tibetan bells, singing bowls and a glass harmonica made by Gerhard Finkenbeiner. Sometimes these instru-

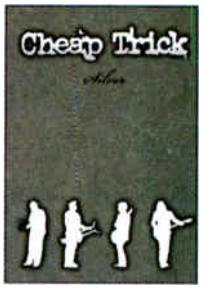
DVD Picks

JIMI HENDRIX
Learn To Play the Songs From "Are You Experienced?"
(Hal Leonard Corporation)

Thirty years after the death of guitar legend Jimi Hendrix, his psychedelic blend of rock and R&B still casts a long shadow over guitarists around the world. This DVD is a must-own geekfest for any guitarist or student of Hendrix' work. Each song from Hendrix' debut *Are You Experienced?*, plus a handful of other gems, is dissected and performed at full and half-speed, with simultaneous close-up camera angles on the fret board and picking hand. The demonstrations, performed by Hendrix expert Andy Aledort, are flawlessly executed in performance and guitar tone. Velvert Turner, who was an acquaintance of Hendrix', provides further explanation of the chord structures and inversions. If there is any weakness in the package, then it is the need for some kind of guitar tablature.

Producer Janie Hendrix. Director: Mark Freed. Music director: John Cerullo. Audio: Matthew Isreal. Recorded at: Avatar Studios, New York City. Post-Production: Star Licks Video Productions, Henderson, Nev.

—Rick Clark



CHEAP TRICK: Silver
(Cheap Trick Unlimited)

This 2-DVD set captures Cheap Trick's 130-minute, 25th anniversary "homecoming" concert, combined with rare historical footage, interviews and insights on the musical craft from each bandmember. The main drawback of the project is the inconsistency of the video quality during the concert, with mismatched exposure and color balance on some shots, as if someone couldn't decide to light this for a live performance or a video shoot. Also, the blank area behind the band looks unfinished—don't these guys have a banner or logo to fly into the background? (Hint: Next time, if the background's ugly, move in tighter on the band.) However, it's still a nice DVD package, with excellent audio, and clean, logical menu navigation. The concert surround mix is great—very live-sounding, as if you were there—and Bun E.'s drum sound really rocks. Cheap Trick fans will love this one. I just wish someone would have sprung for a few more footcandles along the way.

Produced by Cheap Trick, Dave Frey and Harry Witz. Recorded at Davis Park (Rockland, Ill.) by Metro Mobile Recording. Location audio: Scott Larson, Bruce "Slim" Judd, Timothy Powell, Skinner Ways and Kathy Yore. Stereo PCM and Dolby Digital 5.1 surround mix by Harry Witz at 11:30 Inc. Live sound by dB Sound. DVD authoring: Sean Sutton at Chicago Recording Company.

—George Petersen

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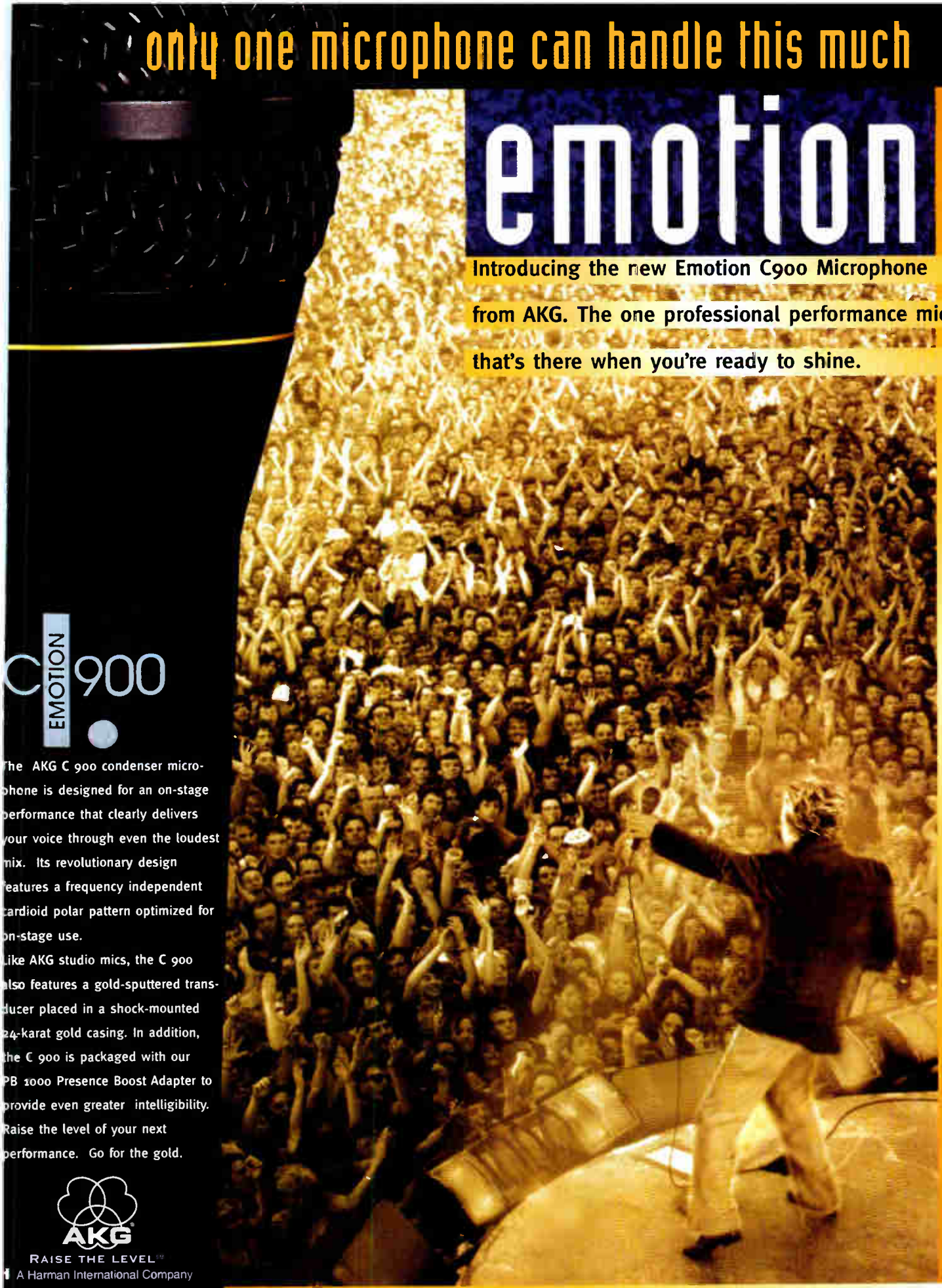

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ments provide dramatic touches in the surround field.

"I have many samples of John Bergamo's instrument collection, including some large aluminum plates, which I suspend over a timpani [which acts like a resonator]. When these instruments are played, the sound literally surrounds you in a room. They radiate omni-directionally," says Chang. "With 5.1, I can finally place this stuff in the room, where it sounds natural, instead of trying to cram it in the proscenium, behind the violins. In *Rose Red*, I use this family of bell-sound instruments to create the subliminal undertow of the undead spirits in the house."

One recently acquired piece of gear that Chang found very useful in rendering the placement of elements like the Tibetan bells was the TC Electronic System 6000, which he used extensively in *Rose Red*.

"It's funny how certain things can dramatically change your perspective on your creative environment," he says. "I have been recording and mixing in my room for years, but when I installed the TC System 6000, something happened. The VSS reverb algorithm allows for precise positioning of sounds in the 5.1 field. I could put a noise right next to me!"

Aside from the obvious features, like auto-panning and such, the System 6000 has an algorithm called UnWrap, which takes stereo information and re-processes it into 5.1. Chang found this extremely useful in helping him reconfigure certain audio files for the soundtrack.

Rose Red

The *Rose Red* score is a combination of orchestral and electronic music. The selected orchestral cues are transcribed for Chang's orchestrator, Todd Hayen, using Emagic Logic Platinum. Once the sketches are checked, they are posted on the orchestrator's FTP site via e-mail.

"For the orchestral recording, we chose to record the session in Pro Tools, with a DA-98 backup," Chang explains. "For the session, we used an Apogee AD-8000SE, with Digi and TDIF interface cards. We provided clicks and reference music tracks by copying the original Pro Tools sessions and stripping them down. On some cues, we added as many as 32 tracks to the existing session, all on a standard Mix Plus system! We brought a total of 90 gigs of disk storage to the session."

Back at home, Chang added any additional electronic music sweetening or certain solo instruments (guitar, for instance). Various episodes of the recording session were sampled into Sonic Foundry's ACID for tempo or pitch modifications, or sampled into a Synclavier.

"During these recording sessions for

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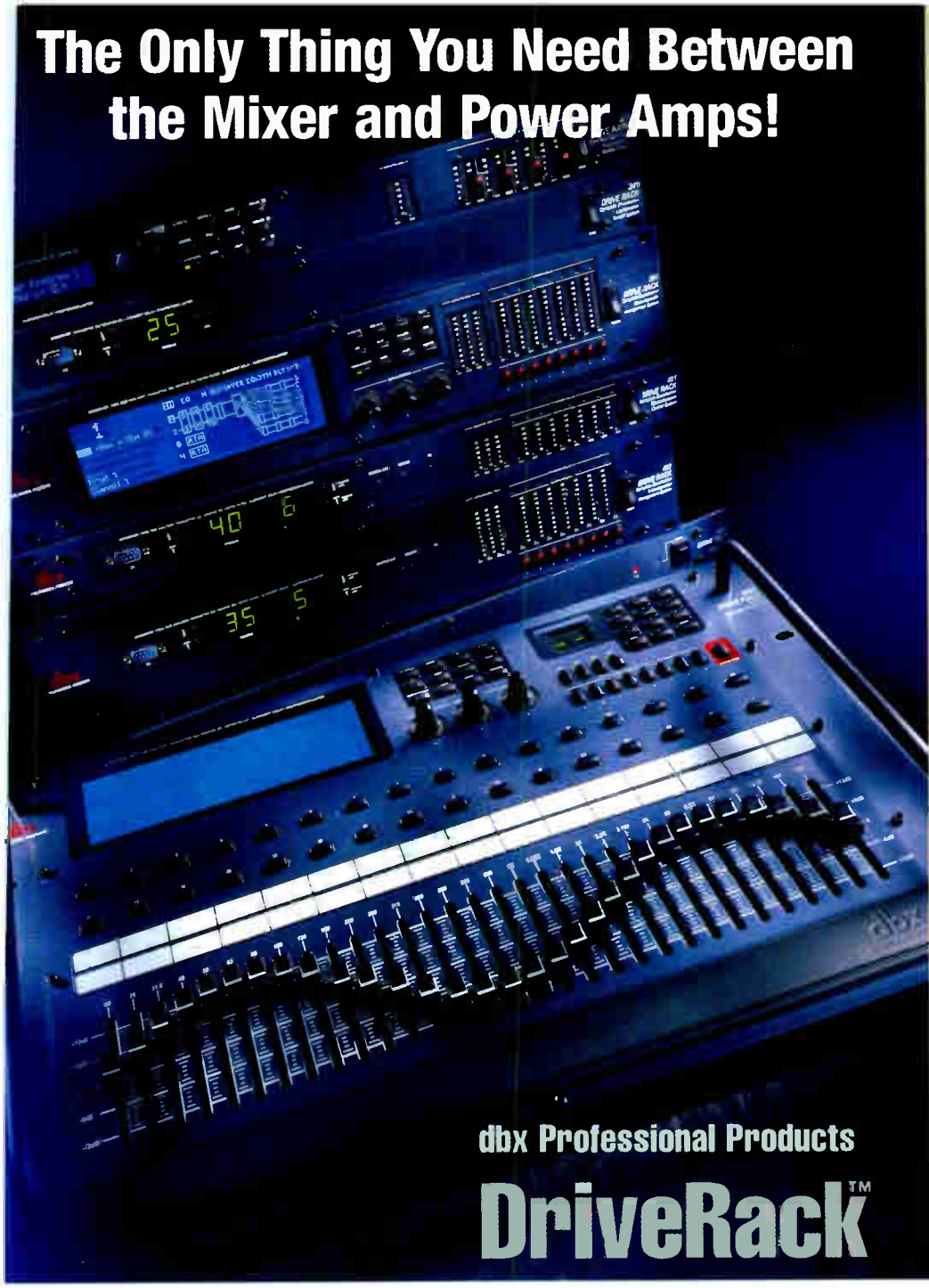

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Rose Red, we discovered that we improved the sound of the recording even more by doing stuff like changing the AC cable of the mic pre!" Chang recalls. "Tara Labs, which has been making 'interconnects' for the audiophile industry for 16 years, makes these AC cables. The noise-deterring qualities were most evident when we swapped the video monitor power cable. It yielded much smoother high-frequency response that everyone could hear. I've got them on my monitors, and intend to eventually swap out every AC cable in the studio.

"Since I am delivering final music mixes in complete acts, Pro Tools gets quite a workout," adds Chang, who goes on to further explain his process for the project:

"A typical example would be Night 3, Act 1. In this section, I have continuous music from beginning to end. So, as many film composers may do, I write and produce such an expansive piece (about 12 minutes) as shorter, interconnecting segments. The 'A' segment has a minimum of 16 tracks from the orchestra session, and 32 tracks from the synth rig. Add to this the 5.0 track that becomes the final mix, and that is 54 tracks. Now double this, so that

Chang at Home

Chang's studio runs off of four computer systems:

1) 550MHz Pentium III w/320-megs RAM running Propellerhead Reason, Sonic Foundry ACID and NemeSys GigaStudio. Audio card is a Soundscape Mixtreme, w/16-channel TDIF I/O.

2) 330MHz G3 that runs the Synclavier. (The most recent version of the Synclavier runs the old audio hardware with a Power PC, weeding out all of the old, outdated disk, optical and tape drives.) The Synclavier has 96 voices, with 192 megs of RAM.

3) 450MHz G4 dual processor that runs Pro Tools, Logic Audio and Reason. The Pro Tools MIX system has five FarmCore Cards (six total), Pro Control and 64 inputs.

- The first 32 are Apogee AD-8000 interfaces, which provide digital I/O with the Windows system and high-quality analog inputs for the Synclavier.
- 16 are Digidesign 888/24, which interface with a TC Electronic System 6000, used for its 5.1 reverb, 5.1 Finalizer and stereo-to-5.1 UnWrap algorithms.
- A Digidesign 1622 provides 16 synthesizer inputs for the Waldorf devices.

4) 500MHz Titanium Powerbook w/512 megs of RAM and Magma PCMCIA expansion chassis. Audio card is a Delta 10/10 24/96 interface.

"My Powerbook can run Pro Tools on the road, although I have to pilfer from my main system to do so," Chang says. "Instead, I run Logic Audio and Reason on this computer. Reason on the Powerbook is great! It's like a transistor-radio version of the big system."

Chang's room is an industry-standard theatrical room, utilizing THX-approved components (Meyer HD-1 LCR, JBL surrounds). "The film industry has industry standards. Everything is absolute. Because I'm involved in film music, I've assembled an industry-standard listening room that virtually matches several important dub stages downtown. I couldn't do what I do without industry-standard monitoring. The speakers I choose and the room that I listen to them in are the most fundamental components in my project studio."

—Rick Clark

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you can record the 'B' segment on clean tracks [in many cases, the ends and beginning of the segments overlap] and that gives us 108 tracks in the session! Add, of course, a 5.0 aux send for reverb returns, and various other aux inputs for plug-in instruments such as the Access Virus, additional master faders to control the reverb sends, and, well you get the idea—these are some huge sessions."

Because Pro Tools has only 64 voices, Chang was busy selecting and activating/deactivating the various voices to record the segment that he is mixing. Once the "A" segment is recorded and mixed, all of the tracks except the 5.0 mix tracks are deactivated. That allowed Chang to activate the "B" segment tracks for recording. With the mix tracks added, Chang was running 59 tracks during each segment's recording and mixing.

"It's pretty cool to see the system operate with so much going on—I tend to run out of TDM slots before I run out of DSP," Chang exclaims. "While mixing, I use a 42-inch Sony monitor, which saves my eyes."

Once an entire act was mixed, a mix-only version was created and a CD archive was burned. This verified copy was given to the music editor, Sherry Whitfield, who then transfered it to the final dubbing stage media.

"On occasion, when the session was too large to fit on a CD, we used hard drives," says Chang. "Imagine 21 sessions, as many as 130 audio tracks wide with a session length of 25 minutes! That's a truckload of storage!"

Rose Red marks the second project that Chang has done with King, the first being the Emmy Award-winning miniseries *Storm of the Century*.

"I have been blessed in my career to have worked with many of the great filmmakers and storytellers of our business," says Chang. "One of the real pleasures of working on Stephen King projects is to read his screenplays. Both *Storm of the Century* and *Rose Red* are original written-for-TV screenplays, not adapted from novels. In many ways, these two pieces are about the choices that people make—decisions that govern people's behavior.

"What is great for me is that Stephen chooses to employ real emotions in his work," Chang says in summation. "Even if the supernatural is involved, his characters are driven like real people. It is the extraordinary circumstances that expose issues for us to examine. It is great for me, because I can focus on those real emotions when I am writing the music." ■

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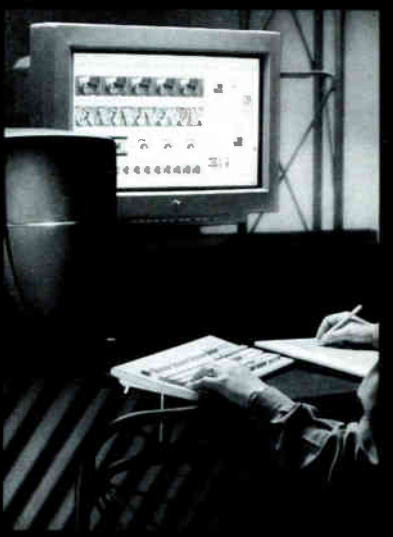

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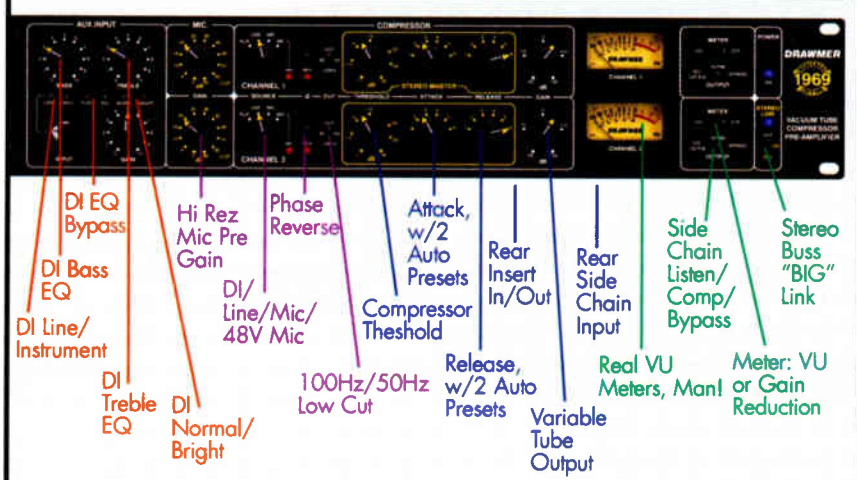

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THE WOBBLIES

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Time and again, a predictable process has played itself out across the (bring up the reverb) Grand Canvas of History. Organizations form and become successful. Success breeds pride and arrogance, and, as the world changes, market forces and hubris bring about the organization's decline. Rome, Communism, dotcoms—all have followed that pattern. Does anyone learn from history?

Hubris brings us to this month's subject: mitigating chaos in the business environment. Entropy always wins, and that 'puter on which you crank out your production is destined for failure. It just hasn't happened...yet.

It's easy enough to make your computer wobbly and even fall right over. Blue Screen or Bomb, take your pick. Simply install lots of software and hardware without updating drivers or OS and never do a disk check when the computer takes a dump. A skilled IT bubba can stabilize NT or classic Mac OS and keep it running without incident for extended periods. Just don't change anything.

Installing new stuff is one major cause of unsavory behaviors on the part of your computer, and a simple check of the vendor's Website prior to installation will alleviate much wasted time and money. When things do take a turn for the worse, as they inevitably will, you need a disaster recovery plan. The key to even the most basic plan is a proven data-restore mechanism. I'll say it again until you can repeat it in your sleep: Who gives a rat's booty about a backup if you can't restore it?

Back in August, I talked about some value-priced tape offerings, including DLT1, progeny of Boulder's Benchmark Storage Innovations (www.4benchmark.com). The parent of DLT1, the DLTape format, premiered way back in 1989 from the late, lamented Digital Equipment Corp. during its MicroVAX II days. It had a whopping 2.6GB capacity. As time went by, the DLT family grew and Quantum (www.quantum.com) wanted to provide a small-form factor, low-cost option for the budget market without diluting existing sales. Enter Benchmark, which licensed Digital Linear Tape technology from Quantum and created its own product niche for the low- to mid-range segment of the tape drive market. In turn, Tandberg Data also licensed DLT technology, so Tandberg, Quantum and Benchmark now all offer DLT1 products in both manual feed and robotic changer configurations. Tandberg also has a competitor to VXA and DLT1, the very affordable SLR100 format.

The first thing, folks, to look for in backup hardware is speed and capacity. Native capacity for DLT1 is 40 GB, hefty enough for most small businesses. A 3MB/s native transfer rate won't frighten small children, but gets the job done nonetheless. Remember that, though newer linear formats like VXA double that native transfer rate, real-world throughput has as much to do with the host's abilities as the attached tape mechanism itself. If the host can't keep up with the tape, then nothing is gained by having a rip-roaring mechanism.

"Benchmark's DLT1 uses standard DLTtape IV media, and the DLT1 boasts backward-read capability with the popular DLT 4000 format." So says their spin doctors, but notice the bit about the 4000. DLT1 can read DLTape 4000 tapes but cannot write that format. DLT1 is also compatible with virtually all popular backup software packages. So, if you're in the market for a fixed-head tape backup scheme and need the added bonus of 4000-read capability, then consider DLT1.

For those of you who have a commodious wallet and the need for higher throughput and capacity, there are a host of new options. Two recent entries, LTO and SDLT, are competing head to head in the high end of tape-storage solutions, alongside Sony's AIT-2 format and Exabyte's Mammoth-2. Super DLT is the Clark Kent of the DLT line and Jor-El's, er, Quantum's bid to maintain DLT's predominance. SDLT provides a current native capacity of 110 GB and native transfer rate of 16 MB/second. It also offers "backward-read compatibility with multiple generations of DLTape 4000, 7000 and 8000 Series drives and millions of DLTape IV data cartridges." In addition, non-BRC or "non-backward-read-compatible" drives are in the works for use in tape library automation applications.

The Linear Tape Open format was developed by IBM, HP and Seagate as a purposely bifurcated family of applica-

BY OLIVER MASCIAROTTE

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Here are a few of the innovative software developers who offer support for the US-428. Cakewalk, Sonar and more virtual synth support coming soon. See the TASCAM web site for the latest info.

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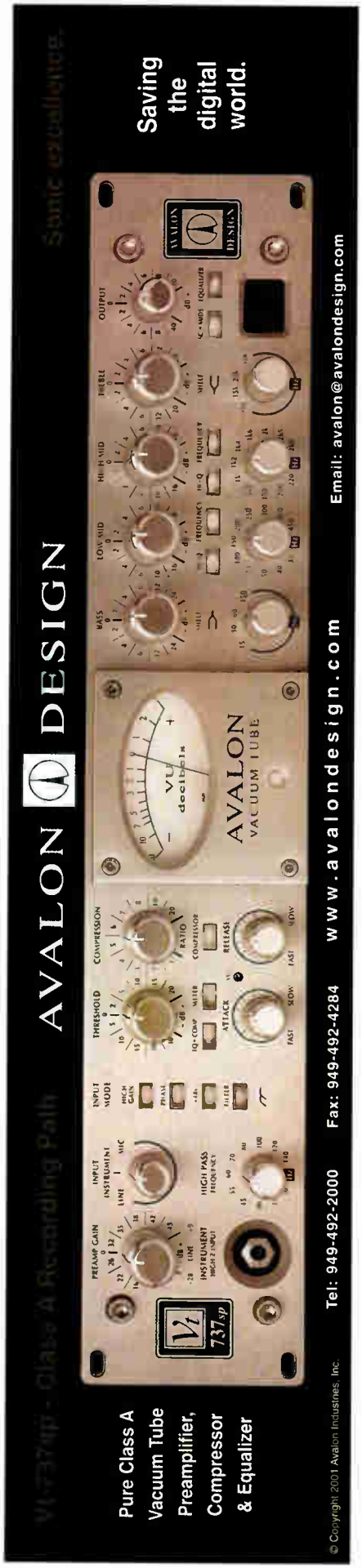

tion-specific products. One branch is the Ultrium format, which strives for high capacity. The other is the Accelis format, which forgoes capacity for extremely low access time. Accelis drives achieve "sub-10-second average" search times, allowing tape to be used in online storage. This makes an argument for optical disc libraries more difficult to justify. Another LTO feature, borrowed from AIT, is the inclusion of in-cartridge, solid-state memory for access to TOC information without touching the tape.

The trade-off for Accelis is a current native capacity of 25 GB, measly in comparison to Ultrium's largest current 100GB native cartridge. Both formats share a 20MB/second native transfer rate. Never slacking, the designers are looking to the future with projected capacities rising to 200 GB for Accelis and 800 GB for Ultrium in the fourth generation.

Next month, I'll look back at the past century, about to slide off quietly into the history books. In the meantime, don't be lulled into a sense of false security. Always brush your teeth, get plenty of rest and, no matter what format you use, back up often! ■

OMas, in an effort to make sense of things, has enjoyed the outstanding sailing weather surrounding the tiny Pueblo By the Bay. This column was created while under the influence of Arthaus/Kinowelt Media's modern interpretation of Le Nozze di Figaro *on DVD-V. Links and occasional commentary at www.seneschal.net.*

PEDANT IN A BOX

Linear Tape

Many tape formats, whether audio or data, rely on physically fixed head assemblies, while others, such as video decks, use heads that move relative to tape in a rotary fashion. To achieve the high data throughput necessary for wide bandwidth signals, designers have to either move the tape really fast past the head or move the heads really fast past the tape. The former approach spawned SDAT, or Stationary Digital Audio Tape, formats like DASH and data formats such as DLT, SLR100 and VXA. The latter approach, pioneered by Ampex in their revolutionary video tape machine, employs a rotating head assembly that spins past slow moving tape. Video tape technology has morphed in data formats including DDS and Exabyte's family of products.

While data formats are moving away from the complexity and unreliability of rotary head designs, the majority of digital audio tape formats, including RDAT, ADAT and DTRS, are rotary designs derived from consumer videotape transports. The first RDAT was Sony's PCM-1600, a substantial beast that converted analog audio into linear PCM and then channel-coded the digital data as monochrome NTSC-composite analog video for recording onto a companion ¾-inch U-matic tape machine, another Sony format. They later created a consumer version of the professional transcoder, releasing the PCM-F1. The entire encoder and tape transport product was later integrated and packaged as the RDAT format, the first turnkey digital audio tape meant for consumers.

3M and MCI/EMI made early SDATs for the pro market but they never caught on. Later, Philips made an unsuccessful attempt at launching a consumer SDAT format, the DCC or Digital Compact Cassette.

Native Capacity

Native capacity refers to the ability of most tape mechanisms to losslessly compress incoming data in real time prior to writing to tape. Typical lossless compression achieves only a 2:1 ratio at best. This compression, however, yields a doubling of tape capacity. Because the amount of incoming data is reduced prior to writing, twice as much can be shoved through the pipe as well, yielding double the throughput.

Tape mechanisms allow software drivers to turn hardware compression on and off via external commands. The amount of redundancy in the data determines the amount of compression. With compression enabled, backup software never "knows" what the total capacity of a particular tape is until it's full! So always go by the native numbers hidden in the fine print.

—OMas

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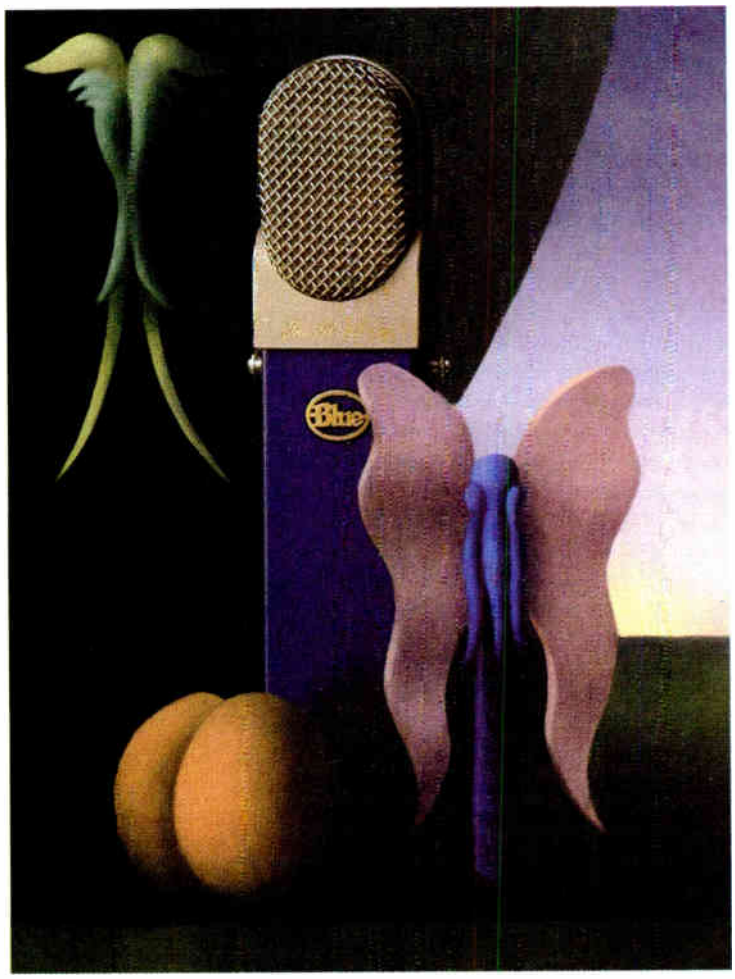
"The construction and workmanship are impeccable, and the parts used throughout are of the highest quality." — George Petterson, Mix Magazine

Berry Good.



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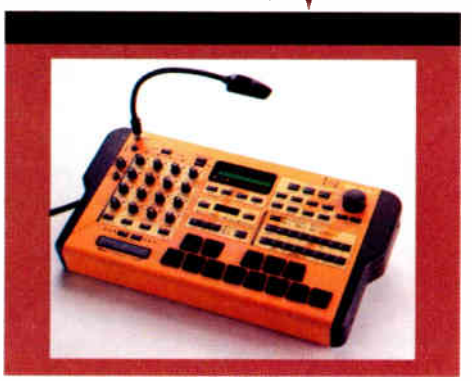
E-MU XL-7/MP-7

The XL-7 and MP-7 Command Stations from E-mu (www.emu.com) combine a powerful multitrack sequencer and 128-voice synthesizer. Features include a multitrack pattern-based sequencer, 13 velocity-sensitive pads, 32 MB of ROM, three expansion slots for Proteus 2000 Sound ROMs, digital output, host performance controls and the onboard Proteus 2000 synth engine. The latter offers electronica (XL-7) and hip hop (MP-7) soundsets with 128 voices of polyphony, 12th and sixth-order filters, multichannel pattern arpeggiators, DRMS synthesis, 16-part multitimbral capability, 24-bit dual effects processor, and dedicated Mute/Select buttons for bringing parts in on-the-fly. Editing tools include cut, copy, paste, quantize and swing. Other features include optional rack ears, S/PDIF out and dual MIDI outs. Retail: $1,695/each.



METRIC HALO I/O

New from Metric Halo (www.mhlabs.com) is the Mobile I/O Series of Modular Processing Audio Interfaces. The first in the series, Mobile I/O 2882 is a portable, modular, FireWire-based multiformat audio I/O. About the same size as a laptop computer and one-rackspace high. Mobile I/O 2882 is ideal for both studio and field use. It supports all standard pro and multimedia sound driver APIs for Mac and Windows (including ASIO, Sound Manager and Wave Drivers), and its field-upgradeable, programmable audio engine provides low-latency signal processing for seamless foldback mixing while tracking. Mobile I/O supports simultaneous input and output of analog balanced and unbalanced (mic, line and instrument) I/Os, plus S/PDIF, AES, ADAT Optical and IEEE 1394 ports. Analog I/Os are all 24-bit, 96kHz-compatible, and wordclock is provided. All units support 400MB/s operation, and overall system support will run up to 128 channels of 96k audio or 256 channels of 48k.

ROLAND FANTOM

Roland's (www.rolandus.com) Fantom workstation keyboard is a 76-note instrument incorporating Roland's XV synthesis and multi-effects with a sequencer and large display interface. The Fantom's 64-voice multitimbral synth engine is based on Roland's XV Series architecture with stereo waveforms per tone, matrix control and onboard effects. The Fantom's 64MB-equivalent waveform memory includes 1,024 patches (640 preset, 128 user and 256 GM2 sounds) and 25 rhythm sets, and can be expanded using two SRX Series and one SR-JV80 Series Wave Expansion Board(s). Fantom's light-sensing D-Beam can control many features, and is ideal for modifying sound parameters in real time. The unit also features 24-bit D/A converters and S/PDIF digital outputs.

CREAMWARE POWERPULSAR

PowerPulsar—a new, more powerful version of the CreamWare (www.creamware.com) Pulsar music production system—is based on the same hardware as the company's high-end SCOPE/SP system, featuring 15 32-bit SHARC DSP chips. PowerPulsar includes Version 3.0 software (the same that is provided with Pulsar II), offering a 24/48-channel mixing console, more than 60 effects, CreamWare's STS-3000 studio sampler, a collection of synthesizers (based on virtual analog, FM, wavetable and vector synthesis), a modular synthesis system with more than 140 modules and 80 pre-patched synthesizers, and more. PowerPulsar comes in four I/O versions offering 20 to 28 audio inputs and outputs in combinations of analog, S/PDIF, AES/EBU, ADAT and Z-Link formats.

World Radio History

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World Radio History

PREVIEW

DCS 992 MASTER CLOCK

dCS (dist. by Independent Audio, www.independentaudio.com) debuts the latest version of the dCS 992 master clock. The new 992 supports system sample rates from 11.025 to 192 kHz, or DSD via four independent AES reference outputs and six independent pairs of BNC outputs. The unit offers "Superclock" rates of up to 256 Fs, can generate all commonly used sample rates and outputs up to 10 different sample rates simultaneously, all phase-locked together. The dCS 992 can be controlled via the front panel or via a Windows-based remote-control program, and the relative phase of each output can be adjusted in steps of 1/256 of a sample, up to ±1 sample. The unit can operate as a master clock or can slave to an external source, and will maintain the external source frequency, even if interrupted.

GEMINI XPM-3000

The XPM-3000 from Gemini Sound (www.geminidj.com) is a 3-channel MOSFET power amp with two main channels and a subwoofer channel with switchable LF boost. Incorporating a two-way Linkwitz-Riley crossover and comprehensive speaker protection circuitry, the XPM-3000 has active balanced inputs and both Neutrik Speakon and five-way binding post outputs. A post-crossover line out can be used for driving additional subwoofers. Additional features include an oversized toroidal transformer, input ground lift switch and two-speed dual fan control, all in a 2U, steel-reinforced chassis.

MARTINSOUND MONITORMAX, PANMAX

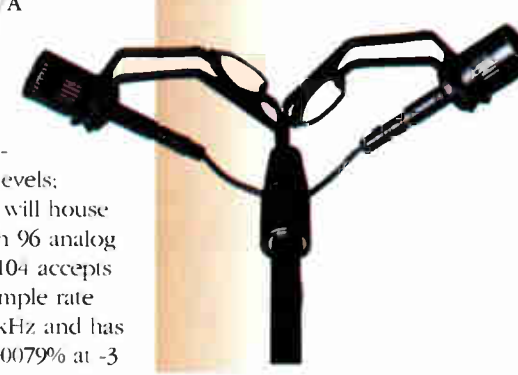
Martinsound (www.martinsound.com) intros MonitorMAX and PanMAX, which add surround functionality to existing consoles and DAWs. The MonitorMAX Stereo Monitor Controller adds multiple stereo-source monitor selection and talkback capabilities to existing mix environments, either as a standalone unit or in conjunction with the MultiMAX EX Multiformat Monitor Controller. Ten stereo sources, eight at +4 dB and two at -10 dB, may be selected to separate cue and monitor outputs. Sensitivity of the two -10dB inputs can be adjusted over an 18dB gain range in 1dB increments. A third stereo output can feed MultiMAX or a pair of external meters. The PanMAX Automated Surround Panner lets users make repeatable dynamic sound motion and parameter changes, and is configurable with single or multiple remote controllers. Each remote provides automated control of divergence, stereo width and surround panning through three faders and a joystick. SMPTE-lock permits frame-accurate replay of the recorded movements. The 2-channel base system PanMAX offers eight outputs as standard, and is expandable to up to 16 input channels.

BENCHMARK 4-CHANNEL 24/96 DAC

Benchmark Media Systems (www.benchmarkmedia.com) offers the DAC-104 4-channel, 24-bit/96kHz D/A converter for the Benchmark System 1000 audio card frame. The DAC-104 provides up to four channels of 24-bit, 96kHz D/A conversion, and offers two balanced audio outputs per channel with adjustable output levels; a 12-card frame will house 48 channels with 96 analog outs. The DAC-104 accepts inputs at any sample rate from 28 to 108 kHz and has a THD+N of 0.00079% at -3 dBFS. Benchmark's UltraLock Technology™ provides total jitter immunity (-100 dB @ 1 kHz, -160 dB @ 10 kHz). Additional features include auto-detection and processing of pre-emphasized digital audio, jumper selection of discrete stereo, matrix stereo (L+R and L-R), polarity inversion and mono sum on all outputs. Output level controls at the front card edge provide an output adjustment range of +7.5 dBu to +27.5 dBu at 0 dBFS. LEDs indicate power, error and range conditions. Price is $1,295.

DPA ORTF MOUNT

DPA Microphones (www.dpamicrophones.com) offers the CXO4000 mic holder for stereo-mounting DPAs type 4021, 4022 and 4023s Compact Cardioid mics. The CXO4000 holder enables the cardioid mics to be mounted in either a coincident XY stereo configuration or a near-coincident ORTF combined time and intensity difference stereo configuration. The ORTF stereo technique provides a wider stereo image than XY stereo, yet still preserves a reasonable



World Radio History

PREVIEW

amount of mono information. Using four mics, it is possible to use the CXO4000 for both XY and ORTF configurations simultaneously to compare the setups or to record both stereo formats. The CXO4000 can also be used for a surround sound mic setup.

CROWN POWER-TECH.1
Crown Audio's (www.crownaudio.com) Power-Tech.1 Series of 2-channel amps feature a two-rackspace design. The Power-Tech 1.1 ($869) delivers 305 watts/channel @ 4 ohms (600W bridged mono); the Power-Tech 2.1 ($999) outputs 460 W/channel into 4 ohms (910W bridged mono); and the Power-Tech 3.1 ($1,299) provides 760 W/channel at

4 ohms or 1,525W bridged mono. All models have recessed level controls, signal presence and IOC (Input/Output Comparator) indicators, ODEP (Output Device Emulation Protection) circuitry, balanced ¼-inch TRS and XLR inputs, five-way touch-proof binding posts and forced air cooling.

PRESONUS DIGITUBE MIC PRE
PreSonus (www.presonus.com) offers the DigiTube Mic Preamp, a single-channel tube preamp with EQ section and 24-bit digital output. The tube preamp accepts mic/line and instrument inputs via an XLR/TRS combo connector, and offers 70 dB of gain. The 3-band sweepable EQ section offers overlapping EQ bands and a Bypass switch. A ¼-inch TRS insert point allows outboard processors to be patched into the signal chain. Analog outputs are XLR and TRS, and a coaxial S/PDIF 24-bit output provides digital output at 44.1kHz and 48kHz sample rates. Price is $299.95; a rack adapter is optional.

WESTLAKE AUDIO LC4.75 MONITOR
The Lc4.75 Monitor Speaker System from Westlake Audio (www.westlakeaudio.com) is an extremely compact, passive, two-way system. Featuring a bass-reflex enclosure, each Lc4.75 includes a 4-inch woofer with a ¾-inch soft dome tweeter. Frequency response is 65-20k Hz, and the Lc4.75's extensively dampened cabinet design results in high resolution, low noise floor and low distortion. Sensitivity is 85 dB @ 1 m for 2.83V input, and the unit handles up to 100 watts. Additional features include a hand-built crossover and point-to-point wiring. The Lc4.75 measures 5.5x12x7.25 inches (WxHxD) and weighs 12 pounds. Price: $899/pair.

CYCLONE FIREWIRE DUPLICATORS
CyClone (www.cdcyclone.com) has introduced a new line of pro CD duplication products offering new DVD duplication technology and higher CD copying speeds. The first of its kind, the CyClone DVD.10 FireWire DVD-R duplicator supports 10 DVD-R recorders in one unit, duplicating up to 10 4.7GB single-sided DVD discs in just over 30 minutes. The CyClone XT.10 CD duplication unit has 10 24x FireWire CD recorders; the CyClone XT.30 is a 16x FireWire version of CyClone's popular T30 30-disc CD duplicator and can copy more than 400 CDs per hour. CyClone XT.10 and XT.30 workstations can perform direct disc copies, perfect disc imaging to file, ISO mastering, and audio disc creation from .WAV or MP3 files. Several recording jobs can be prepared and run simultaneously, or queued and run sequentially.

BRYSTON POWERPAC 250
Bryston's (www.bryston.ca) PowerPac 250 is a modular, single-channel power amp that delivers 250 watts (8 ohms) or 400 W (4 ohms). Essentially a mono version of the Bryston 4B-ST stereo amp, the PowerPac 250 is designed for use as a portable power amp that can be directly attached to the rear of a loudspeaker or nearby wall, resulting in very short speaker leads and an improved loudspeaker/amplifier interface. Additional features include balanced/unbal-

World Radio History

PREVIEW

anced operation, ground lift switch, level control adjustment, gold-plated five-way banana jack, and RCA and XLR connectors.

EARTHWORKS SIGMA SIX REFERENCE MONITOR Earthworks (www.earthworksaudio.com) offers the Sigma Six Point Two, a precision, passive, two-way, near-to-mid-field monitor. Frequency response is flat from below 40 Hz to beyond 40 kHz, while impulse response and performance in the time domain are close to ideal. Earthworks carefully selects and precision-integrates the components to create matched pairs.

HOT OFF THE SHELF

EMTEC Pro Media's repackaged Studio Master 900 maxima analog tape now includes new "Blu(e)" reels with an artistic swirl pattern, and each reel of SM 900 now comes equipped with a sturdier tape collar and includes two EMTEC ceramic-plated CD-R master discs. Call 888/295-5551 or visit www.emtec-usa.com...**The German Sound Library** includes recent recordings of common sounds from German life, as well as some sounds that have never been available on CD. Surf to www.soundlibraries.com... **Maxell's CD-Rpro™ 700MB discs** are ideal for archiving original material and master mixes. Featuring a triple coating, CD-Rpro discs have an archival life of 100 years and are compatible with high-speed recorders with up to 16x write speeds. Maxell also offers new 10x CD-RW discs that enable recording speeds of more than 1.5 MB/sec. Call 201/796-8790 for more info... **Hannay AVX Series reels** are specifically designed for pro audio applications and feature welded channels that allow reels to be stacked for storage and transportation. A slotted divider disc allows pigtails to be stored safely, and an adjustable friction brake prevents unexpected unspooling. Call 877/GOREELS or visit www.hannay.com...**EASE 4.0 sound system simulation software** from Renkus-Heinz is designed by Acoustical Design Ahnert (ADA) and features a new intuitive interface incorporating icons, improved menus, and "wizards" that help create new projects and simplify mapping and ray-tracing functions. A new Objects function allows objects to be imported, duplicated, rotated and moved in three axes. Also new are added phase data, a complex acoustical mapping module, an architectural rendering module, and new Texture and Light Source Editors. Call 616/687-8848 or visit www.renkus-heinz.com...**Radial Engineering's revised JDI direct box** (now $200) adds functionality while reducing manufacturing costs. The JDI Mk3 now features a polarity reverse, a Merge function that combines two inputs, and a parallel speaker-level input with HF roll-off for an "amped" sound. Call 604/942-1001 for Radial's latest product catalog or visit www.radialeng.com...**The Discrete Drums library of drum sounds** consists of nine CD-ROMs containing 31 performances mixed to eight discrete tracks, plus two stereo CDs for auditioning songs and a single CD-ROM with .AIFF samples of individual hits. The 12-CD Professional Set is $299; a 4-CD Limited Edition set (15 mixable tracks) is $179. Call 800/387-5720 or visit www.discretedrums.com...**artistpro.com has released two new video titles: *Understanding MIDI* and *Understanding Samplers and Sampling***. Both VHS-format tapes cover the basics, include advanced user tips from instructor David Wills and are priced at $19.95. Call 707/554-1935 or visit www.artistpro.com...**The *A/B CD*** audio CD has more than 52 minutes of A/B comparisons in 15 categories of recording technologies and techniques. For example, the CD presents the sounds of digital vs. analog recorders, condenser vs. dynamic mics, tube vs. solid-state preamps, and a Stradivarius violin vs. a "standard" violin. The *A/B CD* costs $34.95, and may be ordered by phone at 866/877-ABCD or online at www.CDbaby.com/ABCD...**Tascam's Version 2.0 software for the MX-2424** 24-track, 24-bit hard disk recorder has been updated to allow MX-2424 users to record 12 tracks of 24-bit/96kHz audio in addition to 24 tracks of 24-bit/48kHz. Version 2.0 release also provides compatibility with the HFS+ Macintosh drive format. The software is available free to all registered MX-2424 owners, downloadable from www.mx2424.com and www.tascam.com...**FirstCom Music offers the *Galerie* sound library**, a 40-CD collection of production music from France. Covering themes from Minimalism to Electro Surf, and including such volumes as jazz, rock, Circus and Accordion, the *Galerie* collection will swell by another 12 volumes in 2001. FirstCom also offers the 10-CD *Velocity* collection of contemporary music. Call 800/858-8880 or visit www.firstcom.com. ■

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CIRRUS LOGIC

PRODUCT UPDATE

New 6 & 8-Channel DACs Deliver Highest Audio Performance

Perfect for Surround Sound Enjoyment

CS4362/82 Features

- 6-channel (CS4362)
- 8-channel (CS4382)
- 24-Bit conversion
- Up to 192 kHz sample rates
- 114 dB dynamic range
- -100 dB THD+N
- Supports PCM and DSD data formats
- Selectable digital filters
- Volume control with soft ramp
  1 dB step size
  Zero crossing click-free transitions
- Dedicated DSD inputs
- Low clock jitter sensitivity
- Simultaneous support for two synchronous sample rates for DVD Audio
- µC or stand-alone operation
- Available in a 48-Pin LQFP
- CS4362 Price: $5.35 (10K)
- CS4382 Price: $6.50 (10K)

Actual Size

Need the best DAC for audio entertainment applications? Looking for a DAC that supports both DVD Audio and SACD? Check out CS4362 and CS4382! They're complete 6 and 8-channel digital-to-analog systems with all the features you need for all multi-channel audio applications. Features like digital interpolation, fifth-order Delta Sigma digital-to-analog conversion, digital de-emphasis, volume control and analog filtering. Both accept PCM data at sample rates from 4 kHz to 192 kHz, DSD audio data, and operates over a wide power supply range. Design CS4362 (6-channel) or CS4382 (8-channel) into your next generation DVD players, SACD players, A/V receivers, car audio systems, mixing consoles, effects processors, outboard converters and set-top box systems.

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New ADC and DAC Ideal for Multi-Channel Audio Systems

Ideal for Consumer and Professional Applications

Need excellent sound quality and optimal performance in a minimum of space? Check out CS5333 and CS4360—they're ideal for any audio system. CS5333 is a complete stereo ADC with 24-bit resolution that delivers excellent sound quality—its proprietary Delta Sigma modulator architecture allows infinite adjustment of the sample rate between 2 kHz and 100 kHz simply by changing the master clock frequency. CS4360 is a highly integrated multi-channel DAC system that delivers 6-channels of high-quality analog output—it supports 192 kHz sample rates for compliance with all DVD standards, including DVD Audio. Based on proprietary Delta Sigma modulation, CS4360 also includes digital interpolation filter,digital de-emphasis, volume control, channel mixing, and switchedcapacitor analog filtering. Together, the CS5333 and CS4360 are perfect for all multi-channel audio applications such as DVD players, set-top boxes,AVRs, mini-systems and digital mixing consoles.

Analog Building Blocks from Cirrus Logic

CS5333 Features

- 2 channel ADC
- 24-Bits
- Supports 96 kHz sample rates
- 98 dB dynamic range at 3 V supply
- -88 dBFS THD+N
- 1.8 to 3.3 V power supply
- 11 mW at 1.8 V power consumption
- Internal high pass filter to remove DC offsets
- Linear phase digital anti-alias filter
- PopGuard® Technology
- Available in 16-Pin TSSOP
- Price: $3.60 (1K)

Actual Size

www.cirrus.com/ad/ma2

CS4360 Features

- 6 channel DAC
- 24-Bits
- 102 dB dynamic range
- -90 dB THD+N
- +3 V to +5 V power supply
- Digital volume control with soft ramp
- 119 dB attenuation
- 1 dB step size
- Zero crossing click-free transitions
- Low power consumption
- 105 mW with 3 V supply
- ATAPI mixing
- PopGuard® Technology
- Low clock jitter sensitivity
- Available in 28-Pin SOIC/TSSOP
- Price: $4.40 (1K)

Actual Sizes

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KRK V88 AND S12

POWERED STUDIO MONITORS AND SUBWOOFER

Having owned a pair of KRK V8s for several years, I wanted to evaluate the V88s (the company's newest self-powered monitors) and see how they would compare to the smaller—and popular—V8s.

ENTER THE V88

Priced at $1,199 each, the V88 is a bi-amplified system, intended for near- or mid-field monitoring. The stated frequency response is 39 to 23k Hz, +2 dB. Each enclosure has two 8-inch woven Kevlar drivers wired in parallel and powered by a 160-watt amp. The two woofers have an approximate combined surface area of an 11-inch driver. However, 8-inch speakers do not move air like 12-inch units do, even if the total surface area is almost the same. The 1.25-inch polymer dome tweeter is fitted with an excellent elliptical waveguide and driven by a 60-watt amp.

Each V88 weighs 50 pounds, is sturdily constructed, and is coated with a black/gray "Zolatone" finish, giving the units a pro look and feel. The V88s are 13.6x20x17 inches (HxWxD) and are well-shielded—even an inch from my video monitor, the picture display was unaffected.

The V88s accept a wide variety of inputs: The Neutrik Combo XLR/TRS input connector on the rear panel is active and balanced, and handles an unbalanced signal as well. The crossover uses three-way active filters and a 2.3kHz crossover point. The slopes are -12 dB/octave, Butterworth types, with an additional -12dB/octave subsonic filter that's -3 dB down at 21 Hz.

Response can be tweaked via LF and HF contour controls. A three-position switch adjusts the HF shelving at 1 kHz to flat, ±1 dB. A three-position LF toggle has a -3dB corner frequency cut at 39, 47 or 55 Hz. An overall system gain/trim input sensitivity pot has a -30 dB to +6 dB range. The internal power supply can be set for 100 to 120 or 220 to 240 VAC operation, and the power switch is delayed and muted to avoid power-up/down thumps.

LISTENING TESTS

The first thing I expected from the V88s was increased LF response. The bass was full and deep, yet the mids and highs made the biggest initial impression. Listening to familiar material, songs seemed to "open up," and—as clichéd as this may sound—I found myself saying things like, "Oh, there *is* an organ part in this tune!"

The V88s are *loud*! But determining exactly how loud is a mystery. The manual rates the maximum 1m SPL at 112dB "music" and 115dB "peak."

That being said, these things are louder than you could possibly ever want, or need! I couldn't turn them up enough to overload the drivers or amps without risking deafness.

I like the fact that, unlike some powered monitors, the V88s do not have an input limiter. You might blow the drivers or your ears, or burn up the fuses, but not trigger a limiter. Because there is an input gain trim, you should be able to hear the speakers overload and correct the problem before you have the input mush out. This is the correct way to design a powered monitor.

DOWN UNDER

As I mentioned before, the bass response is big, fat and full. But I was spoiled, having the optional $1,499 S12 subwoofer in the chain. While the V88s bottom is accurate and usable, it is nowhere near what you get with the sub added.

I also had to adjust my listening position, pulling back a few feet, to allow the longer bass wavelengths to develop for the fullest bottom response. Sitting as close as I had with the near-field V8s provided too much mids/highs and a lot less bottom. By their very nature, the V88s are mid-field monitors. If you use them as near-fields, then change your listening position by moving your chair back a little. Conveniently, this also widens and improves the "sweet spot" a bit. However, the V88's sweet spot is very wide and on-axis at almost any distance and reasonable position.

Combined with the S12 subwoofer, the V88 could become the standard monitoring system for small- to mid-sized studios. These would easily serve as mains in post rooms, larger studios or for 5.1 surround mixes. Anyone who's worked in a large, world-class studio knows the sound and feel of soffited mains cranked up *loud*. That's what you can expect from the V88s, only they're right in front of you, not 15 to 20 feet away. I'm sure I'll catch flak for this from purists, but the S12/V88 combo reminds me of the sound of a pair of Augspurger mains.

Of course, the V88s are just fine by themselves, but I'd suggest saving your pennies to add the S12 to the package. The S12/V88s give smaller-studio owners and their clients a

BY BOB BUONTEMPO

World Radio History

Your music can't be felt if your voice isn't heard.

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PV® Series Power Amplifiers by Peavey

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Bob Buontempo is a freelance producer/engineer based in the New York City area.

THE KRK S12 SUBWOOFER

So far, I've raved about how the S12 sounded with the V88s, but I should mention that I first tried the sub with my V8s, having received the S12 weeks before the V88s arrived. As with the V88s, the S12/V8 combination offered excellent overall sound quality, with improved imaging accuracy, extended frequency response and increased SPLs.

Now let's look at some S12 specs, features and a few design flaws.

The S12 has a 12-inch, woven Kevlar speaker, powered by an internal 160-watt amp. Frequency response is stated as 31 to 50 Hz (sweepable), topping out at 130 Hz (±2 dB). The I/Os are balanced XLRs. Amplifier gain is adjustable (+6 to -30 dB). The rear panel also has a phase reverse switch and a variable lowpass filter (50 to 130 Hz). A highpass filter on the outputs to the full-range speakers is fixed at 80 Hz. The enclosure is 15x22x20 inches and weighs 72 pounds. Once again, the SPL ratings are non-standard: Max SPL @ 1 m is 112dB music and 115dB peak. Its Zolatone finish matches the other V Series speakers.

The S12 does not have a manual [The manual is now available, according to KRK—*Editors*], but does anyone need instructions for a speaker? Normally, I'd agree, except not having information not only makes the setup difficult, but could also detract from the system's sound, if configured incorrectly. And, logistically, it's a pain to set up alone: You'll need an assistant.

All S12 controls are on the back panel—good economic sense, but impractical. In a small studio like mine, where the S12 is placed on the floor, near a wall or under the desk, accessing its rear AC switch is nearly impossible. So I could either always leave it on or turn it off via a power strip, which would defeat the purpose of the "non-thump" power switch.

Setting up, my first instinct was to "Y" the output from the mixer and feed one signal into the V88s and the other into the S12. However, a call to KRK informed me that the S12 had a built-in 80Hz crossover. The mixer's control room outs route to the S12, and the V88's 80Hz highpass signal comes from the S12, becoming a three-way, tri-amplified system. How could anyone know that without a manual?

Crawling behind the S12, I found the sweepable lowpass filter, but with no markings on the pot, where was 80 Hz? After another call to KRK, the answer was "somewhere around 1 or 2 o'clock." KRK should silkscreen the frequencies around the knob or detent the pot at 80 Hz. Finding the correct sub output level is a lengthy matter of trial and error. Adjust the pot behind the speaker, move the speaker back into place and listen to the level change. Not quite right? Do it again. It's not easy to remember a 1 or 2dB volume adjustment for three or four minutes, but after an hour of futzing, I had it set okay.

Setting the two-position phase switch is simpler—it's much easier to hear something that is not subtle. The S12 does not have a switch for bypassing the sub and routing full-bandwidth audio to the mains for making A/B comparisons between the sub-in/out sound. Finally, I kept kicking the woofer cone because it's under the console. KRK doesn't make a grille or cover, although they were working on one about eight months ago when they started writing the S12 manual...

Besides these "inconveniences," the S12 sounds great. Combined with the V88s, I doubt that you can find a system this good for the price. Just have an assistant help you set the thing up!

—*Bob Buontempo*

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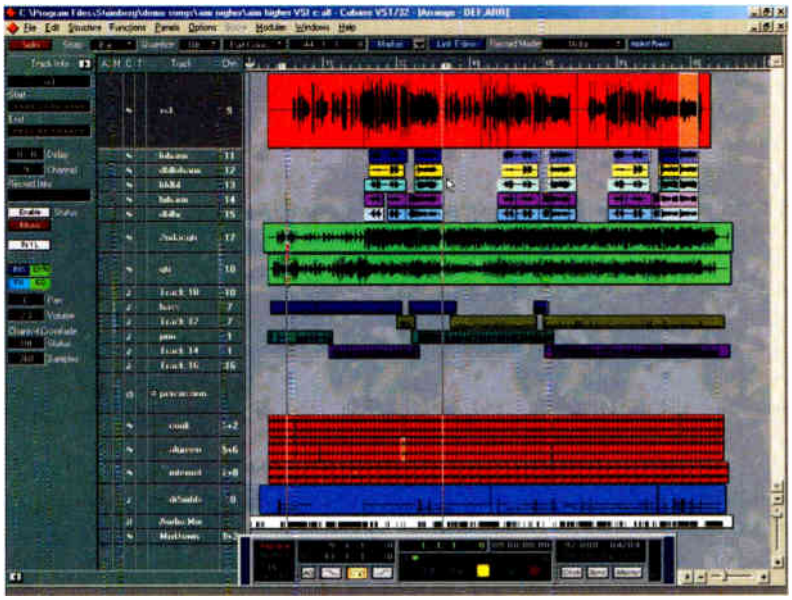
STEINBERG CUBASE VST/32 V. 5.0

CROSS-PLATFORM MAC/PC WORKSTATION

Nothing sparks a debate among a group of audio pros quicker than the issue of DAWs. Everyone has their favorite: One does this or that better or quicker than the other does. Hardware vs. software. Native vs. non-native processing. Differing plug-in architectures. Cross-platform compatibility. Memory issues. One is *prettier* than the other is. All in all, these discussions can get downright painful. With all of this in mind, I was anxious to audition Steinberg's latest version of Cubase—a program that many of us have literally grown up with.

Now in Version 5.0, Cubase has evolved over the years from a straight-ahead MIDI sequencer to its current incarnation as a full-fledged audio production suite that can stand shoulder to shoulder with anything on the planet. Many are actually attracted to the software because it maintains the feel and organization of those "old-school" sequencing programs like Studio Vision Pro, Master Tracks Pro and other bygone favorites, while at the same time delivering a thoroughly modern feature set. Shy of CD burning and finite sample-level editing/import/export chores, Cubase is a powerful, mature and widely expandable (due to the VST standard) program that handles everything from MIDI sequencing to audio tracking and editing—at 24/96 precision—with excellent sound quality and resolution.



Users can edit and arrange both audio and MIDI tracks in the same window.

BASIC REQUIREMENTS

Cubase is engineered for both Mac and PC platforms, and the two versions are nearly indistinguishable from one another. The recommended system on a Mac consists of a 266MHz G3 processor, 128 MB of RAM, OS 8.5 and an approved ASIO or MME soundcard. System requirements for PC include a 450MHz Pentium III or AMD processor, 128 MB of RAM, EIDE/Ultra DMA or SCSI hard drives, Windows 98/ME/2000, and an ASIO or MME soundcard. Version 5.0 also includes improved optimization of dual-processor machines, utilizing both processors for audio tasks instead of just one as in previous versions. Cubase VST 32 retails for $799. The standard version of Cubase retails for $399, and Cubase Score VST for $549.

The test unit was a Mac G4 450, with 256 MB of RAM, OS 9.1, a 30GB Seagate internal ATA hard drive (audio only), Tascam PCI-822 interfacing via TDIF/S/PDIF with a Tascam TM-D1000 digital mixer (used as a front end and control surface), and Steinberg's Midex 8x8 MIDI interface. With this set up, I found the realistic CPU limit to be somewhere around 12 tracks of 24/48 audio with about 30 real-time effects (dynamics, plug-ins, EQs) in use, and almost unlimited MIDI playback tracks. If I had maxed out the amount of RAM that the machine could hold (two gigabytes), then those numbers would jump way up. Even when I pushed the machine to the point that the screen draws and level meters pretty much failed, the audio still came across crystal clear, and, generally speaking, I experienced almost no crashes from realistic use. It performed like a champ.

BY ROBERT HANSON

READY TO ROLL

After a (thankfully painless!) registration procedure, the program is ready to go—right out the box. Opening the program for the first time, the OMS studio setup predictably pops up. One item of note with regard to OMS: Most Mac users who are using Cubase will likely be running the program on a newer USB-equipped machine; when running OMS, take care to *not* check either the modem or printer port boxes when running the studio setup. Simply leave the boxes unchecked and OMS will find your USB or PCI MIDI interface. Otherwise, the basic "Autoload" song comes prefigured to get users up to speed quickly.

Most professional or semi-pro users will also be using a high-resolution soundcard of some sort. Assuming that your audio hardware is properly set up with current drivers, the process is a snap. In the Audio

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*Optional internal 2.5" hard disk required for 88.2 & 96kHz/4 track and 176.4 & 196kHz recording. All trademarks acknowledged. E.&O.E.

Setup window, simply select your hardware interface, set your sample rate (44.1, 48 or 96 kHz), bit depth (16/24/32-bit or Cubase's proprietary 32-bit True Tape emulation), disk cache size and choose a hard drive. After configuring your I/Os under the VST Input and Master Mixer windows (both of which automatically correspond with your D/A interface), you're ready to record.

VIRTUAL EVERYTHING

As with most computer-based DAWs, Cubase puts an essentially limitless, fully automated, virtual console/recorder at your fingertips; the only real limiting factor is the amount of available processing horsepower. Every channel has four available effects inserts (which also respond to automation) in addition to a full suite of dynamic controls (compression, EQ, limiting, gating). There are separate mixer screens for group/aux sends, master mixer (where global insert effects can be added) and a dedicated MIDI track mixer.

Cubase also ships with the Universal Sound Module, one of myriad VST instruments that are currently available. These work almost exactly like external synths. After opening and activating an instrument from the VST Instrument screen and assigning the output of a MIDI track to that instrument, you're ready to make some noise. VST synths appear as separate audio tracks in the main mixer screen. You can either play VST instruments via an external MIDI controller or draw the notes from inside the Key editor. VST instruments also respond to continuous controller data. For most synth-savvy users, this process will make perfect sense.

SPEC BOX

New Features for Cubase 32 5.0

- New algorithms for the onboard 4-band EQ
- Re-written factory plug-ins by Spectral Design
- Implementation of Apogee's RUV-22R dithering algorithm
- InWire- and Rocket-enabled for Internet-based collaboration
- Universal Sound Module VST instrument included
- Improved dual processor support
- Higher resolution audio and MIDI
- Auto Crossfade function
- "Generic" Remote function will work with any MIDI controller
- Yamaha DSP factory support

FIRST SESSION

The first thing I was struck with was the relatively easy learning curve. The program is well-organized, and first-time users with even a scant knowledge of multitrack recording can be up and running in minutes. The program, of course, goes far deeper, but the fact that it is immediately accessible is refreshing, to say the least.

To start audio recording, either open the pre-configured Autoload song or start totally fresh. Highlight an empty track and set it for either mono or stereo recording. Designate an appropriate audio file on your hard drive, check your levels in the main mixer screen and you're

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set. A small red level meter appears next to the track in the Arrange window, assuring you that what you're playing is actually being printed. Working on the MIDI side is really no different. If you've used any other computer-based DAW in the past five years, then you almost don't need the manual to access the more basic recording and mixing features of the program. It's all there, laid out right in front of you.

The main VST mixer screen

EDITING FEATURES

There are three fairly logical levels of audio editing, working (or double-clicking on a piece of audio) from the main Arrange window to the Audio Editor and eventually to Wave Editor. In the Arrange window, you can make all of your macro edits and even crossfades. The edits on the Arrange screen can work at any resolution that the snap value is set at. It defaults to one measure but can be easily changed. Also inside the Arrange window, you can paste any piece of audio to any audio-enabled track, allowing you to quickly build up a track from only a few pieces of audio. Inside the Audio Editor, you can adjust stop and start points, slide data in either direction, and make cuts at the bars and beats level.

Finally, the Wave Editor allows for some more finite editing, including basic reverse/forward and time/pitch-shifting options. This is one of the weak aspects of the program. The obvious assumption, on the part of the programmers, is that most people will purchase a dedicated editing/mastering/CD-burning program, making the inclusion of a more robust audio editor a bit redundant. However, it proved totally adequate for most music studio tasks.

On the MIDI side of things, the editing is far more comprehensive. Cubase includes four different editing screens including a basic Key Editor, Drum Track Editor, Score Editor and an Event List Editor. So the program accommodates any method you prefer. I spent most of my time in the standard Key Editor—not only were all of the various tools extremely easy to use, but the ability to edit controller data on the same screen was very convenient.

IN SESSION: MIXING AND AUTOMATION FEATURES

Creating and editing mixes and automation in the program itself is a snap. Once you get your tracking completed, simply click the Read and Write icons on any of the three mixing screens, and start moving some faders. Once you've got things dialed up, turn off the Write icon and you're set; you can, of course, move to any place in the song, click the Write icon and make changes. To automate effects on individual channels, click the Dynamics icon on either the mixer channel strip or inside the Arrange window. The entire dynamics/EQ

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SILVER BULLETS

"I could tell immediately this was the silver bullet for male vocals. You may not realize it, but you really need one of these mics!!"

Ronnie Brookshire,
Recording Engineer (Boyz II Men, Michael W. Smith, Wynonna Judd, Steven Curtis Chapman, Sandi Patty, Point of Grace, Nichole Nordeman)

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section will then pop up with that channel's fader and pan controls, as well as the effect insert and send controls. Next to the fader/pan is the Write/Read icon. Simply select the effect and tweak away!

Here is the only place where a hardware investment really pays off. At the very least, drop $60 and pick up an optical mouse. Making fader moves, and especially pans (the Pan slider could have been a little larger), was a pain with a standard mouse, which has a tendency to catch and bind. I couldn't make those ultra-smooth left-right moves with any real confidence. Thankfully, my Tascam TM-D1000 mixer has full MIDI fader and pan control. After a quick fader map download from Tascam and, again, a painless remote control set up, the problem was solved. Cubase also comes preloaded with control surface templates for other popular controllers such as CM Automation's Motor Mix and a host of others.

Once you begin recording automation data, the program automatically creates a controller track at the very bottom of the Arrange window. Here you can get as picky as your heart desires, editing moves down to the bars and beats level. And this data can be copied to other Cubase files as well.

Every audio channel includes a full suite of dynamic processors.

A FEW EXTRAS

As we've all made the move from serial-port MIDI interfaces to USB, certain timing "issues" have come to light. To compensate for this, Steinberg released the Midex 8, an 8x8 USB MIDI interface that uses the company's propriety LTB (Linear Time Base) communication protocol, boasting sub-millisecond timing. And to Steinberg's credit, I did notice a great deal of improvement once I switched. There were several occasions where I'd have to slide data that had been changed over from MIDI to audio a few ticks. This all but disappeared when I hooked up the Midex 8.

In addition to reading standard .WAV, .AIFF and MP3 files (which are converted to .WAV or .AIFF, respectively PC and Mac), Cubase also reads .REX files generated by Propellerhead's Recycle!, older Cubase 3.X files, supports Rewire 2.0 and can handle a host of MIDI files.

CONCLUSIONS

I'll cut to the quick: Cubase 5.0 sounds great, and it's a breeze to use. With a well-outfitted computer, a decent control surface and a high-resolution interface, you're set. With 32-bit internal resolution and archiving, the project you begin now, you'll be able to come back to for years to come. For project studio owners, Cubase is a natural fit. Professionals who are on the move would be hard-pressed to find a more powerful laptop setup or second studio setup. Between its real-time effects, full automation and VST synths, Cubase is an all-inclusive production tool that delivers excellent sound quality and absolute ease-of-use.

Steinberg, 9200 Eton Ave., Chatsworth, CA 91311; 818/678-5100; www.steinberg.net. ■

Mix staffer Robert Hanson is a Bay Area musician. Check out www.sfmidimafia.com to see what he and his friends are up to while the rest of the world sleeps.

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WAVES GOLD BUNDLE 3.2

SIGNAL PROCESSING PLUG-IN COLLECTION

For close to a decade, the award-winning Waves family of plug-ins have garnered accolades from users who love the clear sound, precise control and intuitive feel of the processors. Introduced at the end of 2000, Waves Gold Bundle 3.0 represented a new look and feel for the plug-in family. Essentially, Waves added design consistency between interfaces, introduced 88.2/96kHz support for some native platforms, got rid of the dongle and stuffed 20 plug-ins into one package. In this article, I'll primarily cover the innovations found in Version 3.0. The latest Version 3.2 is a free update to Version 3.x customers. It isn't a major change but provides bug fixes to increase system stability for TDM users.

Waves Gold Bundle comes in two flavors: Native ($1,300) and TDM ($2,600). Before you lose your cool over the price tag, keep in mind that you'd spend close to a grand for just the Renaissance plug-in family and the C4 Multiband Parametric Processor. The purpose of bundling is to offer a better deal on a full complement of audio tools designed to handle daily chores and unusual requests.

Enigma offers phasing and flanging effects with interdependent reverb, feedback and filtering environments.

All plug-ins were tested on a Digidesign Pro Tools|24 MIXPlus TDM system running on a Mac G4 450 MHz (single processor). For software, I alternated between Pro Tools 5.1.1, Emagic Logic Audio 4.7 and Bias Peak 2.6.2, depending on the application. Some of the more DSP-intensive plug-ins—such as C4 and Renaissance Reverb—really need the MIX DSP resources to be of any use. However, Waves has found intelligent approaches to managing and sharing DSP allocation between most of its plug-ins via its Waveshell—a sort of DSP traffic cop. So, even host-based users should be able to handle various groups of plug-ins without having a session stop due to lack of DSP. The key is to plan around the DSP power at your disposal. Waves helps by breaking down some processors like Q10 into components made up of fewer bands.

On the surface, I love the consistent look and feel between plug-ins that Waves brought to Version 3.0. You can quickly sort out basic operations, as in buttons and metering, and adopt the darker console scheme found in the Renaissance collection, making it easier on the eye. Navigating is as easy as it ever was. You can quickly copy and save your settings, load them and A/B with other settings.

Each plug-in comes with several presets as good launching points and includes a convenient full reset. Multiple parameters can be controlled at once and automated within Pro Tools, so some of these algorithms can become performance instruments in capable hands.

Doppler lets you adjust the effect's fly-by time, plus adjust reverb, panning, pitch shift and air-damping parameters.

BEHOLD: THE PLUG-INS!

If you want to check out the Gold Bundle, first go to www.waves.com and download a demo. Dial-up modems will take awhile, but you'll end up with a two-week demo version that you can explore to your ear's delight. If you want to buy at the end of the trial period, you won't need extra hardware. Waves has moved to a dongle-less challenge/response approach that numerous software companies are favoring these days. Soon after, you'll receive a hefty collection of manuals that are gloriously detailed with practical minutiae and historical references. I hate manuals, but these rewarded my patience.

L1 ULTRAMAXIMIZER

Some engineers get misty-eyed about this wonder limiter. Whether as a reliable channel insert to bring out a vocal or an instrument track or as a mastering tool, L1 has become an audio institution over the years. It's even spawned a hardware version, L2, but that's another review—

BY ALEX ARTAUD

World Radio History

in fact, it ran in the May 2000 issue of *Mix*, and can be found at www.mixonline.com. L1 junkies abound in studios worldwide, and have used and abused it on countless recordings. Engineers love the extra headroom and the density L1 adds to the mix. It's a transparent, reliable studio limiter.

In the Version 3.0 bundle, Waves provides the standard L1 as well as the +L1 Ultramaximizer, a super L1 tailored for mastering that integrates IDR, Waves' proprietary dithering and noise-shaping processor, and adds input level controls. With +L1, you get two types of dithering, as well as three levels of noise shaping. (You can dither down to 20-bit, 16-bit, 12-bit or 8-bit.) Also, both the L1 and +L1 Ultramaximizer are now 48-bit internal resolution dithered down to 24-bit, a feature shared with C4, S1 and the Renaissance Series, which we'll cover below.

The Renaissance reverb offers halls, plates, rooms and chambers, with 48-bit internal processing dithered to 24-bit.

C1 COMPRESSOR/GATE

This Compressor/Gate (or Parametric Compander) plug-in is actually a three-in-one processor, with compressor/expander, gate/expander and sidechain filter modules. You can link a couple, all three or just select the component you need from a pull-down menu and save processing power for other chores. C1 includes three selectable modes: Wideband, Sidechain and Split. In Wideband mode, C1 provides common compressor functions; in Sidechain mode, a sidechain audio signal is filtered for band-specific compression; and in Split mode, the sidechain is filtered, but the signal is split into two bands—one active, one passive. The sidechain also includes a useful look-ahead limiting feature for precise response.

This is a workhorse plug-in that imbues no warmth or color to the sound (as opposed to the Renaissance Compressor). However, its ability to selectively compress, expand or gate any frequency band makes it a valuable asset. Plus, the manual, combined with an extensive setup library, is a great compressor tutorial. Also in V. 3.0, both the C1comp and C1gate can operate at 88.2/96 kHz in some native platforms.

Q10 PARAGRAPHIC EQ

The Q10 Paragraphic Equalizer is another bread-and-butter plug-in that's improved with V. 3.0. Ten bands are available, although you can select down to a single-band Q1. Filter types are selectable between bandpass, low shelf, high shelf, highpass and lowpass. The filter design opts for constant bandwidth rather than constant Q approach—Waves' rationale being that it makes control of the equalizer more intuitive. In any case, mousing around color-aided feels much smoother now. Q10 is great for everything from forensic jobs to automatic filter sweeps to pseudostereo treatments—though this application is best achieved with PS22 (described below).

S1 STEREO IMAGER

Wanna mess with the stereo field? Here's your chance. S1 is a fairly easy plug-in to jump into. Increase or decrease the perceived width, rotate the stereo field back and forth, and generally freak out your listener. One of those plug-ins to throw in when you're trying to find room for that special sample. I've used it on everything from spacey pads to filtered/delayed cymbals. In general, this is an excellent tool for subtle stereo-field correction on master recordings.

SuperTap comes in 2-tap and 6-tap versions, each with its own gain, panning (or rotation), EQ and delay.

PS22 STEREOMAKER

The PS22 Stereomaker creates a pseudostereo effect, generating a stereo image from mono signal. It lacks any of the cheesy qualities that other purported stereo-izers have (read: very little phasi-ness). PS22 comprises three components: PS-Spread, PS-Split and DLA, the last being a companion that is used to compensate for delay and increase the stereo effect. You can get a smooth spread of the stereo image, achieve a hard left/right feel, and dramatize the stereo with DLA. I've favored it for ambiences, such as whispered vocals and solo woodwinds, but there are several setups to experiment with.

TRUEVERB

TrueVerb provides room emulation algorithms as launching points to tailor roll your own settings. TrueVerb creates a virtual space by treating source signal with two algorithms: one for multiple reflections generated in the first 100 ms, the second dedicated to actual reverb. All spaces are constructed from these building blocks. In my experience, TrueVerb is best when used with fairly dry recordings, such as a grand piano recorded in a living room. On acoustic recordings with clear reverberant traits, the plug-in needs to be used with more caution. This plug-in rewards anyone who understands the source material and the room. Don't casually slap it on and expect to be pleased. Working from presets is especially recommended for the user to learn how acoustic environments are built. And, unlike the Renaissance Reverb, your DSP won't get chewed up as bad.

DE-ESSER

A basic, reliable plug-in with adjustable parameters for sidechain frequency and threshold, DeEsser performs well on "esss" and "shhh" vocal troublespots. Some engineers are used to automating the "esss" out, but this plug-in is worth a try—and it is better than Digidesign's stock de-esser. At press time, Waves had also introduced

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a Renaissance DeEsser for TDM systems as part of the Renaissance Collection 2 bundle ($400).

AUDIOTRACK

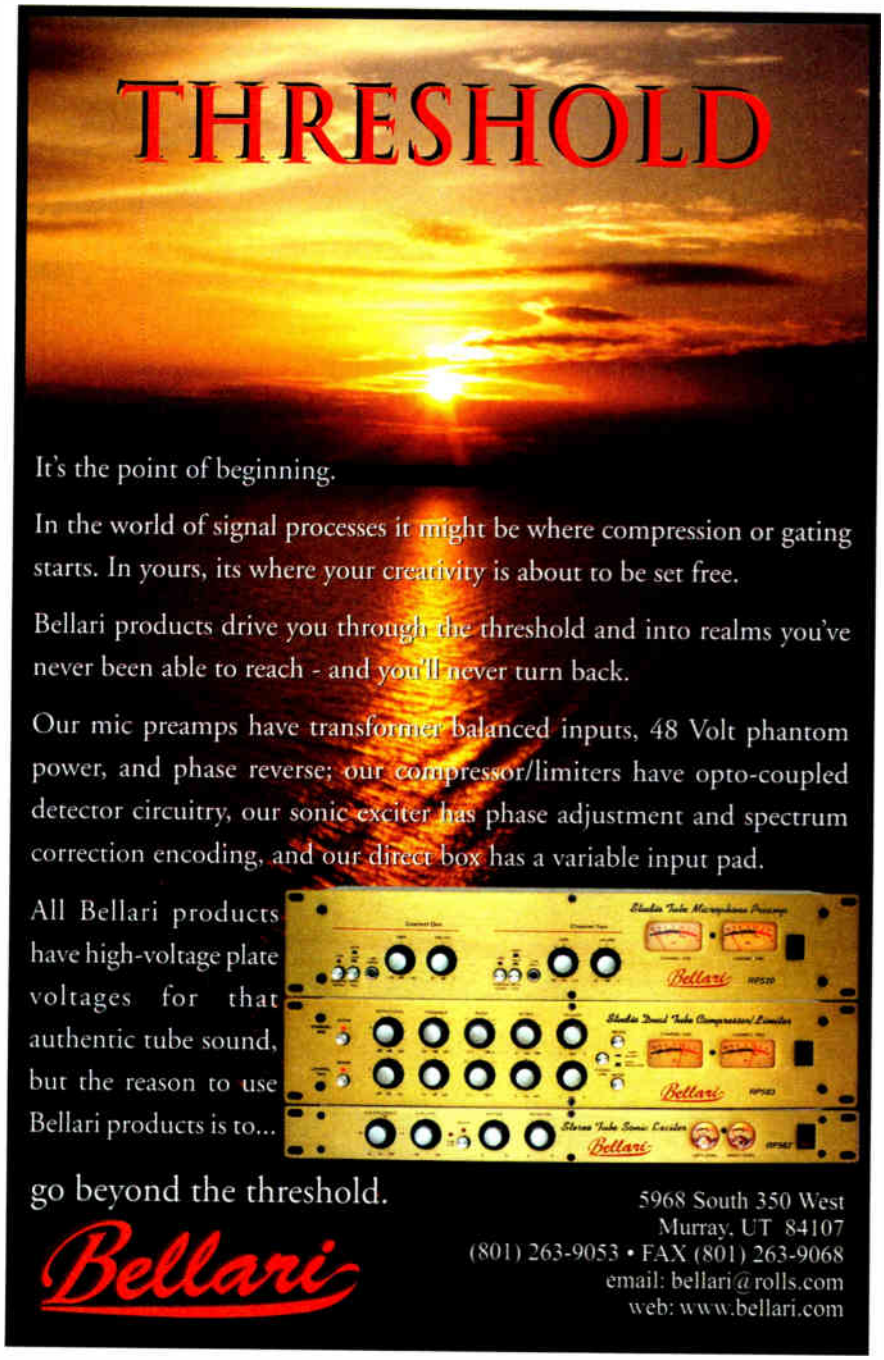
An all-in-one plug-in providing stripped-down, 4-band, parametric EQ, compression and noise gating, AudioTrack is a no-frills problem solver. AudioTrack is DSP-friendly and pretty transparent, but you'll probably turn to it only when processor power is taxed. It's useful on vocal and instrumental tracks that require minor tweaks.

C4 MULTIBAND PROCESSOR

C4 is a dynamics processor combining compression, expansion and limiting, de-essing and EQ, in one console. Best suited for working on the overall mix, C4 features a phase-compensated crossover and four separate compressors for discrete control of selectable frequency bands. Three crossover points and four frequency points are all draggable, providing a very flexible environment. C4 is frequently used in radio and TV broadcasts for maximizing loudness via multiband compression.

MAXXBASS

First choice for subheads, MaxxBass will create the appropriate rump-shaking treatment you need for dubby bass lines or the relentless, thumping drone on a house track. You can also easily replicate the distinct *whoomp* of dbx's classic subharmonic synthesizer, as well as other idiosyncratic bass sounds. A patented technology, MaxxBass doesn't boost the low end. Rather, it uses psychoacoustic principles to increase apparent bass frequency range. It works like a charm, and the presets and tutorial are excellent. It also includes dynamics and highpass filter controls to round out the sound. It's also useful for low-res Internet applications, and it's better than Aphex's Big Bottom.



RENAISSANCE REVERB

King reverb. Hands down, one of the best reverb plug-ins available today. Warmer and more dramatic than TrueVerb, with a better interface, Renaissance Reverb (RVerb) gives you excellent halls, plates, rooms and chambers, plus odd presets such as ResoVerb and EchoVerb. It improves on TrueVerb's early reflections algorithm and adds onboard EQ and reverb damping controls, with a Decorrelation parameter to fine-tune the color of the sound. As with L1, all processing is 48-bit internal dithered to 24-bit. (Note: This plug-in eats up DSP with abandon and might exhaust your resources faster than you think.)

RENAISSANCE COMPRESSOR

The Renaissance Compressor (RCOMP) has all of the common compressor controls, plus the added benefits of "warmth" controls, as well as Electro and Opto mode switches. Leaving C1 in the dust, this is the closest a plug-in comes to a vintage LA-2A or a current Summit DCL-200—just don't expect it to replace either one! It's an excellent choice for drum overheads or across the entire mix. Between this and the Focusrite d3, I cover pretty much all I need to do. RCOMP includes Waves' ARC® (Automatic Release Control) technologies, and all processing is 56-bit internal dithered to 24-bit. The only thing I found wanting was the lack of a sidechain, but you can't have it all. This plug-in is so good, it's silly.

RENAISSANCE EQ

As with its companion plug-ins, the Renaissance EQ (REQ) adds a warmer resonance to a source signal. Partly modeled on the action of the Pultec EQs, the REQ is a 6-band EQ with frequency, bandwidth, gain control and an EQ window with draggable elements as found in Q10. Bands 1 and 6 are selectable between cut and bell, low- and highpass filters, and resonant shelves; and

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bands 2 through 5 are bell filters and resonant shelves. The REQ's emulation of analog filter action is very impressive. All internal processing is 48-bit, and you can select between 2, 4 and 6-band versions.

MONDOMOD

This modulation plug-in combines rotation, amplitude modulation and frequency modulation algorithms in one environment. Respectively, they provide autopanning, tremolo and vibrato treatments that can be combined to create very unusual effects. MondoMod depends on selectable LFO waveforms to modulate volume, frequency and rotation. A tempo feature adjusts the frequency of the LFO, and you can set the bpm to match the tempo of a song. Worth digging deep into for swirling effects and 3-D ambiences.

METAFLANGER

MetaFlanger provides great flanging, phaser and chorus treatments. Various cool settings are provided, including homage to classic Mutron Biphase and MXR units, as well as Ampex 440 tape-flanging emulation, which is excellent. Filter types toggle between lowpass and highpass with a selectable corner frequency. Base delay times are selectable between 0.1 and 50 ms, and a Tape button provides added flanging emphasis. You can set the LFO rate between 0 and 20 Hz, though waveforms are only selectable between triangle and sine. A useful Stop button will freeze the modulator for more precise processing work. You can also set the stereo spread between mono (0°) and full stereo (180°). Excellent for guitar and drums fills.

ENIGMA

Like the MetaFlanger, Enigma includes phasing and flanging effects. But it's a much more complex animal with interdependent reverb, feedback and filtering environments. It's the least predictable of all the plug-ins, hence the name. The plug-in has two main sections: an upper "notch" control window with up to 12 frequency sweeps, and a lower Feedback section that acts as an echo/reflection generator. A depth slider controls the depth of the notches, and there's a Phase button to reverse the polarity of the notches. There are five LFO shapes to choose from, as well as a rate/bmp parameter that was highly useful for mutating drum loops. Best for deconstructive remixing chores, Enigma merits hours of study.

DOPPLER

Although there may be limited applications for Doppler effects, this plug-in does much more. Doppler's main window contains a curved line with a start point, end point, a center handle to adjust the curve and a red dot at the window's bottom denoting the listener's position. You can adjust the time for the Doppler effect to fly by, and tweak reverb, panning, pitch shift and air-damping parameters. Though Doppler excels at realism, I used it to morph a conga loop into an alien tabla/udu drum performance. Dopper is a hidden gem in the list.

ULTRAPITCH

Pretty cool, but at times a challenge to control. UltraPitch is a formant-correcting, 6-voice pitch shifter and harmonizer. UltraPitch will detect a pitch and shift the note, leaving the harmonics intact. Or, you can mess with the harmonics while leaving the pitch untouched. Creating complex three-part vocal harmonies is possible, but it's no substitute for hired talent. That said, UltraPitch provides great gender-bending effects, and it does a decent job of emulating stacked vocals. I used it for morphing guitar and brass passages, though a slight delay (due to a look-ahead feature) limits real-time applications. Cool features in-

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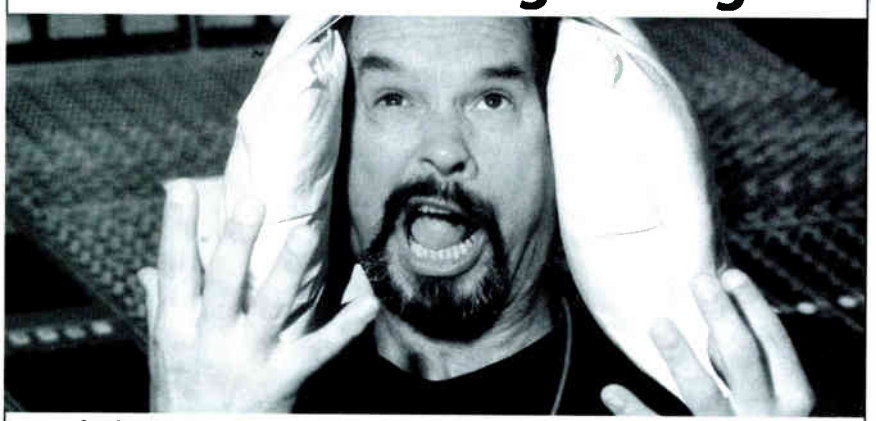

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clude an Animation control to approximate what several singers would sound like, as a well as a keyboard graphic interface for setting intervals.

SUPERTAP

This plug-in provides immediate gratification, with no real learning curve—just insert and play. There's a 2-tap and a 6-tap version (available only with Gold Version), each tap with its own gain, panning (or rotation), EQ and up to six seconds of delay time. A panning graph provides color-coded representation of each tap, which you can grab and move in the window. There's a great Tap button to set tempo, and SuperTap performs tempo averaging for accuracy. A Mode button can be set to Tempo or Pattern; in the latter, SuperTap will learn and reproduce the rhythm you tap in—great for building complex looping parts. There are good feedback features, and feedback loops can be routed through SuperTap's Rotation feature to move delays in the stereo field—a looper's delight.

PAZ PSYCHOACOUSTIC ANALYZER

Waves has provided an excellent diagnostic tool in PAZ, a psychoacoustic analyzer comprising three sections you can call up independently. A Frequency window (RTA) shows real-time frequency display across 52 bands based on how the ear typically responds. There is a Stereo Position Display (SPD) that shows distribution loudness across the stereo field to help sort out phasing issues, and there are peak and level meters. One good feature is that RTA can be set to Peak mode or RMS mode, where the energy read-out is averaged over time.

PACKING UP YOUR TOOLS

Waves 3.2 is a versatile toolbox that verges on providing an embarrassing amount of riches. Hands down, the strongest plug-ins are the Renaissance Collection, plus C4, L1, SuperTap, MaxxBass and Doppler. And for pure weirdness, Enigma is your ticket. Most of these plug-ins will be useful for years to come, so the bundle is a lasting investment. The only thing that was missing was a spring reverb plug-in, where slapping the side of your CPU creates that familiar, hollow "sproing" effect. Maybe in V. 4.0.

Waves Inc., 306 West Depot Ave., Suite 100, Knoxville, TN 37917; 865/546-6115, fax 865/546-8445; www.waves.com. ■

Alex Artaud is a musician and engineer living in Oakland, Calif.

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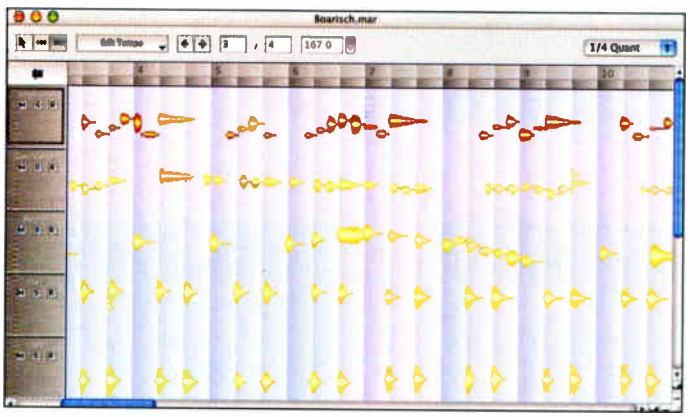
CELEMONY MELODYNE 1.0

TIME- AND PITCH-MANIPULATION SOFTWARE

Melodyne is a stand-alone program that analyzes monophonic audio—such as vocals or solo string and brass instruments—and allows changes in both pitch and time, resulting in melodic control that was previously possible only with MIDI instruments. Melodyne uses a new technology called Local Sound Synthesis, where time and pitch become completely independent of each other. So, pitch changes do not affect duration and, conversely, time changes do not affect pitch. Melodyne also automatically corrects the formant position to maintain the original sound's qualities: Men sound like men singing, and women still sound like women, even when big pitch or time shifts are implemented. Great sound quality and real-time performance are the notable features of Melodyne.



The Arrangement window displays melodies (audio files) in color-coded organization.

WHAT DOES IT DO?

Melodyne performs a detection process on digital audio files and generates a Melodyne Definition Data file that must reside along with the audio file in the same folder. This file, with an .mdd extension, fully describes the individual pitches, including unique vibrato of all notes; timing, including note lengths and internal tempos; pitch transition times, or the time it takes to go from note to note; individual note amplitudes (volume); and formant information (resonant volume). Any of these parameters and their interaction are completely editable in a highly intuitive visual interface, with real-time changes possible on audio streams of up to 24 separate tracks playing at a time.

No "rendering" is necessary for the user to hear results; changes are totally elastic until they are saved to the .mdd file. The original audio files are never altered, and, once all changes are made, a version can be saved as a new audio file and placed back in your session, whether you are working in Pro Tools, another DAW system or with a good ol' analog tape recording. There are several output options, including a stereo mix of melodies (as in an ensemble) or separate melody tracks (say, for separate lead vocal and harmony tracks). You can also output standard MIDI files that play the detected melody in exact sync with the audio. With this first released version, the exported MIDI file contains no dynamic pitch change information, such as any vibrato or glissando/portamento a singer may use; the MIDI file only contains the note number and note on/off. Melodyne accomplishes this digitally divine handiwork of interpreting your ideas in a natural, musically intelligent way, and without altering the basic nature of the sound file.

INSTALL AND GO

Installation went fine from the single CD-ROM on our G4/400 Mac with 704 MB of RAM running OS 9.1. Minimum system requirements are: Power Mac G4 or G3 (blue and white), PowerBook G4, PowerBook G3 (Wallstreet, Pismo), iMac, iBook and 128MB RAM. MAC OS 9.0.4 or later (including MAC OS X) is required. If you don't have CardbonLib 1.3.1, then you'll have to download it from Apple's server or from Celemony's Website: While online, you'll get an authorization (Celemony) that takes about three minutes. The manual takes you through many tutorial examples to learn this deep program using the supplied undetected and detected melodies. Melodyne runs under either the Mac's Sound Manager or any ASIO driver. ASIO allows more audio channels, lower latency and other sample rates besides 44.1 kHz. For this review, I mostly used Sound Manager, which has just two outputs. Melodyne has a basic, onboard mixer page for mixing down to stereo or assigning multiple tracks to separate outputs when saving processed sound files.

DETECTION AND ANALYSIS

Melodyne works with .AIFF, SD2, .WAV and .SND sound file formats. Sounds must be totally monophonic-only single notes at a time, dry without effects. I was unable to use interlaced stereo files, but you can import separate left and right channel files. Detection of a new sound file happens as soon as you import it into Melodyne's Arrangement window and double-click on it. There is a Melody Definition window for predefining what the program expects to "see" and for correcting detection mistakes. Even though the program rarely misdetected, this feature is important for melodies for which you already have tempo and scale information

BY BARRY RUDOLPH

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Behind the Scenes

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This year at the National Association of Broadcasters (NAB) Conference and Trade Show, Waskul Entertainment, a leading content creation company based in Southern California, created a high-definition electronic cinema that received rave reviews. The theater was packed with standing room only during all performances. When it came to choosing a storage solution for the cinema, Waskul Entertainment relied on the StorCase InfoStation™, a rugged and versatile 9-bay back-plane RAID-ready enclosure.

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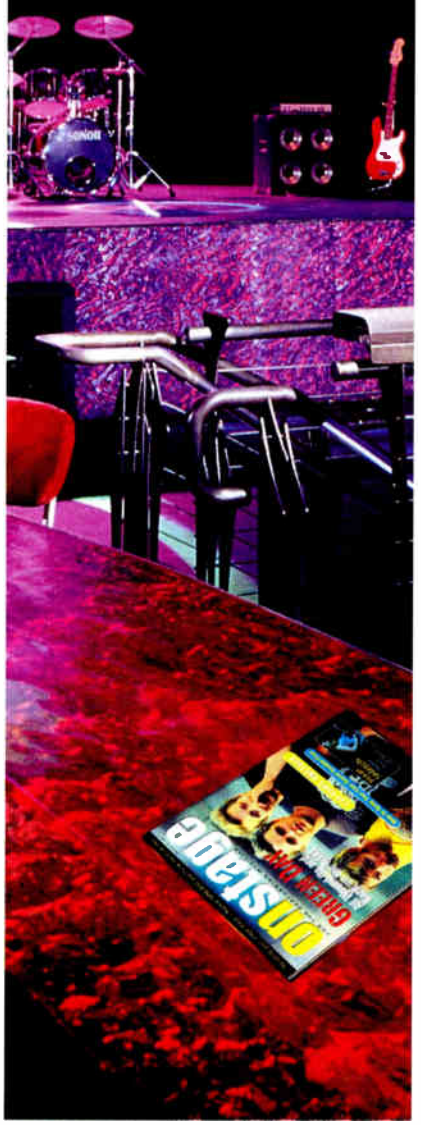


and want to make sure Melodyne gets it right. You also use this window when importing a reference backing track that you have no intention of processing. If you know nothing about the new melody, then the program will detect melody tempo and pitch, and it will attempt to detect the scale used within the melody.

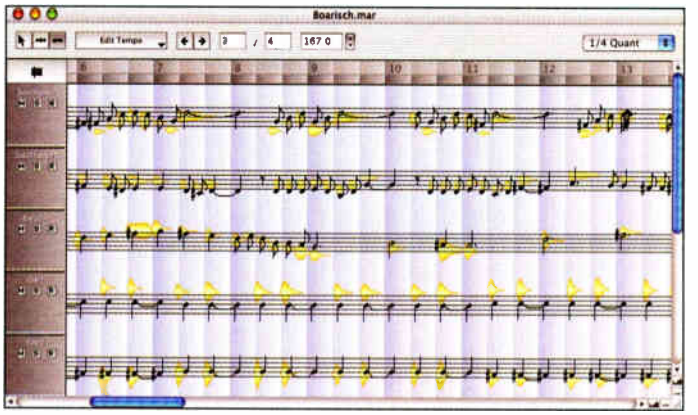
ARRANGEMENT WINDOW

The Arrangement window is the main window where all melodies (audio files) are shown in color-coded organization. There are transport controls with a Looping function, individual track record arming and naming, and Solo and Mute buttons just as there are with any other DAW system. You can also get an instant, notated score view of the melody if you prefer to work that way. At the top of the screen is a grid timeline indicating bars and beats; however, in this version, only quarter-notes are shown, without subdivisions or ticks for precise locating. Time-stamp information of audio files (such as Pro Tools or Logic Audio files) is not recognized in the program, so exact synchronization depends upon all audio files starting at the same time when they are imported into Melodyne. I am told that time-stamping will be supported in later versions. For now, there is a Bar Quant feature that will "snap" any new file to the nearest bar (as selected in the Quantizing menu) that facilitates lining up audio files.

There are icon/tool sets that are contextually based on the setting of an Action pull-down menu and what operation you want to perform. There are also digital readouts for detected tempo, time signature and quantize. Depending on the Action submenu, you can zoom, play individual notes, "scrub" or solo. The Arrangement window is where you can record or import sound files; rearrange by copying and pasting single notes or whole melodies; define, adapt or change the tempo of the entire melody; and slip an entire melody in time. To edit individual notes, you must double-click on the melody and use the Editor window.

EDITOR WINDOW

The Editor is for already-detected melodies, and if you double-click on an undetected melody, it will undergo detection and open. This detection process is amazing! Instead of displaying a straight waveform from left to right across the screen, Melodyne passes the entire waveform into "chunks" vertically up and down, corresponding to the individual notes detected, in-line with a piano keyboard on the screen's left side. Because each distinct note is a separate event, the internal vibrato of the note, as well as the transition from note to note, is graphically represented along with each note's amplitude and timing. This is where the fun starts!



A notated Score View is an alternative to the Arrangement window.

Depending on which Action submenu and which tool you select, the melody is marked up with color-coded glyphs that show which melody parameters are available for adjustment by point, click and drag. Without naming all of the different tools, you can create new melodies with copy and paste or replace single notes; freely move notes in time; alter time phrasing; or quantize to a selected grid depth. I found this excellent for lining up a poor double-tracked vocal to a well-sung lead vocal, and for stretching or shortening certain notes for artistic reasons (slowing down a note where it literally stands still and have it sound like the singer held it without *ever* running out of breath!). You can correct intonation of individual note events or slice note events into smaller bits for microscopic fixes (like having Auto-Tune built-in).

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There is also the ability to quantize or align a melody to a defined scale. Melodyne will detect the scale, but you can change it from melody to melody if you wish. Melodyne, when pitch correcting, will not alter vibratos, and you can separately manipulate vibrato intensities all the way to flattened-out for that "CherBot" sound. I guarantee that changing the speed of pitch transition from note to note will become a favorite thing (just like Auto-Tuning) with young singers!

You can change formant position of individual notes or entire tracks. This is gender-bender stuff, but I found it easy to change a trumpet to a trombone or a tenor male singer to a high baritone. I also could mute or alter the amplitude of any note and then modify the attack portion of a note. This is more useful for percussion processing, but has definite potential for certain vocal sounds.

PLAYBACK ALGORITHM

Melodyne has specific playback algorithms especially tailored to different sound sources. The different algorithms use varying amounts of available processing power, depending on the complexity of the sounds. This becomes important, especially with many tracks playing and minimal computer resources. There are five different algorithms placed here according to required computational power: Sampler, Time, Pitch, Formant and Voice. The least resource-hogging are Sampler and Time, which are used for undetected melodies. Sampler is just like a simple sampler playing backing tracks, and Time is optimized for percussive material in which each attack is carefully preserved. Pitch applies Local Sound Synthesis to the entire sound file and is suited for vocals and instruments with soft transitions between notes. Formant is when only the formants are changed, and Voice is for changing both pitch and formant in correlation. To conserve computer resources, Melodyne automatically determines which playback algorithm to use, depending on what parameters you have manipulated. Playback algorithm is applied on a track-by-track basis, so you should not put, for example, a percussive sound on the same track as a vocal.

USING MELODYNE

Even with this early Version 1.0, I am enthusiastic about Melodyne because of its huge potential and immediate usefulness. But Celemony's seemingly Faustian bargain comes with a few caveats that are promised to be fixed in Version 1.1. First of all, there is no undo. There is a Reset button that resets the entire file back to the original detected state if you are in the Arrangement screen. A simple Command-Z to undo the last operation, like in most Mac programs, would be a big help! Furthermore, if you delete a note from a melody, there is no way to get it back other than to re-import the file...pretty lame. By the time you read this, Multiple Undo will be available.

I found four major bugs. 1) The Apple Menu icon dims while Melodyne is present, so you have to click on the desktop to get the Apple Menu back. 2) Melodyne has trouble knowing the difference between closely similar file names when importing. 3) The Playback algorithm function disappears mysteriously from time to time but returns on reboot. 4) While using either an ASIO driver or Sound Manager, I had a 10dB lower level when exporting processed files back to Pro Tools. Carsten Gehle and Joerg Huettner at Celemony explained that later versions will fix all these shortcomings. Also promised for future versions, Melodyne will synchronize with other programs and redirect its output into their mixers: once connected, any changes of the tempo of your sequencer or hard disk recorder will immediately be reflected by your audio. Also, specific versions of Melodyne will be available for both VST2 and MAS-based front-end applications (Logic/Cubase/Digital Performer), as well as Pro Tools once the legalities with Digidesign are resolved. Other plans for V. 1.1: configurable keystroke command shortcuts; revert to save; stereo interlace file support; and more intensive MIDI performance.

I am thrilled with how well Melodyne works and sounds, even though I did experience a few freezes, crashes and Type 2 errors along the way. I look forward to future updates and revisions when Melodyne becomes a world-class, fully professional piece of software.

Melodyne sells for $995 MSRP from Celemony Software GmbH, Valley Strasse 25, Munich, Germany 81371. In this country, contact the GSF Agency at 118½ Pacific Street, Santa Monica, CA 90405; 310/452-6216; fax 310/452-3886; gsf.agency@gte.net. Or visit www.celemony.com, where you can download MP3 files of processing examples. Thanks go to producer David Gamson for the use of his studio/computers and helping me with my evaluation. ■

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World Radio History

HAFLER M5

COMPACT NEAR-FIELD REFERENCE MONITORS

Most studio engineers are familiar with Hafler amplifiers, known for their low noise, rugged construction and affordability. Three years ago, Hafler expanded into speaker construction. The TRM8 came first, followed by the TRM6 and the TRM10s (an active subwoofer option designed to complement either the TRM8 or the TRM6). Hafler's latest release is the M5—essentially an unpowered version of the active TRM6. The M5 measures a compact 12x7x7 inches (HxWxD), although premature dismissal of these gems due to their size would be unwise: Not only do these speakers deliver in terms of volume, but they are also impressive in both frequency response and imaging.

The M5s are 6-ohm, two-way, near-field reference monitors. They feel heavier than they look, but each weighs only 12 pounds. The 4.2-pound magnet is well-shielded and will not distort nearby computer or video screens. The 5.25-inch polypropylene mid-bass driver produces lower lows than expected, while the 1-inch silk dome tweeter disperses high frequencies evenly with the aid of what the manual calls an "exponential horn waveguide," a curved recession in the cabinet. Hafler uses this waveguide to "control or flatten the high-frequency beamwidth of the dome tweeter. Exponential waveguide control not only stabilizes the near-field 'phantom' center image, it also adds depth to this image." For whatever reason, these speakers produce ample detail for a near-field design, but more on that later.

Cosmetically, the M5 is a refreshing alternative to the flamboyant looks we have seen recently in the near-field market. There are no lights or bright colors, only a small Hafler logo on the upper-left corner of each speaker face. Flanked by the high-frequency attenuation switch, the tweeter is centered over the woofer, which is above the thin vent slot at the bottom of the front baffle. The rear panel has five-way, gold binding post inputs.

The manual illustrates on-axis, vertical placement as optimum (tweeters above woofers, cabinets angled in). Also included are graphs for frequency response and horizontal polar response, impedance and impulse graphs, and a cumulative spectral decay plot. Specs for the M5 boast a 70 to 21k Hz frequency response (±3 dB), a 110dB peak output at 1 meter (per pair), and an input sensitivity greater than 89 dB (with 2.83 VRMS @ 1 m). The crossover is a fourth-order Linkwitz-Riley passive filter set at 3.2 kHz.

With the exception of an L-pad switch that attenuates the tweeter by 3 dB, the M5 has no contouring controls. Rather than subscribe to every market demand for various attenuation circuits (DIP switches or small knobs for adjusting the level of each component), Hafler has designed an extremely efficient speaker, free of extra circuits that may induce noise. There is also some comfort in knowing that the M5s should sound consistent at any studio—with no question as to their frequency response contour—and the speaker will be a known element, unlike monitors that sport variable circuits.

IN SESSION

I tested the M5s using a Hafler Transnova™ P3000 amplifier, which offers plenty of clean, uncolored power. Each M5 is rated for 20 to 200 watts, and during more than a month of rigorous testing, the speakers never sounded distorted or broken up. This is partially due to the tweeters' optical protection circuit, which prevents potential damage by sending excessive energy to a small light bulb inside the cabinet.

Before trying some overdubs and mixes on the M5s, I played back a half-dozen DATs of projects that I've worked on—mixes I am intimately familiar with. Right off the bat, I liked the overall sound of the M5s. The high end is not overemphasized. Upper frequencies are bright, but not strident. The bass is loud and clear, with a nice, round thump.

Speakers of this size often try to compensate for their lack of bass with a cabinet and port that are tuned to a low frequency, such as 80 Hz, and the result is usually ugly, with a peak that can be unrealistic and painful. Hafler tuned the M5 to 70 Hz and succeeded in avoiding the aforementioned pitfalls. Low frequencies sound good and reach a little further down than one would expect.

In terms of imaging, these speakers provided clarity to certain upper-midrange elements in my old mixes. The stereo picture seemed different—yet in a good way, with more depth to the image and thus more space for each sound in the mix. I also like to check side-to-side consistency of the stereo soundstage. This is especially important in a crowded control room where the producer and bandmembers all listen from different positions, with each hearing a slightly different mix. In such side-to-side frequency response, the M5 excels. When I moved my head from left to right, the imaging remained consistent.

With any speakers, placement of

BY DAVID OGILVY

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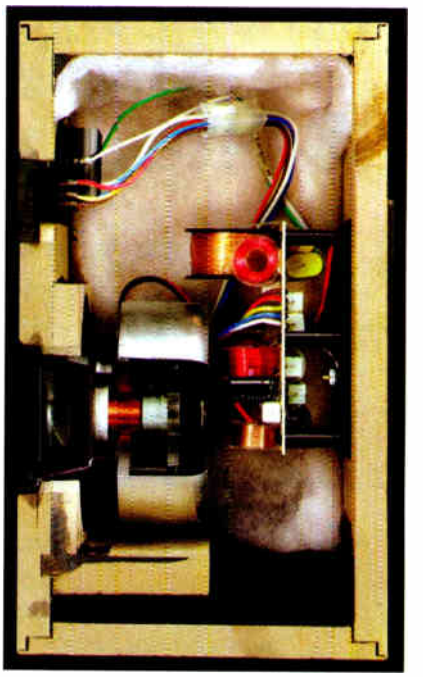
the pair is important. The speakers should appear symmetrical in the room, with similar reflection paths that are uninhibited by close objects. The M5s sounded best when not placed near walls or boxed in by adjacent gear or cabinets. Low frequencies tend to build up in corners, and high frequencies are accentuated by hard surfaces, such as glass or concrete. The M5's high-frequency attenuation switch was probably included for those rare occasions when one has to mix in an overly bright room. I am exceptionally sensitive to high frequencies, yet I never needed to use the -3dB switch, even during long days of mixing.

I found the M5s effective on a variety of studio tasks, including mixing, day-long edit sessions, vocal overdubs, direct and miked instrument overdubs and just plain old listening sessions. Thankfully, they were directional enough for feedback-free control room recordings.

For bass recording/monitoring and hip hop work, adding the optional subwoofer would be a good idea, although you might prefer to just use these as replacements for the now-discontinued Yamaha NS-10Ms. Engineers have a love/hate relationship with this particular white-coned monitor, because the benefit of the NS-10Ms lies in their slightly honky, real-world sound. You have to work harder to make a mix sound good on Yamaha NS-10Ms, but then your mix is more likely to translate effectively to the average stereo. The home listener stands a better chance of enjoying the song if it is mixed on this type of speaker. The M5s and the NS-10Ms share this middle ground.



Cross section of cabinet reveals heavy-gauge wiring and a beefy crossover.

Not to say that the M5s are average, but there is something to be said for their similarity to the NS-10Ms, and the M5s also translate well to the home listener. The Haflers share the same tone as the NS-10Ms, but with more presence and depth. I can hear high frequencies more accurately and "see" the placement of the sounds near and far, more so than with the ubiquitous Yamahas.

Hafler has improved upon the NS-10Ms by building a speaker that is not overly pretty-sounding, and can stand large levels of amplification. Not only can the M5s be driven much harder than the NS-10Ms, but the sound is more pleasant. Rather than finding a pair of NS-10Ms and hoping for the privilege to plow through replacement parts, I would pick up a pair of M5s. Hey, at an MSRP of $124.50 each, why not five?

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David Ogilvy is a producer/engineer living in Northern California.

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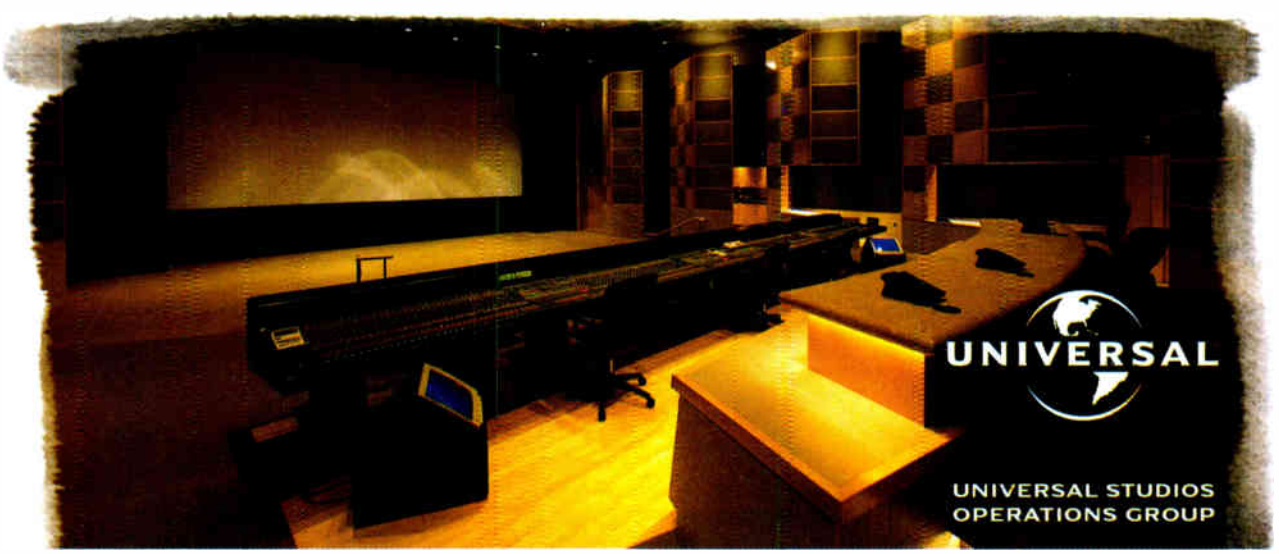

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World Radio History

ELECTRIX REPEATER

LOOP-BASED RECORDER OS VERSION 1.1

It's hard *not* to smile when using the Electrix Repeater. This loop-based recording system is finally available with a new Version 1.1 operating system. After just weeks of using Repeater, it has become my favorite new toy—or should I say musical instrument. It's definitely a musical instrument, because it's a real-time, live performance-oriented tool for performing DJs, dance music producers, or anyone interested in immediate artistic control over musical loops and phrases.

As part of a pop music pastiche, looping is a fun production style, and this stand-alone, loop-based, music-making system easily integrates into existing DJ rigs and MIDI music systems—whether centered around turntables and CD players or computers and synths.

I like Repeater because it operates simply and so differently from menu-driven units or computer-based loop programs such as Sonic Foundry's Acid or even Ableton's more advanced Live 1.0. Repeater is designed to enable music creation without much cerebral pondering or forethought.

DOESN'T LOOK LIKE A RECORDER...

Like previous Electrix products, Repeater ($749 retail) is a two-rack-space unit that will also sit angled up at you on any worksurface. The front panel has the familiar "tape deck" transport with Stop, Play, Record and Reverse (instant backward playback) buttons. A large LED shows what's going on at all times, and there are rotary Loop and Tempo controllers for selecting loops and editing parameters. The rear panel has ¼-inch -10dBv stereo jacks for line inputs and RCAs for CD players and turntables. There is a front instrument jack for plugging in guitars or synths and a headphone monitor out. Stereo outputs include L/R analog line mix outs and a 16-bit/44.1kHz S/PDIF coax digital out. There are no digital audio inputs, but analog stereo ins/outs are provided for inserting effects into any track. Three MIDI jacks with a rotary MIDI channel selector handles the extensive MIDI implementation. Lastly, there is a footswitch jack that works with a DigiTech FS-300 3-button pedal for undo, play/stop and record functions.

Digital audio is directly recorded/played to/from Compact Flash Cards, which come in sizes of up to 512 MB and supplement the unit's internal 8 megs (about 85 seconds total record time) of volatile RAM. Maximum contiguous loop time is eight minutes, and total possible record time is 51 minutes. My review unit included a 16MB CFC with several loops on it. CFCs are the only way to store audio, because after power-down, anything in internal RAM goes to digital heaven. A power-saving Sleep mode retains all data, as long as the unit is plugged in. Sound files are recorded and processed 24-bit/44.1 kHz and saved on the CFCs as non-compressed, 16-bit/44.1kHz .WAV files along with a Loop Data File (.ldf extension) and a Track Data File (.tdf). Buy a $30 CFC reader and you can save and share files back and forth with any computer.

DEALING WITH LOOPS

One thing that makes Repeater so much fun is that the often tedious and analytical trench work involved with making one loop play in sync (and pitch!) with another is done automatically—mostly in the background. You can change tempo anywhere from 1 bpm up to 150% of the original tempo without pitch change. Any changes you make are immediately saved every time without bothering to ask you. You can return to the original or native tempo of a loop with a button push. The Undo/Redo button, with one level of undo, or the transport's Stop button usually aborted most blunders I made while learning Repeater.

The pitch change range (without changing tempo) is two octaves down to one octave up. Loop Point Assist™ is an automatic loop-trimming feature that precisely connects the head of the loop to its own tail. You can pick other looping points and trim loops via the extensive editing functions. Trimming saves memory space after the unused bits are dumped. Once loop points are determined, you can use the Multiply function to copy a loop as many times as you need to complete a song section. For example, record a 1-bar drum loop and multiply it four times for a 4-bar drum loop. This saves memory space because you are not recording any new information, just adding more looping points—the drum loop only takes up one bar's worth of memory. You now have a 4-bar "track." I found this important because subsequent overdubs can only last as long as the initial loop's length (and available memory). Once the end of the loop is reached, Repeater always repeats it along with any overdubbed parts.

BY BARRY RUDOLPH

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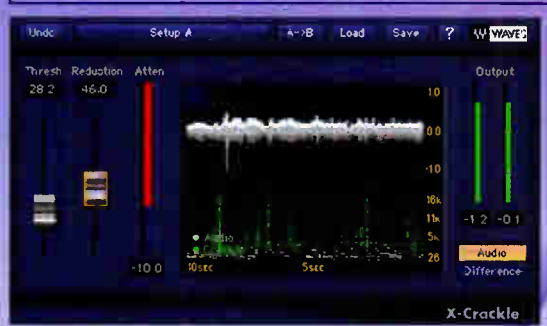

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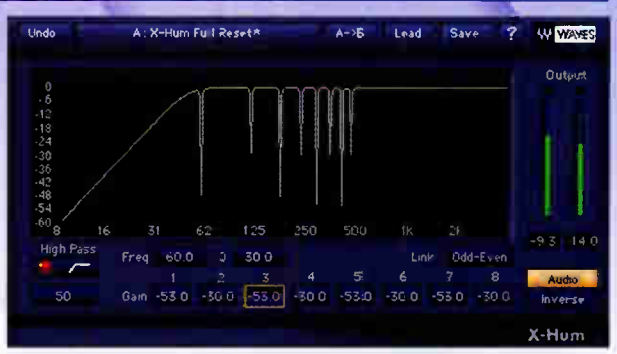

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LOOPING WITH A 4-TRACK RECORDER

Each Repeater loop is actually made up of a 4-track recording. On the front panel, there is a 4-channel stereo mixer with faders, LED level indicators, and separate track selection buttons for record, pan, slip (changing the time relationship of one track to another), pitch and effect sends. Recording is like any other 4-track tape recorder, with the ability to use two tracks together for stereo sounds.

Another similarity to 4-track recording is the resampling or bouncing feature. Users simply build a mix of tracks with panning, effect inserts, etc. (an analog process), and designate which tracks they'd like to bounce it to. Highly useful was the (digital) Copy function where I copied each successive iteration of my loop productions to new memory space so I could go back and get separate bits for reuse. Copy also is great when you want to experiment and still be able to get back your whole mix. The Erase/Undo button will erase an entire loop or any designated track of a loop. You can revert to all original panning, pitch and slip values of individual tracks by holding down the respective Pan, Pitch and Slip buttons.

SYNC

There are three sync modes: User, MIDI and Beat Detect. User mode takes the speed from the Tempo knob or Tap Tempo. MIDI clocking syncs Repeater to an external sequencer (another no-brainer), and Beat Detection offers a way to have already-recorded loops in Repeater "follow" a live drummer or sync to music from any CD or turntable. Beat Detection also identifies the tempo of your incoming audio and synchronizes the internal clock so that loop points are quantized. Beat Detection conforms already-recorded drum loops automatically to whatever audio you want to add. This makes Repeater a remixer's dream.

I used Tap Tempo to help Repeater figure out tempos of audio that lack hard transients, such as loops without drums or percussion. One very important feature is the ability to change between different loops in memory with MIDI. You could have complete songs in Repeater—verses, chorus, bridges, solos, etc.—and toggle between them, and build song compositions on-the-fly. DJs can do this without MIDI right on the front panel by putting a loop in play and then selecting the next loop in memory. Once the first loop finishes, the next loop seamlessly hooks up to it. Repeater can store up to 999 different loops on CFC or 16 loops internally.

PLAYING WITH REPEATER

Recording is immediate and easy: Select an open memory location on the display, arm a track and push Record. I wished there was more internal memory for temporary storage, so, instead, I just bought another CFC! The sound quality is great—better than I am used to with loopers costing more. Good quality becomes very important when bouncing down tracks or stretching tempos and pitch a lot. I like the "grungy" sound you pick up when changing tempos. Extreme pitch changes start to sound otherworldly, providing some great elements for song productions. The Slip function works well for sliding elements around; because it's real time, there is no waiting for a computer to "render it" every time you make a change.

You can overdub where additional parts are added or mixed in with audio already recorded on a track. This is just like using a JamMan™, an Echoplex or (like in the old days) sound-on-sound-equipped tape decks. Repeater defaults to mixing in 90% of the original, with 10% of the overdub sound. Called Feedback Level, you can change this to any amount you'd like for any overdub. Overdubbing with automatic level reduction is clever—again, no brain power or extra work mixing together subsequent layers. If you use Feedback values lower than about 60%, then each time you overdub, the resultant track starts to get psychedelic after only about 10 overdubs.

Repeater is a new kind of music gear—part recording production tool and part performance instrument. It was conceptually simple and intuitive, but I had to develop a few "chops" and learn its operational quirks and secrets, such as what I could get away with and how fast—or slow—I could play and manipulate loops. All great fun with serious power and control over loops or chunks of audio. Production-wise, it's not just for dance and trance: Repeater would also be equally at home in jingle houses or radio stations.

Electrix/IVL Technologies, 6710 Bertram Place, Victoria, B.C., Canada V8M 1Z6; 250/544-4091; www.electrixpro.com. ■

Barry Rudolph is an L.A.-based recording engineer. Visit his Website at www.barryrudolph.com.

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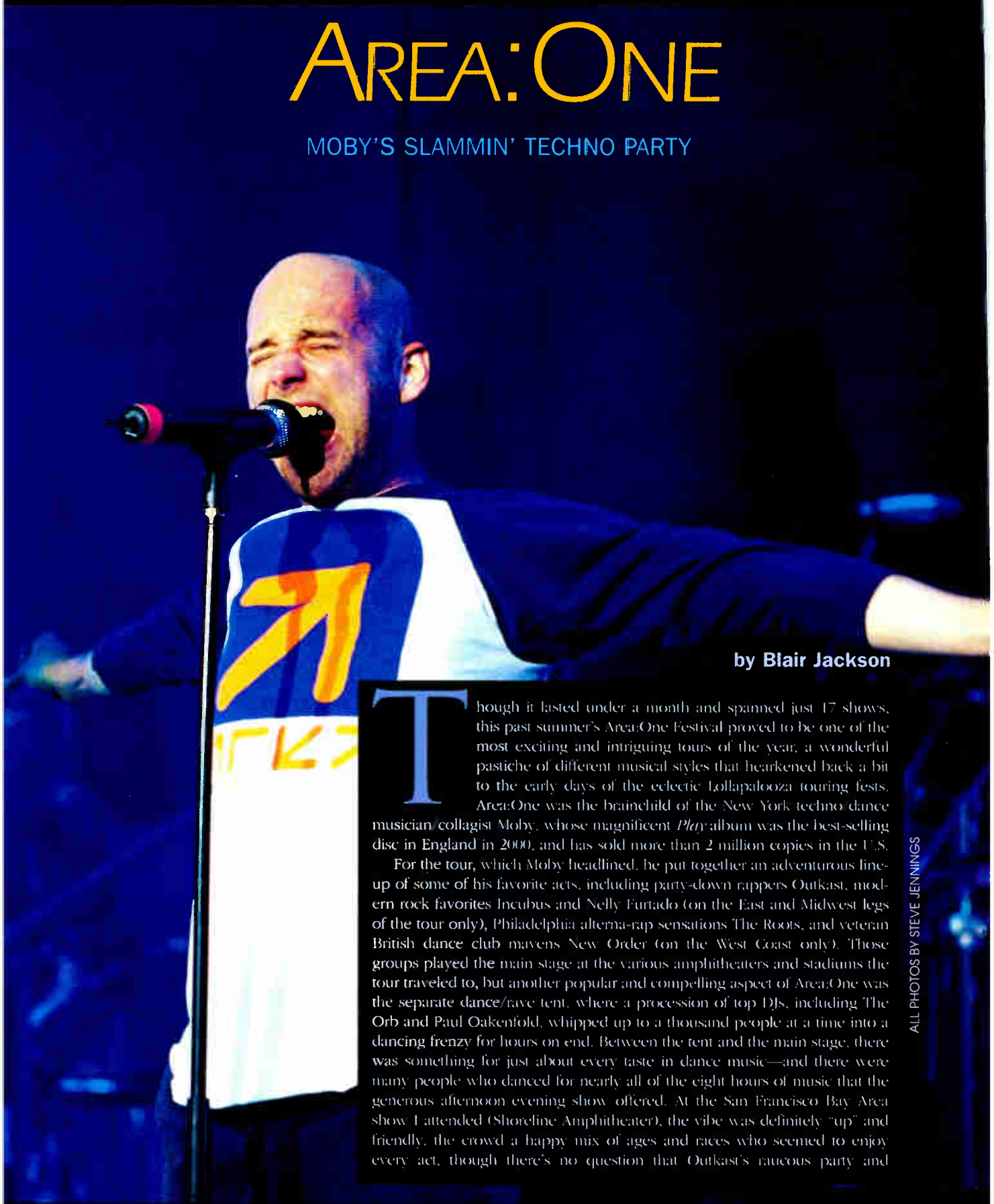
AREA:ONE

MOBY'S SLAMMIN' TECHNO PARTY



ALL PHOTOS BY STEVE JENNINGS

by Blair Jackson

Though it lasted under a month and spanned just 17 shows, this past summer's Area:One Festival proved to be one of the most exciting and intriguing tours of the year, a wonderful pastiche of different musical styles that hearkened back a bit to the early days of the eclectic Lollapalooza touring fests. Area:One was the brainchild of the New York techno/dance musician/collagist Moby, whose magnificent *Play* album was the best-selling disc in England in 2000, and has sold more than 2 million copies in the U.S.

For the tour, which Moby headlined, he put together an adventurous line-up of some of his favorite acts, including party-down rappers Outkast, modern rock favorites Incubus and Nelly Furtado (on the East and Midwest legs of the tour only), Philadelphia alterna-rap sensations The Roots, and veteran British dance club mavens New Order (on the West Coast only). Those groups played the main stage at the various amphitheaters and stadiums the tour traveled to, but another popular and compelling aspect of Area:One was the separate dance/rave tent, where a procession of top DJs, including The Orb and Paul Oakenfold, whipped up to a thousand people at a time into a dancing frenzy for hours on end. Between the tent and the main stage, there was something for just about every taste in dance music—and there were many people who danced for nearly all of the eight hours of music that the generous afternoon/evening show offered. At the San Francisco Bay Area show I attended (Shoreline Amphitheater), the vibe was definitely "up" and friendly, the crowd a happy mix of ages and races who seemed to enjoy every act, though there's no question that Outkast's raucous party and

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Moby's mixture of hot dance grooves and soothing ambient textures were crowd favorites.

From a sound reinforcement perspective, the demands of this sort of music are a little different than those of conventional arena rock bands, because there is so much emphasis on the bottom end in dance music. Also, most of the groups blend live instrumentation with taped elements, MIDI parts and turntablists, who did everything from traditional scratching to firing sequenced rhythm tracks. It was often difficult to know who was playing and singing what, and what was live and what was on tape. In the end, it didn't seem to matter much, because that thump in the chest from the bass drum was real, the grooves got everybody moving and, like the crowd, the musicians worked up a decent sweat. And hey, all those taped backing vocals sounded good.

Clair Brothers handled the audio aspects of the tour, with the company's Steve McCale responsible for designing the touring system and coordinating the sound elements. "This was one of the most difficult tours I've done in terms of physical work," says McCale, whose long resume includes eight years touring as Steve Miller's live engineer, managing Clair Brothers' Nashville office and a zillion gigs in between. "We loaded in at 6 a.m., and the show was done loading out at 2 a.m. We started out with four shows in a row, so when you do the math—that was six bands on one stage plus the other stage... eight-hour shows...it worked everyone to a frazzle. There weren't enough of us to really take breaks, so we were working a 20-hour day. It was pretty grueling. But then, it's always some different degree of grueling no matter what tour you're on," he adds with a chuckle.

The sound system for Area:One was based around Clair's proprietary loudspeakers and the Showconsole—the extraordinary live sound desk developed by Harrison and Clair's former rival Showco (which Clair absorbed in a surprise move last year). According to McCale, there are only 10 Showconsoles in existence, "and there aren't a huge number of people qualified to take those consoles out, so that's how I got involved." He was trained extensively on the console by Howard Page at Clair's Lititz, Pa., office, and then McCale, in turn, gave a crash course to each of the mixers on the tour.

"Every band had their own mixer," he notes, "and what I did was I set the console up with a blank template—all the effects sends and returns and the subdrives and everything were the same for everybody—and I entered in each act's input list lined up on the console as it needed to be. All of this work was done before I saw the individual mix engineers. When those guys came up, they didn't have any computer work to do whatsoever. The only thing they had to realize was, 'I have to push the Select button over the input and then the center section becomes that input'; that was the most computer they had to worry about. Other than that, it worked like a 4k [Yamaha PM4000]. There are 16 remote faders that can be programmed like VCAs, right in the middle of the console. We bring everything down individually for each act, however they wanted to see it. All their faders were right there, all the metering is right there, everything's got a gate and a limiter on it, and all they had to do was get a little comfortable with pushing Select and adjusting it. They all fell right into it; nobody had a problem—even the ones who were a little skeptical or scared of it at first. After one show, they were totally happy.

"The nice thing about it is that, every night after it was done, I was able to save that version of their show, so as we went through the tour, if, for example, somebody didn't like the show they did last night, they didn't have to use that. They could start with whatever show they wanted to start with. A lot of times, if we were going to a big outdoor type of venue, they would call up a preset that might go back as far as Jones Beach [N.Y.], if they felt that was the kind of sound they were looking for. If you went into a nasty shed, they might call up something different. By the time they were done, we had 120 or something different stores in the console, and every act could pick whichever one they wanted to start with."

According to Moby's FOH mixer, British engineer John Pennington, who has worked sporadically with Moby in the studio and onstage since his groundbreaking 1995 release *Everything Is Wrong*, "That desk ended up being just about perfect for the requirements of this tour. I would have liked it better if I'd had my own desk apart from the other acts, just purely in terms of setup time and soundcheck time, but it was fine. It had the total recall we needed, which cut down the change-over time, but as the headliner, I like to be able to check my stuff all the way through the day. But it was very easy to learn; we all learned it immediately. We had a couple of minor problems along the way—pan knobs and automated faders breaking down a couple of times, but other than that, I was very happy with it."

For speakers, MacCale says, "The basis of it was a Clair Brothers I-4 24-cabinet rig; 12 I-4s per side. Then I had four Clair Bothers R-4s, which are more traditional, hanging as sidefills, covering the offstage 60 degrees. The I-4 is a 90-degree box, and in most of the sheds, you've got to wrap a little farther around the sides, so that's what the R-4s did. Then, on the ground I had four S-4 subs per side, and we had four P-2s for the front fill, across the front of the stage.

"The whole design in the tent was unique, too. There were as many S-4 sub lows in the tent as we had on the main stage—eight—and there were 24 R-4s, too; it was a huge rig in there. That's what they wanted and it did well; everyone seemed happy with it. It was rave music loud. That tent went over really well; in fact, sometimes it was a little too popular. It got pretty hot and crowded in there at times."

McCale says that the heavy emphasis on bass and percussion in this music posed a special challenge to him as the audio design engineer for the tour. "To be honest, I was a little skeptical that I-4s would be the right [main] speaker for all that low end," he says. "I-4s are well-known for coverage, but when it comes to low-end thump, they can be a little light. But what we did have—which I had only heard at Madonna's rehearsals in L.A.—was the new I-4B cabinet, which is the new low-end extender box for the I-4.

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Area:One was the first tour it had ever been out in the sheds, and it's only the fourth system of I-4Bs to be built so far. I know Madonna has them, U2 has them and one other act, but those are arena tours. The 'Bs' made a huge difference in the amount of low end that was coming off the I-4s—it really changed them and made them much more present. Then, with the S-4 subs, we played around for the first three or four gigs, finding just the right placement and just the right time-aligning techniques with the sub lows, so by the time we got to Shoreline, we had that worked out. I was impressed with the amount of low end that system produced. The places it suffered a bit was when we would take it outdoors and had no baffle behind it; when there was just a P.A. hanging in space—that was not as good. Other than that, it was a matter of EQ'ing and tuning to maximize the amount of low end that was available."

John Pennington maximized the bass drum thump on Moby's set by putting two Shure SM91 mics in the bass drum: "I won't tell you the configuration," he laughs. "That's a trade secret. But it worked quite well." (Moby's band used Shure mics and RF units exclusively; besides the SM91s, their arsenal included SM57s, 58s, 98s and KSM32s.)

By sheer coincidence, Area:One was the last event ever to play in cavernous Mile High Stadium in Denver (the new stadium there is called Invesco Field at Mile High), and even with the event neatly tucked into just one end of the stadium, the altitude affected the sound more than the size of the stadium did. "It's amazing how much the atmospheric conditions affect the sound up there," McCale says. "Also, it's unusual that you have a show where you're rocking the house at four in the afternoon, when the sun is beating down and it's maximum heat. We really felt it on [openers] The Roots and Nelly Furtado on that show, because with the thin atmosphere and the heat, it sounded like the P.A. was broken or something. The sound just wasn't there enough. As the night went on, I ended up changing levels. We had 6dB gain difference in the high end between the afternoon and when the sun set. It was pretty dramatic. By the time Moby or Outkast came on, it sounded like a P.A. again. I added 30 Audio Analysts S-4s to the bottom deck and then flew the I-4s up above it, which added a lot of presence and oomph to the low end that we needed. But the I-4s, which normally cover really well—at Jones Beach, for example, it was amazing coverage, but that was at sea level—didn't work the same a mile up."

Most of the musicians worked with a combination of wedge monitors and Shure in-ear systems. "Moby had five or six channels of in-ear," says McCale. "Most of the acts had one or two or three sets of in-ears running. The Roots was all wedges. It's common now to have a combination." John Pennington adds, "Moby likes it to be very loud onstage because he's got to feel everything, and Steve Walsh [Moby's longtime monitor engineer] has done a fantastic job supplying that loud sound he needs at every show."

Working with Steve Miller, Steve McCale was an early proponent of using an all in-ear systems, but he recognized that with so many bands on the bill for Area:One and a short time to prepare an all in-ear stage was unlikely. "To get that purity [of the Miller tour], you've got to have a common goal to solve all the little problems that different musicians will have. Most of the time in today's market, when you have different hired musicians, you end up with everything out there. So many musicians are scared to leave the wedges completely, so they end up with a combination of both, which, in my opinion, as a monitor guy, is hardly the best way to work. What's ideal is when you have a chance to work with a band from the beginning and they're putting together a whole tour—like we did with Cher. We went in at a production level and dealt with everybody's issues, had a month-and-a-half of rehearsals to work out all the problems, and by the time we hit the road, it was a pure in-ear show, as it should be. But most of these younger bands don't have the time or budget to put that together."

For all of the acts except Moby, monitoring was through a pair of Yamaha PM-4000s. Moby's monitor engineer, Steve Walsh, used a Midas Heritage 3000. In the rave tent, the FOH console was a Harrison HM-5 and the monitor board was a Harrison SM-5.

On the issue of live vs. taped music on the tour, McCale says, "Almost every

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Inside the Area:One rave tent

band had either a 360 Systems Digicart or a MiniDisc or something running top to bottom, and then things were filled in around it. Now, I don't even know exactly what was live and what wasn't, and I was there! I know Moby had stuff on MiniDisc." John Pennington says that Moby had some additional drums, string parts and other tracks on tape "to bolster the sound onstage and to try to fill in some of the parts that are on [Moby's] record that we couldn't reproduce live."

"If I was the engineer," McCale comments, "I probably wouldn't use MiniDisc, but it's not my choice. It's very handy format and it's very reliable. However, we spent more time EQ'ing the high end on the I-4s to compensate for the quality of the MiniDisc than anything else we did on the tour! They have a pretty nasty high end. But in the case of a group like Outkast, the tracks were so nasty anyway, it didn't matter," he laughs. "With Outkast, the microphones sounded pretty bad because they were wrapping their hands around them and yelling into them, and the tracks they had coming off the stage sounded horrible, but man, they put on a great show and they rocked the house every night! So it just goes to show you that you can spend your time on fancy widgets, or you can get out there and entertain the crowd. That's what they were all about."

And no one in the crowd was complaining about the quality of Outkast's prerecorded tracks (because their overall mix, by an engineer named Meaux—pronounced Mo—was superb), or the fact that Moby ended his portion of the show with a song that was entirely on MiniDisc—it became a showcase for dramatic poses from Moby and an incredible light display (by Dan Hardiman); the line between humanity and technology blurred again, one serving the other. Indeed, the blend of those elements was the real triumph of the whole tour. ■

Blair Jackson is Mix's senior editor.

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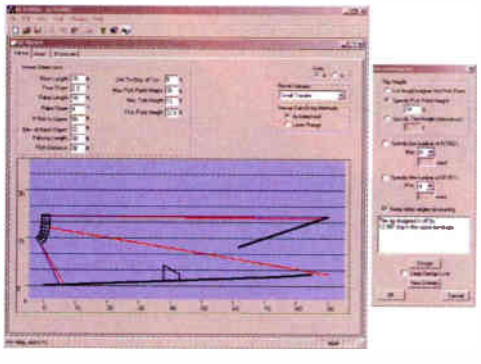

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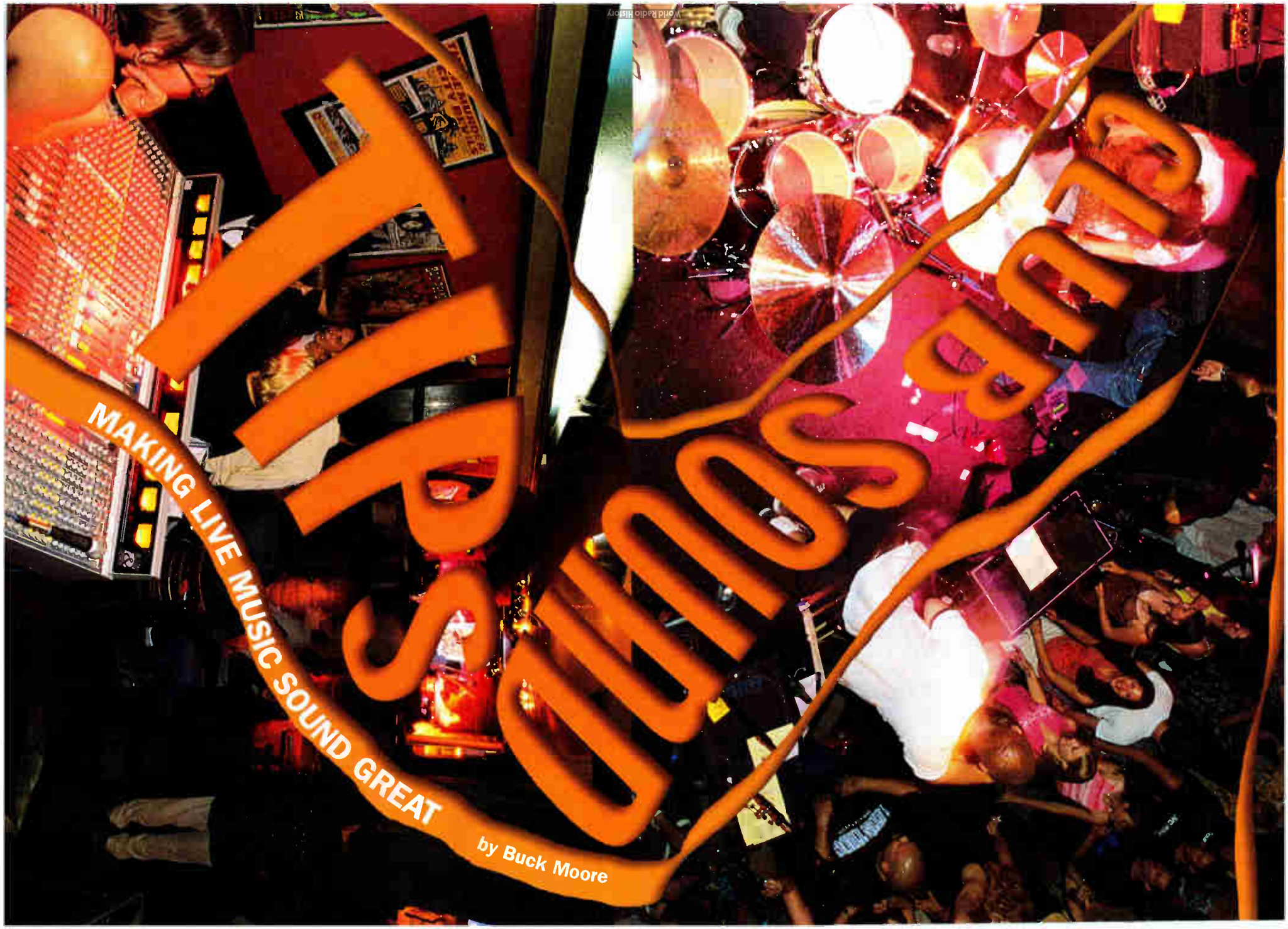
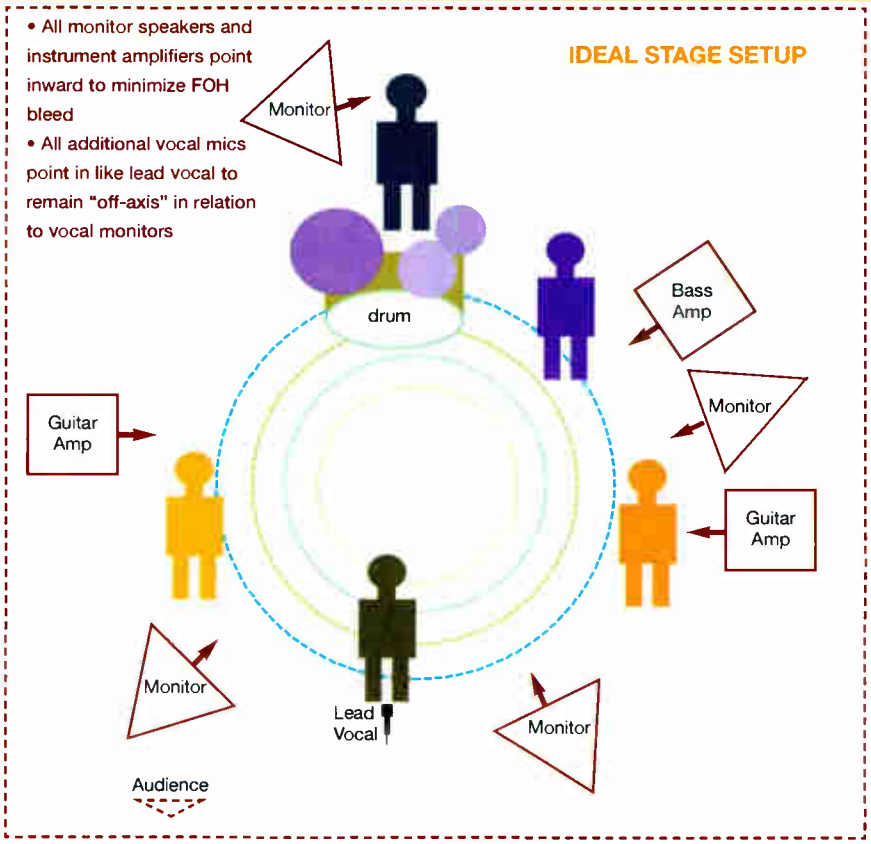

LIVE SOUND
MAKING LIVE MUSIC SOUND GREAT
by Buck Moore

Most people who listen to live music have been to a club or a similar small venue to hear a favorite band or performer. Unfortunately, many music fans have told me that they don't actually expect to hear live music sound "good" in a club—inferior venue acoustics, an inadequate sound system or a poor FOH mix have blighted the experience too many times. Audience members often tell me that they expect the worst; when they happen to hear "great sound," they inevitably mention it.

Not every band or club mixer can achieve great sound every time, but I think that the overall standard could be higher. After all, mixing sound for bands in clubs and smaller venues is not rocket science! However, it can be a demanding and frustrating task and, quite apart from technical knowledge and experience, usually requires fairly well-developed interpersonal skills.

In this article, I will explain my typical setup and soundcheck methodologies and those mixing techniques that I've found to be effective in clubs. I will also explain how communication and cooperation among the musicians and sound crew are necessary to achieve balance and clarity, the essential components of any good mix.



AN IDEAL STAGE SETUP

The figure shows an ideal stage setup. As shown, all of the onstage speakers—instrument amplifiers and stage monitors—point in toward the band. This setup has two distinct advantages: it helps keep the "backline" amplifiers out of the vocal mics, and it means that the bandmembers have to set their amplifier levels so that they can hear each other—not too loud, not too quiet. A good balance onstage can make the FOH engineer's job much easier. Conversely, if the amps are too loud for the bandmembers to hear themselves and each other, then they are definitely too loud for a clear mix. The only drawback to this setup is that equipment nameplates may not be visible to the audience. This typically doesn't matter, but adjustments will have to be made if the band endorses a particular manufacturer.

In the figure, both guitar amps are aimed across the stage, and the bass amp is close enough to the drummer so that there should not be a need for bass in the monitors. Of course, not every band will immediately accept this "self-monitoring" arrangement. Musicians are often surprisingly conservative, and many set up their instruments a certain way because that's what they're used to. For example, most guitarists set up their amps so that the speakers point at the back of their knees, which usually corresponds to ear level to a seated audience. It may require some patient explanation to convince a guitarist that he (or she) will have a better idea of what the audience is hearing if the amp is at ear level.

10 STEPS TO A PRODUCTIVE SOUNDCHECK

Soundchecks can be very useful, but things can and will change by the start of the show. Obvious post-soundcheck changes include the room filling up with people, which will almost certainly change the room's acoustic character. Other factors beyond the sound engineer's control include the bass player who has just put on new strings and will now be using a pick, the guitar player who went home to get another distortion pedal, the singer who has had a few drinks, etc. In such cases, the soundcheck may have only served as a time-consuming line check. Nevertheless, I always attempt to schedule a soundcheck and have developed the following 10-step program.

Step 1: After setting up the band as shown in the figure, I usually ask them to play a song with only the monitors on—I leave the FOH mix in the Off position. If the band can hear themselves play and feel comfortable, then you're halfway there. Adding the FOH mix (see Step 4) typically adds the extra low-end information that monitors often can't reproduce, which may help the onstage monitor mix.

Step 2: Listen for any element that is too loud onstage. Adjust the problem element so that it will be controllable. For example, if you are miking the cymbals, they may need to be "unmiked." If the stage is treated properly, then they won't be a huge problem. (See "Practical Acoustics" in June 2001 *Mix*.)

Step 3: Solo any instrument that sounds funny. Bring its fader up in the FOH mix alone and listen to it carefully. Bring the fader back down and go to the stage to compare the actual sound with what you heard. Adjust the instrument (with mic placement, a different mic or EQ changes) until the FOH signal sounds like the onstage signal.

Step 4: Start a rough FOH mix by bringing up the vocals until they sound loud and clear. Add the bass drum into the mix until it sounds loud and punchy.

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Don't overdo the low end—it will just make the mix muddy. Leave the outboard effects alone for now—adding them in too soon will only complicate matters.

Step 5: Add guitars, horns, keyboards, etc., one by one. If the vocals still sound good and the bass drum is still cutting through while the rest of the instruments sound balanced, then go on to Step 7. If the mix falls apart and you are unsure of why, then proceed to Step 6.

Step 6: Ask the band to stop playing. Perform a rhythm section check by first asking the drummer to play "time." Once you are satisfied with the sound, ask the bass player to join in. Shape the rhythm section until it sounds good and balanced. Ask the other musicians, one at a time, to join in and see which instrument is causing the sound problem. Repeat this step until you solve the problem and then go to Step 7.

Step 7: Fine-tune the mix with minor EQ adjustments. Keep in mind that your fader levels may have to be changed regularly throughout the show, so aim for approximate levels. You should be making sure that every signal is useable—that is, you must be able to cut or boost every signal using the fader and/or EQ (within a reasonable range). If you can't control some inputs—you can neither raise nor lower their levels in the mix—then go back to Step 6. To avoid running out of headroom, keep the faders at the nominal position (0 dB) and adjust the individual mic input gain controls.

Step 8: Bring in the effects, but only if they're really needed. If the band doesn't mention effects, then it's up to you. If they specify effects, then try to accommodate them. Try to keep reverb out of the monitors because it can cause feedback and may confuse the onstage mix. Also, too much reverb in the FOH mix will degrade the clarity of the mix. Effects should be used to enhance a signal, not cover it up—if a singer can't sing, then no amount of reverb will make it sound better. If you need a delay that matches the tempo of a particular song, it helps if you have preset all delay defaults to 100 ms, 200 ms, 300 ms and so on, all the way up to 1,000 ms if possible. The correct delay should then be easy to find.

Step 9: Walk around the room and listen for overall balance. Also, pay attention to vocal dynamics and make mental notes of how the singer is using the microphone. They could be "cupping the bulb," screaming without backing away, moving around a lot, etc. All of these things will affect the quality of the mix.

Step 10: If possible, make a recording from the soundboard. If the mix holds up through the recording and the FOH mix, then you're on the right track. If any one element is way out of control, then you'll have to put less of it through the console, which will further limit your control of it. If something doesn't come through on a recording, then it's probably too loud onstage. This should be pointed out, tactfully, to the offending musician. Surprisingly, musicians who point-blank refuse to turn down in order to improve the FOH mix are often much more compliant if a well-balanced "board tape" is in the offing.

WARMER COMMUNICATIONS

The soundcheck routine I've outlined above requires at least some communication between the FOH engineer and the band or musician. Using a talkback mic to talk to the musicians through the monitor system can be handy when a room is packed, but I prefer to walk to the stage. I find that musicians tend to believe what they see rather than what they hear—if they see you standing in front of them asking them to help you solve a sound problem, then they are more likely to respond than if you are just a disembodied voice in the monitors. A cold request like, "Turn down the guitar!" is likely to be met with a similarly cold response, so friendly communication is necessary to achieve a great FOH mix.

Unfortunately, live sound people in small venues are often seen as jaded, crusty, has-beens who never made it as rock stars. With this mindset, communication between sound person and band can suffer from the very start. It's important for the band to give the sound person the benefit of the doubt, and equally important for the sound person to indulge in the band's requests and explain why some things can't be done, rather than just say, "Sorry, can't do it." As a live sound person who works six or seven nights a week and comes across the same issues almost daily, I can get tired of explaining myself over and over again. But I have to remember that most of the bands I work with deserve to be treated equally, and so I explain the same thing to them as I do for anyone else.

MIXING THE SHOW

Now it's time to mix. The pre-show music fades out, the band adjusts their instruments, the singer taps the lead vocal mic and the audience quiets down a bit in anticipation of what will happen next. The focus is on the band, and if they don't sound good right away, then the focus will soon be on the sound person. Here are some tips on keeping things under control.

Don't make any sudden changes. If you need to turn a guitar up for the solo and you miss it by a few seconds, then fade the guitar up smoothly. Turning it up quickly will make the error more noticeable.

Don't make drastic changes. Major EQ adjustments should be made as smoothly as the "fade-up" guitar mentioned above. If you find yourself putting a 15dB boost or cut on any input, then you might want to explore other ways of getting something to sound the way you want.

Don't run out of headroom. Pay attention to those overload LEDs on board channels and outboard gear. Remember,

QUICK FIXES

Here are some tips on solving common club sound problems.

To clean up the vocals, drop the low mids between (125 to 300 Hz) 3 to 6 dB, boost 6 kHz by 3 dB, and use the 100Hz shelf control to cut lows by 3 to 6 dB.

To clean up bass guitar, cut the lows a bit, lower the bass amp volume onstage or reduce the amount of LF from the bass amp. Compress the bass signal if necessary.

To fix a flabby kick drum, roll off the low end (125 to 150 Hz) and boost at 2 to 3 kHz.

To fix a tinny guitar sound, aim the amp across the stage rather than into the audience (see figure), cut high mids by 6 dB and add 3 dB of low-end EQ. ■

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cutting frequencies on a graphic EQ will preserve headroom, while boosting frequencies will cut into headroom.

Don't lose control. If you feel the mix is falling apart, then go back to the flat settings for the channel strips. (If your system is set up properly, you will get an accurate-sounding signal for each source, but accurate doesn't always mean good.) If all the minor EQ/fader moves you did along the way didn't combine properly, then you'll have to backtrack or start over.

Don't freak out. If you are losing control of the mix, try to keep cool and stay calm. Chewing gum and moving to the beat of the music tends to make you look like you know what you are doing. Promoters, managers and family members can get quite emotional if they feel that their band's sound is being compromised, but you should just nod, chew your gum, move to the music and keep looking at the console. Keep a straight face and you'll be back on track in no time.

Keep a close eye on the performers. If the guitar suddenly drops out of the mix, then check the stage before reaching for the fader—you may see the guitar player hunched over his effects pedals or fishing for a disconnected lead. Watch out for gestures that mean "more monitors." If the singer is looking directly at you while singing, it may mean something is wrong.

Keep a close eye on all incoming signals. Watch those telltale LEDs to pick up on keyboard peaks, mismatches between output levels of different guitar pedals, etc. Check your power amps, outboard gear and console for overload. Many peak indicators light up as a warning that the signal is 6 dB away from distortion, so lowering an input signal by 3 or 4 dB may be enough.

Don't be too sensitive to criticism. Everyone's entitled to an opinion and there's no sense getting into a big discussion in the middle of a show. But if someone says, "I don't want to tell you how to do your job, but I think the singer/guitar player/drummer should be louder/quieter," try to acknowledge the input politely and use your own judgment as to whether changes are called for.

Every working sound person should own a sound level meter and earplugs—and use them. An SPL meter can help you convince managers and bandmembers that the volume needs to come down, especially if you keep records of the SPL levels of each performance. At high SPLs, it is easy to lose perspective and wind up with an excessively bass- or treble-heavy mix. If audience members are sticking their fingers in their ears, then there is probably too much treble in the mix. Similarly, if anyone reports a breathing problem, then there is probably too much bass energy.

Finally, be ready for anything. Almost anything can happen during a club performance. The mixture of loud music, performing musicians, adrenaline, alcohol and other mind-altering substances, all crammed together in a relatively small room, can make for a potent cocktail.

Happy mixing! ■

Buck Moore is a freelance sound engineer living in Toronto. Moore has been the house sound person at the 360 Club for the past few years, where he takes copious notes and conducts extensive experiments in constant pursuit of the ultimate live mix. He can be reached at www.moodswing.com.

World Radio History

L.A.'s Conga Room

By Maureen Droney

Merengue, charanga, mambo, son—every Thursday through Sunday, sizzling Afro-Latin music, both traditional and modern, draws dressed up crowds to the Conga Room, Los Angeles' intimate and upscale showcase for salsa, Latin jazz and world/alternative music. Buoyed by the boom in Latin music's mainstream popularity, and by celebrity investors like Jennifer Lopez, Jimmy Smits and Paul Rodriguez, the Conga Room opened with a splash in 1998. Since then, the club has attracted a crossover audience that comes out to see national acts like Celia Cruz, Chucho Valdez and Jose Feliciano, and local favorites such as Ozomatli and Poncho Sanchez.

At the Conga Room, people come to dance and get up close and personal with the music. We're talking all the way live here: Typically, 10 to 12-member salsa ensembles featuring timbales, congas and bongos, as well as a piano, a horn section and several singers, perform on an elevated stage in what is essentially a long, narrow ballroom with a wood floor, brick walls and skylights. The main P.A. board, a 32-input Allen & Heath GL3300, gets a workout handling FOH and monitors for the 350-capacity main ballroom along with a stereo feed that's piped throughout the complex to the restaurant, bars and lounges. It's a fact: Mixing in this environment requires *mucho cojones*.

"We do everything," says head audio engineer George Acuña with a laugh. "From concerts to TV, videos and dance lessons. It's a very bright room, and it stays bright even with a lot of people in it. It's great for the acoustic sound of the music, which is very percussive and horn-oriented. But when it gets really hot and heavy, it can be a challenge."

Originally designed for the minimal requirements of traditional salsa bands, the sound system has undergone constant refinement: The most recent addition is four built-in JBL SRX Series subwoofers under the stage. EAW LA Series mains and delays hang from the ceiling, onstage monitors are JBL MR902s, and both mains and monitors are driven by QSC PowerLight amplifiers. Four A/B dual 31-band EQs are inserted across mains, delays and the four monitor mixes, and a Symetrix delay unit handles speaker delays.

Typically, 12 to 17 mics are live onstage; the workhorse mic collection comprises Shure 58s, 81s and Beta 57s and a complement of Audix D Series—Acuña says he is partial to Audix D-2s and 3s on percussion.

"We're pretty much miking everybody," says Acuña. "Not because we need them in the P.A., but because we have the auxiliary send to the rest of the venue—we have to make a mix that works everywhere."

To do that, Acuña relies on his trusty Sony MDR-7506 headphones, in combination with a listening "sweet spot" behind the bar at the back of the room. "No, I'm not back there drinking," he laughs.

"The original design of the system was for salsa only," he explains. "Based around a set of timbales with a cowbell, then conga and bongos. Now, a lot of the timbale players are bringing in a kick drum that I'll need to gate or compress. And other instruments show up; the newer generation is adding lots of different things."

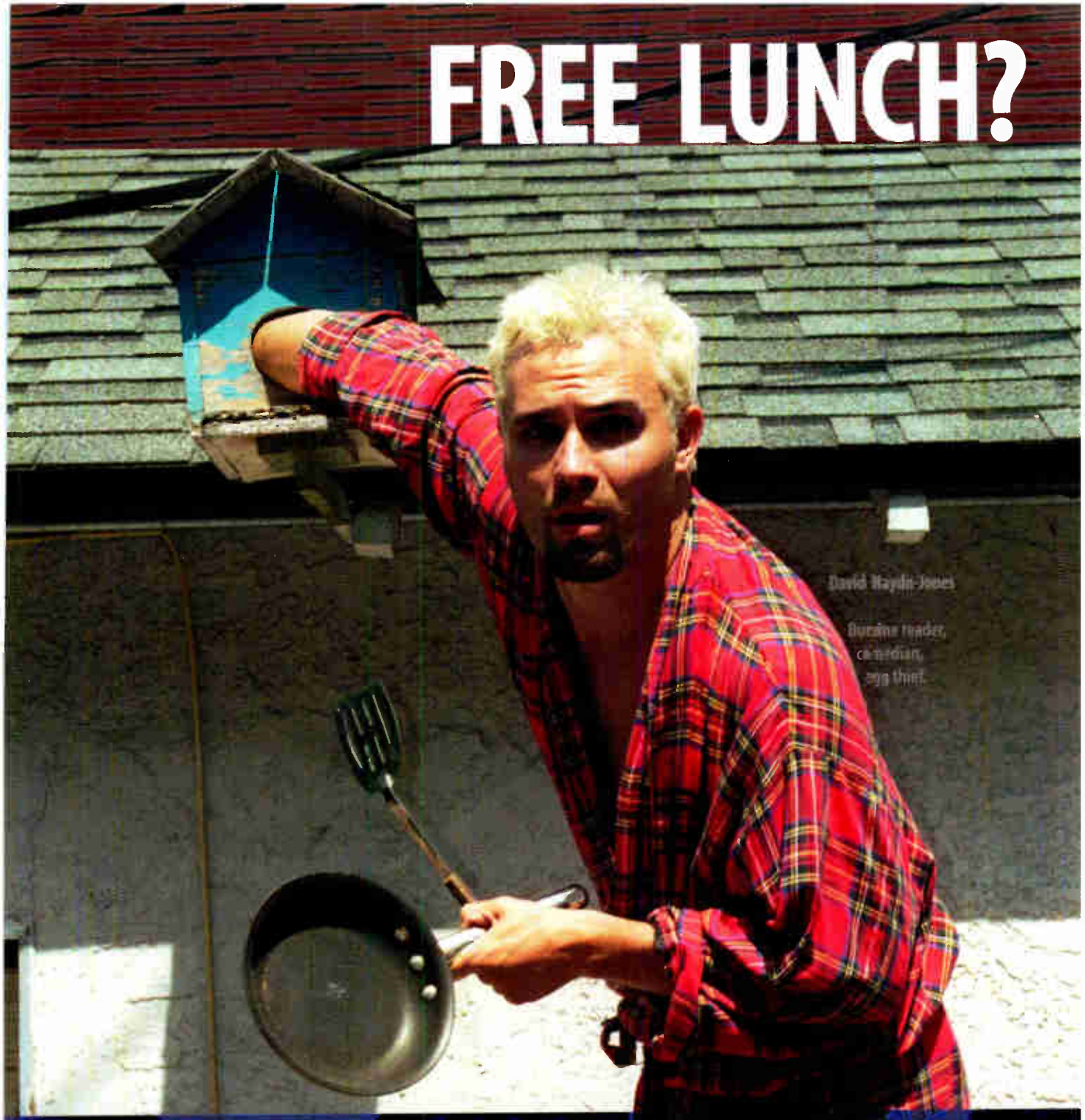
Acuña's outboard collection includes an Aphex Dominator for the main stereo bus, a dbx 262 for horns, a Behringer Composer for vocals and PreSonus ACP8 compressor/gates. Effects include a Yamaha REV-500 and a TC Electronic M1.

Acuña, who has worked with all genres of music from rock to classical and jazz, explains the philosophy of this particular gig. "Mixing here is about working with the room," he says. "And working with salsa, it's not about your standard bass drum and bass. It's about piano and percussion and horns. This is a very special room: The groups are powerful and energetic, and people can get up close to them. Usually at least half of the room is dancing, and the energy in here gets truly amazing." ■

George Acuña, head audio engineer

World Radio History

FREE LUNCH?



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World Radio History

Minneapolis' First Avenue

A nightclub needs to stay current to stay popular. The First Avenue and Seventh Street Entry club in Minneapolis, Minn., has rolled with the times for more than three decades, and it's still packing 'em in.

First Avenue is probably best known to moviegoers as the venue where Prince's *Purple Rain* was filmed in 1983. However, the club, which resides in a former Greyhound terminal, was actually started as The Depot in '70, when psychedelic pop was the main attraction. The club has changed with the times, surviving the disco era and blossoming into a real music-lovers' Mecca when punk hit.

Today, the building contains three rooms—First Avenue, the Seventh Street Entry and the new VIP Lounge—and the venues' management makes a point of showcasing an eclectic range of music. At First Avenue, space and time are divided to accommodate artists who range from Built to Spill to B.B. King, and from Coolio to Cubanismo. After prime time, the main room at the club turns into a "Dance-a-teria," which features reggae or salsa or electronica, depending on what night of the week it is.

"What I love about working here is that one night you see a three-piece funk band onstage, and the next night you'll have a 16-piece African band," says longtime stage manager Conrad Sverkeson. "It changes from day to day, which I think is kind of cool."

Another aspect of First Avenue that has changed recently is the P.A. Sverkeson explains that the club's "hodgepodge of old boxes" was replaced this year with an installed Electro-Voice X-Array loudspeaker system powered by E-V amps. "Once we listened to the E-V system," says Sverkeson, "we realized that listening to our old system was like listening to an AM radio."

Miles Kennedy, who is the stage manager for the First Avenue room and does maintenance, installation and FOH mixing for all of the rooms, says that the new E-V system is well suited for the wide range of musical styles. "We can program different presets in for our DJs, spoken-word nights, loud rock show nights or rap nights, where we can get more low end out of the system when we need it," he explains. "It's pretty user-friendly for all of us. We can leave our EQ pretty flat and get away with it."

Most of the rest of First Avenue's gear is rented from local sound company Downtown Sound. Even the consoles for the main room, a recently refurbished Yamaha PM3000 at FOH and a Ramsa SR-40 for monitors, are leased. "We lease because we have so many different options in terms of when we need stuff and where we need it," explains Kennedy. "Also, if we have a couple of dark days, they can use the boards elsewhere, and we do have shows where [visiting engineers] need a Midas board or need more than 40 channels."

Kennedy says that the main room at First Avenue is "pretty sparse. It's the original old marble floor, and up in the balcony, it's glassed off a bit, so during soundcheck, you kind of wonder what the heck's going on. But when you have people on the dance floor, usually from 400 to 1,400 people, it's just a really wonderful, warm-sounding room. There's great coverage with the X-Array system, too; the nice thing about it is, it's loud but not piercing. It's very full and very present."

The Seventh Street Entry facility is mainly used for smaller rock shows, and the system up there features custom boxes containing E-V cone speakers and JBL horn drivers, powered by Crest amps. At FOH, there's a new Allen and Heath GL3300 board. The smallest room, the VIP Lounge, is currently being rewired and will be set up for acoustic acts, spoken-word performers and DJs.

At the time of this interview, Clarence Gatemouth Brown was doing his soundcheck in the main room, and the fall schedule included appearances by Dave Navarro, Hank Williams III, the Henry Rollins Band, Megadeth, Los Straitjackets, Dr. John and others. Next time you're in the Twin Cities, check out the new system at a club that's still strong at 30. ■

By Barbara Schultz

Barbara Schultz is Mix*'s associate editor.*

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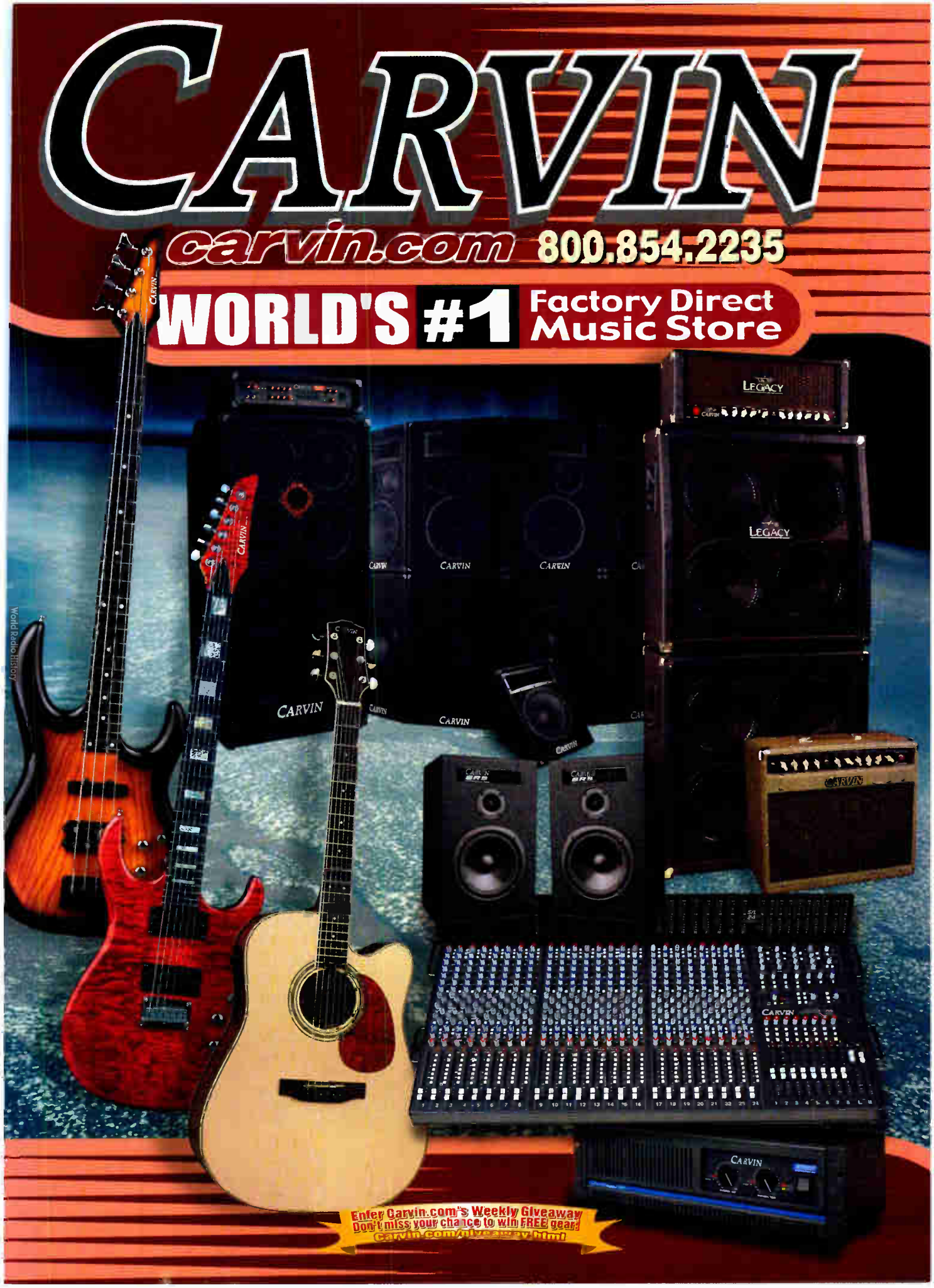

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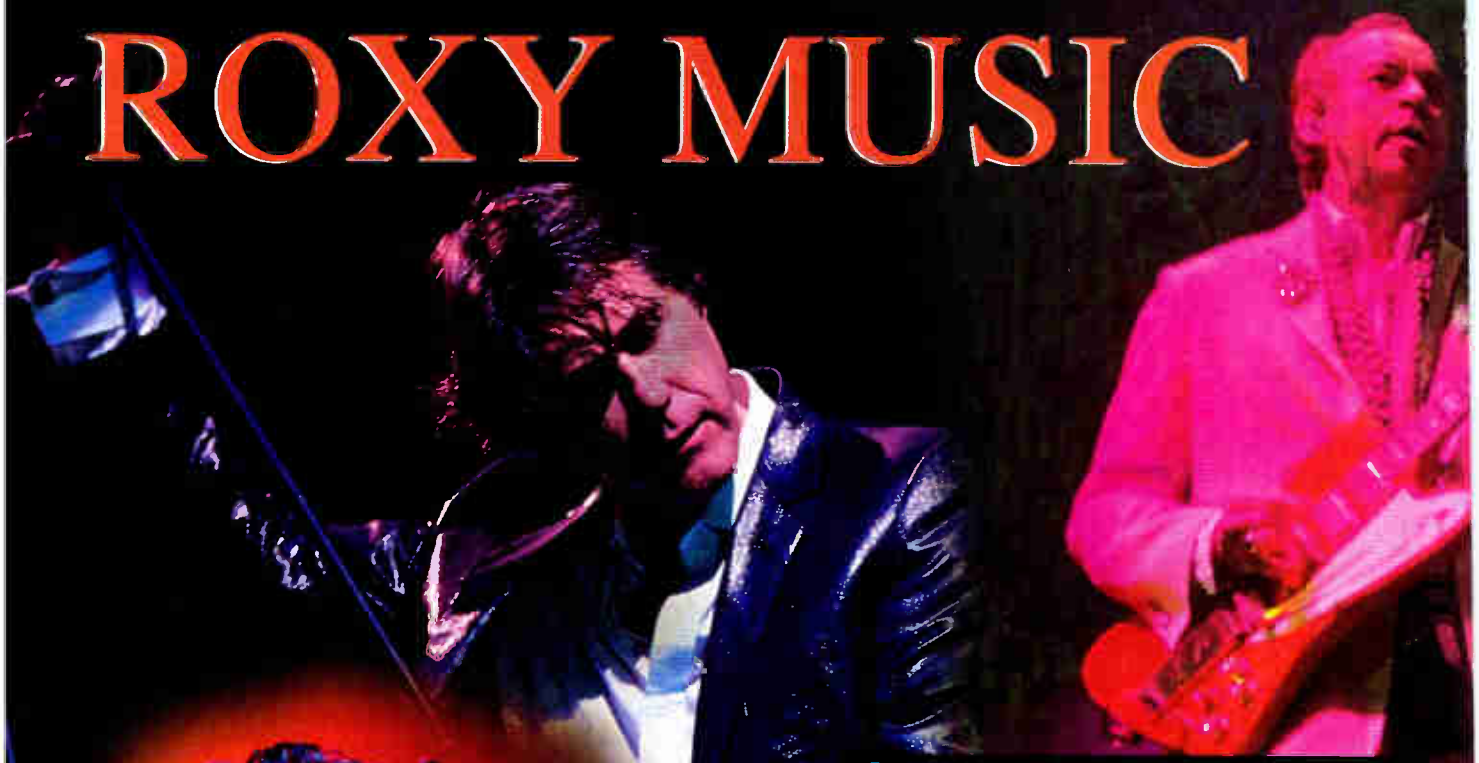
ROXY MUSIC



Reunited after an 18-year hiatus, Roxy Music embarked on a 50-date, 12-country world tour in June. Mix caught the show at the Chronicle Pavilion, Concord, Calif., where the 10-piece band romped through a score of songs from the band's eight-album catalog, ranging from art-noise rockers like "Re-make/Re-model" and "Editions of You" to the soulful shimmer of "Avalon" and "Dance Away." Judging from the rapturous reception at Concord, everyone had A Really Good Time.

Independent monitor engineer Steve May's credits include stints with Tangerine Dream, Tom Jones and Deep Purple; like FOH engineer Levi Tecofski, May has toured previously with Bryan Ferry. May is mixing a combination of in-ear, wedge and sidefill monitors on two Midas Heritage 3000 consoles. Wedges for singer Ferry and keyboardist Colin Good are L'Acoustic models, while Ferry's L'Acoustic Arc sidefills are supplemented with D&B C7 subwoofers. All the other bandmembers use in-ear monitors, with wireless feeds provided via Shure PSM700 transmitters. May uses Yamaha MPX-1 and REV 500 models for in-ear reverbs, and controls the in-ear mix dynamics and EQ with XTA's SIDD units.

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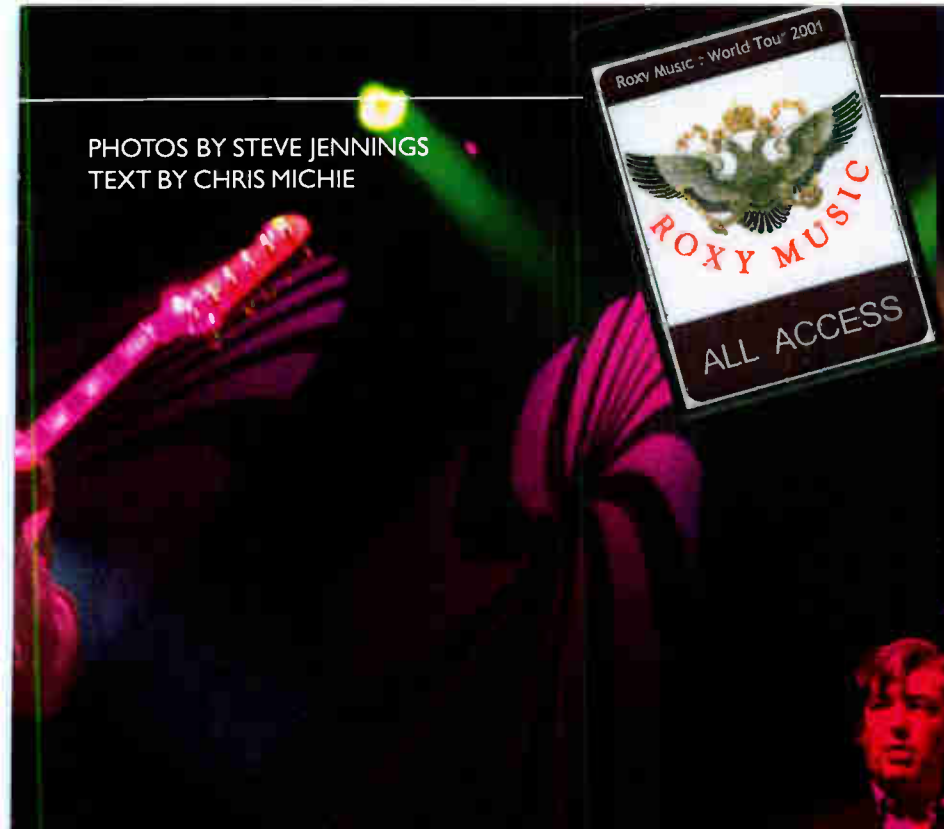
PHOTOS BY STEVE JENNINGS
TEXT BY CHRIS MICHIE



FOH engineer Levi Tecofski's credits include Bryan Ferry, David Bowie, Rickie Lee Jones, Hole and Placebo, among others. The tour is using L'Acoustic's V-DOSC P.A. systems wherever possible—Eighth Day Sound (Cleveland, Ohio) provided all sound services for the U.S. leg of the tour—and Tecofski relies on certified V-DOSC engineer Mike Hackman to align and tune the sound system, which also includes 12 EAW SB1000 sub-woofers per side.

Tecofski mixes on two Midas XL4s and makes extensive use of the boards' VCAs and automated mute functions, carrying his automation cues across international borders on PCMCI and SRAM cards. For dynamic control, Tecofski assigns tube compressors to Phil Manzanera's guitar channels and Andy Mackay's sax and woodwinds subgroup. Bryan Ferry sings into wired Audio-Technica 4054s—Tecofski is using an Avalon 737 compressor and a BSS DPR-901 on Ferry's vocal.

The Great Paul Thompson's acoustic drum kit is miked with Shure SM57s on the snare, SM91s on toms and A-T condenser overheads. Guitar mics are A-T 4050 and 4057 models, while the older analog keyboards are picked up via Avalon DIs. The acoustic/MIDI grand piano is miked with Schoeps and AKG 414 condensers.

World Radio History

TURBOSOUND PAVES THE ROUTE OF KINGS

PHOTOS: MIKE MANN

Andrea Bocelli, Status Quo, the Beach Boys, Sting and Tom Jones were among the artists appearing at this past summer's Route of Kings festival in London's Hyde Park. UK rental giant Britannia Row provided audio facilities, including Turbosound's prototype Flashlight II long-throw system in its last public appearance before its official launch. The new TFS-780H "high-pack" cabinet includes an improved 6.5-inch, cone-based mid driver and an all-new compression unit, resulting in an additional 6 dB of HF level. Also on Brit Row's equipment list were a Cadac R-Type production mixing console, which was used as a master desk for the week-long event, and Turbosound's new TFM-450 monitor wedges.

The main P.A. system was powered entirely by British-built Chameleon amplifiers, with 2,000W DP2 amps feeding HF and hi-mid drivers, and the larger DP3.5 model assigned to low end and sub-bass cabinets. "These are modified standard products that use a pure Class-A front end," explained Chameleon's CEO Paul Houlden. "This gives the amplifiers a very clean sound, even if they are accidentally overdriven."

—Mike Mann

WESTBURY GOES DIGITAL

Billy Graham's Greater Louisville Crusade recently filled the University of Louisville's 42,000-seat Papa John's Cardinal Stadium. Toronto's Westbury national Show Systems provided Yamaha PM-1D Digital Audio Mixing Systems for both FOH and monitor mix positions. Shown here at the FOH PM-1D is sound designer Bill Thrasher. Westbury also supplied an Electro-Voice MT System for the main P.A., with SX, XI and X-Array systems for fills and delays.

ROD STEWART GETS INLINE

Sound Image of Escondido, Calif., is providing an Electro-Voice X-Line loudspeaker system for Rod Stewart. The tour is also carrying a Midas XL4 console for FOH, E-V P3000 amplifiers and Klark Teknik DN9848 crossovers. FOH engineer for the tour is Lars Brogaard, and system engineer is Taidus Vallandi.

FUEL-ED BY A-T

Alternative band Fuel is using Audio-Technica mics on all instruments and vocals. Randy Lane, Fuel's production manager and FOH engineer, has selected the ATW-7373 handheld condenser wireless system for lead vocalist Brett Scallions and uses an AT4050/CM5 on his guitar cabinet. Guitarist Carl Bell's guitar cabinet gets an AT4060 tube mic, and Bell sings into an AT4054. Drummer Kevin Miller's kit is miked with ATM25s (kick drums), ATM23s (snare top and bottom), ATM35s (rack and floor toms) and AT4050/CM5s (overheads, hi-hat). Other artists on the road with A-T microphones include Aerosmith, Slipknot, Billy Joel, The Eagles, Train, Tesla, Chicago and The Wallflowers. ■

SALES AND INSTALLATIONS

UK rental company SSE Hire Ltd. has purchased multiple Klark Teknik DN9848 system controllers for use in SSE monitor systems. SSE senior tech Steve Dando notes that the DN9848 allows him to reconfigure his amplifier racks via the controller's front panel without repatching. Dando also praises the system's Preset Editor, which enables him to program, save and e-mail complete system information using Microsoft Excel...Eighth Day Sound recently purchased a second ATI Paragon II monitoring console. Headquartered in Cleveland, Eighth Day Sound is currently providing equipment and personnel for Barry Manilow, 311, Slayer, Everclear, Roxy Music, Julio Iglesias, Macy Gray and Bjork...Dave Rosenbloom of Dancetronics, an Allentown, PA, design/install company, chose D.A.S. Audio's R-212 speakers for a new sound system at the Evolution club at Pennsylvania's famed Woodlands Inn and Resort. The D.A.S. R-212 box features a 4-inch compression driver coupled to a 90°x45° horn for mid/highs and two 12-inch woofers for the low end. Two D.A.S. Audio DS-8 speaker systems, powered by a Crown CE-1000 amplifier, serve as monitors in the DJ position, which also features a Rane MP2016 "rotary" mixer...Midas Consoles has ceased production of the famed XL3; the last console manufactured had serial number 1000 and, along with numbers 999 and 998, has been shipped to Philing Live, a Belgian full-service production company. Meanwhile, the first XL3 off the production line is still in use as the FOH console at The Forum in Kentish Town, London...CTS Audio of Franklin, TN, has installed a Funktion-One sound system at the 15 North Café, West Chester, PA. The system includes Funktion-One Resolution 2 speakers coupled with F218 bass bins. The system also includes QSC PowerLight 2 amplifiers, DSP-3 signal processing and a Midas Venice 320 console.

TOURING NEWS

Pablo Wheeler, FOH engineer for the current Bob Dylan tour, is using the Innova-Son Grand Live Digital Console for FOH duties. Wheeler reports that he especially appreciates the console's ease of programming...Sound Art Canada has opened two new branch offices in Calgary and Toronto. The new Calgary office supplied all the sound equipment for the Calgary Stampede and the Edmonton 2001 World Championships in Athletics, where an Electro-Voice X-Line system was used for the opening and closing ceremonies at the Commonwealth Stadium. ■

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The amazing XR-20

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JBL EXPANDS MPRO SERIES

JBL Professional (www.jblpro.com) has added the MP212 and MP225 to its MPro 200 Series loudspeakers. The MP212 is a portable, two-way speaker system with a 12-inch woofer and a 1-inch titanium diaphragm, horn-loaded HF compression driver. Capable of handling 250 watts continuous, the MP212 features SonicGuard™ HF protection circuitry and internal crossover. The MPro MP225 is a dual 15-inch, two-way, 500-watt system with an integrated crossover that reduces MF phase anomalies by rolling off the two woofers at different frequencies. The MP225 also features a titanium-diaphragm HF driver and large-mouth 70°x70° horn. Both new MPro two-way systems feature JBL's exclusive Laminar Flow Baffle™ design that integrates horn, woofer mounting and ports into a one-piece, molded part. All MPro 200 Series speakers feature a carpet-covered, 18mm plywood enclosure with steel handles and grille. Inputs are Neutrik Speakon NL-4s and ¼-inch.

YAMAHA CLUB S SERIES SPEAKERS

Yamaha Professional Audio (www.yamaha.com/proaudio) has introduced its Club S Series speakers with five new models. The $399 S112IVS and $429 SM112IVS floor monitor feature a two-way bass reflex design with a 12-inch woofer and 2-inch HF driver, and offer a power handling of 400 watts. The $435 S115IVS and $575 S115IVAS each contain a 15-inch woofer and 2-inch HF driver coupled to a 90°x45° CD horn. The S115IVAS has pre-installed hanging hardware for permanent applications. A companion SM118IVS subwoofer ($539) has an 18-inch cast frame woofer, and produces low frequencies down to 40 Hz with an 800W power-handling capacity. All Club S Series models feature a paintable, durable black polyurethane elastomeric-bonded exterior.

PRESONUS DIGITAL EQ

The DEQ624 stereo graphic EQ from PreSonus (www.presonus.com) combines a familiar analog interface with 24-bit DSP. Its dual 31-band equalizers are switchable among three ranges of operation (±6, ±12 dB or +12/-24 dB), and the unit also includes a brick-wall limiter with variable threshold and a downward expander with variable ratio and threshold. EQ sections include high- and lowpass filters and a Hi Q switch that changes Q from 4.75 to 8.0. Up to four EQ presets can be recalled, and a user-programmable password locks all front faceplate controls. All programmed settings are retained on power-down. An Adaptive Hum Cancellation algorithm identifies and eliminates 60Hz hum, and channel A EQ settings may be copied to channel B. Inputs and outputs are XLR balanced, ¼-inch unbalanced and barrier strip. Price: $799.95.

STAGE ACCOMPANY FRIENDS

The Friend Series of passive speaker systems for club, installation and rental applications from Stage Accompany (www.stageaccompany.com) consists of four models, the F1, F5, F7 and F9. The F1 offers a broad coverage angle of 140°x120°. The F5, F7 and F9 feature double-Speakon connectors, steel grille and flush-mounted speakers to prevent baffle reflection, which can cause frequency instability in the on-axis response. The F9 has a frequency response of 66-20k Hz and is capable of 120dB peak SPLs. The rigid trapezoidal birch cabinets are finished in SA's Protexture coating and available in any color. Multiple mounting options include Trussmount with or without fly frame, Standmount with or without frame, multiple wall and ceiling mounts, and OmniMount or equivalent.

World Radio History

Yorkville and the Bluebird - It's All About the Music

Meet Amy Kurland, owner of the legendary Bluebird Café.

Located deep in the heart of Nashville's music scene, the Bluebird Café has become one of the world's most influential live music venues - a springboard for many aspiring songwriters and performers on their way to successful musical careers.

When it was time to upgrade the club's sound system, Amy's decision to use exclusively Yorkville gear was an easy one. After all, for years the Bluebird had been happily using Yorkville's élite speakers and Audiopro amplifiers.

Amy knew from experience that Yorkville PA would deliver on key factors:

- Excellent sound - for more than a decade Yorkville has been part of the Bluebird's legendary performances.
- Versatility - the Bluebird accommodates numerous styles from acoustic to R&B.
- Solid reliability - equipment built to take it night in and night out with a worry-free warranty just in case.
- Ease of operation - to focus on the music instead of the equipment.
- Value - hey, even a famous club watches the bottom line

The Bluebird showcases the industry's most successful songwriters. Amy Kurland says, "It's all about the music and great sound is a critical part of it. Our Yorkville system helps them bring out their best". How? Visit the Bluebird Café and hear for yourself.

The Bluebird Café's Yorkville system:
élite speakers, PowerMax mixer, Audiopro amps, Backline includes Traynor, BassMaster, Acoustic Master & Yorkville Keyboard amps

The Bluebird is the room where the most successful songwriters in the business gather together and perform the now famous 'In the Round' sessions and try new material for audience and peers, to meet, to collaborate with and to inspire each other. For more info on Amy Kurland and the Bluebird Café, go to www.yorkville.com and follow the 'real people' link, or go to www.bluebirdcafe.com

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BY BLAIR JACKSON

RECORDING NOTES

PHOTO: JEFF SCIORTINO

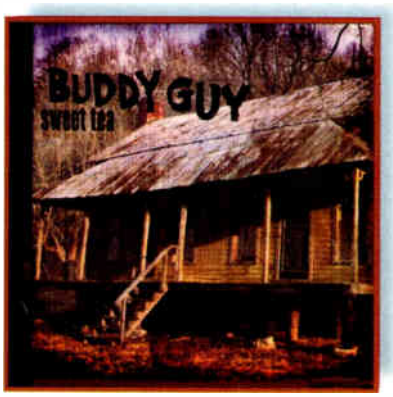
BUDDY GUY

MISSISSIPPI NIGHTS AND "SWEET TEA"

By Chris J. Walker

Sometimes the most interesting albums come from the most unlikely collaborations. A remarkable example is blues guitar dynamo Buddy Guy's recent *Sweet Tea* CD. It's a recording that's dripping with the riveting rawness of his live performances. But this project doesn't feature the guitarist's standout touring band, and it wasn't cut live on the road. Surprisingly, this recording was the outcome of 10 days' worth of sessions at producer/guitarist Dennis Herring's Sweet Tea studio in Oxford, Miss.

The producer, who's best known for his work with such alternative-leaning bands as the Counting Crows, Cracker, Timbuk 3 and Christian rockers Jars of Clay, had never produced a blues CD before. Nor did he have a prior relationship with Guy or his record company. But he says he became a blues aficionado after listening to the landmark Junior Wells album *Hoodoo Man Blues,* which featured Buddy Guy, and he's wanted to work with Guy ever since.



Certainly a major contributing factor to Herring's conception of the Guy project is the location of his studio. Originally from Mississippi, Herring returned in 1995 after being in Los Angeles for close to 20 years. In Oxford, he's smack-dab in the middle of Fat Possum Records territory, where artists such as Robert Cage, R.L. Burnside, T-Model Ford and the late Junior Kimbrough had fashioned a unique, regional blues style. The Mississippi hill country blues, consisting of drawn-out, moody, danceable, trance-like jams, is highly infectious. After developing a strong taste for the regional sub-genre, he started thinking of how to put a new spin on the indigenous sound.

"I was a studio guitar player before I was ever a producer," Herring says, "and I came up being a big Buddy Guy fan. But I felt that Buddy's last few records or so had gotten very studio-oriented and were possibly looking for crossover potential. I just think the albums were going for something that I personally wasn't getting off on, although I get off on him as an artist. So I found myself thinking, 'Wouldn't it be great if a major blues artist was to come and do a record saying, "Boy I love this music, this [Mississippi hill country blues] scene."' I had this separate thought, wishing Buddy would make a nasty-ass, real blues record, where he's freaking out like he does live. So it dawned on me one day that if you put the two together, it could be this completely exciting setting for Buddy that would free him up."

Naturally, making a fantasy like this happen is far more difficult than dreaming it up. It took two years from the time Herring thought of the idea to actually begin recording. First, he made a proposal to Guy's record company, Silvertone, and to his manager, but they didn't respond. Then, a year later, when the producer had nearly given up on his dream project, Guy's people contacted him. "They said, 'Why don't you go sit down with Buddy, play him the songs and tell him about this idea,'" Herring remembers.

Guy admits he was skepti-

—CONTINUED ON PAGE 186

World Radio History

SYSTEM OF A DOWN

NU-METAL'S "TOXIC" AVENGERS

PHOTO: ROBERT SEBREE

By David John Farinella

Ah, yes, the rock 'n' roll lifestyle. Hey, Daron Malakian, what was it like when you and System of a Down went into the studio to record your sophomore album? "I don't remember it too much," he admits, laughing. "We're not too crazy, but each person has their moments. We like to partake in the marijuana. So, there are a lot of bongs and pipes around. A lot of incense and sage. But by no means was it hippie. Well, maybe on Serj's part, but not with me. I like to put up a lot of skeletons and skulls, because I collect a lot of stuff that's on the darker side. I like to create that vibe in the studio. I think each person's personality sticks out in the studio, and they make themselves at home. That's pretty much what makes our band—four characters—and each person brings their own thing. Serj brings the hippie vibe, I bring the devil," he adds, laughing again.

Before System of a Down—Malakian on guitars, singer Serj Tankian, bassist Shavo Odadjian and drummer John Dolmayan—even hit the studio to record *Toxicity*, the band spent some deep time in rehearsal and pre-production. According to engineer Dave Schiffman, that level of preparation helped the band when they hit the doors at Cello Studios in Los Angeles. "They really knew what they wanted, which was good in that respect, in terms of the arrangements," he says. "They had had some issues with the way their previous record had sounded. I think part of it was that it was their first record and it was all a very new experience. This time, they wanted to have more of a say in how things were put together and what things sounded like, which was great. I always applaud a band when they have a definite idea of what they want to sound like and what they want out of something, because I think when you have a goal, it makes it easier."

Odadjian points out that it was easier for the band because they knew what was going on this time around. "It wasn't like the first time around; we were all prepared. Serj brought in five songs, I brought in four, and Daron brought a lot in. We all knew where we were going, and then when we went in the studio, we didn't say, 'How do we record?' We knew how to record." Also, the band knew they had to buff up their sound for this release. "We knew we had to do more this time to make it thicker, and that's why the album sounds more 3-D," Odadjian adds.

Malakian, as the band's main songwriter, concurs. "I definitely wanted a more eclectic vibe on this record," he says. "I like to look at the record as a big piece of work instead of individual songs. As a writer, I knew that Serj was more in the mode of singing, so I wrote songs that had some choruses that were more melodic."

Thirty songs down the road, the band felt as if they were ready to get into the studio. Malakian, who got production credit with Rick Rubin, had some definite ideas of what he wanted in a room. He listened to The Cramps' album *Date With Elvis*, discovered it was recorded at the part of Ocean Way Studios that is now Cello Studios, and knew that was the room for them. "The Cramps aren't necessarily known for having a big sound, and that's the biggest-sounding Cramps record. So I thought that had to be the room," he explains. "I wanted the drums to sound a lot bigger, and I wanted a bigger, bulkier-sounding record."

Rubin, who produced the band's debut, was clear on his goals for the record, too: "Helping focus the arrangements of the songs, help get the best performances, both bandwise and vocally, and really spending time creating an environment where the band is comfortable to create and have the confidence to work on lots of songs and not feel rushed, and not feel like if they wrote 10 songs, they had to go into the studio tomorrow," he says. "Feeling like they can really rediscover who they are musically."

It's not that they were drifting from that, Rubin adds, it had just been a long time since they had been in the studio. "And there was pressure from outside sources, people saying, 'Hey, we've got to get this done.' From day one, we said the most important thing was that the record be the greatest it can be. It didn't take us long to record the album, it just took a long time to write it. But I think it shows. I think there's a depth on this record that not many modern records—certainly not many heavy records—have. I think it came from that—from putting the work in and the work paying off."

Engineer Schiffman and the band spent three days getting sounds, working intensively on miking the drum kit and finding a bass rig that meas-

—CONTINUED ON PAGE 188

World Radio History

THE STAPLES' "RESPECT YOURSELF"

By Blair Jackson

As fate would have it, the first band I ever saw perform live (outside of at local dances) was the Staple Singers, opening for The Doors at Madison Square Garden in January 1969. I'd never heard a note by them before that night, and even though the mostly teenage audience was largely inattentive during The Staples' 30-minute set, I was both charmed by them and engrossed in their set. I had been listening to a lot of old country blues in between my Cream and Jefferson Airplane records, and it was clear to me that The Staples were part of that line that stretched from the Mississippi Delta in the '20s, shot through Chicago in the '40s and '50s, and then changed the face of rock 'n' roll in the '60s. The Staples weren't really a blues group, although Roebuck "Pops" Staples' slinky guitar lines obviously came from that world. But their harmonies were straight from the Southern Baptist church; there were dominant elements of secular '60s R&B in there, and a few of their songs that night had socially conscious lyrics. Lead singer Mavis Staples might not have had the rep of Aretha, but she had incredible pipes and passion to spare; another sister of the church possessed by the Holy Spirit.

I didn't know it then, but the already-veteran Staples were just entering their Golden Era around this time. Pops Staples was born in 1915 in Winoma, Miss., where he heard the blues of Charley Patton, Ma Rainey, Son House and others, and was inspired to take up the guitar himself. At the age of 16, he joined a gospel group, the Golden Trumpets, and stopped playing secular music completely. "I was a Christian man," he said. "I figured blues wasn't the right field for me. My family was a real religious family. There were 14 of us. In the evening, when we used to get through working in the fields picking cotton, we didn't have no amusement but to sing to ourselves. We didn't have no radio, no television, nothing like that. That's the way my family got started singing." In 1935, he joined the huge exodus of African-Americans who moved from Mississippi to Chicago, hoping to find a better life for him, his wife Oceola and their first child Cleotha. His brother, Rev. Chester Staples, was already in Chicago, and Roebuck found a home there for his music. Three other children followed Cleotha—son Pervis and daughters Yvonne and Mavis—and Pops schooled each of them in harmony singing, just as his own father had taught him and his siblings. By 1953, the Staples family had earned a considerable reputation in Chicago for their exquisite harmonies in church, and they cut their first sides for the local United Records; that led to them getting a national contract from Chicago-based VeeJay Records. In 1956, they recorded one of the first million-selling gospel singles—"Uncloudy Day," written by Pops. Other hits followed, including "Too Close," "Will the Circle Be Unbroken" and "This May Be the Last Time," a song that was, frankly, later ripped off by the Rolling Stones. In the early '60s, they put out albums on Riverside and Epic and were embraced as part of the folk boom. Though still firmly rooted in gospel music, some of their songs started reflecting the socio-political currents of the times, as well. Pops wrote "Why (Am I Treated So Bad)" in response to racial unrest surrounding early efforts to desegregate schools in the South, and after meeting Martin Luther King and watching him speak in Birmingham, Pops supposedly told his family, "If he can preach this, we can sing it." In 1967, The Staples even cut a version of Stephen Stills' "For What It's Worth," giving it a soulful reading Stills' Buffalo Springfield couldn't have possibly *imagined*; it even made the pop charts briefly.

The following year, the Staples Singers changed gears again. They signed with Memphis-based Stax Records and began cutting albums there with Booker T. & The MGs' guitarist Steve Cropper producing and MGs' bassist Donald "Duck" Dunn and drummer Al Jackson Jr. laying down funky Memphis soul grooves behind the singers. After two albums produced by Cropper (*Soul Folk in Action* contained their amazing version of "The Weight"), they came under the aegis of Stax producer/executive Al Bell, who wanted to turn the group in a slightly more commercial direction, just as he'd done with Isaac Hayes and Carla Thomas.

His first decision regarding the group was to have their basic tracks recorded at Muscle Shoals Sound in Alabama, using the extraordinary Muscle Shoals rhythm section—Roger Hawkins on drums, Barry Beckett on keyboards, David Hood on bass and Eddie Hinton on rhythm guitar. Playing additional guitar and a whole slew of other instruments, including harmonica and keyboards, was a young musician/engineer named Terry Manning, who was an engineer/musician working at Ardent Studio in Memphis.

By late 1970, when The Staples' cut their first record with Al Bell, *The Staple Swingers*, Ardent had already developed a reputation as the best-equipped studio in Memphis, and Manning was regarded as one of the city's finest engineers. A native of El Paso, Texas, Manning had played guitar with Bobby Fuller while still a teenager, even appearing on the original version of Fuller's classic "I Fought the Law." Fuller moved to L.A. to pursue his career (there, he re-cut "I Fought the Law"; it was that version that became the national hit), and Manning's minister father moved his family to Memphis, much to Terry's delight—he'd been smitten by the Memphis R&B of artists such as Rufus Thomas and The Mar-Keys (which included Steve Cropper and Duck Dunn).

"So at a very young age—still in high school," Manning relates, "I walked into Stax Studio with a guitar in my hand and said, 'I'm here to work.' And those crazy guys said, 'Okay, what do you do? We'll put you to work.' Obviously, that would not happen today," he says with a chuckle. "I said, 'I sing, I write, I play. I'll do anything!' So, I started copying tapes and sweeping up the floor." Manning had been messing with recorders since he was nine and always had an interest in recording, so he was an eager student at Stax. "Then, the band I played in locally—called Bobby & The Originals—recorded at John Fry's home studio, so I started

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hanging out there. John, who was just out of high school, had a studio in his parents' house, and I consider that the original Ardent. And a lot of really cool things were recorded there—some rockabilly things that are not that well-known nationally, but were popular in Memphis, were cut there; all sorts of things. When I first went there was around '64. We recorded there for a while and John had already been there for some time, and then he wanted to expand to a real studio building, so he found this place that was at 1457 National Street. It was half of this big building that stretched over a whole block. He built Ardent in there, and the other half of the building was a Bible bookstore. That was 1966, and that was the first real Ardent commercial studio.

"After the studio moved," Manning continues, "I started working over there and a lot of Stax business came there. We had the first 4-track—a Scully—in the South. So that's one reason Stax people came over to work there, and that's how the Staple Singers would have come over there. Steve Cropper would cut ['Dock of the Bay'] at Stax and then bring it to Ardent, and we'd mix it there. Or [Memphis producer] Willie Mitchell would cut these tracks of Al Green and Ann Peebles and people like that at Hi's studio, and then he'd bring it to Ardent to mix. I guess people still do that: 'We've got to get Bob Clearmountain to mix this…' R&B acts from all over—New Orleans, Chicago, Philly, Detroit—would get me to mix. I got to work on all these records that I now look back on as these great, classic records. At the time, they were just more sessions—I mean I always loved them, but we didn't know they were *so* great that we'd be hearing them still 30 years later."

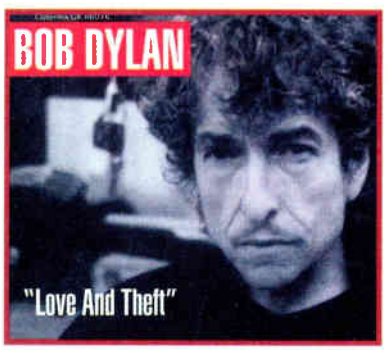
So Manning played on and mixed *The Staple Swingers* LP, which produced three hits for the group, stretching from December '70 through the summer of '71: "Heavy Makes You Happy," "Love Is Plentiful" and "You've Got to Earn It." Al Bell knew he'd hit on something with the group, so the next album, begun in the summer of '71, was made in much the same fashion as the previous one: basic tracks cut in Muscle Shoals, with Jerry Masters engineering, and then overdubs and mixing at Ardent, with Manning engineering and adding a number of instrumental parts himself. Bell found a fantastic bunch of songs for the group to record this time out, including his own "I'll Take You There," Carl Smith and Marshall Jones' "We the People," and this month's Classic Track, "Respect Yourself," penned by veteran songsmiths Mack Rice and Luther Ingram. "Respect Yourself" was a perfect vehicle for the Staple Singers—it featured alternating lead vocals by Pops and Mavis, a slinky bass-drums-rhythm guitar-Wurlitzer electric piano groove set up by the Muscle Shoals gang, and lyrics that decried racism ("take your sheet off your face, boy, it's a brand new day"), as it spoke to the rising black pride movement. Its "message" was in its title really.

Tracking sessions at Muscle Shoals Sound were always relatively straightforward in those days, Jerry Masters remembers. It was a "hot" studio at the time, and there were often sessions going day and night. "We were like a track factory," he

Cool Spins

The Mix Staff Members Pick Their Current Favorites

Bob Dylan: *Love and Theft* (Columbia)
Dylan has been on a roll for a number of years now, touring endlessly with a crack band and apparently rediscovering his musical roots in the process. This latest effort is a real musical smorgasbord, with generous



portions of blues, rockabilly and even Tin Pan Alley-style pop, all of it pretty heavily retro, but performed with great gusto by Dylan and his five-piece band. After the moody and somewhat low-key *Time Out of Mind*, it's nice to hear Dylan having so much fun on a record. The album really amounts to 12 little character studies—most of them first-person stories and vignettes where Dylan assumes the lead role, and we learn bits and pieces about that person's life and/or loves. While the style of the writing occasionally recalls the Dylan mid-period masterwork *Blood on the Tracks* (and I don't make that comparison idly; it's my favorite Dylan record), there's less of a sense on this album of the stories being a veiled autobiography in some form—these characters really do feel like outside creations, not shadowy manifestations from his subconscious. (Dylan says the album is *completely* autobiographical, but I don't believe him.) There are some neat turns of phrases, as you'd expect, a cynical edge to much of it (also expected), but also a surprising amount of humor. Much of the music is pretty loose, but it doesn't have that tossed-off quality of so much of his later work. But neither is it particularly original; Dylan is genre-hopping this time 'round. Dylan's vocals have always been an acquired taste and recent Dylan takes much more patience than his early work. He's still a master at phrasing, but at this point his voice is just about shot. On most songs, his croak serves his material well, but a few tracks, such as the otherwise lovely "Mississippi," are excruciating to listen to. Favorites: "Tweedle Dee & Tweedle Dum" and "Floater."

Producer: Bob Dylan. Engineer: Chris Shaw. Studios Not Listed. Mastering: George Marino. *—Blair Jackson*

Groovenics: *Groovenics* (Spitfire)
It seems that over the years, many incarnations of your basic metal/hard rock record have died away almost as quickly as they've come up. Metal bands no longer pay more attention to their supply of AquaNet and spandex than their music, and the thrash and head-banging musical styles of the late '70s and early '80s have evidently caused too many neck injuries to be a viable "way of life." Likewise, many critics thought that the new wave of punk metal (the likes of Limp Bizkit and Korn) would also be just another fad in this ever-changing genre. And

yet, there are still new bands who blow past the competition and make their own niche. Meet Groovenics. Hailing from south Florida, this six-piece band has opened for the likes of Mötley Crüe, Everclear and Orgy in the past year, all off the strength of their self-released debut album, *Wedgie Fever*. Their

—CONTINUED ON PAGE 192

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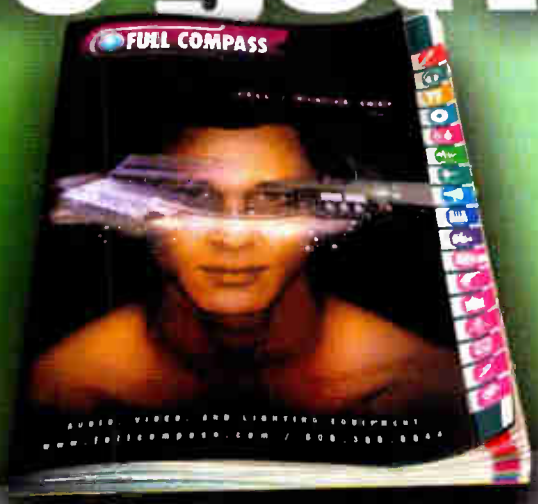

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says. "Sometimes we didn't even know who the artist was, because they weren't around for the tracks. Then later we'd hear a song on the radio and we'd say, 'Well I'll be darned, *that's* who that was!'"

A former casket factory, the studio had a wooden floor with a basement underneath, "and I think that had a lot to do with the ambience in the room," Masters says. "By the time we worked with The Staples, we had built a drum booth and that really made our drums sound great." The control room was equipped with a custom Dan Flickenger console and a new MCI 16-track recorder. To capture Roger Hawkins' drums, Masters used a combination of close miking and overheads: "I was using [Neumann] 87s on the overheads, and dynamics on the tom-toms and the snare. I had a KM84 on the hi-hat and an RE20 on the kick." For David Hood's always-dynamic bass lines, Masters mostly used a direct signal. "David's amp was right there by the control room," Masters says, "and when they'd be running down a song, he'd have his amp on while they were getting the song down. But when we'd start recording, sometimes he'd turn his amp off. Occasionally, we'd put a little amp in [the sound]. As a bassist myself, the bass was always *real* important to me. On Barry Beckett's Wurlitzer, we put this cheap, dynamic Electro-Voice mic; I can't recall the model number."

Masters recalls The Staples working closely with Al Bell on the arrangements of the songs—"finding the right key for Mavis, where to put the choruses and such"—though only Mavis was involved in the basic tracks. As Terry Manning, who was down at Muscle Shoals primarily as an extra guitar player, recalls, "Mavis would do a rough guide track, singing behind some baffling or in a separate little booth to help them get the feel of it. On some occasions, we'd later take some of those guide vocals and we'd have to use them, they were so good. And the musicians were playing off that feel she was getting, so it was a great collaboration.

"Al was very much the producer in charge," he continues. "Al was not necessarily a musician who could pick up a guitar and play a c-minor diminished and say, 'This is what I want.' But he knew how to guide musicians into getting the feel and the sound he wanted, and he guided the arrangements. Of course, the Muscle Shoals guys were great musicians and used to playing together; they'd been on many, many hits already, so they knew what to do and they would arrange themselves to a large extent.

"Still, on this particular album, Al and

PHOTO: C. RULEMAN

Terry Manning (far right) at Ardent with James Taylor (left) and Peter Asher.

I talked a lot about all the different styles we wanted to incorporate. I was trying to bring in some rock elements—fuzz tone and various things. And Al was trying to bring in a Jamaican feel. Not long before that, he'd been on a trip to Montego Bay and he'd heard some of the early reggae and he brought that back with him: 'We need to get this feeling in with the R&B and the funk and the rock.' That may sound a bit grandiose because maybe you listen to that and think, 'It's just the Memphis sound, it's just R&B." But it's not. It was a big thing to us at the time. I can hear Jamaican ska type of jumps that are on the drums, especially on 'I'll Take You There'—that off-beat, not all the way to reggae, mixed with R&B."

When the basic tracks had been completed, the action shifted to Ardent, where overdubs were cut on a 3M M-56 16-track through their custom Auditronics board. Manning says that Mavis Staples' lead vocals were typically comped from three or four run-throughs of a tune, "and nearly every take she did was great. She's amazing, probably one of the top three artists I've ever worked with." Manning used a U87 through a UA 1176 tube compressor for those vocals (and also used a U87 on Pops Staples' guitar amp). After Mavis' lead was in place, the background vocals—also including Mavis—would be cut, the singers usually grouped around a single U87 (or on occasion, a U67). Sometimes he would double-track the backgrounds to reinforce certain sections of a song.

Manning was fond of adding little instrumental touches to the records he worked on, and Bell encouraged him to experiment. On "Respect Yourself," the most striking additions are the soulful blasts of the Memphis Horns, led by Andrew Love and Wayne Jackson, and Manning's prominent Moog synthesizer line—nearly unheard of on an R&B record in those days. "The Memphis Horns really did their own arrangements for the most part," Manning says, "but on that song, I had some ideas, too, so I came up with the arrangement in conjunction with them. I had the one line [he sings] '*da-da-da-da-dit-dat-a-dat-a*' for the end; that was something I wanted to get on there. And I'd predone that on the track before the horns came in. You see, I'd just gotten this Moog synthesizer. I had been up to meet Robert Moog up in Trumansburg, New York, and under his tutelage I'd learned a bit about his synthesizer." Manning bought one from Moog, and even managed to snare the keyboard controller that The Beatles had used on Abbey Road (after they returned it to Moog, mistakenly believing that because the oscillators were out of tune, that it was somehow faulty). The Staples were the first group Manning used it with. "We were working on that album that had 'Heavy Makes You Happy,' and I used the Moog to put these little twinkly sounds and some sort of horn-like sounds in the background." On "Respect Yourself," Manning used the synth as a guide track for the horn line he envisioned, but then he and Bell decided to keep the synth as a prominent element in the mix.

As far as the mix was concerned, Manning left both the instruments and the vocals fairly natural-sounding, adding some judicious EMT reverb here and there (though not as much on that track as on some others) and various other outboard tools, including Pultec and Langevin EQs.

"Respect Yourself" was released as a single in the fall of 1971, and it quickly became The Staples' biggest hit up to that

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PHOTO: TERRY MANNING

The control room on National Street with its Auditronics board.

point, reaching Number Two on the R&B charts and Number 12 on the pop charts. Bell and the group completed the rest of the album *Be Altitude Respect Yourself* after the single was already a hit. At Ardent, this finishing work coincided with the studio's move to a new address on Madison Street in Memphis, where it resides to this day. With radio hungry for more Staples, a second single, "I'll Take You There" (which features one of David Hood's all-time great bass lines) came out in the spring of 1972 and became one of The Staples' two Number One pop hits. (The other was "Let's Do It Again" in 1975.) Though The Staples would never ascend to the top of the pop charts again, they continued to score R&B hits for many years, and both as a group and on solo records by Pops and Mavis Staples, they continued to make great albums that deftly mixed spiritual and social concerns. Pops Staples died last year at the age of 85, but Mavis is still going strong as a solo artist, and will no doubt be a continuing inspiration for years to come. ■

—FROM PAGE 178, BUDDY GUY

cal when he first met with Herring. Respect for the Mississippi musicians was a key concern: "I didn't want to mess up those guys' original type of blues," Guy says from his Chicago home "'I can't do this,' I said. But Dennis said, 'No, we'll just play Buddy Guy along with this.' I was still doubting myself that I was going to go down there and try to figure out how to play like them." Herring adds, "Buddy wasn't too sure about it at first. He called me a couple of weeks later after he'd listened to the CD I made for him. He says, 'I'm *feeling* this music.' And it kind of seemed like he got off on it. I think he started hearing what he could do with it."

Still, when the actual sessions rolled around in the summer of 2000, Guy says, "I got there and started frowning, thinking I'm going to mess this up. I'm not going to be able to do a good job. On the first day, I listened. The next day, I smiled. Third day, I was tapping my feet. Fourth day, I said, 'Man, turn me on, let me have some of this!'" And with that epiphany, the hard-jamming musician, who'd influenced second-generation rockers such as Jimi Hendrix, Eric Clapton, Keith Richards and many others, finally felt comfortable enough to submerge himself in the heated jams. "One of the cuts on the CD, ["I Gotta Try You Girl"], is 12 minutes; they couldn't stop me!" Guy enthuses. "I'm not going to stop playing this, so I just went on and on and on. And that's just that feeling I had about it. When I got into it, I couldn't stop." Indeed it was the longest track of the sessions. But *all* of the tracks, most of which are covers of songs by the region's groundbreaking players, were initially very long and jam-like before being cut down. That was a key element to the project's authenticity: letting Guy get into the flow of this often expansive style and then having him do what comes naturally—play searing, kick-ass guitar.

However, the project wasn't as simple as getting some blues musicians together and having the rocking bluesman jam with them. Herring painstakingly selected a diverse group of musicians and, unlike the authentic Fat Possum material, added a bass player. Rehearsals went on for a couple of weeks before Guy's arrival. "The main drummer on the record is Spam, who's been T-Model Ford's drummer for a real long time," Herring says. "And he has his own beat, which he's great at; some kind of modified stomp. I wanted that beat for every song on the project. The bass player is an L.A. guy named Davey Faragher, who's my favorite bass player on earth. We worked together for 15 years with groups like Cracker and Camper Van Beethoven. He was also the only guy on this project whom I've had a longtime musical dialog with. I could be as musically technical as I wanted to be, and I knew he could always get it. The guitar player I ended up picking was Jimbo Mathus of the Squirrel Nut Zippers; he comes from some other disciplines. But I knew that he had grown up in Clarksdale, Mississippi, was a Southern boy who was legitimately fascinated to learn the guitar styles of people like R.L. Burnside, Junior Kimbrough or T-Model. Musically with these guys, I wanted to make this bed that Buddy could play over. Overall, I never wanted him to have to play the main riff of the songs. I wanted that to be something that somebody else was always supplying. If Buddy wanted to join in with that, he could, but it was always there."

Additional musicians helping out were drummers Sam Carr (Jelly Roll Kings) and Pete Thomas (Elvis Costello's Attractions), percussionist Craig Krampf and Bobby Whitlock on piano.

Herring's studio, converted from an old cement building, houses a vintage Neve 8038 board with 1073 preamps, lots of analog outboard gear, and then both an Otari RADAR hard disk system and an Ampex MM1200 2-inch deck that the producer swears by—it was the classic contemporary mixture of vintage analog and modern digital devices.

"I couldn't have had this whole idea," Herring says, "and tried to be as regional as I could be with the musicians to get the right flavor, and done it in Miami Beach. I don't think it would have even worked in Chicago. You would have had Buddy so much in his normal environment that the other musicians would have felt out of place." On the other hand, to keep Guy comfortable, Herring scheduled all of the sessions in the evening, when Guy likes to work, and he even had an area of the studio set up as a bar, with a female bartender. When the guitarist entered the studio each night, the band was already warmed up, drinks were available, and all technical bugs had been eradicated.

"By the time Buddy came, we all knew these songs backward and forward, from the originals and the versions we worked up," notes Chris Shephard, Herring's engineer for the CD, speaking from his home in Arlington Heights, a suburb of Chicago. Herring and Shephard had worked on several projects together, including albums for Red Telephone and the Counting Crows. Still, because this was a completely live-in-the-studio project (save for an overdubbed tambourine), "it wasn't that easy getting things set up," Shephard says. "When we plugged in the guitars, the drums and mics with the monitor rig running full blare all in one room, it was crazy. The trick was harnessing it and getting a lasso around it." This required a fair amount of moving microphones and changing tones so different elements didn't conflict with each other.

In order to get the best possible vocals from Guy, they had him out in the

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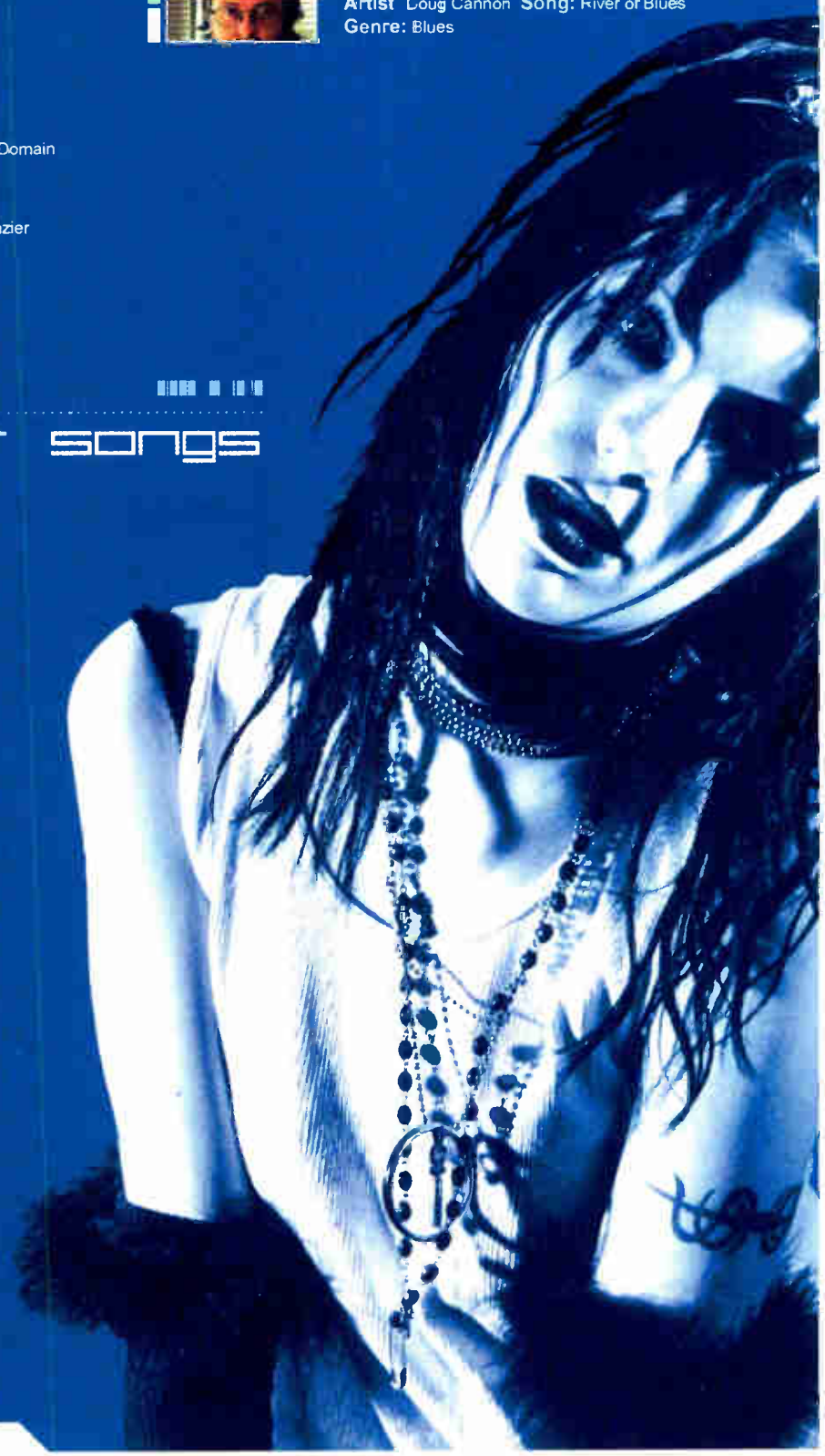

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hall playing and singing. This had some interesting side effects, namely plenty of leakage, but Herring and Shephard were ultimately able to use the leakage to their benefit. "His guitar amp was right next to him," the engineer remembers, "so the reverb you hear on that record on his vocals is really the room mic on the guitar. But the reverb on his guitar is from his vocal mic. Also, I put an amp in this little workshop closet and ran his vocals back through that and miked them. So we had a drive-y vocal thing that we could also use."

Herring has quite a collection of vintage amps and microphones (additionally, they rented an M-49 and a couple of U47s) and that was another element that piqued Guy's interest in the project. "I used Buddy Guy's guitars; I'm in love with them," Guy notes. "But Dennis has all those amps with cobwebs still on them and you can't buy them anymore. He didn't have to say anything to me. I said, 'Turn me on and let me go!' That was one of the reasons I didn't want to stop playing. This is real Buddy Guy; I could turn up the amplifiers like I wanted to and like I play in person. Plus, these old amps give you what you play, not what technology is putting into your playing. His old board doesn't have as much tech stuff as the new ones. [With the new consoles], it's like you sing something, go out to the bathroom and come back asking, 'Who's that?' And they say, 'It's you!' [Working this way] brought me back into the things that I was doing before I left Louisiana. You get to these big cities and they start telling you how to play and when to solo. [Mississippi hill country players] got a groove like James Brown in the '60s. And they're still playing in the blues."

"I learned a lot about *unsterile* on this CD," Shephard acknowledges. "We all know, in the recording process, having everyone in one room is a big no-no. There was no isolation; it was complete bleed—we were breaking laws left and right with that record. The guitar and vocal mics were in the same room. There was all kinds of stuff [making you] say, 'That'll never work.' But it's really a matter of pushing and pulling really hard to make things sound like we had them planned. We had to really work it to make things sound good. There's a lot of compression going on with the drums, bass and other things. A lot of things Davey played were all distorted—it was really different for blues to have that grindy bass sound. Not many bassists plug into a tube Screamer for a blues record."

According to Shephard, mixing the album on the same Neve board at Sweet Tea didn't require anything special. "With Buddy's CD, getting the performance was the thing and the biggest challenge," he says. "It wasn't living on the mixing." In preparation for mixing, Herring edited the songs down from their sometimes-cumbersome lengths. "Dennis is a very crafty editor," Shephard notes. "He took about a month to edit the songs on his own time. He drove around in his car—a new BMW with an awesome stereo—listening to the tracks. While driving back and forth to Memphis, he'd get a feel for the length and structure of the songs." Once Shephard returned, they mixed in a tag-team-type mode, comparing notes at every turn. "Dennis is very hands-on," says the engineer, "because it's his studio and he knows how it all works. Once Buddy left, he could get more involved with technical matters. I'd work on a song for a few hours, then take a break. Then he would come in and push the faders a little bit more the way he wanted things. It's an odd way of working, but with Dennis, that's how you have to work. Most people are too afraid to get in and start monkeying with someone else's mix. Eventually, everything got mixed down to a half-inch machine that we rented from Dream Hire, and to DAT."

We all know, in the recording process, having everyone in one room is a big no-no. There was no isolation; it was complete bleed—we were breaking laws left and right with that record.

—Chris Shephard

Although most of the album features Guy's characteristically scorching electric playing in front of the band, there are other moods and feelings on the CD as well. For instance, the opening track, "Done Got Old," has Guy solo, playing acoustic guitar. "We planned that day so well, knowing that it was just going to be Buddy at the studio," Shephard recalls. "Dennis wanted it to be in the control room so it felt real intimate. So with the air conditioner off, we set Buddy up on the couch with his guitar. He ran through it with Dennis a bunch of times, and we all sat there quietly. And what you hear there sounds like a story. That piece, for me, was the culmination of the whole recording experience.

"This whole record really falls into Dennis' plan," Shephard concludes. "He was very much a master planner when it came to this project; definitely a lot more than I've seen from most producers. He sweated over it and really worked hard. He put a group of people together that was pretty edgy and risky. He hadn't met any of the players [except bassist Faragher], yet they were playing on this record. And these weren't Buddy's songs, so that made things even more unpredictable. We were either going to fall flat on our faces or we were going to make a dangerous and sweaty record. I listen to it now and it sounds *hot*, like it was August in Mississippi." ■

—FROM PAGE 179, SYSTEM OF A DOWN

ured up to Malakian's expectations. "We probably went through 14 basses and like seven or eight different heads, and five or six different cabinets," Schiffman reports. "They really wanted to get that big, sub-y bass that you hear a lot on nu-metal records. At the same time, they wanted it to punch out in the midrange, so it was kind of a tricky thing, because it seems when you have a bass that punches out midrange, you mask a bit of your sub." The eventual winning combination included a 1962 Gibson Firebird bass, a vintage Ampeg head for the main sound through an 8x10 cabinet, and a Trace Elliot for the midrange and gnarl through a 4x10 cabinet. "We didn't combine them together," explains Schiffman. "I was running everything to separate tracks, so we always had balancing options. I was running those two cabinets and a DI." The cabinets were miked with a Neumann FET 47 and Electro-Voice RE20 going through a pair of LA-2As. The DI was compressed with a Distressor.

Dolmayan's kit was a bit of a challenge to mike. "I tried to mike John's kit as tightly as possible, because it's a very extensive kit," Schiffman says. "He's got five toms, these little chime cymbals dispersed all over the kit, two hi-hats—one that's remote and one that he plays—four crashes and two rides, and some RotoToms. The

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kit is like 12 yards long; it's huge. So, in order to keep it so that it was powerful, I wanted to have everything pretty tightly miked, except for something like the chimes that could cut through any place." To capture it all, Schiffman spot-miked much of the kit, including the ride cymbals, where a Shure SM57 came in handy. For the balance of the cymbals, an AKG C-12 was used for the overheads, while a Sennheiser 421 and a FET 47 were used on the kick drum. Dolmayan's snare was miked with a Sennheiser 441 on the bottom, and both a Shure 57 and an old AKG C-60 on top. "It's a really cool thing to mix in with the 57," he says of the C-60. "You get the crack from the 57, and the C-60 tends to fill it out a little bit. The only downside was when John would bash his hi-hat, you get a little bleed into the snare mic. I blend all of those to one track. I almost always had the underside mic on, because that makes the snare feel a little taller." Sennheiser 421s were used on the toms.

Recording Malakian's guitar tracks was relatively straight-ahead, because he doesn't like to play through effects pedals. His signal went through a combination of Marshall and Mesa Boogie cabinets and heads. "The Mesa gave us the teeth, and the Marshall gave us the body," Schiffman explains. "The two together made a big, full, nice sound." He put a 57 and an 87 on each cabinet, taking care that they were phased correctly, and then ran them through a pair of black-faced 1176s. Though the actual signal path was simple, some of the parts were not: Malakian layered them extensively. "I would layer a muddy guitar over a rock guitar over a real heavy metal guitar," he explains. "I would play the song about 50 times until we got each layer right. Then there are soft parts of the songs where I put a lot of different acoustics over each other. Every time you hear the album, you'll hear something a little different hidden in there with the guitars. Even I hear stuff that I don't remember doing."

One of the major changes in System of a Down, which Rubin noticed as soon as they got into the studio, was that Tankian was singing as much as he was screaming. "On the first album, it's mostly screaming, and on this album, there's lots of screaming and really great world-class singing," Rubin says. "That's also something you don't hear very often on a heavy record. He's the man of a thousand voices. He can really make a lot of funny sounds. He really feels it; he's a real emotional and passionate singer."

To capture Tankian's vocals, Schiffman used a Shure SM7 for the more aggressive

tracks. "It can withstand a lot of high SPLs, and it doesn't fold or buckle," he says. "It's a pretty warm mic." For the more delicate vocals, he used an AKG C-12. Tankian also had a Chaos Pad, a device that changes the waveform of the signal going through it, to use during tracking. "We'd plug a 57 into that and he would do weird background things," Schiffman says. "A lot of [the background noise] is his voice going through the Chaos Pad."

Adding another interesting layer to the System sound was percussionist Arto Tuncboyaciyan. "He came in and played his body and his zipper and his pockets," Rubin explains. "So he played a lot of the interesting additional sounds, besides the ones both Daron and Serj played. Arto took it to a new acoustic, natural level of new sounds that we haven't heard before." The Arto tracks were used intermittently during bridges, solos or during different musical passages, Rubin explains. "His tracks will come in and take it to a new place. I think it makes it more interesting to listen to; you're getting pulled into hearing different stuff that you don't normally hear. There's also the element of surprise. You're expecting to hear a certain thing from System of a Down, and then, all of a sudden, you hear percussion or an odd mandolin or some weird thing comes in, and it expands your vision of the band and makes it bigger than just four people rocking out. It widened the landscape of the thing."

The Arto tracks were recorded directly into Pro Tools, as were Tankian's vocals. "If you're singing a lot over a long period of time, Pro Tools makes it really easy to comp between different takes and to have everything right there and not have to wait to rewind. You just get a lot done that way," Rubin says.

However, the majority of the album was recorded on an Ampex ATR-24 24-track analog machine, with some punches and overdubs done on a Studer A800. "The ATRs don't punch fast enough for this kind of stuff," Schiffman says. "A lot of their songs were at 140 bpms, and to punch 16th notes at 140 on this machine was pretty impossible. The A800 kind of saved our butts on that."

As for mic pre's, Schiffman didn't feel that it was necessary to go outside of the 1073s found in the Neve 8038 console. "It sounded great, and every time I tried other mic pre's, I found myself going back to those, because they do such great things, especially for rock 'n' roll," he reports. "The console [a Neve 8038] in there is just phenomenal, and we were hard-pressed to find something better than the console to run it through. It's a real simple chain, and those tape machines [Ampex ATR-124s] are phenomenal. It was hard to beat that. I felt like if I started adding different EQs and all that other stuff, it was like I was convoluting it a little bit. So it was a pretty organic chain."

Once the recording of the 32 songs—yes, they did 32 songs top to bottom—was completed, mixer Andy Wallace came into the picture. "The stuff on tape was pretty good," Wallace reports. "I really liked the fact that there's so much variety in the music. It's refreshing, in fact. You can't just set it, forget it and mix all the songs. I don't even do that anyway, because even on groups where there is a lot of similarity between songs, each song has its own requirements. It's not just a matter of getting a sound on the instruments; it's a matter of weaving it all in and out and making it work right, and that's

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different on every song." He ended up mixing more than 20 songs, 15 of which made the final album sequence.

Wallace, Rubin and the band had some discussions regarding the use of the sonic under-textures that helped define the sound of the album. "There was a certain amount of debate about how much that should or should not be in the record," Wallace reports. "But I think everybody came to a similar place on it, and I think they're all happy with it. I think it gives it a little extra character thing that it might not have otherwise."

The record was mixed at The Enterprise in Burbank, Calif., on an SSL G-Plus. From Wallace's seat, this album was a straightforward affair. "There was no song that was particularly problematic for any reason, either the material or an equipment problem or a band problem," he says. "Considering that they've got a pretty solid fan base and they are a very exciting live band, I would expect that this album would stack up pretty well with what's out there. You never know until the cash registers start going, but I expect it's going to be pretty well received. I think it's an interesting album, so it doesn't just sound like any other record. It has its own character and it's a strong character. And even though there's a lot of variety between songs, there's still some underlying unity there that you definitely feel it's the same band. The songs sound like they belong together to me. That is just a matter of the band having its own character and it coming through." ■

—FROM PAGE 182, COOL SPINS

first major-label release, *Groovenics* showcases a diverse blend of hard rock, punk, pop, hip hop and electronica, deftly fusing the hard-core guitar anthems of Black Sabbath and Metallica with the punk edginess of the Beastie Boys and Less Than Jake. The release flows into different styles and textures with great ease; from the metaloid "Teach Me" to the more melodic "Spooky" and the electronic machine gun fire of "Just Right," Groovenics really show their ability to fuse many genres and come away with a clean, rockin' CD. Standout tracks include the fun "She's a Freak" and their Korn-like cover of Def Leppard's "Pour Some Sugar on Me"—it doesn't get any better than that!

Produced, recorded and mixed by Michael Wagener. Studio: Wireworld Studios (Nashville). Mastering: Eric Conn at Independent Mastering.

—Sarah Benzuly

The Derailers: *Here Come the Derailers* (Luckydog/Sony); BR549: *This Is BR549* (Luckydog/Sony)

Sony has signed two of the best neo-traditional country bands to its Luckydog label and is presenting them as if they are new artists. For BR549, this seems to mean merely that they've signed a new dotted line; their sound is as quirky and as country as ever. They've got a great lead-bass pop sound on this record that owes a bit to Nick Lowe. And, in fact, there's a country cover of the awesome Rockpile track "Play That Fast Thing One More Time." The Derailers are best known as an Austin group with a rockabilly-mixed, Buck Owens-influenced sound. *Here Come the Derailers* is their first album to be recorded in Nashville and their first with producer Kyle Lehning (Randy Travis, Waylon Jennings). Lehning has added some Nashville strings and polish to this unpretentious band, but don't be put off; this release shines with old-fashioned country humor ("I'm Taking a 'Bar Exam'...) and it still rocks ("There Goes the Bride").

The Derailers producer: Kyle Lehning. Engineer: Jason Lehning. Additional engineering (overdubs): Jason Lehning, Kyle Lehning, Sandy Williams. Recording studio: Masterlink (Nashville). Overdub studios: The Compound and J's Broke Ass Studio (both in Nashville). Mastering: Doug Sax/The Mastering Lab (Hollywood).

BR549 Producers: Mike Poole, Paul Worley. Engineers: Mike Poole, Erik Hellerman. Studios:

The Money Pit, Clean-x Boxhead (both in Nashville). Mastering: Denny Purcell/Georgetown Masters (Nashville). *—Barbara Schultz*

Harry Manx: *Dog My Cat* (Northern Blues Music)

What a deal: Canadian guitarist Harry Manx's new CD is like getting three albums in one 13-song set. On one, he sounds like the self-assured descendant of the Chicago Blues greats, ripping great lap steel solos on tunes by Muddy Waters and Jimmy Reed. Another side of Manx is his own material, which is a confessional folk-blues style, sung nicely and accompanied again by his guitar and, on occasion, overdubbed harmonica. The third, and to my taste the most interesting songs, are his Indian pieces, played on the mohan veena, which has some similarities to a lap guitar. The globe-trotting Manx studied extensively with the renowned master of that instrument, V.M. Bhatt, best known in this country for the excellent *Meeting By the River* CD with Ry Cooder in 1993. Solo acoustic pioneer Robbie Basho dove into Indian music many years

ago, but Manx's work in the style is more authentic and exciting. I'd love to hear a whole CD of *just* his Indian musings, though his blues covers and original songs are strong, too. He'd be great to see in a club, and indeed this CD has the feeling of a fine solo performance (with a couple of overdubs).

Producer: Jordy Sharp. Engineer: Andy Bowner. Studio: The Barn (Salt Spring Island, B.C.). *—Blair Jackson* ■

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COAST TO

L.A.'s "fab four" reunited (again) to quench the world's taste for slick power pop fun.

L.A. GRAPEVINE

by Maureen Droney

The Knack are Kback—with September's release of *Normal As the Next Guy* and the upcoming *Live From the Rock and Roll Funhouse*. Doug Fieger, the artistic opinionated and always-nattily attired frontman/producer of the '80s hipsters responsible for "My Sharona," has stayed busy the past few years writing and producing for a number of local L.A. bands. Now, hanging tough with his passion for power pop, Fieger and his Knack brethren (guitarist Berton Averre, bassist Prescott Niles and drummers Pat Torpey and David "Homes Jones" Henderson) have launched a new multiple-format foray: the studio CD, a live album and a DVD scheduled for early '02 release. Plans are also in the works to re-release 1999's *Zoom* with bonus tracks and the new title, *ReZoom*. "Nobody really heard that record," comments Fieger ruefully. "Only hard-core fans even knew it came out, and a lot of them had no way to get it since it really wasn't in the stores."

It was the strength of *Zoom*, however, that led to The Knack's new deal with Image Entertainment/Smile Records, and to the recording of *Normal As the Next Guy*. The 12-song *Normal* was cut half at L.A.'s House of Blues Studios and half at Fieger's home studio, with co-producer Richard Bosworth handling engineering chores.

"Our new manager, Jake Hooker, was out beating the bushes for us, playing people *Zoom*," explains Fieger. "We got an offer from Image Entertainment, one of the largest DVD distributors. Image is affiliated with Smile Records, which believes very strongly in power pop."

Fieger and Bosworth went for a vintage sound spin; all of the songs were recorded on API consoles to Studer analog 24-track. At Fieger's converted living room studio, a Mackie 24•8 was also used to supple-

—CONTINUED ON PAGE 196

NY METRO REPORT

by Paul Verna

Like any savvy entrepreneur who builds a state-of-the-art music recording studio, Dae Bennett rationalizes his decision by invoking the insanity defense: 'Everybody's like, 'You're building a large studio? You're out of your mind!' But our family, we've always done that. When everybody's doing this, we're doing that."

Bennett's family ties are important to the success of his operation. His father is none other than Tony Bennett, the legendary crooner who has enjoyed a career resurgence since the early '90s. Dae's older brother, Danny, is also in the family business, managing their father, among other artists. Danny was also the driving force behind the Arts & Entertainment network's popular *Live By Request* series.

But Bennett Studios has a lot more going for it than its bloodlines. The two-room facility—located in an old train station depot in suburban Englewood, N.J., minutes away from New York—is a musician's and engineer's dream.

It features a 50x30-foot live space with high ceilings, lots of ambient light and four isolation booths; a Bosendorfer grand piano that has been in the Bennett family for years, as well as a Yamaha grand; Neve VR and Solid State Logic G Plus consoles; a Pro Tools suite featuring a Pro Control surface; full-blown Pro Tools systems in the recording rooms; 48 tracks of Studer analog recorders; 32 tracks of 24-bit Tascam DA-98 per room; four Apogee AD-8000s; and a collection of microphones and outboard gear that you would

—CONTINUED ON PAGE 198

Equipped with a Neve VR console, the control room of the North Studio at Bennett Studios looks out onto a sunlit, 50x30-foot live room featuring Bosendorfer and Yamaha grand pianos.

World Radio History

COAST

NASHVILLE SKYLINE

by Dan Daley

Cover Shot: When's the last time you recall the recording studio receiving credit on the front of an album? The Band's *Music From Big Pink* record comes to mind. (And it was one of the first of the high-end home studios, too.) But do you remember when the engineers got their due on the front of the record sleeve, as well? Unless it was Todd Rundgren engineering himself, I don't think I've ever seen it. So it was a pleasant surprise when country artist Brad Paisley's sophomore outing showed up in the mail. Modeled on a poster for a film sequel, Paisley's *Part II* has a two-line credit list along the bottom of the cover, noting that this is a "Frank Rogers Film"—Paisley's producer and co-writer—"with appearances by Buck Owens, George Jones, Bill Anderson..." "Screenplay" credit goes to the various songwriters who contributed to the record. Finally, the credits end with "Filmed at The Castle by Richard Barrow & Brian David Willis."

"Half the time, it's a battle to get anything listed anywhere on the record," said Mike Janis, The Castle Recording's studio manager. The facility's semi-Gothic exterior has made the studio a background for a few album pictures, most of which have found their way inside a CD booklet, or at best on the back cover. Phish's *Rift* used the studio door on the cover shot. But after a thorough search of the collective memories of a number of music business veterans, the consensus is that this may be the first time in history that both the studio and the recording engineers are credited on the front cover of an album. Now, maybe we can start to work on rates...

I thought for a minute that the old Music Mill Studios had been put back into service after its closure two years ago. The truth is, it *has* returned to the music business, though in a changed form. The Mill is now the headquarters of VFR Records, one of Nashville's most successful independent country labels, whose artist Mark McGuire's first outing has charted well. Music Mill Studio's owner, former Mercury Records president Harold Shedd, is a partner in VFR Records, along with Paul Lucks and Ed Arnold. "I'm sorry to let you down, but Music Mill is no longer a functioning studio," Lucks told me. "The main recording room is now our conference room. And it's a very nice, big conference room. And it sounds very good." VFR does have a small demo studio on the premises, but Lucks says he's never seen it.

Nashville may be moving toward the anchor client model. More and more studios are actively seeking, or have been serendipitous in finding, clients who rent out a studio for extended periods of time for multiple projects. At Dark Horse Recording, studio manager Ed Simonton says the studio has been hosting Full Sail owner John Phelps for several months, as Phelps records the seven initial recording artists on his own CD^3 label. Also, producer Brown Bannister is showing

—CONTINUED ON PAGE 199

Jesus built their hot rod. Contingence stopped in at Rainstorm to get the remix treatment (L-R): vocalist/keyboardist Otto Cote, engineer Steve Carter, engineer Poul Speer, guitarist Johnny B and drummer Johnny O.

SESSIONS & STUDIO NEWS

NORTHEAST

Hip hop maven **Jay-Z** and producer **Bink** camped out at **Sound on Sound Recording** (NYC). The pair were in finishing up some mixing duties for a future Def Jam release. **Doug Wilson** engineered the sessions with **Richard Furch** assisting. Also at Sound on Sound, but on the other side of the pop music spectrum: teen idol and Columbia Records' multimedia empire **Jessica Simpson** and producer **Allstar** were laying down some tracks with engineer Wilson and assistant **Bojan Dugich**...**Russell Crowe** and his band, **30 Odd Foot of Grunts** (Artemis Records), took a break from their sold-out tour to stop in at **Indre Studios** (Philadelphia) for a Y100 radio broadcast. This session was engineered by Michael Comstock with Mike Richelle assisting.

NORTHWEST

Gravelvoice (Seattle) vibrated with the reggae sounds of the legendary **Winston Jarrett** recording his new song "Man of Peace." The session was engineered by **Scott Colburn** and **Julian Martlew**...Producer engineer **Tucker Martine** worked on albums with **Sanford Arms, Tony Grasso, Orbiter, Mount Analog** and **Mike Dumavich** out at **Flora Avenue Studios** (Seattle)...Sessions at **Rainstorm Studio** (Seattle): industrial outfit **Contingence** were in to remix a few tracks with engineer **Paul Speer** mixing and **Steve Carter** on Pro Tools. Singer/songwriter **Marvin Glover** tracked overdubs and did the mixing for his new full-length release with **Bruno Modolo** producing. Speer mixed the album with Carter assisting. Producer **Bryan Richardson** brought singer **Bridget Shaw** into Rainstorm

—CONTINUED ON PAGE 199

World Radio History

—FROM PAGE 194, L.A. GRAPEVINE

ment monitoring on the 16-in API desk, with modules rebuilt by vintage console guru Brent Averill and assembled by Ian Gardner of Boutique Audio.

Miking was on the vintage tip as well. "We looked at pictures of recording sessions from the '60s to see how they placed the mics, and we tried to do some of that," explains Fieger.

"Both Doug and I are big Beatles aficionados," adds Bosworth. "When Doug built the studio, he wanted to get some things that were used on Beatles records that we don't see here very often. The Abbey Road session book lists mics used on given sessions, and the AKG D-19, which was sort of the SM57 of Europe, was common. You'll see pictures of Hendrix and Cream using them, and they were used on some of John Lennon's vocals. They weren't normally used on drums, but when Geoff Emerick started recording The Beatles, he used them for overheads. In the beginning, they used three: one direct center and two coming from the sides. Doug had gotten three of them, so that's what we did. They sound different than any mic I've heard, with a really classy high end—not like a dynamic at all."

With the studio album completed and packed to Doug Sax at the Mastering Lab for final tweaking, the band, Bosworth and the Design FX remote truck were off to Long Beach's South Bay Studios to record and film a greatest hits performance. Don't expect your standard concert footage on this DVD; as usual, Fieger and The Knack went for visual impact.

"Live DVDs are becoming a big industry," notes Fieger. "But it's generally, 'Three cameras in a club—call it a day.' Boring! So I came up with the idea of a fake TV show, like *Shindig* or *Hullabaloo*. The guys who I hired—and I use that word loosely, because we had no money—were enormously creative. George Good of Goodsets designed and built the sets. James 'Rico' LaRocca directed and John Bilecky produced. Really, we made a million-dollar TV show for no money. When I walked in and saw what they'd done, I was flabbergasted."

Oh yeah, and it sounds good too... "I've always felt that The Knack live was the essence of the band," says Fieger. "But until we started working with Richard, I never felt we sounded as good on record as we did live. I'm really happy with what we got on both of these projects."

With these releases and the accompanying live performances, you can expect there'll be some new hard-core Knack fans. "I only do what I believe in musically," Fieger states. "That's all I've ever done. It's actually funny that The Knack was always accused of being a big marketing ploy—like I was some kind of Svengali with an eye on the marketplace to fill a slot and make a hit. I'm not that bright! The truth is, the market for the kind of music that I like died in 1968, but I just keep making it."

You've heard composer Christopher L. Stone's music in films, commercials, made-for-TV movies and television series—most notably *Walker, Texas Ranger*, which he scored for seven years—numerous Disney, A&E and MTV specials, and even at the hit Las Vegas attraction *Treasure Island*. Many of those scores were composed at his private home studio, an unconventional space designed in collaboration with Rick Ruggieri.

PHOTO: MAUREEN DRONEY

Two wild and crazy guys: Rick Ruggieri (left) and Christopher L. Stone in front of the 18-foot projection screen.

The Emmy and ASCAP award-winning Stone grew up in the movie business—his parents produced and directed for MGM. Trained classically in Europe, he studied in Paris and Vienna before settling back in L.A. He's had four previous home studios; this time around, he was ready for his dream workspace. Built from the ground up on the site of a former garage, his current studio is, as Stone describes it, "part dubbing stage, part English manor house.

"Since I do music for both film and TV," he comments. "I wanted to ensure that when it went to the film environment of the dubbing stage, it would sound exactly the way I wanted it to. I didn't want producers I work with to have that nervous debate, 'Well, it sounds great here, but what's it going to sound like in theaters?'"

That goal was realized through the large size of the control room, the use of projection screens instead of computer monitors and, of course, the speaker system. "It's basically a theater system," says Ruggieri, who was instrumental in the design of the O'Henry Sound Studios complex, and who has built numerous private studios, including ones for composer Denis Hannigan and producer Ed Mitchell. "Instead of working on a TV with small, near-field monitors, there are large screens and big JBLs behind them. It's a crossover between a typical recording studio and a dubbing stage/small theater."

Comprising JBL 4638s with dual 15-inch woofers, 2352 horns and 2541 drivers, the speaker system also includes two Bag End subwoofers, Bryston amps and custom Mastering Lab electronic crossovers.

The control room features clean lines and a dignified, wood-paneled "boardroom" look, with nary a cable to be seen. "After working for 25 years in home studios, I was sick and tired of seeing wires and computer screens," Stone explains. "It used to be that gear was important to clients, but now producers couldn't care less. I don't need flashing lights to impress them, and that's eliminated the need for racks. We have no equipment in view, and there are no obstacles to interfere with the sound."

The custom-built control room furniture was maximized for equipment storage, and was designed in a "pod" with 360° access to the equipment panels. All equipment is hard-wired—no small feat considering there are some 200 feeds from sound modules and outboard equip-

World Radio History

ment running through *seven* mixing desks: five Behringer Eurodesks and two Mackies—a 1604 and an SR32. Why the modular console setup?

"None of the digital consoles had enough inputs," says Ruggieri. "And it really didn't make sense to invest in mid technology when we do a lot of our serious mixing in Pro Tools, bypassing the boards entirely. This modular setup was economical, and it had a small footprint."

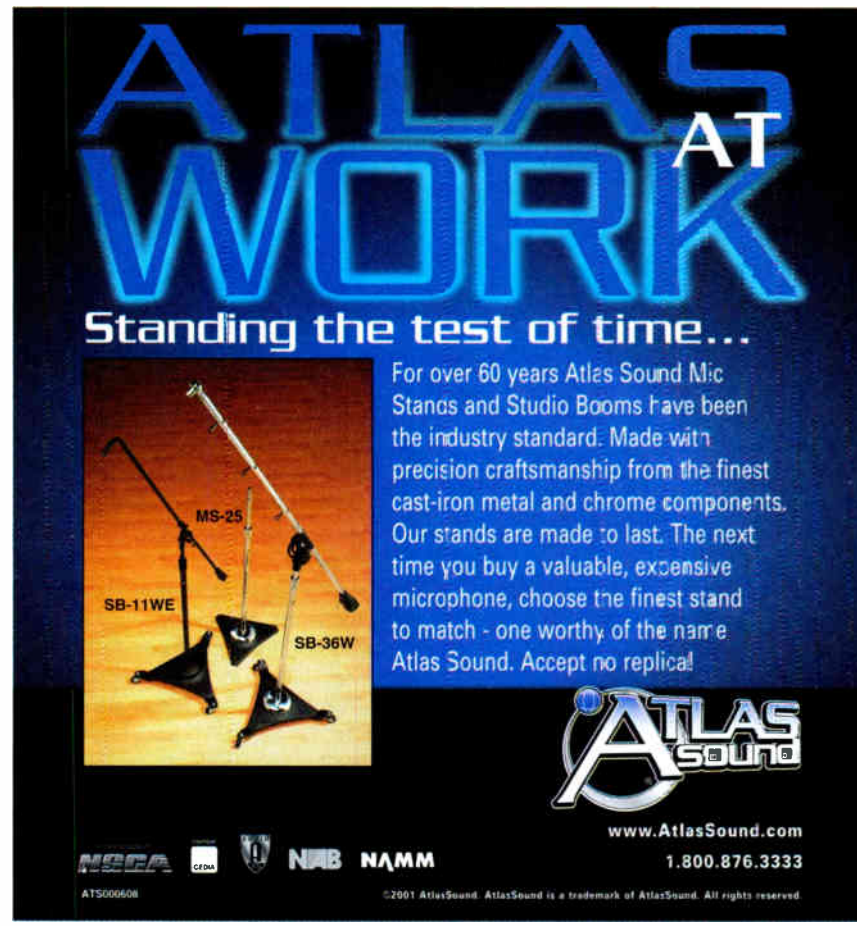
Stone works almost completely in Pro Tools, projecting its display, along with other visuals, from three Sanyo 5600 projectors, through a switching matrix, onto an 18-foot custom Stewart screen. The projectors are housed above the pod workstation area in sound-isolated and air-conditioned coves—complete with temperature readout.

"It was odd for me, at first, to see a quarter-note displayed the size of a silver dollar," says Stone with a laugh. "But I quickly adjusted as I experienced the ease of working with my entire score projected over a 6-foot by 6-foot expanse. There's no way I'll ever go back to conventional monitors."

Both Stone and Ruggieri have spent a lot of time thinking about the fatigue factor—an important issue when one regularly logs 12-hour workdays. "Eliminating clutter, having even lighting and temperature, and access to natural light, all combine to reduce fatigue," Stone asserts. "Having the projection screens helps, too, because your eyes are generally focused on one plane. And, with LCD screens, there is none of the flicker that you have on TV monitors."

From original design work to completion, the studio was two years in the making. Fabric panels in distressed knotty-pine frames produced the desired "library" effect while providing controllable acoustics, and double-paned and angled, control room-style glass outfit the windows to provide sound isolation. The floor, raised 6.5 inches, is filled with sand and the troughs that hide all those cables.

"Raising the floor allows wires to go everywhere in the building," Ruggieri explains. "It also helps the acoustics a great deal. A lot of times when people convert a house to a studio, it's just sitting on a slab and will never sound right. You can add woofers till the cows come home, but you'll never get the bass right unless you actually treat the floor itself. Also, the floor is not attached to the rest of the house, which helps with the isolation. Construction technique is as critical as acoustics; any slop or looseness in the joints will cause your walls to resonate at unwanted frequencies, and contribute to all kinds of problems."



World Radio History

A compact but quite live attached recording space is frequently used for strings and horns, and also houses a Drum Workshop rock kit previously owned by Tommy Lee, and a Steinway B piano that once belonged to Johnny Mercer. Stone's large mic collection includes Neumann tubes such as M50s, M49s and KM53, 54 and 56s, as well as a number of ribbon mics.

"Trying to accomplish what Chris wanted was quite a chore," admits Ruggieri. "There are windows for natural light, lots of wood and a very large space to deal with. It took a lot of planning and time to get it all right."

"It's true," concludes Stone, "it was a bit of a labor of love. Some people buy a boat or a Lamborghini. I did this!" ■

E-mail L.A. news to MsMDK@aol.com, or fax 818/346-3062.

in production technology.

The facility was designed by London-based studio architect Andy Munro, whose credits include NRG in Hollywood, AIR Studios in London, and the personal studios of Paul McCartney and David Gilmour. The town of Englewood has long and strong ties to the music industry: Besides the Bennett family, which lived in the town from the '50s through the early '70s, Englewood and its sister municipality, Englewood Cliffs, have been home to Dizzy Gillespie, Sarah Vaughn, Wilson Pickett, Jerry Vale, George Benson, Joey Bishop, Eddie Murphy, John Faddis and iconic jazz producer Rudy Van Gelder.

Bennett Studios' look suggests homelike comfort, but its underlying design reflects the realities of a professional clientele that needs far more than just a vibey place in which to record. The facility is

Mario de Arce (right) and engineer Eddie Miller working at Chung King Studios on a song by rock group 9 Days for the soundtrack to The New Guy.

—FROM PAGE 194, NEW YORK METRO REPORT

expect in a studio of its caliber.

Furthermore, Bennett Studios is linked via fiber to the nearby John Harms Theater, a 1,400-seat venue with renowned acoustics and a history of hosting top acts. The connection allows the Bennett facility to record up to 64 channels of audio and four channels of video from the theater's stage, enabling the recording and broadcasting of concert events, and the use of the venue's acoustics in music post-production.

Another distinguishing feature of Dae Bennett's operation is the Tony Bennett Center for the Media Arts, an educational facility that will offer students from the nearby Dwight Morrow School programs equipped with an Internet production suite that can accommodate virtually any Web-related pursuit, from site development to Webcasting to online commerce for independent artists. The Internet suite and the recording/mixing/post rooms are all linked via a central machine room that allows for a broad range of signal routing options, according to Bennett.

"We set this up so that anybody could use it however they wanted to use it," says Bennett of the various rooms at his studio. "I was really into making it open-ended."

The North Room, which is adjacent to the large tracking area, features a 60-input Neve VR with Flying Faders automation. The South Room houses an 80-input SSL G Plus and feeds a 12x15-foot live space with additional iso booths, which will make that studio predominantly a mixing/overdub room.

Although both of the "music" control rooms can be equipped with 5.1-channel monitoring capabilities, should the demand arise, in the immediate future all the surround work at Bennett will be done in the Pro Tools suite. That may include film or television posting, as well as mixing and/or authoring for DVD—ancillary areas that are intended to round out the studio's core offering, which is music production.

"The approach here was to be a studio that does all things—music recording, mixing, digital editing, posting, etc.—but it's really about our specialty, which is music," says Bennett. "Not that you couldn't post a Discovery Channel show here; there's a facility here to do it. But our main thrust as engineers and producers is about music, and we wanted to make sure that we had a space that could accommodate that."

The senior staff at Bennett reflects the facility's commitment to the music community. Engineer/Web master Dave Kowalski worked with Dae Bennett at his previous studio, Hillside Sound, which had a solid track record among pop, rock, jazz and R&B artists, including Gillespie, Queen Latifah and Naughty By Nature. Bennett shuttered Hillside when he decided to open Bennett Studios.

Another Bennett staffer is general manager Bill Foley, most recently operations manager at Clinton Recording, and previously a marketing manager for RCA Victor. Foley brings to the operation deep experience in studio management and a strong music orientation.

Even as the staff puts the finishing touches on the rooms, the studio is officially open. In its first few days of operation, it hosted post-production sessions for PBS live music programs featuring Petula Clark and the Newport Jazz Festival. Both of those projects were recorded on location by Bennett.

One of the best-kept secrets in New York engineering circles is Mario de Arce, a multifaceted studio pro who, in a short time, has amassed an impressive list of credits that includes Canibus, Pras, Whitney Houston, Brand Nubians, DMX, Erykah Badu, Jennifer Lopez, Lauryn Hill, Vitamin C, Faith Evans, Carlos Santana and Mary J. Blige. A graduate of Full Sail Academy and a veteran of Criteria Studios in Miami and Sony Music Studios in New York, de Arce is equally adept at cutting analog tracks as he is at performing the most sophisticated Pro Tools moves. In fact, his Pro Tools chops have earned him

World Radio History

distinction not only as a top-level editor, but also as a technical guru who often has answers to questions that baffle other experts. (His Web address reveals his fascination with the popular digital audio format: www.protoolsworld.com.)

De Arce keeps one of his two Pro Tools rigs in his home-based studio on the Upper East Side; the other he rents to select clients, most recently to Foxy Brown, whose engineering team used it for several weeks while editing and mixing her new album.

Lately, de Arce has been expanding his horizons with a variety of engineering, editing, consulting and mixing projects, including sessions with up-and-coming rock/pop group 9 Days for the soundtrack to *The New Guy*. On that project, de Arce worked with engineer Eddie Miller and musical director Ralph Sall at Chung King Studios (see photo).

De Arce also is preparing to engineer tracks by pop singer Adrianne, who is working with composer/producer Joe Ross. In addition, de Arce has been advising songwriter/producer Phil Galdston (of "Save the Best For Last" fame) on a major studio upgrade. ■

Send your NY Metro news to pverna@vernacularmusic.com.

—FROM PAGE 195, NASHVILLE SKYLINE

signs of settling into one of Dark Horse's minimally equipped production rooms, bringing his own Sony R100 console and Otari RADAR and Steinberg Nuendo systems with him. "Like a lot of clients these days, what Brown wants is just the space," says Simonton. "Fortunately, that's something we've got plenty of."

The anchor client approach to business isn't anything new, but it is a tricky one to balance. Building a reliance on a single client for a studio makes the immediate future more economically predictable. But if that client should pick up and go elsewhere—and many do as their own equipment arsenals grow larger and more sophisticated—the long-term economics could be devastating. It takes a long time to change the perception in the market that a particular studio is available for hire again.

"Sure, it can be dangerous in the long run to rely too heavily on a single client," says the owner of a leading Nashville studio who preferred to remain anonymous. The fact that his is a single-room facility makes his risk factor all the higher, he agrees, though the bulk of his revenues have come in the last nine months from a single continuous lock-out client. "The thing is, in this kind of a business climate, what other options are there? You have to keep a close watch on how an anchor client is doing. If there's a chance they may move someplace else, you would have to start the process of letting the community know that your room is going to be available again shortly. Hopefully, you're dealing with the kind of client who will give you some notice before moving." This studio owner also notes that there are some categories of an anchor client that might be better than others. "A producer with a long-running, consistent track record is always the best kind of anchor client," he says. "A hot producer is good, too, but you have to watch how their career moves. Engineers can make good long-term clients, but even successful producers are known to change engineers just like that."

Milan Bogdan, general manager at East Iris Studios, which has one main studio and a second digital suite, says it's not as easy a choice as it would have been in Nashville five years ago. "My first instinct is always to avoid using an anchor client strategy," he says. "But these days, I can see the point of it for some studios. The problem I have with one main studio is that the bookings are there, but keeping them there is hard. Especially as you get more pop and rock artists from out of town in the studio—their schedules change and they want to slide their booking by two weeks. And most of the time I can't do that. When that happens enough times, an anchor client who you can leave the keys with begins to sound really good. But in the end I'd still rather have the headaches that come with trying to keep a diverse client base running through the studio than the more entrenched problems that come with relying on a single long-term client." ■

Send your Nashville news to danwriter@aol.com.

—FROM PAGE 195, SESSIONS & STUDIO NEWS

for vocal overdubs with Carter handling the engineering.

SOUTHWEST

HardLine Studios (Salt Lake City) hosted the California Guitar Trio along with King Crimson bassist Tony Levin and drummer Pat Mastelotto. The musicians were in preparing for their 2001 national tour. The band concluded rehearsals with two concerts for a lucky crowd of 150. Both nights were filmed and recorded; chief engineer

World Radio History

Henry Miller is set to edit and engineer the project for a DVD release next spring.

SOUTHERN CALIFORNIA

Artist Robben Ford is laying down guitar tracks for the next Charlie Musselwhite record with engineer Jeff Evans at Zircon Skye Studios (Ojai, CA). Also at Zircon Skye, award-winning traditional flute master Kevin Locke (Lakota-Sioux) is recording his next album with producer Jim Deerhawk and associate producer/musical arranger/director Jimmy Calire, with Evans engineering...Scott Storch (Dr. Dre, The Roots) has been in Studio A at Enterprise Studios (Burbank) off and on all summer tracking beats and vocals for Christina Aguilera, Brandy and new artist Sarari with engineer Wassiem Zreik, Pro Tools tech Oscar Ramirez and assistant Scott Whiting. Korn bassist Fieldy has been in Studio J working on his solo hip hop record, *Fieldy's Dreams*, with engineer Greg Edenfield and assistant Brian Douglas...Vanguard recording artists Quetzal recorded their second album with producer Greg Landau and engineer John Chamberlin at Mad Hatter Studios (Silverlake).

SOUTHEAST

Down south at SoundMixers Recording Studios (Hollywood, FL), UTP Records artist Juvenile is mixing his upcoming CD release with Mac "Silencer" Jones engineering. International mastering whiz kid Trace and Marilyn Manson co-founder Sara Lee Lucas are at SoundMixers overdubbing tracks for their forthcoming *Electro Shock Therapy* release with studio owner Warren Damian Mazur engineering. Also at SoundMixers, Warren and Jason Sterling are busy tracking and mixing VP Records artists Sanchez, Fiona and Mikey Spice with Lloyd Campbell and Bobby Digital producing...Seventeen Grand (Nashville) favorite Dolly Parton was tracking in the Neve room for a slew of upcoming movie projects with her producer Steve Buckingham, engineers Neal Cappelino and Gary Paczosa, and assistant engineer Thomas Johnson. Producer Scott Rouse was also in working on a project for Charlie Daniels on Daniels' Brave Recordings label. Paczosa mixed with the help of assistant engineer Johnson. Also at Seventeen, hammer dulcimer virtuoso Craig Duncan tracked an upcoming self-produced album for Intersound. Bil Vorndick engineered with the assistance of Chris Scherbak...Spring Theatre Studio (Tampa, FL) had Willa Ford laying down tracks for her new remix of "Did Ya Understand That." In the studio with Willa were producers Lamar Young, Dre Lewis and engineer Danny Blaszczak. The song is for her new video to be released sometime this fall...Incubus performed at Southern Tracks Recording (Atlanta) for a future 99X radio broadcast. The session was engineered by Ryan Williams and Karl Egsieker. UK import Craig David also spent some time at Southern Tracks. Atlantic Records threw the up-and-coming artist a little meet and greet soiree with some lucky fans.

Up at Seattle's Gravelvoice (L-R): engineer Scott Colburn, artist Winston Jarrett and engineer Julian Martlew

NORTH CENTRAL

At Pogo Studio (Champaign, IL), prog rock legend Starcastle are tracking with engineer Gary Strater. After a 20-year hiatus, they are recording new music for an upcoming Sunsinger Recording Co. release. Also at Pogo, producer Mark Rubel tracked Chicago's own Morris Minors with Travis Grimes assisting...Epic recording artist Bliss 66 stopped in at MPA/Pearl Sound (Canton, MI) to lay down an acoustic version of their single "Sooner or Later," which was originally recorded by producer Glen Ballard. The new cut was recorded by senior engineer/producer Chuck Alkazian.

STUDIO NEWS

Producer Don Fury (Quicksand, Helmet, Civ) has opened Cyclone Sound, a new studio on Coney Island beach in New York City. The new room features a 44-input Amek analog console, TL Audio valve EQs and Tube Tech compressors... Cherokee Studios (Los Angeles) has recently installed a customized API Legacy Plus Recording Console. The new board replaces the Cherokee/Trident A Range console inside Cherokee's famed Studio One. ■

Please submit your Sessions and Studio News for "Coast to Coast" and "Current" to Robert Hanson. Submissions can be sent via e-mail to RHanson@primedia business.com, fax: 510/653-5142 or snail mail: 6400 Hollis St., Suite 12, Emeryville, CA 94608. Photo submissions are always encouraged.

PHOTO: DAVID GOGGIN

Inside Studio B at Ocean Way Recording were (L-R) jazz saxophonist Kenny Garret, engineer Bill Schnee and producer Marcus Miller. Garret's new album, Happy People, will be released in early 2002 on Warner Bros.

World Radio History

—FROM PAGE 18, END OF YELLOW BRICK ROAD

is smashed and I can't get any vehicles out.

So now we have money, health and home in the list of missing stuff. And if any of you see humor in all of this, don't feel guilty. Even I see the absurdity. After all, *The Jerk* is one of my favorite movies.

I still had my family. Isn't that one of the things people say? "Well, you've still got your health...oh, sorry. Well, you've still got..."

Three weeks ago, my father died. He taught me music, audio, electronics, ceramics, machining, welding, scuba diving, and actually worked with me when designing and manufacturing custom parts to make my vehicles as illegal as humanly possible.

While *many* other *very* bad things happened to me in the past 12 months, I have chosen these few highlights to get a point across. And that point is: I went from living like a king to standing in the rubble of what was once my life, all in the span of a single year.

PART TWO: OUR STORY

But thousands of other Americans just did it in one *hour*, and died in the process.

On September 11, 2001, we came to the end of the Yellow Brick Road. With thousands of innocent Americans murdered, hundreds of thousands more left standing in the rubble of what was once their lives, and millions more stunned by America's involuntary, instant transition from the Exempt Super Power to one of the countries of Earth, exempt from *nothing*.

America was an interesting place—kind of the Baby Huey of countries in a way: good-natured and generally well meaning, and simply far too big for the other countries to mess with. There have certainly been exceptions, but the general picture has been that we have enough money, power and dangerous toys to ward off most evil. And this feeling has been further bolstered by our considerable history of helping other countries. The United States has given more aid, and helped more countries, than any other power in the history of Earth. And all of this from one of the youngest countries on Earth.

But we are all grown up now. Kind of like when your parents die. You *thought* you were grown up before, but then you actually *have* to be, and you can feel that difference in your heart and mind from the day it happens until the day you die.

America has been ripped from the bliss of childhood and dropped-kicked through the door to adulthood with a violence that will never be forgotten, and should never be. And all of this in an hour, blindsided by a vicious coward.

So, now, as the newest member of the World Community of Adult Nations, what do we do? How are we supposed to act? How are we supposed to feel?

I will not write about the horrors; if you read this column, then you read the news. I will not attempt to describe the stages of Post-Traumatic Stress Disorder, though I urge all of you to take the time to learn a bit about it, as it can affect those who would never think it could. Please take this seriously.

For the healthy mind, it is inconceivable that someone could harbor the anger to do this to someone else—another living human. How can there be this much hatred? How can anyone be so deranged that they can justify this kind of act? The fact that the average American just can't understand this causes an elaborate sequence of complicated emotions to develop within us.

This is *not* an earthquake, *not* an act of God. If you live on the beach in Malibu, you don't take it personally if an annoying California earthquake does a million bucks' worth of damage to your two-room condo, you just think, "Damn, I shoulda moved to Ohio last year," and write a check to rebuild.

Even when an earthquake is more serious and lives are lost, as horrible as it is, *nobody did it to you on purpose*; nobody hated you that much. It changes your life forever, but at least you understand what has happened, even in the grief of your loss.

But *this* is a personal assault on an inconceivable scale, right where we live.

The haunting image of the way the tower remains were sticking out of the smoldering rubble like the post-apocalyptic scenes in every movie from *Planet of the Apes* to *Terminator*, and all the sci-fi and war films before and since, appears every night in my dreams. And in those dreams, I am homeless and sleeping on the sidewalk in the dust and debris.

PART THREE: HOW DOES IT END?

I went to see an old friend yesterday, and his wife brought down three Lego figures that their six-year-old had made: one fireman, one policeman and one guy in a business suit. She brought them into the living room, where the child announced, "I made those for the people that died." He's six, and he did something.

We all have to do something. We cannot become a nation of victims. Once the victim mentality takes over, it is almost impossible to recover. This is actually an *opportunity*. As twisted as it sounds, this is our debut as a mature country.

But we need to take a very deep breath and plan our next move carefully—very carefully, responsibly. The whole world is watching. The *whole world*.

We are faced with a very, very complex problem. We must show that we don't play that game, while resisting the natural desire to lash out at any anyone and anyplace that seems guilty. The only path out of this is narrow and fraught with booby-traps. If we're too soft, then we are victims—even without further attacks, we will disintegrate from the inside out. If we're too harsh, then we are bullies and indiscriminate killers.

We can deny the attackers true victory by not letting America shut down, and by not attacking fellow Americans because they superficially resemble the bad guys. We fought a 50-year war against communism; maybe we have to think of terrorism in the same way.

Everything that has happened to me personally is just ordinary pain, as Stevie Wonder once sang. This isn't about me. I'm certainly no hero for pushing through it. I have just decided that I don't wish to be a victim. The *heroes* are the firefighters who ran up the tower stairs and the police on the scene.

The *heroes* are the passengers and crew on the flight that went down in Pennsylvania. They had to decide to give up their own lives when they decided not to be victims.

I've envisioned the scene that must have taken place on that plane too may times to count. I've asked myself a hundred times if I would have, if I *could* have, made the decision to charge the hijackers on that airplane. I have come to know and trust my answer.

Tell me, would you charge?

Every movie has a hero. But on September 11, we had *hundreds*. Real ones. The fireman and the cops who stayed, went back in and died helping, and the passengers who made the decision that their plane was *not* going to kill innocent people in D.C. In the face of incomprehensible violence and hatred, these people stood up and fought back, and paid with their lives so that America could go on. ■

This column was written on September 16, 2001.

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■ STUDIO SHOWCASE ■

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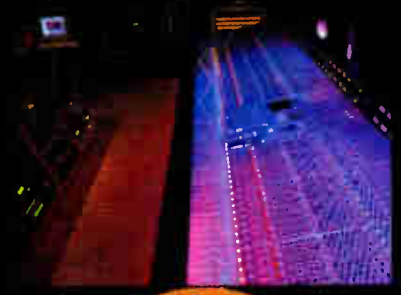

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Advertiser Index

ADVERTISER	WEBSITE	PAGE
Acoustical Solutions	www.acousticalsolutions.com	56
Acoustics First	www.acousticsfirst.com	64
ADK	www.adkmic.com	133
AKG Acoustics (C 4000 B)	www.akgusa.com	7
AKG Acoustics (C 900)	www.akg-acoustics.com	107
Allen & Heath	www.allen-heath.com	17
AMEK	www.amek.com	57
AMS Neve plc	www.ams-neve.com	85
Antares	www.antarestech.com	75
Aphex	www.aphex.com	19
Apogee Electronics	www.apogeedigital.com/tk2/	157
Argosy Console	www.argosyconsole.com	108
Ashly Audio	www.ashly.com	127
Atlas Sound	www.atlassound.com	197
Audix	www.audixusa.com	87
Avalon Design	www.avalondesign.com	116
B&H Photo-Video	www.bhphotovideo.com	208-209
B.L.U.E. Microphones	www.bluemic.com	47
B.L.U.E. Microphones	www.bluemic.com	117
Bennett Studios	www.bennettstudios.com	90
Broadjam.com	www.broadjam.com	187
Cakewalk	www.cakewalk.com	181
Carvin	www.carvin.com	171
Cirrus Logic	www.circus.com/ad/ma4	123
Conservatory of Recording Arts & Sciences	www.audiorecordingschool.com	77
Crest Audio	www.crestaudio.com/go-xseries	175
db Technologies	www.aidinc.com	18
dbx Professional Products	www.dbxpro.com	51
dbx Professional Products	www.dbxpro.com	109
Denon	www.denon.com	113
Disc Makers	www.discmakers.com	101
Dolby Labs Inc.	www.dolby.com/pro	IFC
DPA Microphones/ TGI North America Inc	www.dpamicrophones.com	36
Dreamhire	www.dreamhire.com	72
Dynaudio Acoustics	www.dynaudioacoustics.com	131
EAR Professional Audio/Video	www.ear.net	112
Ear Q Technologies	www.earq.net	142
Eastern Acoustic Works	www.eaw.com	163
Edirol	www.edirol.com	71
EGO*SYS/AUDIOTRAK	www.egosys.net	37
E-Magic	www.emagic.de	33
E-Magic	www.emagic.de	35
EMTEC	www.emtec-usa.com	132
Europadisk	www.europadisk.com	140
Eventide	www.eventide.com	63
Expression Center for New Media	www.expression.edu	52
Fairlight	www.fairlight.net	59
Five Towns College	www.fivetowns.edu	56
FMR Audio	www.fmraudio.com	162
Fostex America	www.fostex.com	129
Full Compass	www.fullcompass.com	183
Full Sail	www.fullsail.com	67
Genelec	www.genelec.com	13
Glyph Technologies	www.guitarcenter.com	185
Grandma's Music & Sound	www.grandmas.com	192
Harman International	www.jblsynthesis.com	61
Harris Institute for the Arts	www.harrisinstitute.com	60

ADVERTISER	WEBSITE	PAGE
HHB (Rosendahl))	www.hhbusa.com	24
HHB (TL Audio)	www.hhbusa.com	42
HHB (CDR 830)	www.hhbusa.com	73
Hosa	www.hosatech.com	86
Innova SON	www.innovason.com	152
Institute of Audio Research	www.audioschool.com	58
JBL Professional	www.jblpro.com/vertec1/pro_user_comment.htm	BC
Korg USA	www.korg.com	31
Lexicon	www.lexicon.com/960L	15
Los Angeles Recording Workshop	www.recordingcareer.com	79
Lynx Studio Technology	www.lynxstudio.com	62
Mackie (MDR-24/96))	www.mackie.com	2
Mackie (1402-VLZ Pro)	www.mackie.com	29
Mackie (S500)	www.mackie.com	65
Mackie (MDR-24/96)	www.mackie.com	IBC
Mark of the Unicorn	www.motu.com	9
M-Audio	www.m-audio.com	189
Medéa	www.medea.com	135
Meyer Sound	www.meyersound.com/m3d	119
Millennia	www.mil-media.com	93
Music Tech	www.musictech.com	68
Musician's Friend	www.musiciansfriend.com	69
MXL Professional Microphones	www.mxlmics.com	167
NAPRS	www.naprs.org	197
Neutrik USA	www.neutrikusa.com	139
Ontario Institute of Audio Recording Tech.	www.oiart.org	60
ORAM	www.oram.co.uk	143
Panasonic Pro Audio Group	www.panasonic.com	102
Peavey	www.peavey.com	125
Professional Audio Design	www.usedssl.com	25
Professional Audio Design	www.proaudiodesign.com	191
ProSoundweb.com	www.prosoundweb.com	30
Quantegy	www.quantegy.com	103
Recording Workshop	www.recordingworkshop.com	70
RØDE Microphones	www.rodemicrophones.com	141
Rolls Corporation	www.bellari.com	138
Rosati Acoustics	www.rosatiacoustics.com	66
Royer Labs	www.royerlabs.com	44
SABRA-SOM	www.sabrasom.com.br	74
SADiE, Inc.	www.sadie.com	43
SAE Institute of Technology	www.sae.edu	81
Sam Ash	www.samash.com	204-205
Samson	www.samsontech.com	96-97
Schoeps	www.schoeps.de	64
Sekaku	www.sekaku.com.tw	130
Sennheiser	www.sennheiserusa.com/didomix	110
Sheffield Institute	www.sheffieldav.com	62
Solid State Logic Ltd	www.solid-state-logic.com	1
Sonomic	www.sonomic.com	156
SRS Labs	www.srslabs.com	104
Steinberg	www.nuendo.com	45
Stipko Media/Buzzine Magazine	www.stipko.com	169
StorCase Technology	www.storcase.com	145
Streaming Media	www.streamingmedia.com/east	193
Studio Consultants	www.studioconsultants.com	142
Studio Network Solutions	www.studionetworksolutions.com	111
Studio Projects	www.studioprojectsusa.com	100
SurgeX	www.surgex.com	134

World Radio History

ADVERTISER	WEBSITE	PAGE
Sweetwater Sound	www.sweetwater.com	21
Sweetwater Sound	www.sweetwater.com	147
Sweetwater Sound	www.sweetwater.com	199
Sweetwater Sound	www.sweetwater.com	230-231
Switchcraft	www.switchcraft.com	148
Switchcraft	www.switchcraft.com	149
Tannoy/TGI North America Inc.	www.tannoy.com	3
Tascam (MX-2424)	www.mx2424.com	23
Tascam (US-428)	www.tascam.com	115
Tascam (GigaStudio)	www.tascam.com	151
TC Works	www.tcworks.de	91
TEC Awards	www.tecawards.org	105
TransAmerica Audio Group	www.drawmerusa.com	112
Universal Audio	www.uaudio.com	41
Universal Studios	www.universalstudios.com/studio	153
University of Memphis	www.people.memphis.edu	70
Waves Ltd.	www.waves.com	155
West L.A. Music	www.westlamusic.com	162
Yamaha	www.yamaha.com/proaudio	89
Yamaha	www.yamaha.com/proaudio	99
Yorkville Sound	www.yorkville.com	177
Z-Systems Audio Engineering	www.z-sys.com	98

MARKETPLACE

ADVERTISER	WEBSITE	PAGE
ATR Service Company	www.atrservice.com	212
Advanced Sonic Concepts	www.advancedsonicconcepts.com	218
Alpha Media Group	www.justdupeit.com	218
Alter Media	www.studiosuite.com	213
American Duplication Supply	www.superdups.com	215
Bayview Pro Audio	www.bayviewproaudio.com	214
Black Audio Devices	www.blackaudio.com	215
C & C Music	www.candcmusic.com	217
Clearsonic	www.clearsonic.com	217
Crystal Clear Sound	www.crystalclearcds.com	212
D.W. Fearn	www.dwfearn.com	212
Demeter Amplification	www.demeteramps.com	211
Digital Domain	www.digido.com	216
Earth Disc	www.earthdisc.com	216
Etymotic Research	www.etymotic.com	218
Gefen Systems	www.gefen.com	212
Ground Support Equipment	www.biomorphdesk.com	217
Lonely Records	www.lonelyrecords.com	214
Marquette Audio Labs	www.marquetteaudiolabs.com	214
Media Services	www.mediaomaha.com	215
MediaFORM	www.mediaform.com	211
Multimedia Recording Systems	www.gomrs.com	216
Neato, LLC	www.neato.com	216
Omnirax	www.omnirax.com	212
Pacific North Studios	www.pncd-arts.com	217
Pendulum Audio	www.pendulumaudio.com	216
Primal Gear	www.primalgear.com	217
Progressive Music	www.progressivecds.com	214
Rainbo Records	www.rainborecords.com	217
Requisite Audio	www.requisiteaudio.com	216
SEK'D America	www.ucik.com	211
Shreve Audio	www.shreveaudio.com	213
Sonic Circus	www.soniccircus.com	215
Sound Anchors	www.soundanchors.com	215
Sound Ideas	www.sound-ideas.com	218
Sound Technology	www.soundtechnology.com	213
TerraSonde	www.terrasonde.com	212
The Gate	www.gatemedia.com	213
United Agencies	www.gearinsurance.com	218
Vintage King	www.vintageking.com	213

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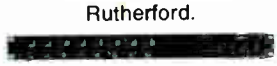

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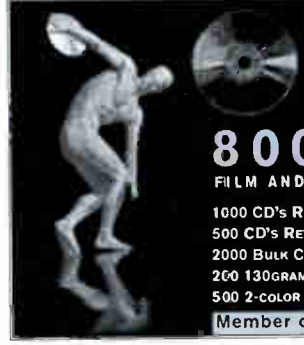

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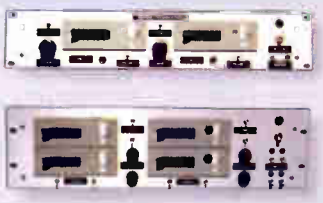

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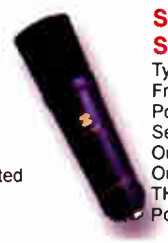

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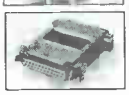

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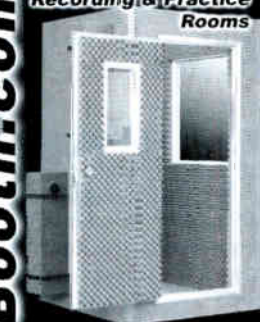

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World Radio History

—FROM PAGE 24, COLUMN THAT WOULDN'T END

film is that interesting, and the quality, with our $1,000 camera, is no doubt up to broadcast standards.

But besides the fact that it made my life miserable for the past year, why should you care about my trials? Because I fear they soon may be yours.

Mini-DV, perhaps the first true "prosumer" video format, is selling in enormous numbers. It's forcing down the prices not only of cameras and decks, but also of the ancillary tools like video cards and editing software; in the case of Apple's iMovie, the price has gone down to zero. As with any technology that suddenly finds a mass market, competition is vicious, margins are shrinking and development cycles are tightening. The need to sell large volumes of product, as fast as possible, is overtaking the need to make a reliable product.

When less-than-functional software gets into the marketplace, the users end up holding the bag. Magazine reviews are of little help—searching the Web and my stock of print magazines, I was unable to find a single negative review of either EditDV or Cinestream. This is not surprising, because reviewers don't have nearly enough time to evaluate products in any depth or do serious bug-hunting, and lead times in the publishing world (even on the Internet) are such that by the time a review appears, the next version of the product has been released—with an all-new set of features and bugs.

In the professional world, audio has too often played second fiddle to video, and as the atrocious audio features in Cinestream show, it's even worse in the prosumer field. Is this good news for audio professionals? In some ways, it is, in that we can expect that more people will be coming to us to bail them out of their audio problems. But that's a mixed blessing: They're not going to be willing to pay $250 an hour, or even $100, to save their audio when they can download Pro Tools Free for nothing. So we can look forward to another round of "micro-project" studios cropping up, containing little more than a laptop with an extra monitor, a cheap tube mic and a pair of "multimedia" speakers, whose owners will advertise that they can clean up the audio on video projects, add narration (by a hungry, out-of-work actor), add sound effects (downloaded) and lay in music (generated from Acid loops), all for $250—not per *studio* hour, but per *program* hour.

There's always a lot of pressure on tool developers to be the firstest with the mostest. But when the pro world and consumer worlds merge, that pressure gets insane. More flashy features, whether users really need them or not, and whether they work or not, take priority over reliability. Development cycles go into negative time-space, and testing sinks even further down the priority list. And there are few survivors in the world of consumer electronics: In pro audio, ADAT and TDIF have been able to co-exist well, but compare that to the battle between VHS and Betamax.

The audio and video worlds are likewise merging: More and more developers are working in both areas, and video companies are absorbing or licensing technology from audio companies. So the pressure brought on by trying to dominate the consumer market may very well infect the companies that make our tools as well. If they do, we'll be back where we started, in those bad old days of crummy, slow, crash-laden, file-format-incompatible audio programs.

I, for one, am not looking forward to it. ■

Paul D. Lehrman is Mix*'s Web editor. You can see more about the project he's talking about at www.antheil.org.*

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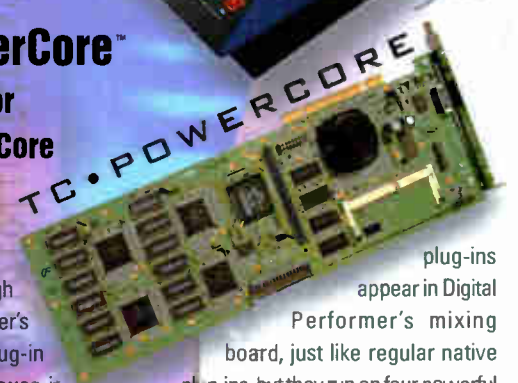

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STEINBERG NUENDO

TIPS AND TRICKS

The timing for writing this article was perfect. I had just completed my upcoming CD/DVD, *Atom: You're Not Alone*, using Nuendo for the entire project. Here are a few tricks I learned along the way.

WORK WITH TWO HANDS

Work efficiently. Use the key commands! Try to keep one hand on the mouse and the other on the keyboard. You can customize key commands and make new ones to your own liking. One of the handiest key commands lets you move parts left or right with the arrow keys. Here's how to set it up:

Pull down the File menu and select Key Commands. Select Nudge under Categories. Select Left under Commands. Click on the black bar under Type New Key Command. Hold down Ctrl, then Shift and hit the left arrow key. Next hit Assign and repeat these steps for the right arrow key. Save your settings using the Export button or import other settings via the Import button.

REPLACING CLIPS

If your kick drum track has hundreds of little clips and you can't make this kick sample sound right, then here's how to try another. Open your pool or sample library and choose a new sample. Drag the sample to the desired position (on top of one of the old clips) and hold Shift before releasing the mouse button. At the "Do you want to modify all events that refer to the same audio material?" prompt, click the All option and every clip will be replaced by your new sample, without losing the time position, the settings and length of the clip.

DITHER: WHY? WHEN?

Nuendo uses 32-bit, floating-point internal processing, and Steinberg recommends recording in the same bit resolution with Nuendo handling multiple bit depths in the same project.

Nuendo's Mixer screen

Nuendo includes Apogee's renowned UV22 dithering plug-in, so when should you dither? Dither for making quick-reference CDs is obvious, but you should also dither when printing virtual instruments or effects. For a quick mix, put the UV22 in the last post position of the post master section and export your audio. You can leave the UV22 in the master section, but remember to turn it off.

Computers can handle a lot more audio tracks than virtual synth tracks. To avoid overtaxing your CPU, print or mix down your virtual tracks and import them into your project. Few virtual synths—except some sampling devices, such as the LM-4—use resolutions higher than 16 bits. Keep those low-res synths at 16-bit: Saving them at a higher resolution won't make them sound better and may introduce unwanted noise and distortion.

Also, check your effects plug-ins. Nuendo's internal effects—and many other third-party plug-ins—run higher than 16-bit. If you must apply the effects to the virtual synth or are in doubt, then use the UV22 and then print. After printing, listen to the track by itself and compare it to the original virtual track before choosing. Note: When printing tracks from a virtual synth that is 24-bit, use the Nuendo Dither instead of UV22 and print at 24-bit, as the UV22 only dithers to 16 bits.

BY ATOM TROY

AUTOMATE AN EFFECT ON A WHOLE MIX

For something different on the intro to my album's last track, I put a filter plug-in in the master effects and swept it over the whole mix—DJ-style. Unfortunately, it couldn't be automated, but here's a workaround for doing crazy stuff to your entire mix.

Send all the parts you want effected to a subgroup. Put your effect in the subgroups insert. Turn on the Write button, play the track and automate away. Turn off the Write and turn on the Read. By using the "mix" of your effects plug-in and bringing it all the way to dry, you can put things back to normal when needed, rather than trying to turn the effects off. Bypassing automation can also do this, but watch for level changes. You can work on your automation or quantize it by adding an automation track from your original track. It will show you which parameters were used, so grab one, play around and work on smoothing your automation. If Snap is enabled, then you can quantize.

USERS GROUP

Join the Nuendo users forum at www.nuendo.com. It's the best place to discover new tips and get questions answered quickly. ■

Atom Troy is director of computer audio production at The Center for Electronic Communication at Florida Atlantic University, and an artist/producer on Nebulous/Atlantic Records.

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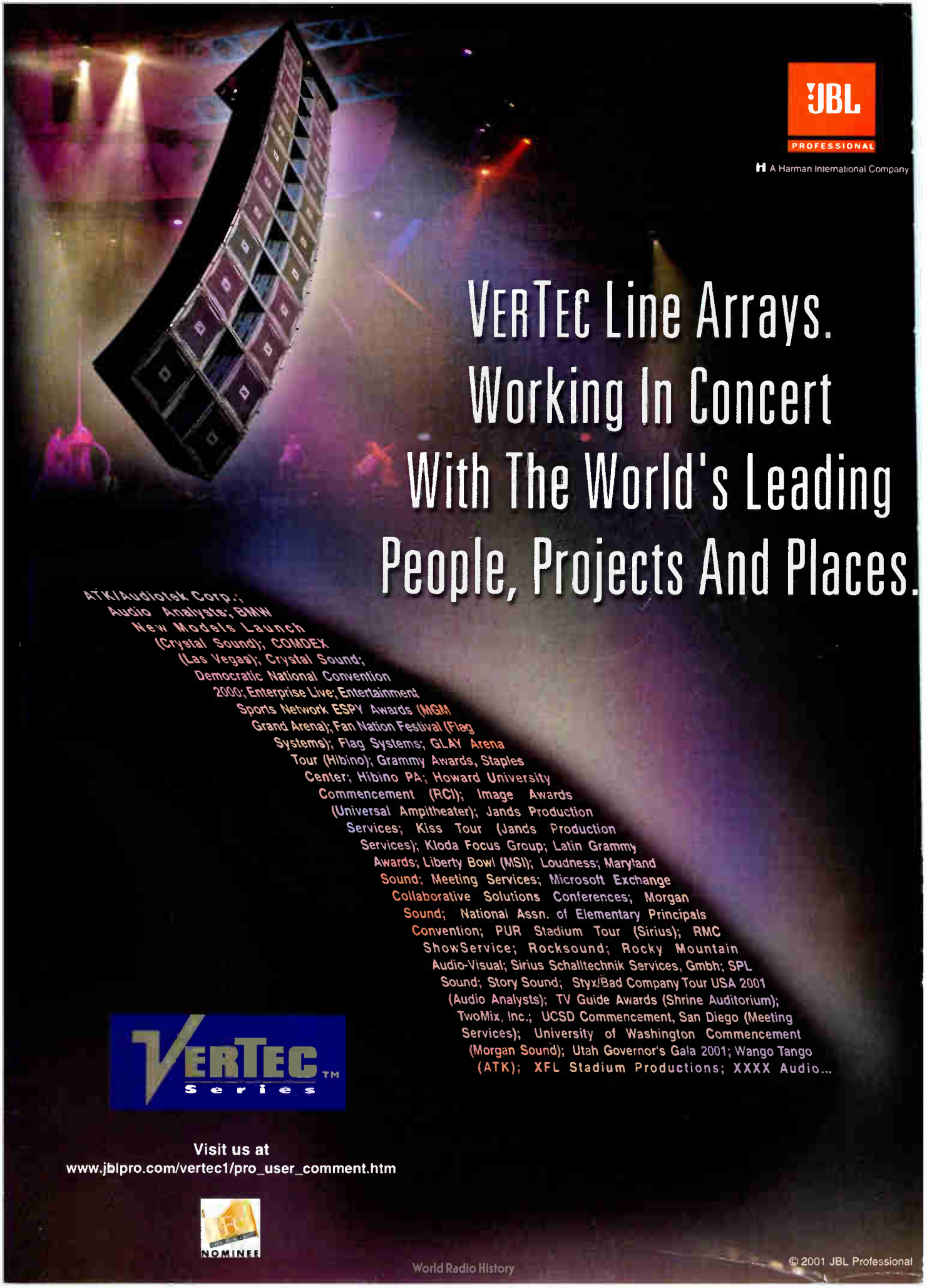

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