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On the Cover: The new 5.1 mix room at The Plant, dubbed The Garden, is centered around a refurbished SSL 8096 with G Plus Ultimation and a surround module. Monitors were custom-designed by Manny LaCarrubba. For more, see page 72. **Photo:** Tom Rider. **Inset Photo:** K. Wright/NewLine.

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At the 1999 NAB show in Las Vegas, our Digital 8•Bus console received POST Magazine's coveted 8th Annual Award for Innovation in Post Production Products.

1 SEE 24-CHANNELS AT A GLANCE. Instead of a microscopic gray LCD display, you plug in an SVGA monitor and get the whole story on a big screen: channel and aux levels, EQ and effects, mutes, record status—even an electronic "scribble strip." When you switch fader banks, the display automatically switches, too.

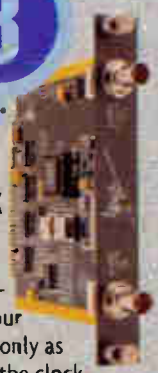
2 RECORD 24-CHANNELS AT A TIME. The Digital 8•Bus is the only digital console in its price range that lets you record 24 channels at once. Every channel has a Record Ready button; you can punch in and out to your heart's content.

3 56 INPUTS AND 72 CHANNELS. Greg Mackie really wanted us to make sure that we got this point across. This is NOT a mere 24-channel console!

6 A REAL PAN POT ON EVERY CHANNEL. A no-brainer right? Tell that to the other digital mixer and workstation companies. We're guessing that you want to get down to mixing, not clicking and mousing, so we built a real mixer.

7 A SOFTWARE PLUG-IN ARCHITECTURE AND ONLY THE BEST DEVELOPMENT PARTNERS. Add incredible software options like Massenburg EQ, Antares Auto-Tune, IVL Vocal Studio and more. Turn your console into an easy to control sound design pallet.

8 APOGEE® LOW JITTER CLOCK I/O. Since the quality of your audio is only as good as the clock that controls your console, we went to Apogee Electronics, the best in the business, to design our Clock I/O card.



9 24-BIT PDI•8 CARD Our 8-Channel AES/EBU I/O card offers optional real-time sample rate conversion on every stereo input.

10 24-BIT DIO•8 CARD The DIO•8 card features both ADAT and T/DIF formats and allows you to convert from one format to the other with a single card.

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13 FREE DEMO CD. Bonus undocumented reason: Get a free PC/Mac demo CD of our 2.0 software and console tutorial by calling toll-free or e-mailing our web site. Not available via this magazine's reader service card. Offer expires 12/99 or upon heat death of universe, whichever comes first.

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12 TWELVE REASONS WHY

48 Windows, Walter Afanasieff, Arista Records, David Arnold, The Bomb Factory, Jeff Bridges, Ed Cherney, Cinemuse, Columbia /Black Music Division, Michael DeLorenzo, Tim Dubois, The Dungeon, Earth, Wind & Fire, Ed Green, Mick Guzauski, Scott Hendricks, Islandlife Records, Wayne Linsey, Little River Band, Machine Head Post Production Studios, Binky Mack, Bobby Mackston, MXPX, Keith Olsen, Glen Phillips, Poke, Trent Reznor, Lance Rubin, Michael Score, Soundelux, South Beach Studios, Chester Thompson, Virgin Records, Bruce Willis, Dwight Yoakam, & the CIA are among those who

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(Thousands in use around the world everyday.)

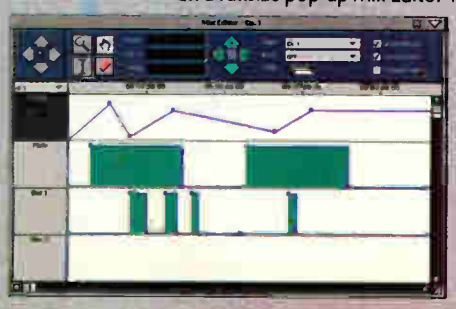
3 **56 INPUTS AND 72 CHANNELS.** It's harder to impress clients when your console isn't twenty feet long, but the D8B gives you the same performance. One-touch switching gives you 24 tracking channels (Chs 1-24), 24 tape return channels (Chs. 25-48), 16 FX returns, 8 alt returns, 8 virtual fader groups, 8 bus masters and 8 control faders.

4 **EQ, COMPRESSOR AND GATE ON EVERY AUDIO CHANNEL (W/O ANY CHANNEL LATENCY).** Most other digital mixers or work stations "bus" your audio to a DSP pool for EQ and dynamics. The resulting propagation delay causes phasing problems with your audio. The D8B has dedicated DSPs for each channel pair, so you don't run out of DSP and you incur no DSP latency. (One reason it sounds so good.)

5 **A CHANNEL AT A GLANCE VIA ON-SCREEN "FAT CHANNEL" DISPLAY.** Even million-buck mondo mega consoles don't have displays this informative and easy to use.

11 **EASY-ACCESS TRANSPORT CONTROLS.** Run the transport controls of any tape or hard disk recorder that has MMC. Add cue points anywhere. Create song start and stop points or loop between two points. The D8B speaks SMPTE or bars/beats/ticks. You can use the keypad to dial in to any point with frame accuracy.

12 **AUTOMATION EDITING MADE SIMPLE.** The Digital 8•Bus' Version 2.0 software provides you with the most comprehensive automation and automation editing tools ever found on an automated console of any size. View levels and mutes on a fullsize pop-up Mix Editor window that scrolls in real time with the audio. Then make changes graphically with the flourish of a mouse — or by typing in exact time code.



TEC TECHNICAL EXCELLENCE & CREATIVITY 1999 Nominee

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World Radio History

FROM THE EDITOR

CELEBRATING 15 YEARS OF TECHNICAL EXCELLENCE & CREATIVITY

It's hard to believe, but this month marks 15 years since *Mix* readers voted on the first annual TEC Awards. To be sure, a lot of changes have taken place during the ensuing decade-and-a-half, but through it all, the TEC Awards has maintained its goals of recognizing excellence among the products, companies and individuals, and funding charitable causes related to our industry. TEC has raised nearly $400,000 for audio scholarships, deafness research and hearing education programs such as the Hearing is Priceless (HIP) campaign of the House Ear Institute, and Hearing Education and Awareness for Rockers (HEAR).

Over the years, the TEC Awards has grown immensely in size and stature. At the inaugural ceremony, held in the basement of New York's historic Puck Building, attendees were subjected to warm champagne, cold food and a venue with acoustics best described as "unique." But those who braved these primitive conditions (a few enterprising guests even brought take-out pizza and Chinese food) had an entertaining evening that concluded with a hot performance by Herbie Hancock and the Rockit Band. Despite that shaky start, the industry came on strong in its support of the TEC Awards and its goals. One of the most moving moments in TEC history was when a young girl—the recipient of a middle ear bone implant operation funded by 3M—thanked the TEC audience a year later for giving her the gift of hearing. There wasn't a dry eye in the place.

In 1988, a TEC Awards Hall of Fame was established with honorees including Ray Dolby, Deane Jensen, Quincy Jones, George Massenburg, George Martin, Bob Moog, Les Paul, Rupert Neve, Phil Ramone, Bruce Swedien, Frank Zappa, Willi Studer and Al Schmitt. A Les Paul Award was added in 1991 to honor those who have set the highest standards in the creative application of recording technology—producers and artists such as Alan Parsons, Peter Gabriel, Herbie Hancock, Phil Spector, Brian Wilson, Stevie Wonder and Neil Young. There is no doubt that this year's honorees, Tom Dowd (Hall of Fame) and Sting (Les Paul Award), reflect all aspects of Technical Excellence and Creativity in their work.

Mix columnist Stephen St.Croix once said he liked the TEC Awards because "it makes manufacturers work that much harder to make the best possible products." It would be misleading to assume that TEC or any awards program is responsible for any product's performance, but if something like TEC provides an additional incentive for an engineer, producer, acoustician or product designer to please an audience of sophisticated end-users, then the TEC Awards has achieved its primary goal. However, one thing is clear: While there are TEC winners, there certainly are no losers—deserving products, individuals and companies get recognition, audio students earn scholarships, and awareness of hearing health and protection is increased. Perhaps the biggest award of all is that spirit of excellence that we all share when putting in that extra effort on our next project.

On an unrelated note, this marks the final issue for *Mix* associate editor Adam Beyda, who for the past seven years managed our Coast To Coast studio section with grace and aplomb. His humor and alternative music bent will be missed but should serve him well as he begins his Ph.D. studies. Good luck, Adam. And this month Kimberly Chun, formerly a reporter with the San Francisco Chronicle, joins our staff as copy editor.

Welcome aboard!

George Petersen

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PHOTOGRAPHY Steve Jennings

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MIX MAGAZINE
6400 HOLLIS ST., SUITE 12
EMERYVILLE, CA 94608
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SALES ADMINISTRATION MANAGER Dan Hernandez
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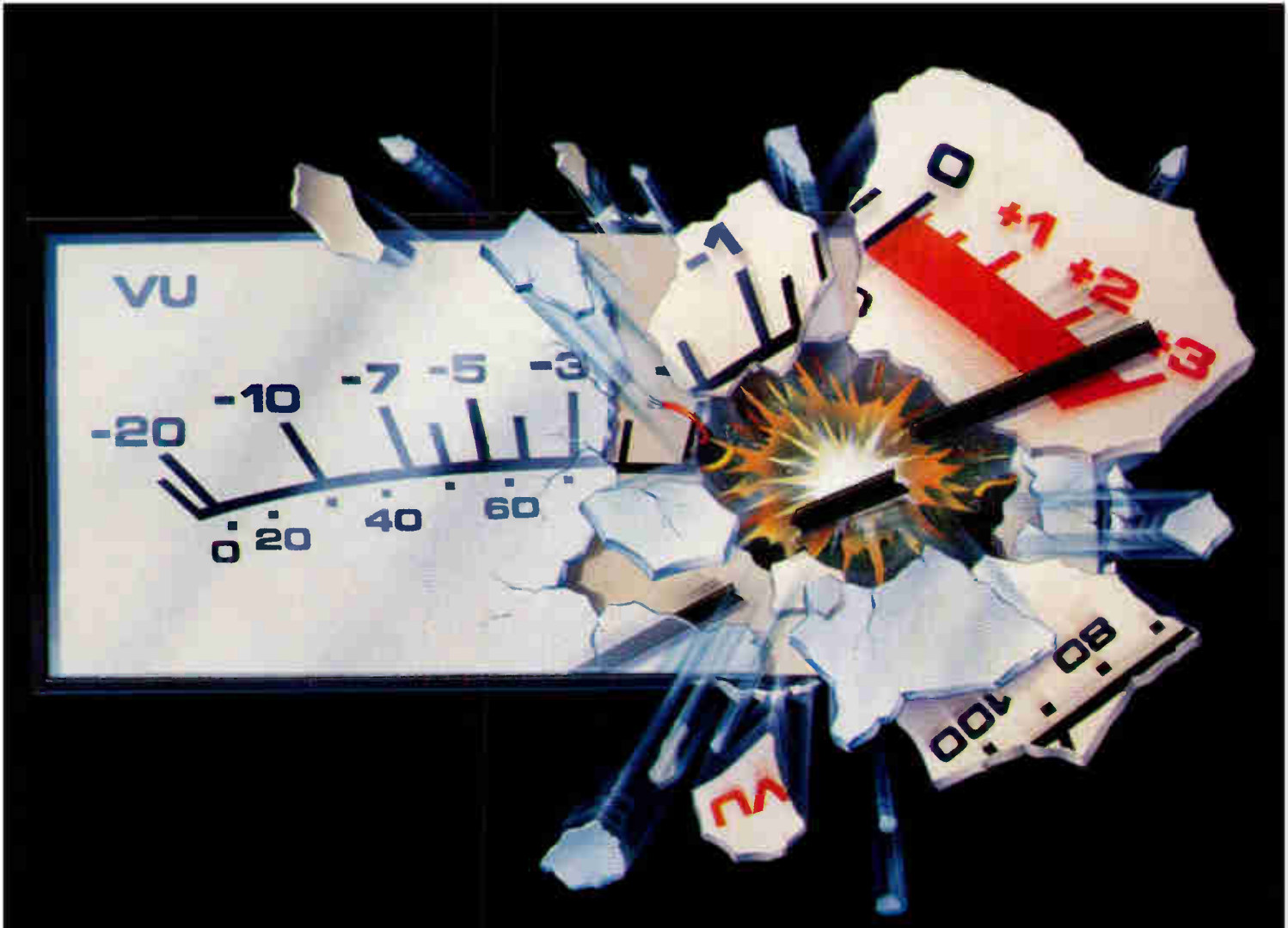

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FEEDBACK

LIVE MIXERS OUGHTA KNOW...

I just finished reading the Alanis Morissette article ["All Access"] in the June issue, and I am simply amazed. I am amazed at the complete overuse of processing gear on the FOH vocal mics: a tube leveling amplifier, followed by a Sabine unit followed by a 31-band graphic. What's wrong here? Is the console that crappy that a mixer needs all these things? Is her vocal that bad and out of control? Is the front-of-house system that bad? As a live mixer with a large company in Nashville, I and many others have never felt the need for this preponderance of gear. It is almost humorous that on the page preceding this article Mark Frink has a great story of tuning a room. As a fellow SIM engineer, I agree with much of what Mark has to say.

I would hate to be an up-and-coming engineer in this field because I would have to spend all my time learning all the outboard gear rather than concentrating on my mix. All of us in the live community should take greater care to allow the artist's music to come through rather than EQ and compress them so that we don't have to work as hard in the course of a show. We should be just as pumped and excited about the show as the band is, and if we are not, then we are in the wrong business.

Jeff Wess
via e-mail

DON'T FORGET THE OVERHEAD

All in all, the "Insider Audio" about MP3 and the industry ["Fuss and Bother Over Internet Audio," by Paul D. Lehrman, June *Mix*] was an excellent article. You need to seriously clarify one fact however. It does not cost labels under $1 to make a CD, as your editorial seems to claim. It costs labels, or anybody for that matter, possibly under $1 to manufacture a CD, but that's only a small part of the overall cost of "making" a CD. When factoring in the costs of recording, mastering, graphic design, videos, radio and retail promotion, live tour sponsorship, etc., it costs considerably more than one measely dollar to "make" a CD.

Richie Kessler
Platinum Island Studios

Of course you're right, Richie. I was just talking about the materials and actual pressing cost. If you will recall in the early days of CDs, record labels justified jacking up the price of the things high above vinyl and cassette based on the scarcity of manufacturing plants and the cost of manufacture. This is no longer a factor, but I haven't seen the prices come down.

—Paul D. Lehrman

READER QUESTION

Is the low-impedance, balanced mic/line analog interface (cable and interface electronics) pro audio uses standardized formally anywhere? I searched AES, but only digital interfaces came up under their umbrella. If you folks know of anything (or know there isn't any standard), please let me know.

Jeff Jaska
Continuum Group

I don't think it's formally standardized. I think it just evolved. Twenty years ago, people were still using double-pronged telephone connectors and ladders of resistors to pass and balance audio, and that just faded away, not by fiat but by practice.

—Paul D. Lehrman

THANKS FOR THE GLOSSARY

I would like to thank you very much indeed for the publication of Larry Blake's Handy-Dandy Film Sound Glossary [Post Script, "Sound for Film," March, April and June issues].

I'm Spanish, and my English is not as good as I would like. There's not too much written in Spanish about sound, especially film-related sound. It's all in English. Almost all of the papers, articles and books use lots of terms and words you're supposed to know but are not explained anywhere.

I really appreciate your Glossary in two ways. First, it helps a lot of people like me, who are not "natural English speakers" that are not used to sound jargon used in the USA or the UK. We just know the polite English taught at school, you know. Second, it's not just a simple dictionary, it's got tons of info about the terms being explained, and it's in plain English, so everybody is able to understand it. Once more, thank you very much.

Suso
via e-mail

ANYBODY OUT THERE?

I am seeking information regarding the concept of a musicians' studio cooperative. The plan goes like this: Lease a 3,600-square-foot commercial or industrial space and divide it into seven soundproof studios, six of which will be custom-built, private rehearsal studios; the seventh would be a communal recording studio. All members of the co-op will participate in the planning, construction and operation of the company. Expenses and recording studio usage will be divided equally. Of course, there is much more to it than this, but I understand your magazine's space constraints.

If any of your readers have participated in this type of thing, I would appreciate hearing from them (what their experiences were, what pitfalls to watch out for, "If I knew then what I know now...").

Also, tips on soundproofing on a budget would come in handy; I've seen lots of practical studio design ideas but nothing on soundproofing. We do not expect to open for several months, as we are still in the planning stages. If you have any advice, contact Cheyenne Thorne, Longmont Musician's Studio Cooperative, PMB 395 700 Ken Pratt Blvd. #204, Longmont, CO 80501; 303/870-6357.

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

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"Right Track pioneered the use of digital consoles in high end studios. We were the first facility in New York to install a Capricorn. Today we have the bookings, client list and Grammy-nominated projects to confirm our decision."

– Barry Bongiovi, *General Manager*

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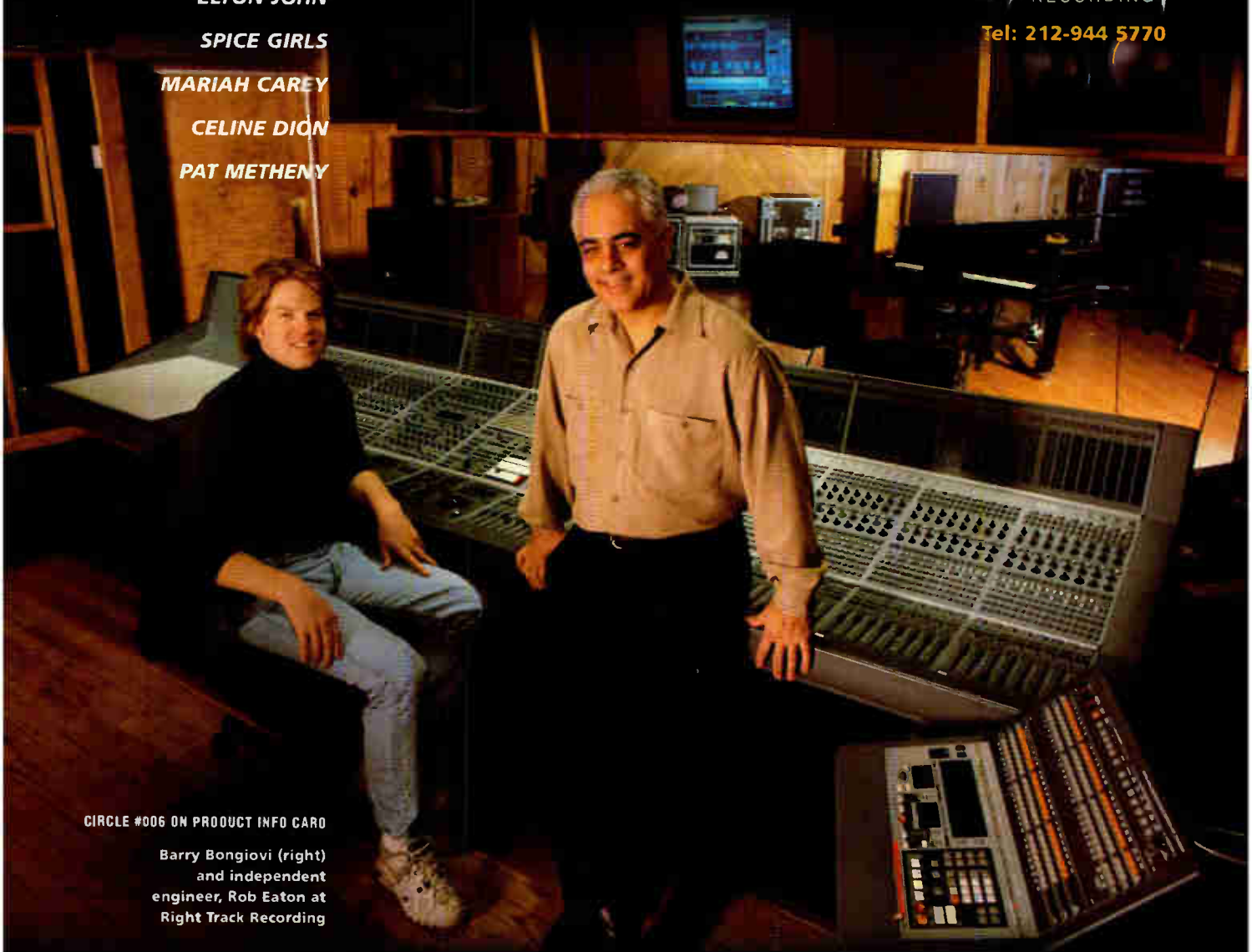

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Barry Bongiovi (right) and independent engineer, Rob Eaton at Right Track Recording

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World Radio History

CURRENT

TODD-AO ACQUIRES SOUND ONE, 4MC MERGES WITH DIGITAL SOUND & PICTURE

Major consolidations took place in the audio post-production industry during the month of June. Long-established and seemingly ever-expanding Todd-AO purchased New York's leading sound-for-picture facility Sound One, and relative newcomer 4MC bought the assets of Digital Sound & Picture in Los Angeles. Both buyers are public companies.

Todd-AO Corporation bought $12.8 million worth of common shares outstanding. The company will retain the name Sound One, and Jeremy Koch will continue to serve as president, running both East Coast locations and adding the title of senior vice president at Todd-AO Corporation. One of the founders of Sound One, Elisha Birnbaum, has retired.

"This was a merger that was meant to happen," says Koch. "I think this is the best of all worlds, for New York and for both companies. Certainly, it opens the markets, and it creates greater opportunities. We believe that more work will come to New York because of what we have together and what we plan to do in the future."

Todd-AO Studios East recently purchased a Neve DFC film board, and further developments are in the works. "That facility has a wonderful room, the biggest room in New York," Koch says. "The integration of the two facilities will create one of the most state-of-the-art, full-service post-production sound facilities in the country."

With a strong foothold in New York and an eye on Europe (including facilities in London and Germany), Todd-AO seems well-positioned for the global enterprise it has long envisioned.

Meanwhile, Four Media Corporation of Los Angeles has purchased the assets of Digital Sound & Picture for $7.2 million. The company has retained the name Digital Sound & Picture for its facilities and will operate out of 4MC's existing (but extensively remodeled) studios in Burbank and DS&P's original location on South La Cienega in Los Angeles. Owners John and Nancy Ross have negotiated long-term employment contracts and will be in charge of operating the sound departments at the two locations. Personnel have all been retained as part of the deal.

"We've always had a technological edge, we've just never had the scale to operate at this level," John Ross says. "We will essentially be the second largest sound facility in Los Angeles, but with a technological edge and a capital base that will allow us to be very effective. We are now in the process of expanding both our talent base and our client base."

DS&P works in longform film and television. The two locations now include 11 dubbing stages, 36 5.1 editing bays, three Foley stages and three ADR stages, and are connected via an OC3 link on a private fiber-optic line leased through Pacific Bell. As Ross says, "Electronically, we are one facility."

AGENDA SET FOR FALL AES

At a press conference held in Manhattan's Roosevelt Hotel, the agenda for the fall AES show was revealed. Acknowledging that references to the new millennium have become tiresome, AES Director Roger Furness nonetheless stressed this year's focus on the future.

One feature of this year's convention is increased attention on the AES's student members. Young engineers throughout the country have been asked to submit recordings in several genres, including jazz, pop and classical, to a panel of judges.

Attendees will be able to take advantage of various tours showcasing the audio treasures that the metropolitan area has to offer. Trips to Carnegie Hall and Lincoln Center will include discussions of the acoustical properties of those two venues. On a first come, first served basis, convention-goers can visit the audio transmission facilities at both the Empire State Building and World Trade Center. Tours of several major New York recording studios—The Hit Factory, Sony and Sear Sound Studios—are also scheduled.

Although many people attend AES to check out the newest gear, convention co-chairman Doug Cook pointed out that workshops are the "hidden treasure" of the shows. Workshop chairman Michael Solomon told the press that his toughest job was "limiting the workshops to 54 hours."

Highlights of this year's workshops will include papers on the history of the microphone, music delivery on the Internet and a follow-up workshop to the highly popular "Guerrilla Acoustics" lecture given at an earlier convention. "We're committed to reaching out to the project studio owner," said Cook. "This workshop has been scheduled on a weekend; we understand that many project studio owners have 9-5 jobs. We know that not all great music is recorded under optimal circumstances, and we want to make sure that the AES offers some things to everyone who is dedicated to recording music well."

—Gary Eskow

SECOND ANNUAL MP3 SUMMIT

June 15 and 16 marked MP3's second annual conference, the MP3 Summit. Held at the University of California, San Diego, it was a major event for the online music community. With more than 15,000 artists, over 27 million MP3 singles downloads, and roughly 300,000 hits per month, the MP3 site and its associated compression format, MPEG, have generated a lot of attention. A lot of new MP3 players, software and hardware made their debut, and discussions

—CONTINUED ON PAGE 16

TEC SPONSORS ANNOUNCED

The Mix Foundation for Excellence in Audio has announced a record 34 sponsors for the 15th Annual Technical Excellence & Creativity Awards, to be held Saturday, September 25, at the Marriott Marquis in New York City.

For more information about the 1999 TEC Awards sponsors, see page 120. A limited number of sponsorships and tickets are still available. Call Karen Dunn at (925) 939-6149 or e-mail KarenTEC@aol.com. ■

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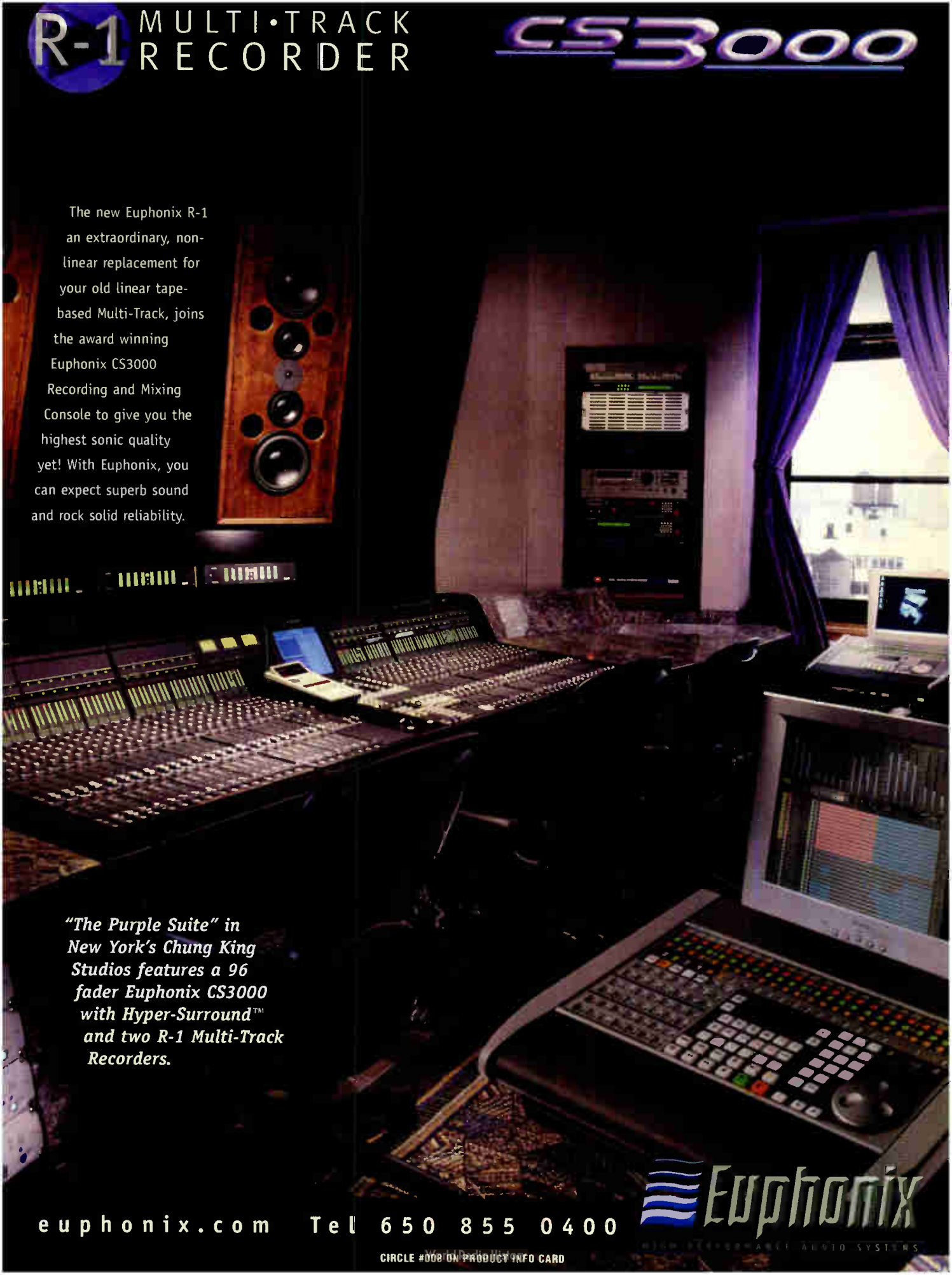
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INDUSTRY NOTES

Larry Howard joined **Tannoy/TGI North America** (Kitchener, Ontario) as product and business development manager. Howard, an industry veteran, has held managerial and director positions at Universal Studios, Planet Hollywood and, most recently, Soundelux...Changes at **Manley Laboratories** (Chino, CA): David Manley resigned as president and assigned his total shares in the company to **EveAnna Manley**, who has assumed the duties of president, CEO and sole owner. David Manley is no longer associated or affiliated with Manley Labs...Following the departure of Gloria Borders, **Glenn Kiser** was tapped for vice president and general manager of **Skywalker Sound**, a division of Lucas Digital Ltd. (San Rafael, CA). Previously, Kiser served as the executive in charge of post-production at Propaganda Films...Bedford, MA-based **Lexicon** brought industry vet **Buzz Goodwin** onboard as VP of sales. Goodwin will be responsible for sales of MI and professional products and will supervise the marketing for MI, pro and consumer audio products...NAMM president/CEO **Larry R. Linkin** was awarded an honorary doctor of music education degree from Duquesne University in Pittsburgh, PA, in recognition of his contributions to promoting music, music making and music education. The May 8 ceremony took place during the Duquesne School of Music Commencement Ceremony, where Linkin also delivered the commencement address...**EVI Audio** (Buchanan, MI) announced the appointment of **Michael Webb** as national sales manager, commercial sound products for EV and Altec Lansing. Webb has worked in the retail music/contracting market since the '70s...**Peavey Electronics** Corporation (Meridian, MS) announced that it will host the **Melia Peavey Memorial Vendor Golf Classic** to be held October 18-19 at Meridian's Northwood Country Club. Golf Pro Jack Nicklaus has agreed to attend the tournament and host a Golf Clinic to benefit Peavey House, a shelter for abused children. For further information contact Jere Hess at 601/486-1115...Burbank CA-based **Nelson Sound** added live sound pro **Jeff Van Duyn** to its sales and service team. Van Duyn has served as production/tour manager for Rickie Lee Jones, Paula Abdul and Pat Metheny...**Sound Physics Labs** (Glenview, IL), parent company of ServoDrive Inc., named audio designer/engineer **Thomas Danley** director of engineering...International marketing consulting and training firm **Frost and Sullivan** (Mountain View, CA) announced that its research report, **"The North American Market for Commercial and Professional Audio Products,"** commissioned by the NSCA, is now available. For further information, visit www.frost.com or call 650/237-6525...**Jeff D. Szymanski** joined **Auralex Acoustics** (Indianapolis, IN) as head of the consulting engineering department, and **Dave Harbinson** was appointed national sales manager...**Anthony Petruzziello** was promoted to director of sales at Fair Lawn, NJ-based **Maxell Corporation**'s professional media products group...**Charles M. Salter Associates** (San Francisco) promoted **James Chung** to the position of marketing manager, and **Jessica Johnston** was hired as marketing coordinator...**Mackie Designs** (Woodinville, WA) and **Antares Audio Technologies** announced an exclusive partnership for the development of Auto-Tune real-time pitch correction software for the Mackie Digital 8-Bus console...**Westlake Audio** (Newbury Park, CA) appointed **Larking Audio Ltd.** as its exclusive distributor of Westlake Audio Monitors in the United Kingdom...**Phase Acoustics** (Stuttgart, Germany) signed a distribution contract with **Formula Sound.** ■

—FROM PAGE 12, CURRENT

about making money and the future of MPEG abounded. (If you are unfamiliar with MP3, check out their site, www.mp3.com.)

This year's conference drew more than 1,000 attendees and 30 exhibitors, quite a change from last year's 200 attendees and four exhibitors. An ongoing schedule of memorable discussion panels included such topics as "Keeping the 17 Year Old Happy: How to Monetize the Online Community," "Music as a Virus: Biological Warfare 101" and "The Triumph of Technology: The Defeat of the Copyright Law." Panelists included: Ice T, Mark Kates (Grand Royal Records), Ron Sobel (ASCAP), Tom Dolan (Virgin Records), Canibus (Universal Records) and representatives from companies including Macromedia, RealNetworks, Adaptec, Creative Labs, RCA and Microsoft.

The new MP3 hardware players were colorful and varied: There were pint-sized players from I-Jam and San Disk; larger palm units from RCA, HanGo and Trimax Technology; and full-sized stereo audio component machines from Frontier Labs and netDrives. At the Microsoft booth, everyone had a chance to listen to the company's new audio codec, MSAudio. Microsoft also showed off its new software player, Windows Media Player, a multiformat player. MP3, .WAV, AVI, MPEG, MIDI, and, of course, MSAudio—expect to see more multiformat players in the near future, hardware and software. Other fresh-out-of-the-box soft players included VisioSonic's Digital 1200 SL with a virtual Denon dual CD interface; MusicMatch's Jukebox 4.0, which adds a music library and MP3 recorder to the player; and Xing's XingMP3 Player.

Other highlights: ASCAP proclaimed the formation of a strategic alliance with MP3 for "the protection of creators' rights and the development of music talent." On June 15, the first day of the conference, the Recording Industry Association of America (RIAA) lost its much-publicized lawsuit against Diamond Multimedia, maker of the most popular handheld MP3 player, Rio. (Diamond followed the victory with an announcement that the Rio 500, with twice as much memory as its predecessor, would ship soon.) Michael Robertson, MP3's CEO, announced that the company received a $45 million investment from Cox Interactive Media.

—Erik Hawkins and Lygia Ferra

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MUSING ON THE END OF LIFE AS WE KNOW IT

HOW EMBARRASSING

A friend told me yesterday that she had the next day off because T. Row Price was having their New Year's party. This early June date is because they are going to make some employees work through midnight into the actual New Year's Day 2K.

Two friends have told me that they are taking their planes from their airports to their back yards for a few days at the end of the year so that they won't get hurt when all the other planes fall out of the sky on J1-2K.

Another friend in San Diego called me to ask what caliber automatic weapons would be best to mount in the windows of his home so he could best protect his old Us7s from the mutants that he is sure will roam the streets at night after the inevitable total collapse of civilization on J1. I told him it didn't much matter because all of his new pulsed laser sights will probably crash anyway, and besides, I was pretty sure that mutants like Sennheisers more.

One guy I know has been surfing the 'Net and buying all those books on how to build thermonuclear devices at home for less than $150, using components readily available at Kmart. I didn't have the heart to tell him that the timer he will get will probably crash at midnight and kill everyone within 15 feet of his living room. (He's one of those guys that says "nucular," so I don't imagine he's educated enough to get the thing to do much more than ignite the chemical detonators.)

Another friend called and asked if I could come over and check out her new electronic pool filter to see if it was going to freeze up and make her pool all icky. I didn't get that one—she lives in Maine, so the whole damn pool should be pretty frozen by then anyway. Personally, I will be immune, as I live in the woods and use the old rope-start DE pool filter.

Hospitals are refusing to book elective surgery at or around J1-2K, but there is no need for panic. Rodeo Drive plastic surgeons are working hard to assure that there will be no down time (that the patients will be aware of) during that critical period. And as the Los Angeles Chamber of Commerce has admitted that even a 15-minute in-

—CONTINUED ON PAGE 225

BY STEPHEN ST.CROIX

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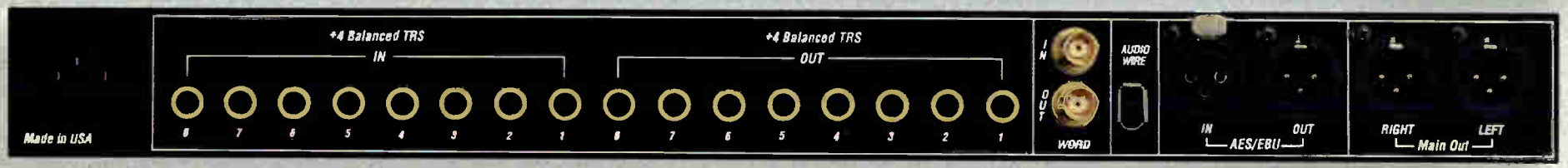

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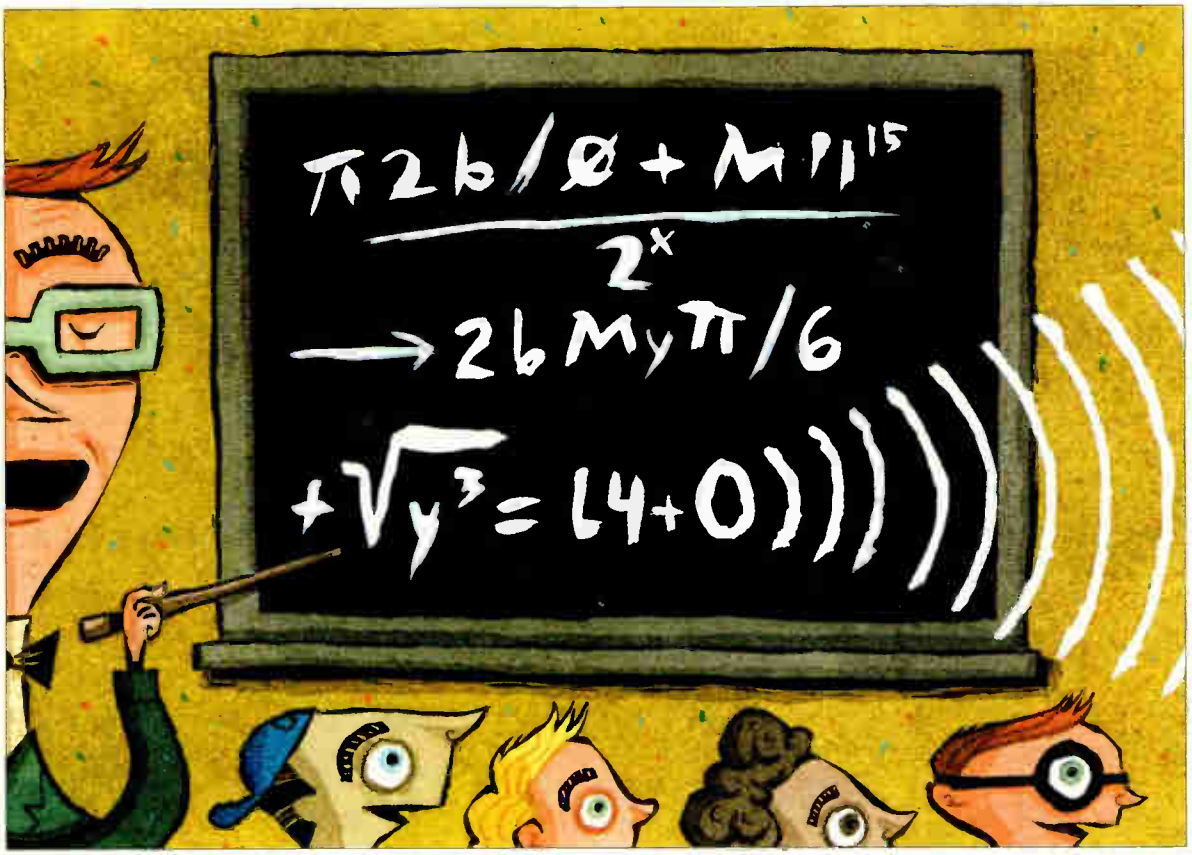


ILLUSTRATION: ADAM MCCAULEY

First of all, don't worry about the sunscreen. For the next four years, where you're going to be spending all your time, you're not going to need it.

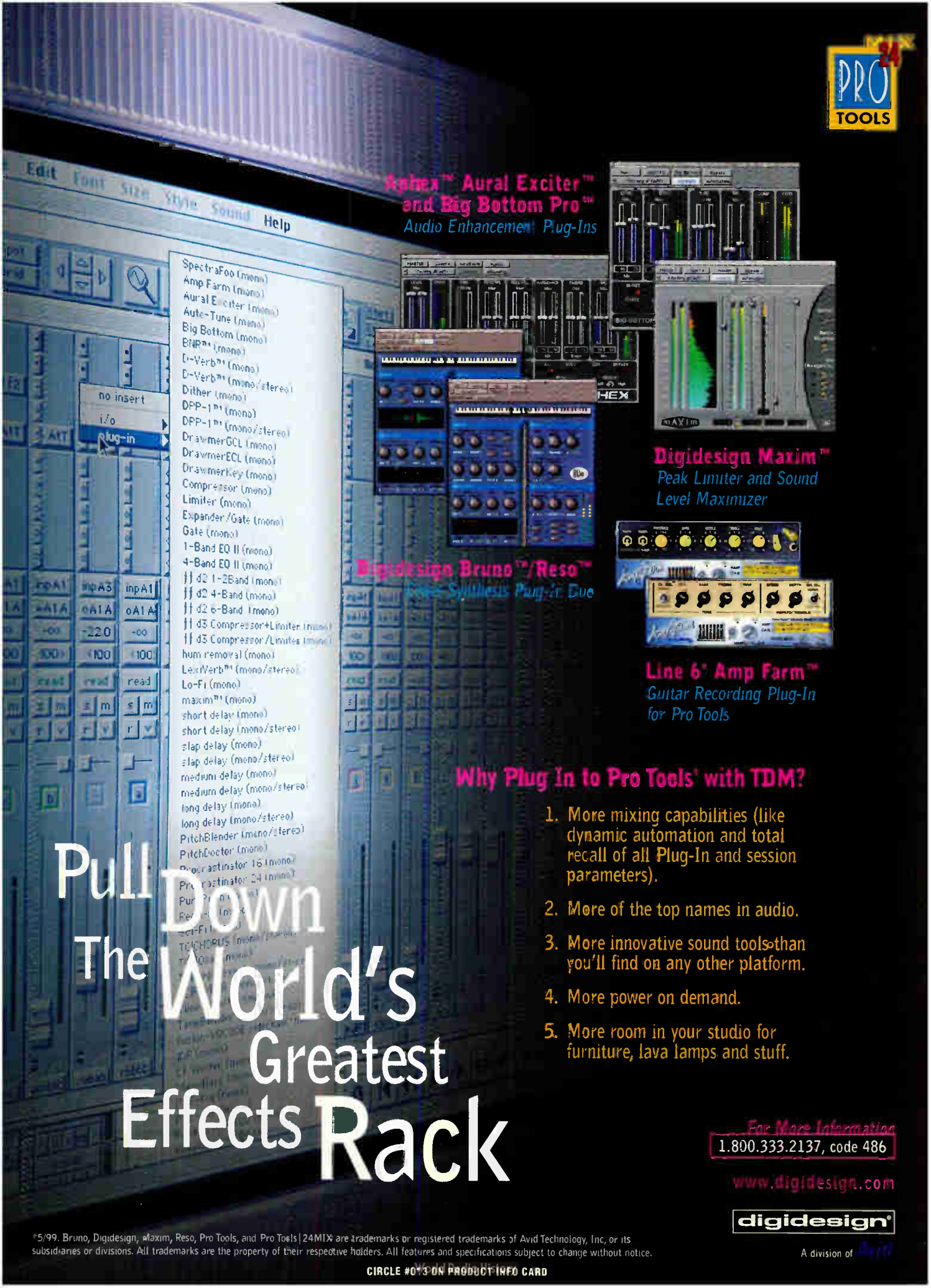
Worry instead about this: If you ever—well, more than once—ask yourself, "What am I doing here?" then you probably don't belong here. Pursuing a career in professional audio is no fun. It's not linear, it's not predictable, the hourly wage usually sucks, and the working conditions are often less than ideal. You'll have to deal with all sorts of jerks, from marketing jackasses to egotistical clients to wretched guitar heroes and worse. You'll be wrestling with user-hostile equipment, hopeless tech support lines and the constant threat of obsolescence of both you and your gear, while working the type of hours that make it impossible to even dream of having a personal life.

So if you don't love this, if you can't imagine yourself spending the rest of your life anywhere else except in front of or surrounded by a bunch of speakers, devoting all your energy and creativity to perfecting in one way or another the sounds you hear, then you're in the wrong place. This is not a business for the faint of heart or for those who just figure, "Hey, it's a cool way to get through college." If you can't say to yourself, at least most of the time, as you slog through classes, homework, exams, studio exercises and term projects, "This is exactly what I want to do," then you should be doing something else.

At the same time, realize this: You are not likely to come out of this program with the same goals and passions that you had when you started. Some of you today are completely convinced that you want to produce records or score films or mix live bands, and a few of you will indeed end up doing those things. But in the time you're here, both you and the industry will change. You'll discover that there are a lot more opportunities in audio than just the obvious ones, and many of you will fall in love with things you never knew existed before you came here. Some of you will end up wanting to be dialog editors or sound designers for low-bandwidth video games or Web sites. Some will be interested in designing and installing sound systems for theaters or for airports. Some will get into radio or

BY PAUL D. LEHRMAN

World Radio History



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producing talking books or doing audio for educational CD-ROMs. Some of you will decide that you want to be on the manufacturing side and go for jobs with speaker designers, signal processing hardware makers, chip designers or software publishers, finding your niche in product development or testing or marketing or customer support. And some of you will go out and do stuff that your teachers never heard of, because it didn't exist when we were teaching you. And we'll be very proud of you.

And speaking of change, get used to the idea that most of the equipment you'll be getting trained on here will be obsolete in five years. But that doesn't mean it's stupid to learn it. Being expert on a particular piece of gear is, by itself, not much use in an industry where product cycles can be counted in months. But learning how to become an expert is a skill that never goes out of date. And this is where you can learn that. This is where you'll develop the habits and attitudes that will let you learn things well—where you'll learn to learn. I spent two years of college getting really good at playing the bassoon, and after I graduated I barely touched it again. But I don't regret those years one iota: I learned how to focus, how to practice, how to set goals, how to break down a seemingly impossible task (the Alvin Etler sonata, for any bassoonists out there) into manageable chunks, and how to pace myself. On every new task I've been confronted with since, I have benefited from those skills.

Don't just learn what equipment does; learn why it does what it does. If you memorize every function on some piece of equipment by rote, when you are confronted with the next generation of hardware or software, what you know won't apply anymore and you'll have to start from scratch. But if you know the principles behind the equipment, you can carry that knowledge over to every other system you encounter.

How do you do that? Well, besides getting a good theoretical grounding in electronics, acoustics and digital logic, you should, if you have the choice, get as much training and hands-on time as you can with open-ended systems. They reflect the real world better than closed, self-contained systems. Don't just learn how to use a workstation—learn how to make it cooperate with and talk to other workstations and devices. Don't just learn one digital audio editor, learn several of them, so you get the broadest possible understanding of what digital audio editing is all about. When the next one comes along, you'll take what you know and be able to jump right on it. Don't just learn how to get SMPTE into your system—learn how it's generated, what the bits mean, what other purpose it has in the world besides linking your computer to a video deck, and why it's such a pain in the butt.

Don't forget to learn music. It's a language that's spoken by a lot of the people you'll be working with, no matter what you end up doing. Obviously, if you're working with musicians, you want to be able to understand what they're saying when they talk about taking it from the bridge, or putting in a key change, or doubling the voice at the octave in the middle eight. And you certainly don't want to embarrass yourself by telling a soprano sax player that his clarinet is too loud. But even if your gig is chopping up library music to make industrial video soundtracks, it's going to make your job go a lot faster if you know that splicing from the second beat of one bar in G major to the third beat of another in B-flat minor isn't going to work very well. Even if you're making speakers, you need to be able to talk to your customers and your marketing department not just about transient response, crossover slopes and damping, but about how well the listener can pick the instruments out of an orchestra, and about how accurate the stereo field is—and that often means being able to tell the difference between a trumpet and an oboe, and between a xylophone and a glockenspiel.

Being an expert on a particular piece of gear is, by itself, not much use in an industry where product cycles can be counted in months. But learning how to become an expert is a skill that never goes out of date.

Don't be afraid to fail. Once you're in the real world, failure can be costly. But in school, no one's depending on you except you, so failure should be educational. If you suddenly realize that a project you have taken on is too much for you, don't just walk away from it—look hard at it, and see where you've broken down. Learn from the experience so that next time you encounter a similar obstacle, you can get past (or at least around) it. And never be afraid to try new things, even though you think you might fail. School is an opportunity to go in many directions, and to discover areas of the audio industry—and yourself—that you may not have thought of before. You may find yourself attracted to, and succeeding brilliantly at, something completely new. And having the experience of going into a new situation cold and being able to master it is going to stand you in good stead for the rest of your career—because it's going to happen to you a lot.

Now a little bit about basics. Two words: signal flow. No matter what you're doing—mixing, synchronizing, designing or troubleshooting—understanding how signals move through and among components and systems is crucial to getting anything done. Learn to think about signal flow. The first time your studio goes down in the middle of an important project, if you can trace in your head how the analog and digital audio, MIDI, SMPTE, SCSI and other signals are supposed to route and distribute themselves, it will keep your efforts to put things right from degenerating into random switch-throwing and cable- (and hair-) pulling. Why isn't that sample being triggered? Why is that bass track so distorted? Why are the sound and picture drifting and hiccuping? You can't easily figure out why things have stopped moving if you don't know where they were supposed to go in the first place.

Along with that, learn how things break down and why. Because they do, constantly. Even if all the equipment in your school works all the time (fat chance), that's not the way things are in the real world. Inevitably, you'll be the only person in the studio at some crucial, down-to-the-wire ses-

—CONTINUED ON PAGE 226

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DIGITAL EDITING TIPS

BY RANDY ALBERTS

ROCKING WITH THE REMIXERS, CAPTURING THE CHOIR

ILLUSTRATION BY ELLE SCHUSTER

What would happen if a carpenter, sculptor and painter shared the same tool-box? Materials such as raw boards, polished marble and bleached canvas have little in common, but the way in which these artisans use their tools and the commonality of their creative visions provide a common bond.

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The situation is no different for digital audio artisans. We spoke with a number of digital creators—ranging from an experimental choral sound artist to two remix producers whose credits are as diverse as Korn, Sarah McLachlan and *Mad About You*—about how they use their computer-based toolboxes, and were not surprised to find common threads in the way they work.

As with most recording projects, the degree of interaction between the producer/engineer and artist varies greatly on a remix session. "The original artist usually dumps a vocal track onto DAT for remixes, and creatively the rest is usually hands-off," says Aaron Stipkovich, a Los Angeles-based producer with a string of remix, recording, television, film and interactive CD-ROM projects to his name. His remix credits include Chumbawamba's "Amnesia," Korn's "It's On," Bloodhound Gang's "I Wish I Were Queer So I Could Get Chicks," and a Tears For Fears track. Occasionally there's more involvement with the artists, such as on the latter's "Mother England" remix, when "Stipko" was asked to lose a background vocal part after completing his remix. "There was a part I liked that sounded like a black female singer, but Curt [Smith, founding member] called back and asked me to bury it in the remix like he had done on the original. It was actually his voice processed through a harmonizer, but he didn't like the digital artifacts in it. With Chumbawamba, I had no involvement with them and replaced everything but their vocals."

Depending on the physical location of the artists he's working with, Stipko has a variety of means and methods to create vibrant, "new" pieces. For his "Not An Addict" remix of the Belgium-based K's Choice, it wasn't feasible to fly the band to L.A. to add more voices to the remix, so the band sent a 2-inch tape of new vocals that Stipko dumped into Soundscape via ADAT. "We loaded the new vocals straight into Soundscape's SSHDR-1 Pro Bus Removable system while at the same time establishing a MIDI bass line on-the-fly using Cakewalk Pro Audio 8's rock-solid MIDI performance. They only put timecode in the first few bars to get their groove, so I had to line up the bass line while laying down a SMPTE backbone to build the rest of the remix."

Vocals are the cornerstone of any remix session (and typically all the original artist provides), so finding the right digital tools to make the most of them is vital. One of Stipko's favorites is VocALign from Synchro Arts, a dialog replacement plug-in he uses in Soundscape in atypical ways. "It dynamically changes time," says Stipko, "so if you've got two dialog lines saying the same thing but in totally different inflections and timing, you can apply the peaks and valleys of the guide track to the target track without changing the original audio file. It's perfect for dialog work, but I also use it to apply the groove of a live drummer to sampled drum parts or to line up vocals. You can sequence and program swings and feels, but it still feels programmed, and I could physically go in and cut up dialog files, but VocALign works instantly. I'm a huge fan of background vocals and harmonies, so I use it extensively to correct sloppy performances and timing problems."

IT'S ALL ABOUT VOICE

"The human voice covers at least a 10,000Hz range, and that's why it's the most complex and difficult instrument to record or sample," says Kathy Kennedy, another producer using digital tools to capture and edit both sung and spoken word. A San Francisco-based choral and experimental sound artist who hails from the Musique Actuelle electroacoustic improvisation scene in Montreal, Kennedy opts to use Mark of the Unicorn's Digital Performer and Digidesign's Pro Tools to capture live performance sparks—needless to say, she is not a fan of the 100-track undertakings of vocal artists like Enya. "I see that as a massive waste of time," she says. "People don't sing well together with audio tracks, they sing well together with each other. People need to sing together in person; it's the basis of my existence."

Often using audio transpose tools in Digital Performer and Pro Tools to correct out-of-tune singers and choir sections, Kennedy also uses EQ and automation to hide mistakes without changing initial audio files. "If I hear a passage or phrase where my altos went flat, I create an EQ notch filter and use automation to mask them for a single phrase or section. I always record vocals first and never know how a large choral group's timing will be, so I also use Performer's Audio to Tempo tool to correct any timing lapses."

In addition to writing, arranging and recording choral pieces, Kennedy's own sound artist residencies at San Francisco Bay Area institutions such as the Headlands Center for the Arts, Exploratorium and The Lab have resulted in some unique performance pieces created with a digital audio tool belt. One performance about kids and violence combines rhythmic drum loops with spoken-word sound bites, but it's the latter that's driving the rhythm of the performance. "It's an all-digital work," explains Kennedy. "The voice bites are RealAudio files taken from NPR, first-hand accounts of tragedies involving kids with guns. This particularly chatty girl's voice talking about Columbine has a rhythmic tempo about it I liked. I

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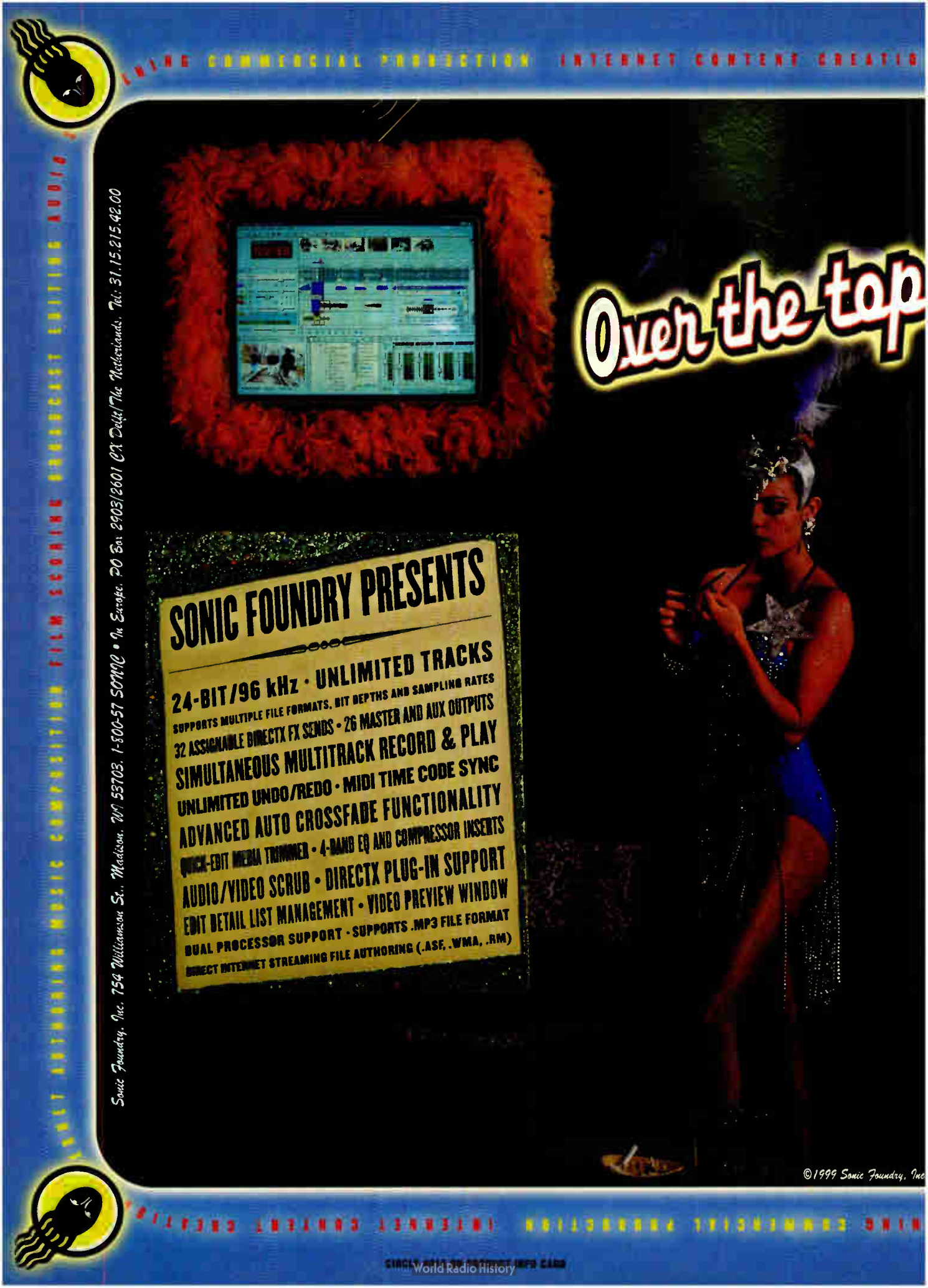
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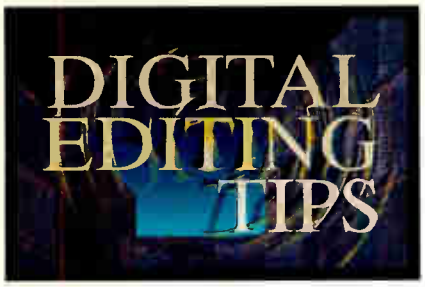

again used Performer's Audio to Tempo and time-stretching tools to lock everything else up to the tempo of her voice when adding drum loops and other voices later, just the opposite of how a DJ works."

Vocals are also important to A&R staffs, though most remix producers don't share their concerns about the ways they are enhanced. "Sarah McLachlan gave us some vocals for the 'I Love You' remix that were originally tracked at 80 bpm, very slow," recalls Brian Transeau, a remix and recording producer in Los Angeles. "Our progressive house mix of the song needed to be at least 135 bpm, so to simply time-stretch her voice that far would tamper with her incredible natural vibrato and obviously wouldn't work. It's trendy for record people these days to tell remixers, 'Don't even think about time-stretching the vocals!' I tell them I won't, then I launch Steinberg's Time Bandit as soon as I'm off the phone. I slowed the tempo down to 67 bpm for Sarah's piece, then double-timed it in Time Bandit, and not even Sarah can hear the difference."

Transeau, who attended the Berklee College of Music, has credits ranging from writing the score for the movie *Go* to remixing Madonna's "Swim" from *Ray of Light* to producing his own progressive electronica and ambient discs. But you'd be hard-pressed to find him tinkering with MIDI files beyond his initial creative process. "I'm so over MIDI," he says. "Trying to stuff all kinds of controllers and note data down a 4MHz modem cable is ridiculous because there are serious MIDI timing problems, especially on Macs. Create a basic four-count drum part in MIDI, record it as audio, and if you look close enough you'll see the kick drums falling before or after the downbeat. Whether I'm working on a remix, a soundtrack or my own stuff, it always ends up as audio data once I'm through creating it because the creative possibilities with digital audio go way beyond MIDI.

"I'll use MIDI to come up with compositional ideas offline from my recording system, then bang it into Pro Tools where I can manually correct absolutely everything I record," he explains. "I line up the down beat, then go to every 16th note or 32nd or whatever and time-stretch the tail ends of everything a bit too long so I can cut them up and do a fade-up and a fade-down for each note. It takes forever and typically adds another three days to most single-track projects and remixes I do, but the difference in the feel is astonishing."

The break beats for "Love on Haight Street," a new Transeau track from his upcoming solo disc, were created with an Ensoniq ASR-10—but that's as far as MIDI could go for him. "It's a great feel tool for beats, but it was getting to the point where the timing was way too sloppy," he says. "I made a quantize template out of audio in Emagic Logic, then corrected all the other audio to that. I'll apply some plug-ins to a track, add some reverb, flip it around, add some backwards reverb, flip it back again, sometimes doing up to 30 edits within a single bar of music. It's time-consuming, but until they come out with Firewire MIDI, this is how I'll always work."

I HAVE TONS OF MICS, PREAMPS AND OUTBOARD GEAR, BUT I SPEND 90 PERCENT OF MY REMIX TIME AT A DESK—AND I MEAN THAT IN THE FURNITURE SENSE. —AARON STIPKOVICH

SOFTWARE NUGGETS AND TOOL JEWELS

The wonders of the well-stocked digital audio desk are deep and wide, but a producer's bag of tricks and surprisingly inexpensive helper tools never cease to amaze and inspire. Ask any remixer, engineer or recording artist with a six-figure budget about their favorite toys, and they'll take great pride in crediting their success to an obscure software feature, free program or homemade retro gadget. Seems that sonic performance artists and techno remixers have more in common with Radio Shack, shareware and Walkmans than they might ever admit.

Packing 36 vocalists into a small studio was no easy task for Kennedy, and that was before putting on and powering up a pair of studio headphones on each singer to hear the click. Using a free schematic found on the Web and cheap parts from Le Shack, she built her own FCC-legal, under 10-watt radio transmitter to beam the click into each singer's personal stereo headphones over a low-band FM frequency. Her "Cell Phone Ballet," performed with three other singers roaming around San Francisco's cavernous Exploratorium, used the same concept over cell phone lines to help create a seamlessly synched performance.

Stipko uses his two Soundscape recording systems, racks of outboard gear and four large-screen monitors to great ends, but one of his little secrets is a 500K PC shareware program. Emulating tape stop (the stopping of a tape deck by hand, which is popular in hip hop, rap, techno and remixes), the $15 Gold Wave can do what Soundscape, Pro Tools or any other sophisticated recording platform cannot without sounding too digital. Rather than going out to tape to physically do this or dealing with the inherent artifacts left when trying it digitally, Stipko prefers Gold Wave's artifact-free, 20-bit performance with its wide range of PC, Mac, Sun and other audio format support. He's created a link on his Web site at www.stipko.com/goldwave for *Mix* readers interested in downloading this little gem.

Similarly, avid Mac fanatic Transeau uses Fruityloops and Little Drummer

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Boy, two tiny PC programs for programming slammin' drum patterns. Created in Sweden by a mathematician, Little Drummer Boy provides great 808- and 909-style pattern generators, from which Transeau sends the audio output via Lightpipe back into Pro Tools.

Host CPU budgets also have a lot to do with how the same digital audio applications are used on different platforms. One's ceiling may be another's floor when it comes to system resources, but the challenges of a light toolbox can be inspiring. "My Apple 8600 is as lean as it could possibly be," Kennedy admits. "Time-based effects like flange, phasing and delay are just electronic ways of describing what happens when a stereo sound file is put in and out of phase to varying degrees, so I'll drag one channel ahead or behind the other by 50 milliseconds to create a lush chorus—great for the choral work I do. Best of all, it gives my CPU a break by not running plug-ins for all the effects I love to use."

Conversely, Stipko's upstairs rig is geared for practically unlimited plug-ins, EQs and individual channel dynamics processors. "Because CPUs have gotten so fast and Soundscape's dedicated chips take all the load off the host computer, I'm allowed the freedom of using plug-ins almost exclusively," he says.

FIX IT IN THE REMIX

The gear, techniques and interactions with artists are not unlike those of any tracking studio, but what's the view like from a remix desk? "It's a world of difference," says Stipko. "Our tracking desk is your usual billion-input board, there's tons of mics, preamps and outboard gear, but I spend 90 percent of my remix time at a desk—and I mean that in the furniture sense. There are $100 million tracking facilities out there, so it's silly to try and compete with the Record Plants of the world."

His setup includes two Soundscape systems, Cakewalk Pro Audio 8, four

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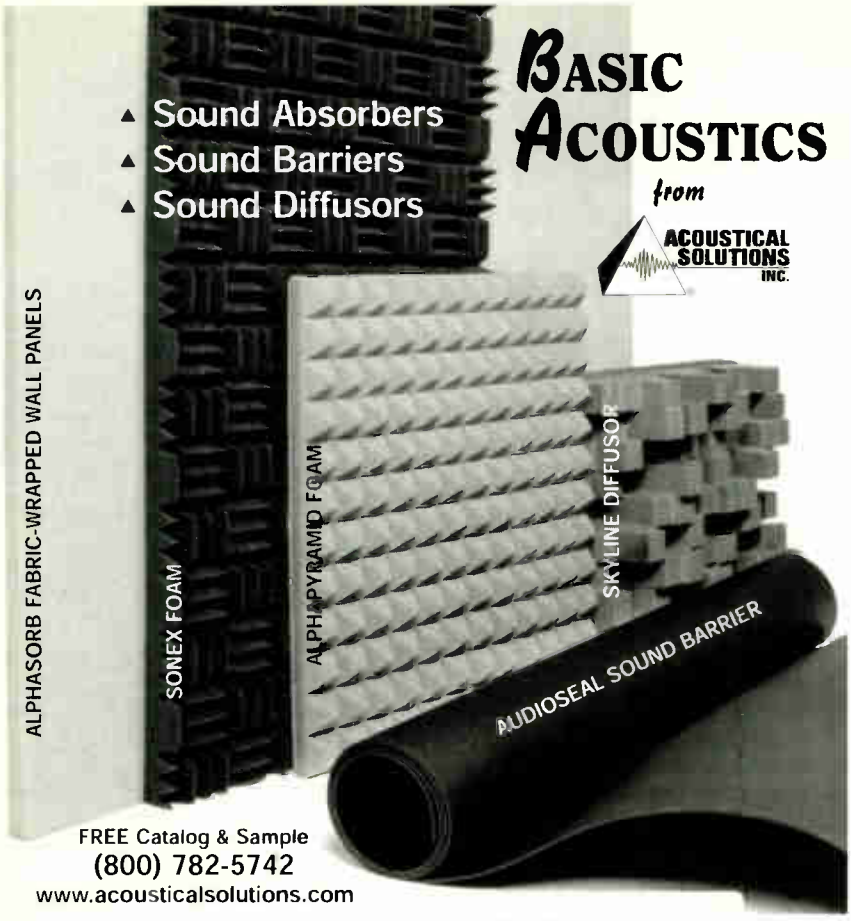

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flat-screen monitors, a JLCooper CS-10 MIDI controller box, a synth, a keyboard and a mouse. "I use a standard 48-track mixer setup in Soundscape when I'm running a bunch of ADATs or DA-88s," Stipko continues. "On one screen I have video for film or TV work, another has the Soundscape mixer up, another the Cakewalk MIDI arrangement, and another for miscellaneous utilities and plug-ins. The gear is different for each, but I can literally switch from a feature film sound effect session to remix mode in five seconds."

Stipko is spending most of his time this year looking for his own remixers—music fans. He's developing interactive CD-ROM albums for artists that let the user remix their favorite tracks to the band's videos. "It's a musical browser interface based on Headspace's Beatnik engine that lets them build loops and remix several drum, bass, guitar, keyboard and vocal parts from the album, all automatically in sync."

The majority of remixes tend to lean toward hip hop, electronica, techno, rock and pop, but why don't we hear jazz, blues or classical remixes? "It's funny you should ask about classical remixes," says Transeau. "William Orbit [Madonna's producer] just asked me to remix a song from his upcoming album of reinterpreted classical pieces, either Barber's *Adagio for Strings* or something from Gorecki, my favorite composer. I'm a Berklee-trained classical pianist, and maybe classical is just too sacrilegious to be tampered with, but jazz is meant to be experimental and improvisational. The rhythmic nature of jazz is ripe for the beat and loop nature of today's digital remix tools. Remixes also give record companies the cool street label an artist might need to cross over or to expand their audience, so some folks are experimenting more with their remixes. The way things are going, our children's children's favorite songs will be pink noise bursts!" ■

Randy Alberts is a musician, writer and faux remixer who's previously been on staff with Mix, Electronic Musician, Keyboard, EQ *and* Radio & Records.

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Oh, Behave!

Shagadelic Sound for the Austin Powers Sequel

Comedy, to quote Woody Allen, is timing and delivery—a pregnant pause that lends anticipation, an infectious giggle to lighten the double entendre or a change in inflection that is loaded with satire. These are the types of moments that make us laugh out loud in a darkened room full of strangers. And few actors working today excel at comic timing and delivery as much as Mike Myers. Think back to his goofy, delayed head flips as Wayne, or listen to Austin Powers' signature "Yeeaaahhh..." Vintage timing.

Granted, most of these moments derive from the performance, but the issues of timing are critical in the audio post-production process, as well, and working on a comedy can be every bit as challenging as working on a special effects blockbuster. *Austin Powers: The Spy Who Shagged Me*, released in June by New Line, has its big effects moments (most notably the final battle sequence), but it's the intricacies and feel of the track, along with the subtle timing issues, that add yet another comedic flavor to the film.

BY TOM KENNY

World Radio History

PHOTOS: K. WRIGHT/©NEW LINE

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Much of the fine detail work—some of it more traditional editorial—took place during the final mix. The post schedule was relatively tight, with only six weeks between the wrap of principal photography in late December and the first temp mix, then less than three months till the print master. So it helped that the sound crew at Digital Sound & Picture in Los Angeles was largely intact from the first Austin Powers film, and that the working method at that facility allows for the ultimate in flexibility.

"The dub is where all our layers come together," says director Jay Roach. "The systematized approach at DS&P—the way editorial feeds the stage, the way the whole process works—is so

RECORDING THE SCORE

Because of the desire to have full temp mixes, film editor Greg Hayden cut in music from the original *Austin Powers* early on. Because music editor Mike Flicker was busy with the score at the time, Hayden also cut in the source music, hand in hand with music supervisor John Houlihan (who wrangled new songs, supervised the scoring and is really a story unto himself). That gave the advantage of fleshed-out temps, but it also carried the danger of being restrictive, the inevitable "temp love."

"It can be restrictive, but it can also be instructive," admits composer George S. Clinton, who also scored the original and whose credits include *Mortal Kombat I* and *II* and the summer release *The Astronaut's Wife*. "The challenge is to retain the sense of comic timing that they've worked so hard to get, and yet not have it be the temp score, but have it be something new."

New themes, new textures. Clinton begins by writing pieces of music with a beginning, middle and end; he doesn't think in terms of cues. At his home studio, he writes at the piano or at his Kurzweil K2000 controller. He also uses two K2000 modules, two Roland JV1080 modules, an Akai S5000 sampler and an Apple G3 running Digital Timepiece. Monitoring is through Tannoy Series 10s.

Clinton says he tries to write from inside the character's head. "There are light moments," he says, "where I use sort of a *Pink Panther*, Henry Mancini-esque approach to the rhythm section and sort of an *In Like Flint* approach with the organ and twangy guitar. And I've also enjoyed the flavor of the '60s-style James Bond—the big 'wall of steel' sound that John Barry patented."

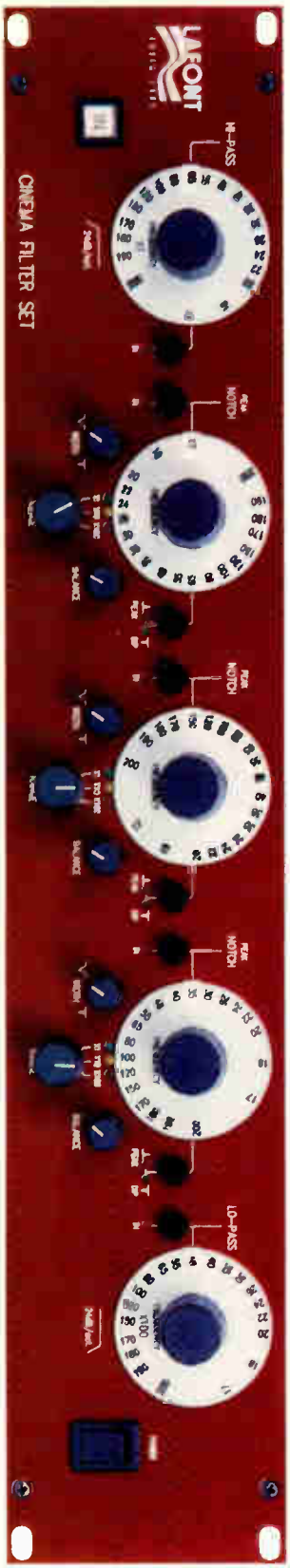
PHOTO: MARK SELLMAN/BERLINER STUDIOS

Director Jay Roach (L) checks the charts with composer George S. Clinton.

One of the first tasks was updating Quincy Jones' classic "Soul Bossa Nova" for the synchronized-swimming opener. The piece was recorded on the "retro-sounding" API console at O'Henry's Studio B, with Fairchild 670 limiters across the left-right channels. "We didn't ignore the vintage technical aspects of it," says scoring/mix engineer John Whynot, who has worked with Clinton on a number of films. "But it's all in the attitude of the playing, and the sound of the brass and rhythm sections. The musicians were into it; it's one of their favorite records."

Bagpipes and percussion/rhythm

—CONTINUED ON PAGE 50



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fast and efficient. We were under a tight schedule, and John [Ross, co-owner and lead mixer] has it all in place."

All versions, including the Avid tracks, are hung in Pro Tools for playback through the final and can be unraveled, modified or completely replaced at any time. Twenty-one Pro Tools-based edit bays can upload to a central server, which feeds the three-position Euphonix on Stage A directly, and stems are updated as the mix progresses. In essence, sound is conformed as changes are made.

PHOTO: BRIAN SLACK

Standing L to R: Bill Smith, Mathew Waters, and Joe Barnett; seated L to R: John Ross and Frederick Howard.

TEMPS

DS&P tries to construct full-blown 5.1 temp mixes of all the films it works on, and, with Austin II, it seemed especially important because of the pressure to deliver a sequel that topped the original and the desire to put the best foot forward for test audiences.

As the film editing team began roughing out a first edit, supervising sound editor/sound designer Frederick Howard was shipping them signature effects, backgrounds and such from the first film, along with newly designed material in as complete a form as was possible early on. At the same time, film editor Greg Hayden was cutting in bits and pieces of George S. Clinton's score from the original so everyone would have an idea of music placement.

"As we were completing scenes and assembling chunks of scenes, we would send them to Fred Howard, and he would send us back sound effects on DAT or Jaz drives," explains Jon Poll, who shares an "Edited By" credit with Debbie Neil-Fisher, editor of the original film. "He was constantly giving us effects, and then, of course, we would turn over reels. It gave us something of a template so that even by the time we got to the temp dub, we had worked some areas out in rough form. The back-and-forth worked very well, and the temps went smoothly. In fact, a lot of the stuff we're hearing in the final has been in from the beginning."

"We had given them several gigabytes of sounds on Jaz cartridges, all categorized and organized," recalls Howard. "We also gave them quite elaborate sound design material, where we literally built whole scenes. Some scenes were a bit complex, so we cut them and somehow managed to squeeze them onto eight tracks so they could pull them up on their Avids or pull out certain elements."

After each temp screening, the picture department received the music, effects and dialog stems, input them and cut a new version, with updated scenes and/or visual effects. When the picture was turned over again, the sound crew had the original Avid tracks plus the updated stems delivered again on DA-88 and loaded onto the DS&P server. (Note: On this film, the OMF utilities for Avid/Pro Tools were not used.) For the next temp mix, then, the Avid tracks are carried to the stage because that is the director's reference.

"It's good to be able to slide in the [Avid effects] if new material we're presenting doesn't quite hit it on the nose," explains Ross. "I like to put the Avid tracks into Pro Tools so I can see them. Often, the picture editors don't know where they put a particular sound effect, which may have been mixed with something else. I can see the waveform of the discrete eight tracks, and I can go in and grab a particular sound effect. I can see it without having to hunt through Track 1 or Track 2 or somebody forgetting to write it down."

Supervising sound editor Frederick Howard praised the Foley team, especially for the tent scene where Heather Graham is rummaging through Austin's survival bag. He then found himself using some Foley elements in design. "The line between Foley and effects merged on this film," he says. "When the Fat Bastard character enters, I needed elements for his footsteps. I wanted the sense of everything coming loose every time he takes a step. I will take some traditional Foley elements and cut in a more traditional sound effects style."

PHOTO: BRIAN SLACK

SIMULTANEOUS SOUND DESIGN

Howard came onboard in late December and immediately began feeding the picture department. At the same time, he viewed a rough cut and began thinking about sound design—particularly

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the time-portal transitions, comedic nuances and various ambiences.

"I really had the same kind of thoughts and ideas in mind that I had on the first film, as far as having it be low-tech and fairly organic, soundwise," Howard says. "We wanted to shy away from anything that didn't really fit in, and that's a fine aesthetic line, because obviously we have modern scenes, like with the NORAD control room. And there's modern beepage in there, but there's also a layer of classic short-wave tuning and that type of sound—something you might imagine in a '60s spy film at spy headquarters.

I wanted to pay homage to the '60s intrigue-espionage movies. There's a look and feel and sound to those films.
—Frederick Howard

"I wanted to pay homage to the world that spawned Austin Powers, the '60s intrigue-espionage movies," he continues. "There's a look and feel and sound to those films. For example, when they're traveling through time, I felt that wouldn't be served by being real high-tech. So we gathered wind sounds and other elements to suggest the movement of air, a movement into the seventh dimension. Sort of like a vacuum. The laser was conceived correspondingly. A lot of real high-tech sounds could have worked there, but we pulled together a lot of elements and went for the quintessential laser beam sounds of '50s sci-fi. Then we add a lot of movement from the surrounds forward, and it gives a good sense of motion."

The visuals and sight gags are funny enough, so the sound crew made a conscious decision not to go cartoon-y, unless the film demanded it. One example is the fight scene between Austin and Mini-Me in Dr. Evil's lunar station, where the "ding" of Mini-Me hitting the pole was intentionally modeled after the classic "anvil on the head" we all recognize from childhood. And the punches lacked variety intentionally, paying equal homage to the Three Stooges and World Championship Wrestling. "There are some sounds you just hear and say, 'That's funny,'" Howard says.

"A good example for me of funny, but not cartoon-y, was the scene where they unveil the time machine," Howard says. "Dr. Evil goes running up to it, says, 'I'm going through time!' and bounces off it. It's not turned on. The visual is very funny when he hits it. I combined a few elements to get a metal flux kind of a '*bonk*.' It plays very funny. Then the body falls, and I made it kind of hard and pratfallish—'*calump, calump, calump*.' That's also about timing. I've learned, working on these shows and comedies in general, how important timing is, both to the sound effect and the joke. Quite often, the payoff to a joke is in the sound of it, a sound cue that is the other foot dropping. If it drops too soon or too late, it isn't as funny."

Often that would mean slipping a reaction or an effect by a frame or two at the mix, once Roach and Myers had seen it. "A lot of Austin's delivery has little nuances, little giggles, that are spaced out in his performance to make him goofy," Ross adds. "He'll say a statement that is quite clumsy, then he'll giggle about it a few frames later, and that timing is critical. Those things all need to be heard and acknowledged by the audience. Otherwise, that punctuation, that orchestration of his line, doesn't work."

Some of the signature backgrounds were pulled from the first *Austin Powers* and again were cut by Benjamin Cook. But Austin moves around a lot, and, in this second installment, he enters Dr. Evil's new lairs inside a volcano and in a moon station. "The lava lair wanted something with low end," Howard explains, "something that spoke of a real viscous, thick environment—a little bit of hissing, some gaseous elements in the midrange and a little bit of steam for the upper reaches. Then you could pick out some gloops and glops occasionally.

"Then in space," he continues, "we were trying to add a little bit of tension,

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a little bit of mid-low nebulous hum, if you will. But we didn't want to get too scary. In fact we toned it down after one of our temps because we had some tones that were just a little too dark and ominous for this film. For the most part, it's a pretty light film."

The Spy Who Shagged Me was the second film (after *Star Wars: Episode I*) to come out in the Dolby Digital EX format, with a matrixed center-rear channel. (Kind of Loud Technologies modified its software-based panning system specifically for DS&P.) Nearly all BGs were cut with "6.1" in mind, but the scene in the NORAD control room, intercut through a TV monitor with footage from *The Jerry Springer Show*, perhaps illustrates the new format's use best.

"We had a lot of mini-vignettes that we built to go on these various monitors," Howard says. "Then we had the general 'spy' type of interior for the room. At the same time we have to push into *The Jerry Springer Show*. The discrete surround allowed us to push in and move the NORAD room around us, and you can still get into *The Jerry Springer Show* without forgetting you're in the room."

"We used [EX] in cases where the picture dictated it, where you can create a nice panorama of sound," Ross adds. "In the *Jerry Springer* sequence, we were able to create an atmosphere back there with beeps and police radios and scanners and other things that didn't intrude upon the screen, but had its own left-center-right behind you. You could split the theater in half."

Ross also made use of the EX format

THE SOUND CREW

It was a tight post schedule, with all the pressure of a sequel that was expected to do better box office than the original. Still, the film came in two days ahead of schedule, with a relatively relaxed final. All editorial and mixing was handled by Digital Sound & Picture, Los Angeles.

PHOTO: BRIAN SLACK

L to R: Anne Black, Brian Slack, Gino Conway, Matt Dubin and Evin Daum

Sound Designer/ Supervising Sound Editor: Frederick Howard

Re-Recording Mixers: John Ross, C.A.S., Mathew Waters, William Smith, Joe Barnett (premixes)

ADR Supervisor: Susan Shin

ADR Mixer: Alan Freedman, C.A.S.

Dialog Editors: David Grant, Jason George, Jed M. Dodge, Yuri Reese

Sound Effects Editors: Javier Bennassar, Benjamin Cook, Dorian Cheah, Kelly Vanderver, Lisle Engle, Roland Thai, M.P.S.E.

Foley Mixers: Mary Erstad, C.W. Jones

Foley Editors: Craig Jurkewicz, Sarah Smith, Lucy Sustar

Foley Artists: S. Diane Marshall, David Lee Fine, Ossama Khuluki

Assistant Sound Editors: Robert Getty, Chato Hill

Digital Transfer Engineers: Anne Black, Matt Dubin

Loop Group: Steve & Edie's Gourmet Looping

And outside Digital Sound & Picture

Sound Mixer: Kenneth McLaughlin

Boom Operator: Patrick Orsbun

Cableperson: Lanessa Phearson

Music Recorded at the Fox Newman Scoring Stage, O'Henry Studios

Music By: George S. Clinton

Scoring Engineer: John Whynot

Music Editor: Mike Flicker

Assistant Music Editors: Thomas Bartke, Jeff Lingle

Music Supervision: John Houlihan

Edited By: Jon Poll, Debra Neil-Fisher

Film Editor: Greg Hayden

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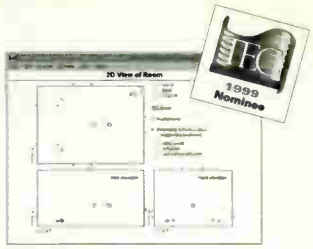

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in firing the laser, which would typically rip forward (or to the rear) in the classic 4 o'clock-8 o'clock position, during the climactic battle scene: "You can stretch this illusion of traveling sound by delaying what goes in the surrounds, and now you have a second arrival point, which can make the theater feel longer."

THE MIX

The predubs and final mix took place in Stage A at DS&P, at a three-position Euphonix 2000 with eight Pro Tools screens at the meter bridge, monitored in a THX-approved JBL environment. (Two more full Pro Tools rigs were on the stage for flying in music changes.) Playback was from Pro Tools; premixes and stems were recorded to DA-88, then loaded back into Pro Tools for playback.

Ross and Joe Barnett handled the premixes in two long shifts each day. First they did a dialog and Foley pass through the whole film. Those were played back while the next pass was made on backgrounds and sound effects. "By monitoring the predubs from Pro Tools sessions, you can make changes to the previous discipline as well," Ross says. "If one particular sound effect was too loud because you didn't know there was going to be a piece of dialog, you can go in and modify that one item—raise it or lower it—by updating the automation. Then when you get to the final, you've already done some work on your old predub stems. You don't get into a situation where you'll fix it in the final. We can get in and adjust all the units all the time."

Consequently, the final mix was relatively relaxed—regular hours, two days ahead of schedule. Ross mixed dialog, Bill Smith mixed music and Mathew Waters handled effects. All of the original source material was hung and metered in Pro Tools, below the stems. If a modification was needed (such as when the inflection of the word "now" by actress Heather Graham was inverted in PurePitch to make it more serious), the tracks could be unraveled in seconds on the stage.

—FROM PAGE 46, RECORDING THE SCORE

beds for the 70-piece orchestra were also recorded to Studer 24-track analog machines at O'Henry, and all the music was mixed there, directly to 24-bit Pro Tools from the SSL 9000J (which has a "tricked-out" film monitor module, allowing for the creation of up to five or six independent 3-, 4- and 5-track mixes). The orchestra was recorded over two days to analog 24-track on the SSL 9000J at the newly refurbished Fox Newman Scoring Stage.

"It's not a terribly radical setup," Whynot says of both the seating arrangements and the miking. "I have a typical three TLM150s setup on the tree, and I spot-mike every section pretty extensively. On violins and celli, we used MKH-40s. For basses, I used 414s and EV RE20s. Ribbon mics on the brass, with a couple of TLM170s for the big brass. For woodwinds, the M149. Then I basically have MKH-40s for all the percussion, with a single TLM150 omni over the tympani and a 414 on the bass drum. Then I make two separate mixes—one with the room mics to get them sounding right; then I turn them off and get all the direct mics to work as a single mix. The way we have it set up, it sounds really good with just the close mics. The room mics become a giant enhancement."

Clinton has said that his score is an homage to '60s spy thrillers and spoofs, and perhaps nowhere is that more evident than in the brass section. "John Barry called it his 'wall of steel,'" Clinton says. "It's just brass and percussion, big gongs and cymbals, anything steel that you can either blow on or hit—it makes you pay attention. The five trombones, with a bass trombone and tuba, four trumpets, four French horns. It's not any bigger than a lot of other brass sections, but used in the right way, it makes an impression."

PHOTO: MARK SELLMAN/BERLINER STUDIOS

Clinton with orchestra on the Fox Newman stage

"I think George underplays what he really does, because he has good comedic sense," says music editor Mike Flicker, who works with Clinton at every step of the process, from feeding him bars and beats to cataloging the takes. "We [on the music team] take Austin seriously. He takes himself seriously. And the music plays that. The two hardest movies to score are heavy walking-talking drama and comedies. You have to play the music in a way that nails the emotion but doesn't get in the way of the dialog. As soon as the music tries to be comedic, you're cartoons."

Flicker and his assistants literally finished editing at 2 a.m. the night before the final began. Each night during the process, he returned to his Burbank office, where he had duplicate sets of the entire score, and backed up all the updates on Zip drive cartridges. If he made changes, they were updated and flown into his rig at console-left in the morning. Most timing changes, however, took place on the stage.

"In the first movie, it would be: action cue, drama cue, romantic cue, 'Austin on the move' cue," Flicker says. "But in this one, within one cue it might start up action, then all of a sudden it would be romantic, then pull back and be dramatic. It's down to all these complex stages."

"The thing I wanted to do, and I feel like everybody associated with the movie wanted to do, was to build on the first movie," Clinton concludes. "I wanted to be able to reuse thematic material but add new themes as necessary. A guy asked me yesterday what my dream project would be. I thought a few minutes, then said, 'Well, doing a sequel to a hit, where I've been identified with a genre or music that I love.' I'm living the dream!" —*Tom Kenny*

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The lines were blurred between the edit and the mix.

"Often when editors are making decisions, they are working in small little stops and starts," Ross explains. "They make decisions based upon what's good for the moment and not necessarily what's good for the sense of the whole movie. When it comes together as a film and we've run the reel down, and something doesn't feel in the same spirit as the rest of the film, then we need to make changes. Yes, these are things that were classically editorial—grabbing alternate production takes and laying them up—but at the end of the day, Jay [Roach, director] is sitting three feet away from me, and it's like he's sitting in an editing room. But now he can evaluate the whole painting and go back in and re-choose the type of red used on the cheeks."

PHOTO: BRIAN SLACK

Supervising ADR editor Susan Shin in her editing bay, where she managed some 1,000 replacement and alternate lines. "I specifically wanted Mini-Me to come in and do more 'eeeee's, which is his only line from production," she says. "I wanted him to sound a little more menacing. He's a totally sweet person, with a kid-like voice. For the laughter at the very end of the movie, we wanted him to sound a little more evil, more disturbing."

Except for the final battle sequence on the moon, this is not a "loud," special effects movie, and the tracks are wonderfully spare and detailed at times. Likewise, the use of the subwoofer channel is judicious and constantly varied. A lot of time was spent on creating rich low-end information, then holding back on it in the mix. "We tend to be picky about what we put in the subs," Ross says. "When it does happen, it's an event that wasn't there for the last 20 minutes. When it comes up, it re-surprises the audience."

With his writer's ear and comic vision, Jay Roach had no trouble elucidating what he wanted during the final. By the time Mike Myers returned from Cannes in late May, the tracks were in order and changes were minimal. "He basically took a grand master approach to why a scene is funny," Ross says. "There's a scene in the volcano lair where Mini-Me is driving Dr. Evil around on a bicycle and honking the horn. Mike wanted the horn so loud that it nearly obliterated the dialog, which was against my instincts. But on a grander scale, the comedy is not what he's saying but the fact that he looked like an idiot, talking about how he's upholding the dignity of the organization while he's being driven around by a midget going ballistic on this horn. Coming from someone as well-versed in comedy as Mike is, these are the types of things we focus on." ■

Tom Kenny is the managing editor of Mix. He can be reached at tom_kenny@intertec.com.

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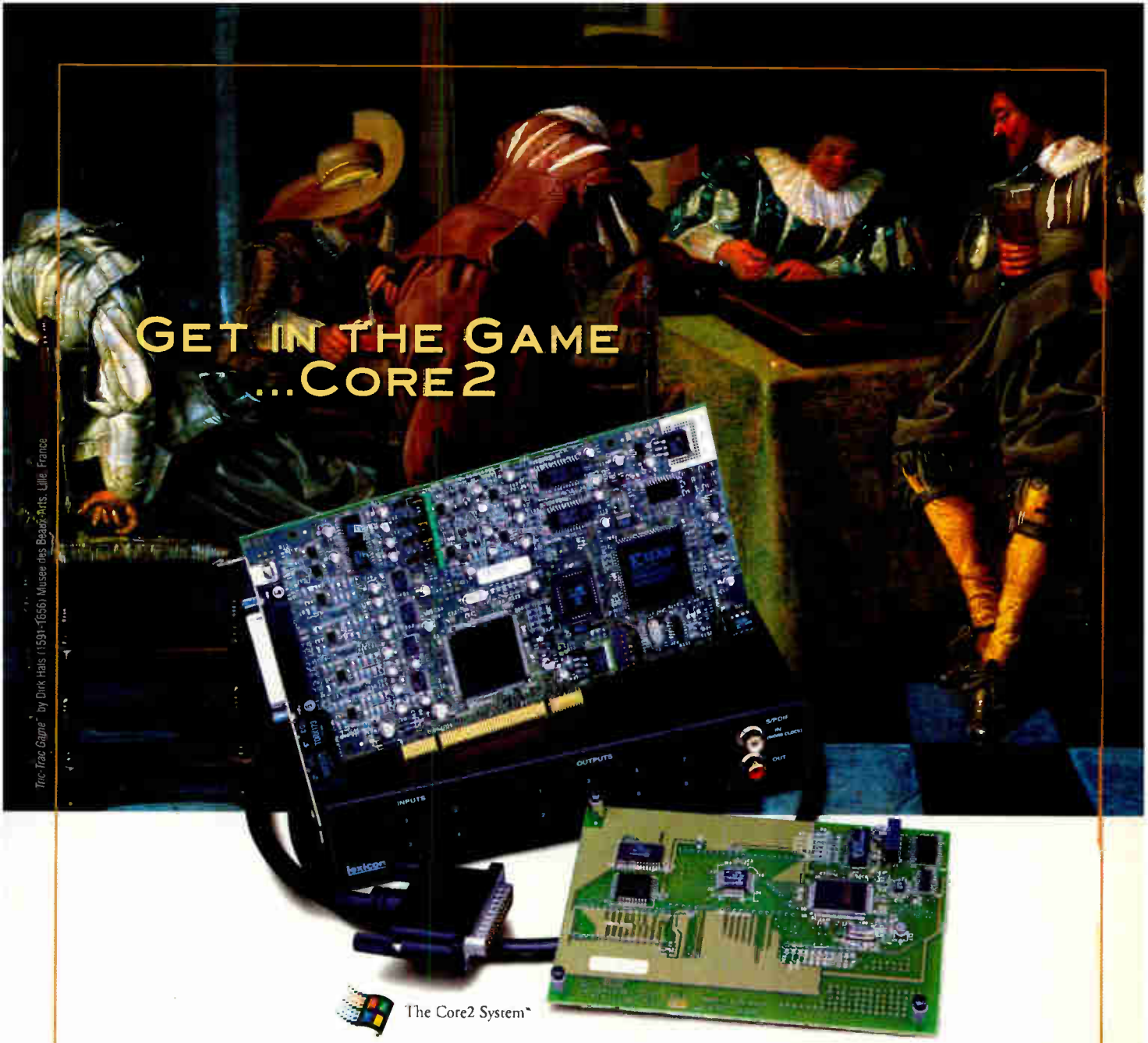

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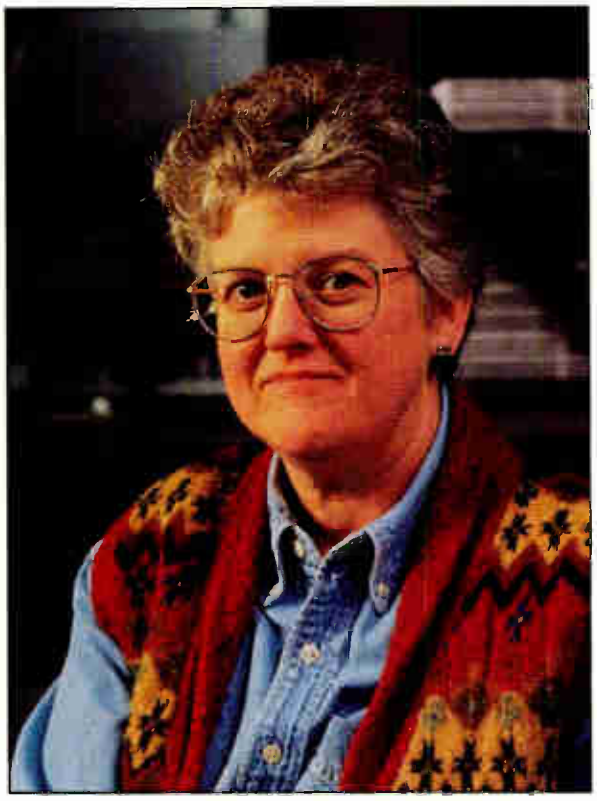

PHOTO: BEATRIZ COLL

A master of the art in the classic sense, Leslie Ann Jones is, first and foremost, a truly musical engineer. Highly respected by her peers, she's the kind of professional that clients come to depend upon—for her uncompromising dedication to quality, her no-nonsense attitude and, most of all, for her educated ears.

Jones is a bit of a well-kept secret—she's not someone whose work is all over the pop charts. But it's the producers, composers, arrangers and musicians she works with who know her true worth, and that's why she's one of the busiest people you'll ever meet. Known particularly for her jazz, big band and orchestral recordings for artists such as Michael Feinstein, Wayne Shorter and Herbie Hancock, and for her impeccable vocal recordings of Rosemary Clooney, Bobby McFerrin, DeeDee Bridgewater and others, she's also recorded some of the funkiest stuff around with seminal R&B artists such as Maze, ConFunkShun and The Whispers.

In person, "L.A. Jones" is generally quite thoughtful, serious and businesslike, but a puckish sense of humor underscores her get-the-job-done mentality, and those in the know appreciate her relaxed approach to even the largest and most complicated sessions.

Although she continues as a hands-on recording and mixing engineer, Jones is also Director of Music Recording and Scoring for George Lucas' Skywalker Sound complex in Northern California, and this year she's also added to her workload the position of Chairwoman of the Board of Trustees of the Recording Academy. With such a nonstop schedule, *Mix* was lucky to catch up with her between sessions at Skywalker.

You actually started out your music career as an artist.

Yes. I got a Sears Silvertone guitar for Christmas when I was about 14 and started playing it. Then my cousins and I and a friend formed a group—kind of like a teenaged Fifth Dimension—and that was pretty much how I spent my high school years, performing and recording. It was the classic Hollywood story: Every time we'd bring home a record contract everybody would get excited and think we were going to make it, and then we'd get dropped. We got signed to Columbia by Gary Usher, which was great because we got to hang out at Columbia recording sessions; then Gary Usher got fired so we were dropped. Then we were signed to Johnny Rivers' Soul City label along with the Fifth Dimension, but when the label was bought out we were dropped. It would have been a sad story except that we were having so much fun the whole time.

Your father was the famous musical parodist Spike Jones—was he a big influence on you?

I think he was influential to me in a peripheral way. Because of what he did, I was exposed to all different kinds of music at a very early age. But actually I think it was my mother, whose professional name is Helen Grayco, who more directly influenced me and the kind of live, big band music that I ended up doing a lot of work with. She sang in my father's band, and I watched her perform every night. Also through her I was exposed to really great singers; she had one of the first Muntz 8-track players in her car and we'd listen to Mel Torme, Barbra Streisand, Frank Sinatra…

How did you make the transition from artist to engineer?

I ended up in an all-woman Top 40 band, playing electric guitar and singing backgrounds. When we went on tour, I was the one who put the P.A. together. Then when the band split up I owned the P.A. By then I was thinking about what to do next—I'd done recording sessions, and I realized that it took something more than I had to be a great musician. I'd never taken lessons or anything; it always came very easy to me to do things like copy Stephen Stills' guitar solos. And that's fine up to a certain point, but if you want to be really

BY MAUREEN DRONEY

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good you have to do a lot more. So I started working with other people's bands, helping them arrange their background vocals, sort of semi-producing their live shows, and then I started mixing their sound.

So you were producing and arranging even before you were engineering.

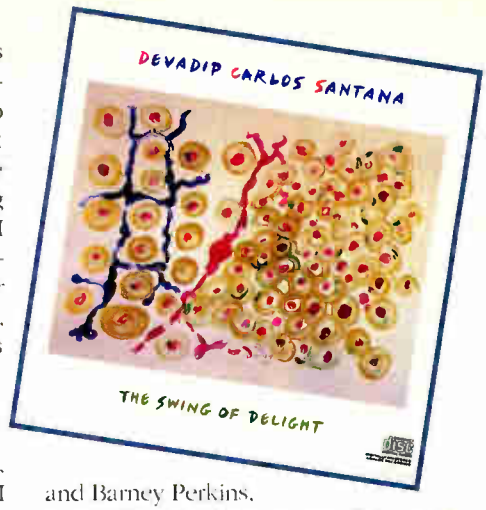
Yeah, in fact I never really wanted to be an engineer. I wanted to be Peter Asher, a producer and a manager. I thought that was a great combination of skills for me because the producer could be the creative side and the manager could be the anal business side.

Meanwhile, I got together with a couple of guys, pooled equipment and started a P.A. company. Obviously it was very hard work, and I really knew nothing—thank God they were patient with me! Then, in 1974—I know that year because this is Tascam's 25th anniversary year and I was reminiscing with some of the guys there—we bought the first Tascam Model 10 console, which was a 4-bus console, and the half-inch 4-track, the 80-8 I think it was. We set up in the basement of my house, and we also had the idea of putting this stuff in a truck and going to clubs to record bands live and get their demos done that way.

No sooner did we start doing that then my partners got other jobs. Meanwhile, I had a day job at ABC Records in publicity and artist relations. I decided the path I wanted to pursue was to produce and manage, and I thought it was important, if you were going to be a good producer, to know something about what a good engineer does. So I went to Phil Kaye, who ran the recording studios for ABC, and asked him for a job. He wasn't quite sure, but he said, "Let's hire you and see what the clients think." He was very willing to put me on with the understanding that it was extremely rare to have a woman engineer, and that if the clients didn't dig it, I'd be gone. So, 25 years later, here I am!

At ABC I worked for six months as a production engineer doing tape copies, and then started assisting. There were two rooms that had just been redone with one of the first in-line automation consoles ever built—Frank DiMedio consoles with API/Allison automation. It was the kind of automation [Ed. note: before SMPTE!] that you couldn't record on an edge track; you'd record on one track, and you'd bounce that to another track—basically you'd bounce it back and forth until it screwed up. I spent most of my time on that first project in the tech room asking a bunch of questions and trying not to look too terribly stupid.

A year-and-a-half after that I was doing a lot of dates with Reggie Dozier and Barney Perkins, who were two very popular black staff engineers. They were always working on more than one project at a time so it was great for me—they'd be mixing and I'd get to do their overdubs, or I'd get to help them track.



Then I assisted on a John Mayall album, and when it became time to do his next album, he asked me to engineer it. There was something about me being able to tweak tape machines that he liked—I don't know how you make that leap from tweaking tape machine to engineering someone's record, but that was the first record I did.

At ABC you often worked with Roy Hallee, one of the all-time greats.

That was one of the best things about being there; I learned so much from him. Not just the nuts and bolts of getting it on tape, although all of that, too—learning to punch in fast, how to work with musicians and the conductor, aligning the tape machines absolutely perfectly, putting tones through the faders so you knew your echo returns were absolutely right—because Roy would not accept anything that was less than perfect. It wasn't just about making sure it was tweaked, it was about making sure it was perfect so you could then go on and be creative. You didn't have to go back and check things. But I also learned from him in a real creative engineering kind of way. The wonderful textures he creates—working with him was really pivotal for me. Go listen to Paul Simon's *Hearts and Bones* album, the album before *Graceland*—there's a song on that called "Train in the Distance" that's a wonderful example of Roy's work.

You went from ABC to David Rubinson's Automatt Studios in San Francisco, and then back to Capitol in Los Angeles.

There were a lot of politics and changes at ABC, and it became time to leave. But I was in that funny place that so

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many people are in—you've done just enough work as a first engineer that you don't want to go back to being an assistant, and you don't have enough credits to be a first engineer. I don't envy people who find themselves there; it's very tough to know when to make that break.

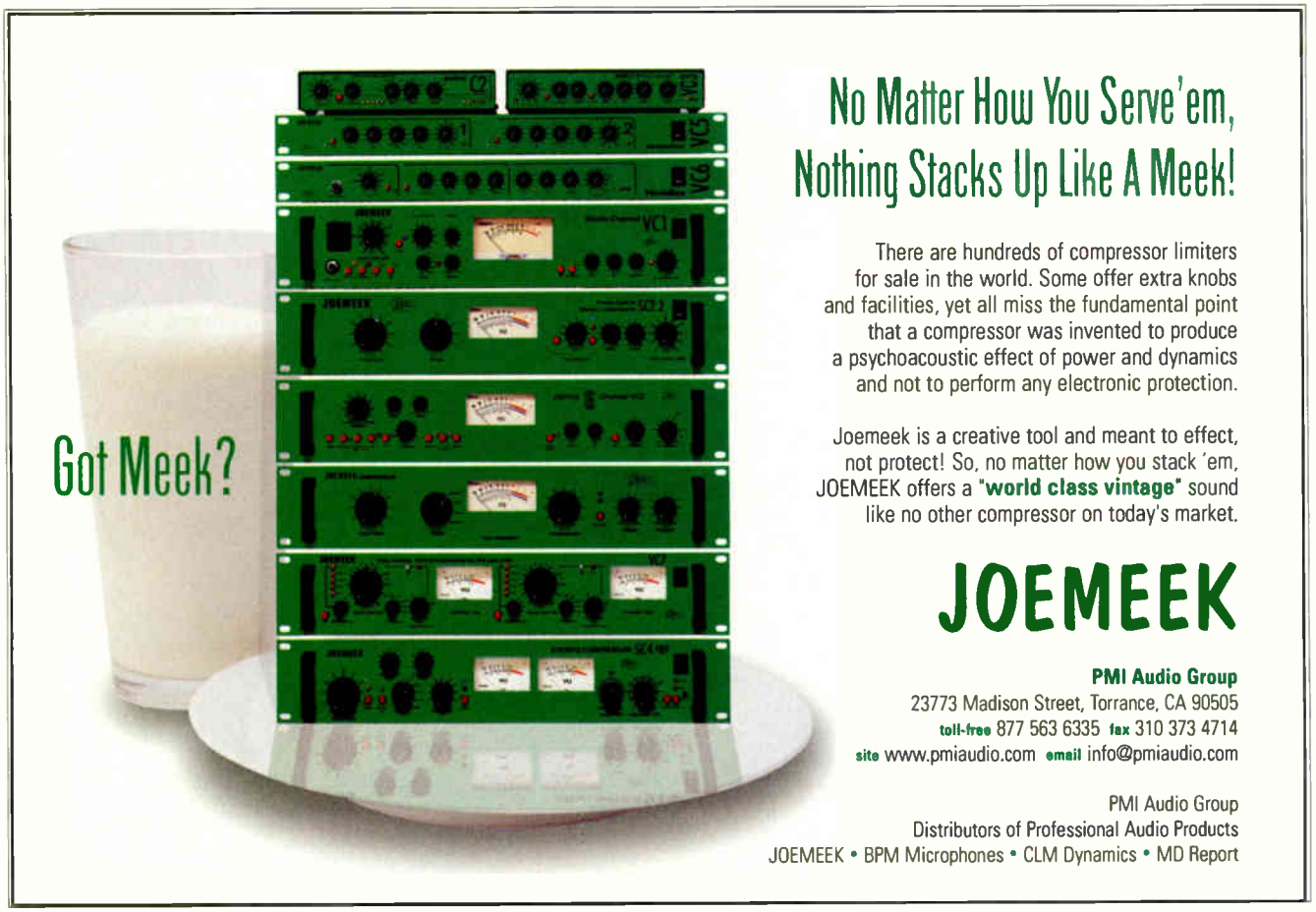
When I was ready to move on, *Mix* magazine had just come out with studio listings and I started sending my resume out. I saw Fred Catero's name listed as David Rubinson's engineer at The Automatt. Fred was another icon; I'd always admired his work, all the Big Brother records and Blood Sweat and Tears, and I knew he and Roy Hallee had worked together at CBS in New York. I figured it was a shot in the dark, but I sent my resume up and three days later they called.

David had just taken over CBS/San Francisco. He'd had one studio in the complex, and when CBS closed he had to either take over the building or lose his studio. So he found himself with three studios and a mastering room, no studio manager and no staff. They couldn't offer me a job as a first engineer, but I took the job because I knew I was capable and that opportunities would present themselves. And that's exactly what happened. Not long after I started somebody needed strings done and they didn't have an engineer. Because of David Rubinson, who managed Herbie Hancock and other artists, at The Automatt we were on the cutting edge in a lot of ways—we were the first studio in San Francisco to be automated, we did the *Apocalypse Now* soundtrack, we did Santana's *Swing of Delight* album on one of the first 3M digital 32-tracks with Carlos, Herbie Hancock, Ron Carter and Tony Williams. I worked with so many really great artists there like Herbie, Carlos, Maze, Con-FunkShun, Angela Bofill...there was always a lot going on. The Automatt closed in 1984, and after that I was an independent engineer in the Bay Area for three years until I took the job at Capitol.

My brain is somehow able to do a lot of things at the same time, and I'm able to keep an ear open to the performance constantly no matter what else I'm doing. That's probably why people started asking me to produce.

I once heard a well-known horn arranger come out of a session with you and say, "Her ears are amazing—she really gets it!" Do you think you have perfect pitch?

No. [Laughs]. I can say that because I know people who do. I think I have really good pitch, but with me it's something more like what you might call multitasking. My brain is somehow able to do a lot of things at the same time, and I'm able to keep an ear open to the performance constantly no matter what else I'm doing. That makes it possible for me to hear things pretty readily—for



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example, if we're doing horn overdubs, to hear if somebody comes in wrong, or there's a bad note or somebody didn't play. That's probably why people started asking me to produce.

Speaking of horns, what are some of your favorite horn mics?

I like RCA DX77s or Neumann TLM170s on trumpets; U87s or RCA 44s on trombones and U67s on saxes.

Would you tend to compress trumpets or saxophones when you are recording?

Generally, I don't anymore. I used to when I first started out, because I didn't know how to record—I used it as protection, and because I was working with people who maybe weren't that great at controlling their own dynamics. Working with great players helps because they set their own balances quite well.

But that means you're doing a lot of riding while you're recording.

Yes, especially in softer sections, if the trumpets change to mutes or something like that. I try to bring them up when I'm recording. If I don't, every time we play the tune back I have to make a level ride for people to hear it the way the arrangement is supposed to be heard, and I'm too lazy to do that!

Obviously you don't get that many run-downs. Do you know what's coming up from reading the score?

From reading the score and watching the band.

Watching the band to see when they're going to play softer or louder?

Usually I don't worry about it when they're going to play louder, only when they're going to play softer. I try and get my loudest level right away and then work from there. Same thing with saxes; if we're cutting a live solo, I can't record the section too hot, because when the person goes to take a solo I don't have any more headroom. I have to record the saxes lower, and all the rest of the horns lower so when the solo happens I've got enough headroom to bring it up. People need to walk into the control room to hear the playback and know that they played it perfectly, so I record it that way. It's not that hard, really.

Any tricks for recording saxes?

No tricks, but sometimes an RCA 44 sounds really good on an alto or soprano sax, especially if it's a real nasal or reedy-type sound. Also, when I'm doing trumpet solos, if I'm using a DX77 I'll put it in omni for the mute work. It makes it sound more round and less harsh.

What are you listening for when you record a big band?

The internal balance of saxes; making sure there's enough lead trumpet. Also the bass has to be articulate.

I've heard you quoted as saying: "When you're an assistant, think like an engineer, and when you're an engineer, think like a producer." Many engineers just record whatever they're given—but you've always acted more like a producer on that end—speaking up if something wasn't right.

I suppose that's why a lot of people feel comfortable going into the studio with me without a producer, or why some producers like to work with me—they know there's a certain thing that I can take care of that they don't have to pay too much attention to. They know that I'll catch it if something is wrong. That's just always been part of what I do.

What consoles do you prefer?

I work on Neves because that's what I'm used to. I've never been an independent long enough to have to learn a lot of different consoles, which is sort of a blessing and a curse at the same time. When I was at The Automatt, we

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had Harrisons and Tridents, and then I was at Capitol for nine years and all the consoles were Neves.

So, obviously I'm very comfortable with Neves and I like the way they sound. The one we have at Skywalker is the new VXS, which I think is outstanding. It's an upgraded V Series with improved power supply distribution, improved mix buses and an 8x8 post panel for film and 5.1 mixing. As far as automation goes, I think Flying Faders is still one of the best automation systems around—it's very easy, very fluid.

Is there any equipment you can't live without?

Well, for tracking or mixing I would have a very difficult time without my speakers. They're Tannoy Limpet 8S—the self-powered dual speakers, PBM-8s with the Canadian Limpet amplifier on the back. I own two pair so that I can do LCR with them.

There isn't anything else I really have to have, although I'm getting close to buying an original [Lexicon] 224 for myself. They're getting very hard to find now, and none of them have been kept up very well, so I'm thinking of getting one of my own. I find there's something refreshing about older reverbs that haven't been so tweaked to death in terms of their algorithms. They're a little more pure, a little more natural-sounding. That's probably why the EMT 250 retains its popularity—it's got only four settings and you can do maybe a total of 16 combinations with it, but it has a sound that, for something artificial, is pretty remarkable.

You're known as an expert vocal engineer. How do you go about choosing vocal microphones?

I don't think I do it differently from anybody else. With experience you get an idea of what the characteristics of certain mics are, and if I have the opportunity I'll stick a couple up and hear the person sing on that particular song. With the instruments, not a cappella, of course. You can't really hear what a mic is going to sound like on someone's voice if they're not singing along with the band; there are too many characteristics that may not show up. It might sound fine if they're all by themselves, but then you stick them with the track and it'll sound completely different. There are some mics that don't sound good on women, and some mics that don't sound good on men. I find 249s or M49s on women sometimes don't sound good because they're a little too bright. When women sing, particularly in their midrange, or when they have to sing out, their voices tend to get a little thin, and those mics may accentuate what you don't want to hear. A lot of times I'll go with the tube 47, and since the 149 came out I use that quite a bit. So my group of three would usually be a 67, a 47 tube and the 149.

Do you have a desert island vocal compressor?

Since I bought the Avalon 737, I've been using that almost exclusively. I love the way it sounds, I love the control that it gives me and I like having everything in one box that I can duplicate, if I need to, wherever I am. The sidechain in it is great, as well. It leaves the low end and the high end free as EQ and allows you to use the two midrange bands as sidechains. So if you have harshness in the midrange you can compress it and still have top and bottom end EQ available.

Besides that it would be an LA2 or a Summit. The rest I use for special applications—like I tend to use an 1176 on bass quite a bit, usually when I'm mixing, because it really seems to bring it out in the track more than anything else.

You record to analog?

I used to record at Capitol to the 32-

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track Mitsubishi, which I wish I still had, because on most of the big band stuff I could really use a couple of extra tracks. Now I drag along a DA-88 with the 24-track analog, and I usually put the room mics on the 88, or anything else extra that I need. I find the DA-88 to be quite an incredible tool—I think Tascam has very good-sounding converters and it sounds fine. I use it when I'm mixing now if I have to make an intro separate from the song, like for a practice edit. I'll mix the pieces to half-inch, lay them over to DA-88 and time the crossfade right. I use 88s for that kind of stuff constantly.

What other new equipment do you like?

At Skywalker we get into the more esoteric stuff, and I'm getting a bit spoiled. For one thing, I've been kind of stunned at the difference cables make. I used to think it was a lot of voodoo, but when you get into a place where you can really hear the difference it's not such voodoo anymore. Not that I would take $7,000 cables with me wherever I go, but I definitely think it contributes to why Skywalker sounds the way it does. We use MIT, Cello and Canare Starquad.

I also love the Pacific Microsonics Model One converter. It's really difficult now for me to use another converter when I'm mixing direct to 2-track. I use it as a 16-bit to mix to DAT or I use it 88.2/24-bit when I'm doing something high-bit on the DA-88.

So I'm kind of spoiled, but we need those things; we do a lot of direct to 2-track recording and a lot of really kind of critical listening records, the kind of music where that equipment makes a real difference.

What engineers and producers do you admire these days?

Well, Don Murray of course does great work, and Al Schmitt, obviously, as well as Shawn Murphy and Keith Johnson. I also really like Mike Shipley's work; Shania Twain's record sounds fantastic—it's wonderfully tough-sounding. I think some of Bob Clearmountain's work is absolutely astounding, like Jonatha Brooks' *Ten Cent Wings*. As far as producers, John Levanthal and Larry Klein are two of my favorites. Both of them are so talented on their own but you don't hear their contribution when you listen to the records that they produce. They really enhance the artist that they work with and bring out the best in them without making it seem like it's their album. That's really hard to do.

What's your secret for juggling all your different jobs?

[Laughs] I have a very understanding partner and a good dog. Seriously, the easy answer is because I want to do it all. I took the job at Skywalker because I don't want to give up engineering. I really love it, but I don't want to spend 90 hours a week in the studio anymore. And I think continuing to be a recording engineer is part of what makes me a good studio director; if I don't keep my hands in, then it's kind of hard for me to have real conversations with other engineers who come in. It isn't easy to do it all, and I'm really lucky that Skywalker has been supportive of me being so active in the music community—they see it as a positive thing for Skywalker and the studio. And it's certainly a positive thing for me. Being back in the Bay Area and doing a combination of all the things I love is just about perfect. ■

Maureen Droney is Mix's Los Angeles editor.

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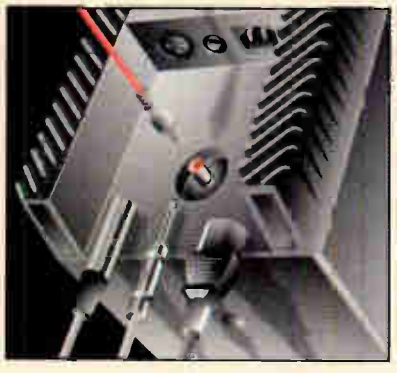

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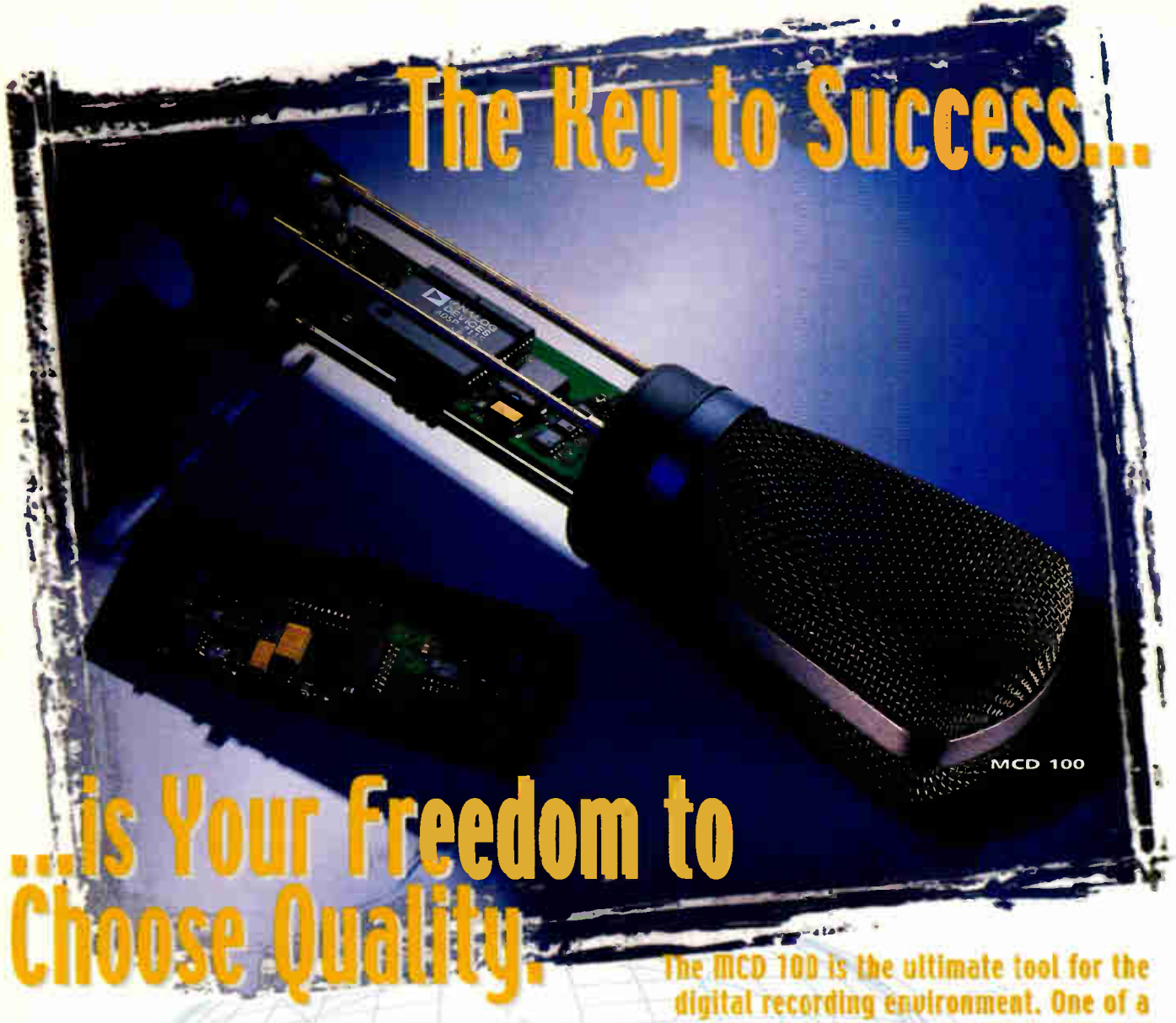

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A week of songwriting and recording culminated in two days of performances in Havana's Karl Marx Theater.

Music Bridges Around the World Reaches Cuba

BY ALEX ARTAUD

More than a decade ago, Alan Roy Scott, founder of Music Bridges Around the World, dreamt of bringing together musicians from different countries and traditions to play together. His approach of uniting artists who normally wouldn't meet has taken him to several countries, including Russia, Romania, Indonesia, Ireland and, most recently, Cuba.

With the success of the Platinum-selling *Buena Vista Social Club* (produced by Ry Cooder and performed by Cooder and a host of top-notch Cuban musicians) and of Rykodisc's *Cubanismo!* series, many more Cuban acts are touring the United States, and the popularity of Cuban music has soared. So, in the fall of 1997, Scott began exploring the possibility of a collaboration between songwriters and performers from the United States and their Cuban counterparts, to take place in Cuba.

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"I chose Cuba because timing was important," he says. "Their music has reached international consciousness within the last few years. Even someone outside of the circle couldn't help but notice the incredible explosion of Cuban music everywhere."

In recent years, few U.S. musicians have had a chance to travel to Cuba, much less work there—not only because of the existing trade embargo, but because of the high emotional and political stakes involved. However, this didn't deter Scott. "That seemed to me to be the perfect reason to do it: a chance to prove that music is a communication tool that transcends politics. Cuba seemed like a natural choice."

Scott enlisted songwriter and collaborator Todd Smallwood to help organize this event. "I'd known Alan for several years," says Smallwood. "We'd written a song on the record *Celtic Harmony* that sold just under a million copies. Alan asked me to bring some friends to his Music Bridges event in Ireland. I called Jeff Healey, and a group of us spent a week there writing songs. It ended up with a concert in Dublin—everything went really well."

The plan was to pair Cuban and American musicians to work together and record songs in Havana over the course of a week. Toward the end of the stay, a selection of songs would be performed and recorded live.

"I invited Mick Fleetwood and several other of my friends," continues Smallwood. "We had a lot of help. Linda Livingston at BMI was supportive, and between us we were able to get Bonnie Raitt, Peter Frampton, Gladys Knight, Lisa Loeb, Indigo Girls, Joan Osborne, J.D. Souther and Burt Bacharach. One thing led to another, interest spread through word-of mouth and it got *big*."

Others to make the commitment included Stewart Copeland, Andy Summers, Duncan Shiek, Montell Jordan, Don Was, Jimmy Buffet, Me' Shell Ndegeocello, Lee Roy Parnell, Dave Koz and actor Woody Harrelson. Some of the Cuban artists who came onboard included Chucho Valdez, Pablo Menendez, Juan De Marcos, Carlos Varella, Pablo Milanes, Papa Terry and Los Van Van.

Todd Smallwood with Bonnie Raitt

As momentum began to build, Smallwood invited Jerry Merrill to assist in engineering and eventually to co-produce. "Jerry brought in his friend Joel Geldermann, who offered generous, no-strings financing for this event. Jerry and I then traveled to winter NAMM and got a great response there. Tacoma Guitars and its sister company, Kurzweil, came onboard, with Tacoma eventually donating 25 beautiful guitars to the Cubans. Mackie Designs was also extremely helpful. They offered us not only four 32•8 mixers and ten HR16 studio monitors but two Digital 8-Buses to mix on. Argosy donated studio furniture for the consoles, and Latin Percussion donated percussion instruments."

Engineer Jerry Merrill (standing) in "One-Take Studios"

The pair also had good fortune when Ed Cherney agreed to record the live show. This led to another lucky break. "Ed contacted Lisa Roy, who connected us with Audio-Technica. With the help of Ken Reichel [A-T vice president in the U.S.] and John Phelan [A-T's international marketing consultant, Latin America], we were able to use over 100 Audio-Technica microphones, which was amazingly generous!"

Hartley Peavey also helped with an extensive array of gear, and came through at a crucial moment. When it was discovered that most of the drivers in the venue's sound system were blown, Peavey sent replacements down on his boat, along with Lad Temple and a crew of technicians to help out with the show.

Musical preparations leading up to the concert were quite hectic. Artists had as little as four hours to compose songs. The three studios assembled in meeting rooms of Havana's Hotel Nacional were there to serve up to 200 artists, so the high demand led to the studios being dubbed "One-Take Studios." Adds Merrill, "There were only three engineers: Dennis Mays, Rick Cowing and myself. We were trying to make the best of a challenging situation, but that's what engineering is all about. Listening back to the tracks now, there's very little that needs to get fixed."

Once all the songs were mixed to DAT, a group of Cuban and American listeners stayed up until 4 a.m., selecting 24 songs to be rehearsed and performed within two days. Merrill

One of the jam sessions that took place during the week.

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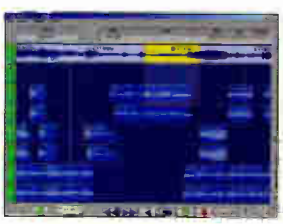

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The OMR-8 can be configured with any SCSI recording media (Hard disk, Jaz, MO). At the heart of its design, DAR's powerful and efficient Genesis™ file management system works with native WAV files and allows import and export compatibility with major industry audio file formats.

The OMR-8 is available in versions configured for specific audio tasks and can also be easily customized to suit any application. The **OMR-8MR Master Recorder** offers the highest resolution audio performance available today with a choice of internal 24-bit, 96k or 48k converters. And with support for sampling rates of 192k, and higher (using external converters) it's already set for the future! With its screens, you can edit, cross-fade and sequence right in the box.

The OMR-8D Digital Dubber is the more complete digital dubber replacement. It delivers full mag emulation, sample accurate punch-in across all tracks and full audio networking. And with DAR's revolutionary SAM (Scalable Audio Multitrack) software you can control and edit up to 1024 tracks as if they were one machine—all on a single screen!

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DIGITAL AUDIO RESEARCH

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the lunatec V2 from grace design
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remembers, "It was an incredible show. A free concert for the music and art students of Havana's schools. About 5,000 people packed the Karl Marx Theater, and David Hopkinson of Zeta did a wonderful job as front-of-house engineer. I don't think they'd ever had quite a show there."

At press time, there is no indication when the public will get to hear a recording of either the studio work or the concert. However, two production companies, Sir Reel Film, and Evil Twin Productions, along with cinematographer Haskell Wexler (*Who's Afraid of Virginia Woolf?*, *The Thomas Crown Affair*, *One Flew Over the Cuckoo's Nest*) captured the event on film, and perhaps that document will find its way to U.S. theaters.

The friendships and musical collaborations that took place have forever changed those involved.
—Jerry Merrill

In the meantime, Smallwood and Merrill continue to develop material under the name No Borders Productions. This production company has a Web site (noborderesproductions.com) with a narrative description of the Bridges event, written by Merrill. "The Cuban people opened their hearts, and often their homes, to receive us," he writes. "There was little political posturing, from either side. The friendships and musical collaborations that took place have forever changed those involved."

Alan Roy Scott's various projects now take him to Australia, Germany, Peru and the Middle East. He is currently collaborating with Smallwood and Will Jennings (*Titanic*) on the finale song for UNICEF's Campaign for Street Children. The song will be performed on December 11, 1999, by 197 singers—one from each of the countries on the globe. At press time, more than half had confirmed. ■

Alex Artaud is the editor of Mix—Edición en Español.

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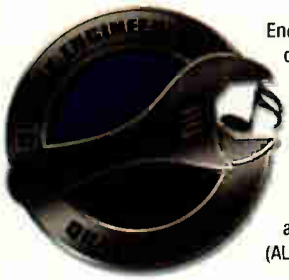

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THE PLANT

ON THE COVER

STILL CRAZY AFTER ALL THESE YEARS

Forget about convention. The Plant Recording Studios in Sausalito, Calif., has never been about convention. Over the past 27 years, an indefinable vibe has seeped through the curvilinear hallways, the classic collection of outboard gear and mics and the floating acoustic clouds, attracting top artists from Fleetwood Mac, Stevie Wonder and Sly Stone, to Metallica, Wu Tang Clan and the Dave Matthews Band. On the day *Mix* visited in mid-June, Kenny Wayne Shepherd was laying down vocals in Studio B, Third Eye Blind was tracking in A, and Primus was finishing up mixes in The Garden, the new 5.1 jewel in owner Arne Frager's crown.

Frager, who bought into the studio in 1988, is now the longest continuous owner in The Plant's colorful history. Last fall he negotiated a deal with investor Eckard Wintzen, owner of Ex'pression Center for New Media in nearby Emeryville, that allowed him to boost his record label, Pop Mafia; jump start an artist management company; and begin building his dream mix room, The Garden, pictured on this month's cover.

"The Garden represents a commitment to mixing in the Bay Area," Frager says, acknowledging that for years he had watched business flee to New York or L.A. after tracking dates. "We looked around and saw a business opportunity because nobody here seems to have made the major investment in a mix room, and I don't just mean surround mixing. We wanted to build something completely different."

The Garden is noticeably different, beginning with its elliptical shape and on through its state-of-the-art lighting system, which allows for 16.7 million hues out of its LED-based cans (no hum, no heat! visit colorkinetics.com). The room, formerly Mix 01 and home to Sly Stone's "Pit" for many years, was redesigned by Frager, architect Robert Remiker and former Plant chief tech Manny LaCarrubba, who did the acoustics and designed the custom monitoring system. Rose Greenway was the visual artist and interior designer.

"I've been working for some years with the wide dispersion of high frequencies, and I've developed what I call the Acoustic Lens," LaCarrubba explains. "It's a patented, proprietary device, and it gives a wonderfully flat response curve over a broad horizontal coverage area. Basically, it redistributes a driver's sound power, stealing from the vertical Peter to pay the horizontal Paul. The sweet spot is just stupidly huge, and at the same time, you're getting less splash off the console, floor and ceiling." The mains utilize the Acoustic Lens for the midrange and tweeter sections; LaCarrubba has formed the company Sausalito Audio Works to market the technology.

When they excavated the Pit, they found a huge concrete...well, pit. Making use of the space, LaCarrubba created two 20-cubic-foot concrete enclosures to house the dual-18-inch subs. "Slab on grade, flush in the floor; there are no cabinet wall resonances," LaCarrubba says. "There is no direct coupling to the building structure, except through the earth, which is the ultimate vibration sink." The front wall is a broadband absorber; the back wall is soft as well but includes a cylindrical diffusor. The rear speakers are movable but are now placed to the European ITU spec of 120 degrees.

The centerpiece of The Garden is an SSL 8096 (G Plus Ultimation), refurbished extensively by Bruce Millett at Desk Doctor in Burbank. Frager admits the decision to go with older technology kept him up nights. But after talking to clients and weighing the upcoming analog vs. digital decision, he decided to replace his 4000 in Studio A with a 9000 this fall and hopes for two more years out of his 8096. "We'll have the best of all worlds," Frager says. "One room is a vintage Neve 8068, one room is a 9000 for tracking and mixing, and the mixing-overdub room is an 8096 with G Plus Ultimation."

A fourth room, now used for pre-production, will be turned into a 500-square-foot stereo (later 5.1) mastering room beginning this fall, and construction on the outdoor garden patio, complete with Hawaiian foliage, waterfall, curved deck and hot tub for seven, will be complete by the time you read this. Frager realizes that much of his competition comes from the converted "house in the woods," as he calls it, where artists set up temporary mixing quarters. Those studios can't match him technically, he says, so he's planning to bring the comfort they offer back home to Sausalito.

"I put a lot of money into The Garden and its outdoor space, and into the lighting," he says. "I know a lot of my brothers in the studio business would have said, 'Hey, take that other 200 grand and put it in a 9000. That's a point of view I respect, but I have a different point of view, which is that I think creature comforts and vibe and ambience are just as responsible for hit records—and that's what we're talking about here. We're not talking about the last bit in a 24-bit recording. I wanted to create the space that makes people feel like you have to feel to create those hits." ■

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CIRCLE #047 ON PRODUCT INFO CARD

World Radio History

JACKPOT! STUDIO

CREATIVE RECORDING IN PORTLAND

In a given week Larry Crane splits his time between practicing and playing with his band, Elephant Factory; editing an indie-oriented recording magazine, *Tape Op*; and engineering and managing his own studio, Jackpot! It may seem like a lot of commitments, but for Crane, making, enjoying and sharing music is a way of life. "I wouldn't be playing if I wasn't in a band with really good friends," the Portland, Ore., resident says, "and I probably wouldn't have gotten into recording if I wasn't playing."

Crane, who says he's been messing around with tape decks since age 10, played bass for eight years with Chico, Calif.-based indie faves Vomit Launch. When they would go into the studio, Crane says, "I was the one in the band who was in charge of the sessions; I just understood the recording process well." Chums who knew of Crane's interest chipped in and bought him a cassette 4-track, which he put to use recording demos and friends' projects. When he moved to Portland in '93, he set up a recording studio in his basement and slowly continued to acquire gear. By the fall of '96, he recalls, "I'd gotten so busy that there were always bands coming in and out of the house. My roommates were kind of sick of it! It seemed like the time to get a loan and build a studio, so I did."

With help (and gear) from artist Elliott Smith, Crane found a suitable building in southeast Portland and constructed Jackpot! in one large room. "We just built a wall in it with a double-paned window and a door that leaks tons of sound, and started working," Crane says. "We had it done in a month. Other engineers come in here and wanna kill me, but I can get a really good live sound and good mixes, so it works.

"I do as much live recording as I can," he continues. "I can get all the amps and the drums in the main room and baffle them enough, but if I need more separation, I'll do things like put the bass amp in the office and the guitar amps in the control room. I just did an album last week in two days, but then I also record projects like the new Quasi record, which we spent a month on." Crane does most of the engineering, though freelancer Joanna Bolme often works at the studio, as well. Between them, they've recorded tracks and albums for artists such as Smith, Satan's Pilgrims, Pete Krebs, Pinehurst Kids, Crabs and Cadallaca.

PHOTO: DEWEY MAHOOD

Owner/engineer Larry Crane with engineer Joanna Bolme

The studio is based around an MCI JH-16 2-inch, 16-track and a 40-input Allen and Heath Saber. Crane has Sytek and Rolls mic pre's and compressors by LA Audio and Manley, as well as three FMR RNC 1773s. "The FMRs are probably the best deal you'll find in a cheap compressor," Crane says. "They're well-designed and have good ICs." Some of his other favorite pieces are a funky dbx Boombox subharmonic synthesizer, as well as standbys such as MIDIverb II and REV7 units. Mics at Jackpot! include a Manley Reference tube and a matched pair of Earthworks 30Ks, as well as models by Langevin, AKG, EV, Shure and Audio-Technica. Crane monitors through Tannoy PBM-8s and Yamaha NS-10s and mixes to a Panasonic SV-3800 DAT.

When he spoke to *Mix*, Crane was excited about a recent purchase: some generic, 95-cent ball-end mics made for plugging into cheap cassette recorders. "They're pieces of junk that keep crapping out on me, but they make things sound really weird and interesting," he says with a laugh. "I've used them a bunch recently, because things can sound too good—if you're solely into recording, it can be tempting to make things sound very glossy. The benefit of me and Joanna is that we're also record collectors and musicians, and we have really strong opinions. My theory is you go through the process of learning how to record really well, then you just throw that shit out the window and start recording what's going to work!

"I'm not the kind of guy who walks into a studio and knows what every microphone is and exactly what's going to get the best sound," Crane adds. "I'm more, 'Hey, let's just try this and see what happens.' I'm always thinking of it as an art form, not as making a product; I'm concerned with whether it's going to be fun to listen to." ■

BY ADAM BEYDA

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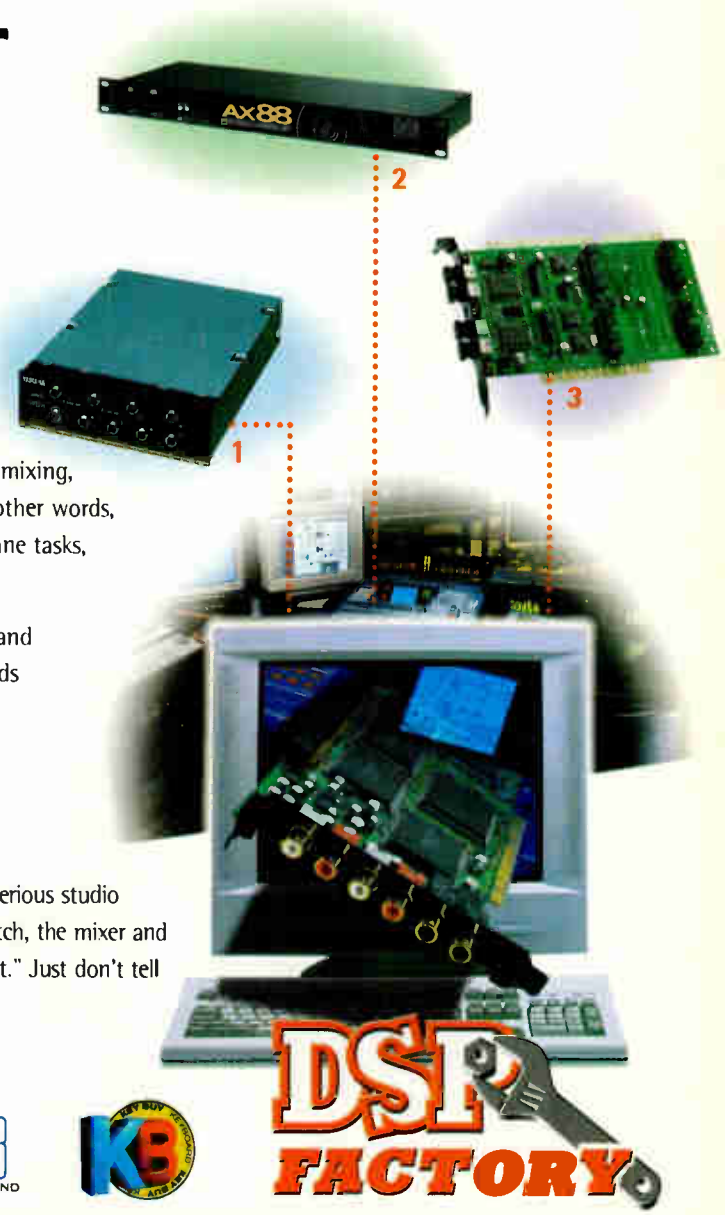

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CIRCLE #048 ON PRODUCT INFO CARD

Like any winning baseball team, studios and live venues rely on various role-players to field a winner and fill the stands. Notch filters make great outfielders, speedy computers steal bases and the general manager runs it all from behind the desk, but no team can win the pennant until the muscled-up power amps go yard.

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Power Amplifiers

BY RANDY ALBERTS

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World Radio History

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Carver PXm 900

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THE LINEUP

Stepping up to the plate is the Precedent Series II and Multichannel Series from **AB International** (www.abamps.com), featuring Enhanced Rail Technology that's said to offer clearer sound and consume 30% less AC power, while coming in at a 20% reduction in weight compared to amps using conventional power supplies and cooling. The 2/3/4/6-channel multichannel amps feature Soft Clip Limiting and internal crossovers.

Apogee Sound (www.apogeesound.com) added the computer-controllable MA and DA Series in the past year. The MA Series A ($4,214) is a 250-watt @ 4 ohms amp that includes built-in emergency page override, load monitoring and programmable gain control, and can be upgraded to support the team's AmpNET networking system to remotely reset circuit breakers from any desktop. The MA Series B ($2,929) is a simplified version of the A with the same power rating, and Apogee's new DA Series of 2-channel amps are offered in 600-watt ($2,179), 700-watt ($2,321) and 800-watt ($2,464) configurations into 4 ohms.

ARX (www.arx.com.au) offers a long roster of new amps from Down Under, including the ZR350, a 2-channel, 100-watt @ 4 ohms, all-MOSFET output stage amp with plug-in options for adding signal processing and active crossovers. Contact the company Stateside at 818/225-1809 for special orders and pricing for the ZR350, ZR550, ZR850, AmbiDrive, MicroDrive, PowerDrive, PowerDrive Lite, SX1500 and SX3000.

Stage Accompany ES Series

New to the **BGW** (www.bgw.com) team and appropriately named for next season are the Millennium 3 TMC-2 ($1,408) and Millennium 2 TMC-2 ($1,048). At 8 ohms stereo, the MIL 2 pumps a respectable 220 watts and the MIL 3 puts out 330 watts, the latter also rating a whopping 1,400 watts @ 4 ohms when mono-bridged. Both shave a little off the salary cap by including internally mounted crossover/processor cards so users can fine-tune crossover points, EQ, attenuation and delay lines to eliminate the cost of external crossovers and processors.

Bryston (www.bryston.ca) brought out no less than six units over the past 18 months. Topping the list is the bulging 65-pound Model 9B-ST Pro ($3,695)—200-watt @ 4 ohms with a modular chassis and separate power supplies for each of its five channels. The Model 8B-ST Pro ($3,100, 120W stereo @ 8 ohms) can operate in 2-, 3- or 4-channel modes and boasts a 0.007% THD. The XLR and RCA connectors of the Model 7B-ST Pro Mono Amplifier ($2,500, 500W stereo @ 4 ohms) look good in gold, and the 2-channel Model 4B-ST Pro's ($2,350, 250W @ 8 ohms) tubes are powered by dual power supplies. Rounding out Bryston's lineup is the 3B-ST Pro ($1,650, 120W stereo @ 8 ohms) and 2B-LP Pro ($995, 60W stereo @ 8 ohms), and all but the Model 2B are available in THX-approved versions.

Power amps from **BST** (www.bst-sound.com) include the Liker 330 stereo power amp ($434, 180W stereo @ 4 ohms); the Liker 630 ($565, 360W stereo

Apogee MA-Series

World Radio History

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- "The speakers had a certain life to them that I had not experienced before....transients were tight and clear, and the bass was extremely responsive. I am glad to see where the state of amplifier technology is going." Tom Young, Sound Engineer

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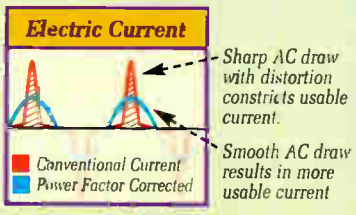

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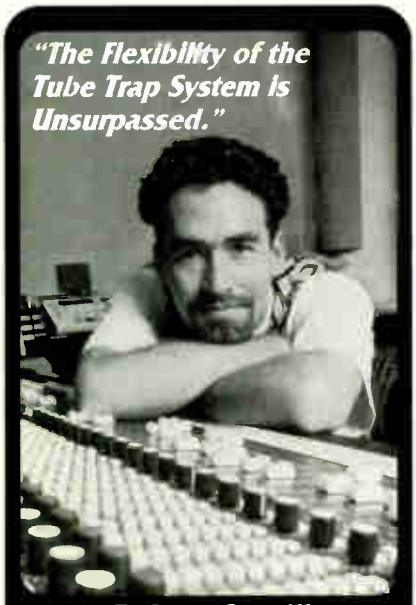

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Power Amplifiers

@ 4 ohms) and the Liker 930 ($665, 490W stereo @ 4 ohms). All feature a MOFSET design, quiet toroidal transformers, built-in active crossover, Speakon outputs and variable-speed, forced-air cooling.

C Audio (www.harman.com, distributed by BSS Audio in the U.S.) is an expansion team with three new players—all with switched-mode power supplies for reduced weight and heat, and microprocessor-controlled power-ups. The Pulse 4x300 ($1,650, 600W stereo @ 8 ohms) is a 4-channel amp that can also be run as a bridged-stereo amp, the Pulse 2x650 ($1,495, 1,700W mono @ 4 ohms) is a two-unit rackspace, 24-pound stereo amp, and the Pulse 2x1100 ($1,850) is rated at 1,100 watts stereo @ 4 ohms.

Beefing up **Carver**'s (www.carverpro.com) lineup the past two seasons are the PXm900 ($795, 300W stereo @ 8 ohms), PXm450 ($665, 150W stereo @ 8 ohms) and PXm250 ($535, 200W stereo @ 8 ohms). Each offers selectable high-pass filters, clip limiters and input sensitivity controls, as well as over-current, thermal and DC protection. The light-hitting Pxm250 weighs in at 24 pounds, while the three-rackspace m900 offers mono-bridged power.

Carvin (www.carvin.com) has six new units on its stage and studio team, including the HT 150 ($229, 150W mono-bridged @ 4 ohms), HT760M ($469, 175W stereo @ 8 ohms), DCM600 ($359, 150W stereo @ 8 ohms), DCM1000 ($419, 1,000W mono-bridged @ 4 ohms), DCM1500 ($519, 1,000W mono-bridged @ 8 ohms), and their leading hitter, the DCM2000 ($619). The latter is a three-rackspace, 2-channel unit with XLR and ¼-inch inputs, toroid transformer, five protection circuits and 2,000 watts of mono-bridged, fence-clearing power @ 8 ohms.

Chevin's (www.sennheiserusa.com) remodeled lineup includes no less than 11 new players. The A3000 ($2,649) is a 2-channel unit sporting 3,000-watt @ 4 ohms mono-bridged, automatic mute on power-up, twin fans and no external magnetic field. Also new are the A500 ($999, 600W mono-bridged @ 8 ohms), A700v ($999, 600W stereo @ 8 ohms), A750 ($1,349, 250W stereo @ 8 ohms), A1000 ($1,595, 1,200W mono @ 8 ohms), A2000 ($2,149, 375W stereo @ 8 ohms), A2500 ($2,849, 1,500W mono @ 4 ohms), A3000 ($2,649, 3,000W mono @ 4 ohms), A5000 ($4,500, 900W stereo @ 8 ohms), A6000 ($4,700, 1,200W stereo @ 8 ohms), Q6 ($2,849, 350W stereo @ 8 ohms), and the Q900 ($5,500, 3,000W mono @ 4 ohms).

Yamaha XS250 and XS350

Crate Pro Audio (www.crateamps.com), an expansion division of St. Louis Music created this past January, introduced the SPA1400 ($599, 260W stereo @ 8 ohms) and SPA400 ($499, 125W stereo @ 8 ohms) to protect its new $699 SPA1400C home-run hitter. The latter offers a crisp 1,320 mono-bridged watts @ 4 ohms and sports two-way ac-

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Power Amplifiers

tive electronic crossover, variable low-cut filters per channel and balanced XLR connectors. Both the 1400 and 400 feature balanced XLR and ¼-inch inputs and five-way binding post outputs.

Crest's (www.crestaudio.com) prodigious lineup just got stronger with the introduction of its 8002 Pro II ($3,560). Sporting twin-tunnel cooling, XLR inputs and an 800-watt @ 8 ohms stereo average, the Pro also managed to get down to a fit and trim 47 pounds with lots of off-season work in the design department.

Crown (www.crownintl.com) has brought up two rookies: The CE2000TX ($1,025, 400W stereo @ 8 ohms) offers a proportional-speed fan, switchable input sensitivity and is approved for THX work, and the new MA 2402 ($2,299) packs 2,070 watts of mono-bridged power @ 4 ohms and includes balanced 3-pin XLR and ¼-inch phone jacks per channel.

Demeter (www.demeteramps.com) is showing a couple of classy new tube amps, each with user-adjustable tube bias settings, selectable triode/pentode operation and eight matched Ruby 6550 output tubes. The VTHF-300m Tube Mono Block ($2,649) strokes 300-watt homers, while the 65-watt stereo per channel VT275HF ($2,299) offers a front-panel LED and the glowing Ruby tubes as power indicators.

Electro-Voice's (www.electrovoice.com) has two new stars in the making, the Q66 ($1,390, 380W stereo @ 8 ohms) and Q44 ($1,110, 280W stereo @ 8 ohms). Both are stereo amps that feature high-current Neutrik Speakon output and active-balanced XLR input connectors, rear-mounted detented level controls and input/output comparator-driven limiters.

Designed for P.A. and DJ applications, Gemini's (www.geminidj.com) three-rackspace XP-1200 has two-speed fan cooling, mono-bridge switch, XLR and ¼-inch inputs, five-way binding posts and three Speakon outputs. Retail is $950; rated power is 600-watt stereo @ 4 ohms.

Migrating from the guitar leagues is Hoffmann Amplification (hoffmann@

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CIRCLE #033 ON PRODUCT INFO CARD

Power Amplifiers

earthlink.net) with two mono tube amplifiers. The Hoffmann 2T ($895) is rated at 70 watts @ 8 ohms, with the Hoffmann 4T ($1,495) at 140 watts @ 8 ohms. Each is a four-unit ultralinear amp with ¼-inch and XLR inputs.

Hot House Professional Audio (www.hothousepro.com) has introduced two new amps since opening day 1998: the Four Hundred ($1,699, 125W stereo @ 8 ohms) and Two Thousand ($4,999, 390W stereo @ 8 ohms). A studio amp designed to power nearfield speakers, with split dual secondaries, the 2-channel Four Hundred's toroidal transformer provides galvanic isolation of DC power. The Two Thousand is a discrete dual-mono, five-rackspace amp that provides zero feedback and is capable of reproducing transients up to three times the rated power without side effects.

LAX Sonic Solution (www.laxaudio.com) has been busy with the debut of four 2-channel units. First is the 780-watt mono-bridged @ 4 ohms MA 2400 MK11 ($899), a 40-pound unit that features balanced XLR inputs and five-way binding post and Speakon output connectors. The MA 3200 MK11 ($1,099) offers 1,100 mono-bridged watts @ 4 ohms, and the MA 5200 MK11 ($1,299) produces 780 watts of stereo power @ 4 ohms. The massive MA 7200 MK11 ($1,899) is listed at 1,950 mono-bridged watts @ 4 ohms and a whopping 54 pounds.

Mackie Designs' (www.mackie.com) roster now includes four new power drivers, each with a five-year warranty. The M800 ($599, 140W stereo @ 8 ohms) features Bessel low-cut filters, variable from off to 170 Hz, and the M1400 ($649, 300W stereo @ 8 ohms) comes to bat with a second-order, 18dB/octave Linkwitz-Riley electronic selectable subwoofer crossover. Also new to Team Mackie are the M1400i ($649, 300W stereo @ 8 ohms)

Yorkville CR5

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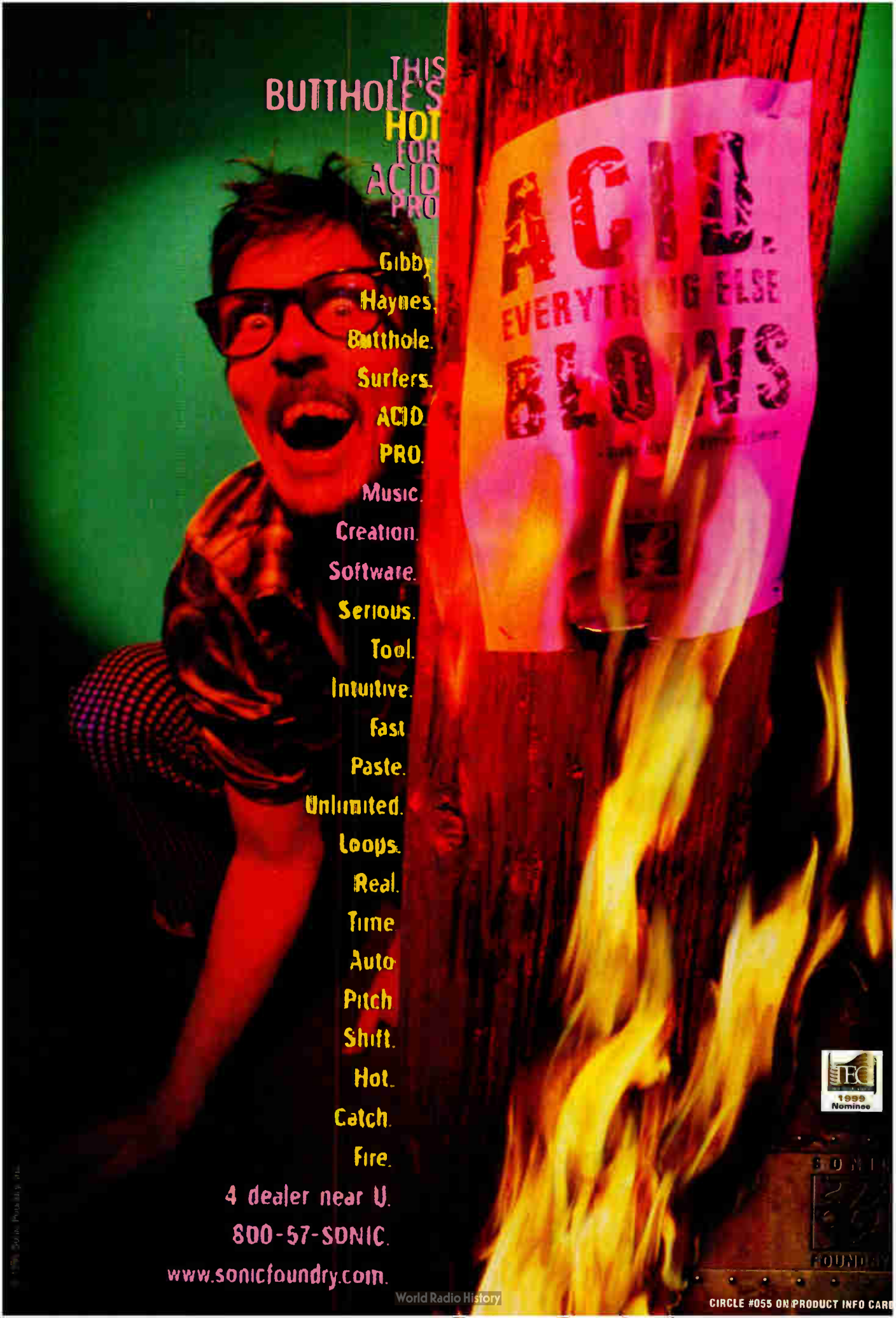
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World Radio History

Power Amplifiers

and M2600 ($1,199, 500W stereo @ 8 ohms).

Miles Technology (www.milestech.com) has put out the MPR-1KX ($2,099) and MPR-500X ($1,499), two modular multichannel units available in various channel configurations and sporting selectable crossover filters. The 1KX is a 6-channel device that pumps 115 watts @ 8 ohms per channel, and the 500X is a 3-channel, 140-watt per channel @ 8 ohm unit that fits into a single rackspace.

Nagra's (www.canorus.com) $12,000 MPA (MOSFET Power Amplifier) is a 250-watt (stereo @ 8 ohm) unit that uses five PFC power supplies for improved performance and corruption-free AC; a $14,500 integrated version of the MPA with RCMI option comes with four pairs of XLRs.

Peavey (www.peavey.com) has introduced a couple of 2-channel models over the past two seasons. The CS500A ($699, 125W stereo @ 8 ohms) offers full support of the CS800S family of input and output modules. The company's new 15-pound single-rack DPC1400X ($1,399, 375W stereo @ 8 ohms) includes ¼-inch through connectors and boasts an unbelievable 1,400 mono-bridged watts of power.

The PowerLight 9.0PFC ($6,998) and PowerLight 6.0PFC ($5,948) are leading this year's team of new power-strokers at **QSC** (www.qscaudio.com), which also now boasts the PLX1202 ($858, 200W stereo @ 8 ohms), PLX1602 ($1,198, 300W stereo @ 8 ohms), PLX2402 ($1,498, 425W stereo @ 8 ohms), PLX3002 ($1,798, 550W stereo @ 8 ohms) and PLX3402 ($2,098, 700W stereo @ 8 ohms). The team might want to consider removing the "Light" from these names thanks to the 6.0's massive 6,300 mono-bridged watts @ 4 ohms and the 9.0's prodigious 9,000 mono-bridged watts @ 4 ohms. Both take up three rackspaces, weigh 59 pounds, and feature Team QSC's PowerWave PFC (Power Factor Correction) technology for dropping AC current and peak level requirements by as much as 40% and 80%, respectively.

Designed for sports bars and other commercial sound applications, the MA3 from **Rane** (www.rane.com) is a 3-channel amp delivering 60 watts into a 4-ohm load. Retail is $699, and features include an internally selectable 80Hz highpass filter, sealed heat-tunnel forced air cooling, load-sensitive servo limiter, headroom meters and optional 70.7 or 100-volt transformers.

Renkus-Heinz (www.renkus-heinz.com) has been active, introducing four new units. The 2-channel P2700 ($1,275, 350W stereo @ 8 ohms) and P2400 ($975, 250W stereo @ 8 ohms) offer a host of crossover, EQ and phase-compensation processor modules, and the P2850 ($2,250, 500W stereo @ 8 ohms) weighs in at 63 pounds. But it's the hulking P2950 ($2,475) that's attracting attention with its 2,800 mono-bridged watts @ 4 ohms.

The SRA-200E ($795) from **Roland** (www.rolandus.com) is a dual-channel unit that offers 100-watt stereo performance @ 8 ohms and balanced TRS ¼-inch and XLR connectors, all in a single rackspace and weighing a wispy 10 pounds. The 200E comes

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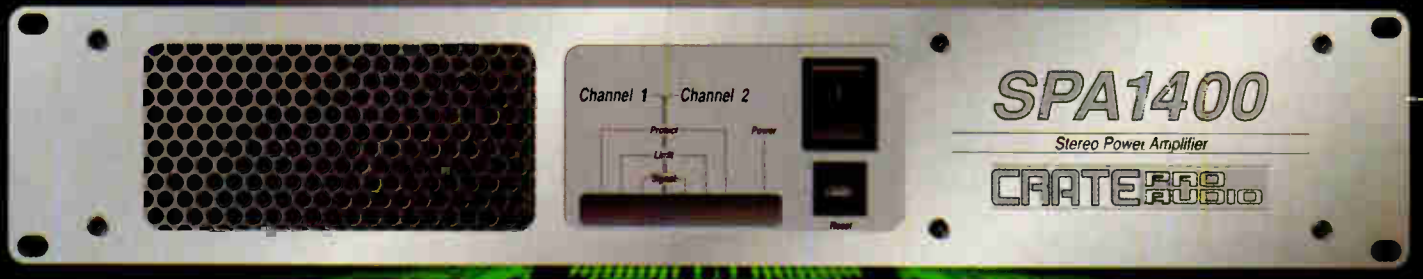

or mount the SPA1400C for only $699.99

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The new SPA1400C will operate with up to 660 watts in stereo at 2 ohms or up to 1320 watts mono-bridged at 4 ohms. They feature two variable-speed fans and a massive amount of heat sink to keep cool in the most demanding situations.

The SPA1400C includes a built-in 24dB/octave, 2-way Linwitz-Riley electronic crossover, giving you the flexibility to feed the upper range to Channel A, while the low range goes to Channel B, or vice-versa. This fully functional 2-way crossover is variable up to 2500Hz so you can use it for highs to mids as well as for sub-wooofers. Balanced XLR thru jacks are switchable giving you the ability to pass the input signal out to other amps in your rack pre or post-crossover. In the "post" (or crossover out) mode,, the XLR thru jacks will reflect the same crossover setting allowing you to send those signals to other amplifiers. So if you've set channel A for your high frequencies, then the channel A thru jack sends only those frequencies.

Additional Features of the SPA1400C

- Built in 24dB /octave 2-way Linkwitz-Riley electronic crossover. Variable from 40Hz to 2.5kHz
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World Radio History

CIRCLE #057 ON PRODUCT INFO CARD

Power Amplifiers

with speaker binding posts, a limiter circuit and the team's proprietary Efficiency Controlled Operating System (ECOS) technology.

Samson (www.samsontech.com) brought out the S1000 ($649, 340W stereo @ 8 ohms) and S700 ($549, 230W stereo @ 8 ohms) this past season. Both are dual-temperature sensitive and feature speed-controlled fans, relay-controlled outputs, and input level controls with 41 precise detents.

Sony's (www.sony.com/professional) SRP-P50 ($500, 150W stereo @ 8 ohms) is a sound reinforcement model that features anti-vibration and anti-flux construction, a high-end toroidal transformer and high supply voltage rejection ratios. Input levels are switchable between 0 dB and -10 dBu on this single-rackspace unit.

New from **Stage Accompany** (www.stageaccompany.com) is the ES (Efficiency Series) amplifier range, built with a high-speed/high-current Class G design for increased efficiency. All units feature SA's Dynamic Damping Control (DDC™) system, which realizes a high damping factor (10,000 @ 10-20k Hz.), along with optional EFN™ circuit modules, such as crossovers, EQs, HP/LP filters and limiters. The top-of-the-line ES 40 ($3,147, 1,900W stereo), the ES 20 ($2,277, 960W stereo) and ES 10 ($1,707, 480W stereo) come with all power ratings RMS into a 2-ohm load.

The PA-50b ($299) from **Stewart Electronics** (209/588-8111) is the company's new 25-watt (stereo @ 8 ohms) model, weighing in at 3.5 pounds. The PA-100B ($399) puts out 100 watts of stereo power @ 4 ohms and sports a new active power supply, while the PA-200B ($429, 50W stereo @ 8 ohms) features IEQ equalization. All three of Stewart's new players fit snugly into any half rackspace.

In the past year-and-a-half, **StudioMaster** (www.studiomaster.com) has introduced the 1600 D ($1,195), 1200 D ($995, 700W stereo @ 8 ohms) and 700 D ($749, 420W stereo @ 8 ohms). Each brings separate mono and bridge switching, defeatable 20:1 signal limiters, crow bar electronic speaker protection, and thermal- and load-sensing variable-speed cooling fans. The powerful 1600 D puts out 800 watts (stereo @ 8 ohms) or 2,000 watts in bridged-mono mode @ 4 ohms.

Yamaha's (www.yamaha.com) two new live sound models are the XS250 ($599) and the XS350 ($699). Both bring built-in variable subwoofer and low-cut filters, rear-mounted, dB-calibrated attenuators, variable speed cooling fans and XLR inputs. The XS250 outputs 700 watts of mono-bridged power @ 8 ohms, while the XS350 produces 350 watts stereo @ 4 ohms.

Yorkville (www.yorkville.com) has added the CR5 ($549, 180W stereo @ 8 ohms) and AP6040 ($1,799) to its lineup. The CR5 offers barrier-strip inputs, touchproof binding-post outs and efficient silent passive cooling for hot August nights. The AP6040 brings stereo and mono switches, highpass filter and advanced protection circuitry, but the press booth pays more attention to its 4,000 watts of mono-bridged power @ 4 ohms. Can you say "power" alley? ■

Randy Alberts is a musician, freelance writer and former second baseman with Mix, Electronic Musician, Keyboard, EQ *and* Radio & Records.

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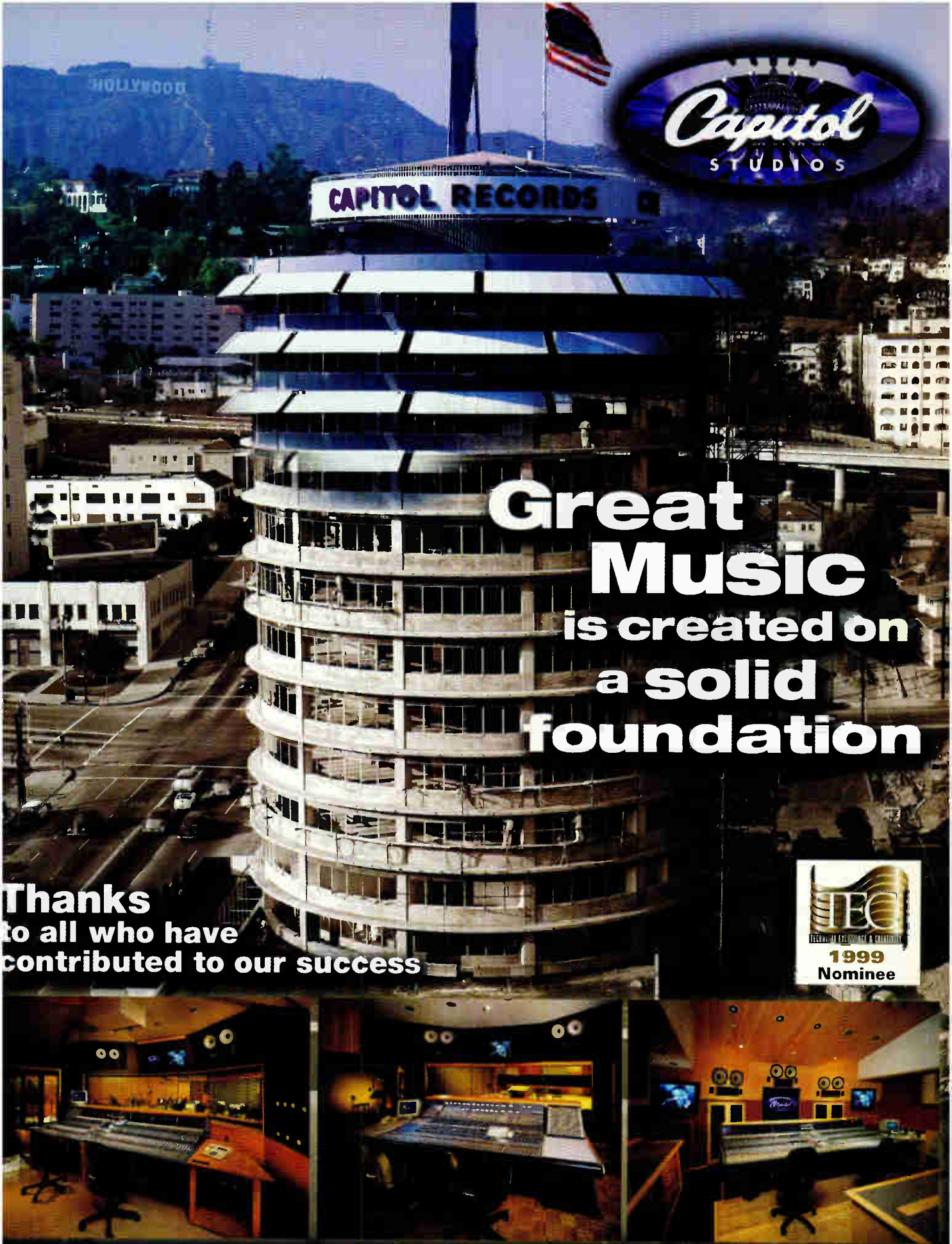

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World Radio History

PREVIEW

GENELEC 1036A ▲
Designed for large control rooms, Genelec's (Natick, MA) 1036A system consists of two 3-way, double-18 enclosures and two electronics racks with the active crossovers, 3-channel power amps, protection and diagnostic circuitry. Highs and mids are handled by two 5-inch cone drivers and a 1-inch throat compression driver, mounted on a Directivity Control Waveguide that's rotatable for horizontal or vertical installs. The 1036As can produce peak SPLs in excess of 130 dB; frequency response goes down to 17.5 Hz, with a 3dB down point of 19 Hz.
Circle 327 on Product Info Card

ACOUSTICSFIRST ACOUSTICAL WALL COVERING
AcousticsFirst Corporation (Richmond, VA) intros the Sound Channels-2 acoustical covering for vertical surfaces. The absorptive material is designed to be applied directly to wall surfaces. Offering improved sound absorption specifications (NRC value is 0.20), Sound Channels-2 is supplied in 54-inch widths and is available by the running yard or in 33-yard bolts. Sound Channels-2 meets the Class-A flame spread rating and is available in 61 colors from stock.
Circle 328 on Product Info Card

TASCAM CD DUPLICATOR ▶
Tascam (Montebello, CA) offers the CD-D4000 CD Duplicator, a rackmount unit that duplicates CDs at 1x, 2x or 4x speeds. A front panel display shows the unit's operating mode, and a 2-button interface controls all operations, including checking disks for write capability, duplication and comparison. Price: $1,299.
Circle 329 on Product Info Card

BRAINSTORM TIME CODE REPAIR KIT
Brainstorm Electronics Inc., (distributed by Audio Intervisual Design, West Hollywood, CA) offers the SR-R3 Time Code Repair Kit, a rackmount timecode regenerator that identifies and repairs faulty timecode. Functions include dropout repairs, jitter reduction, auto video phase correction and auto drop-flag correction. The unit also includes a timecode reader (LEDs indicate formats), a video phase analyzer, and generation of all standard TC formats, referenced to internal crystal or external video. Price: $699.
Circle 330 on Product Info Card

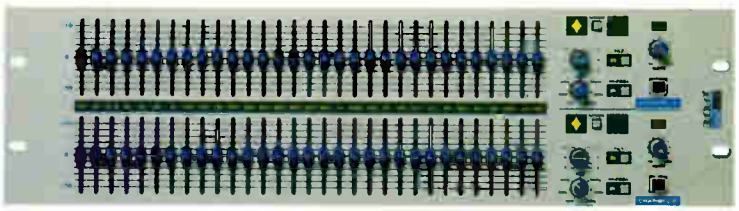
SONY MINIDISC RECORDER/PLAYER
The MDS-E11 professional MiniDisc recorder/player from Sony Electronics (Park Ridge, NJ) is a single-rack-space unit with 20-bit processing, optical digital I/Os and an RS-232C interface for computer control. A sample rate converter allows digital recording from 48kHz sources, and the unit includes the latest version of ATRAC V. 4.5 coding. I/Os include RCA and XLR analog and optical and coaxial digital. Price: $825, with wireless remote.
Circle 332 on Product Info Card

ACE TRS PATCHBAY ▲
ACE Products (San Rafael, CA) offers the APB-48S Master Patching System, a 48-point, ¼-inch balanced patchbay with a modular design allowing for a variety of configurations. Users can configure the APB-48S for normaling, de-normaling and half-normaling by rotating each jack module. Optional drop-in modules offer Direct Box, Combiner, Splitter and Cable Tester functions. The unit includes two erasable designation strips and a spare module. Price: $129.95.
Circle 331 on Product Info Card

World Radio History

PREVIEW

AUDIENT GRAPHIC EQs ▼
Audient (distributed by Audio Independence, Middleton, WI) has introduced two new rackmount graphic processors. The Audient ASP 131 single-channel and ASP



231 dual-channel graphic processors both feature a choice of optimized constant-Q filters or a switchable high-Q mode that affects cuts only. A proprietary Tilt control (centered on 1 kHz) allows for overall system tuning while maintaining relative filter settings. Additional features include a continuously variable highpass filter on each input, back-lit display of all parameters and functions, long-throw 45mm faders and XLR and barrier strip connectors. Price: $1,065 for the ASP 131; $1,495 for the ASP 231.
Circle 333 on Product Info Card

CROWN MATCHED ▼ CONDENSERS
Crown International (Elkhart, IN) now offers its CM-150 (omni) and CM-700 (cardioid) condenser microphones in matched pairs. Paired mics are matched in sensitivity and frequency response to within 1.5 dB. Featuring a pre-aged titanium diaphragm for stability over a wide range of environmental conditions, the top-of-the-line CM-150 has a frequency response of 20-20k Hz (±1.5 dB); self noise is 19 dBA. Two matched CM-150s are $1,590; a matched pair of CM-700s is $578.
Circle 334 on Product Info Card

FLYING FADERS DIRECT
With the passing of a ten-year exclusive agreement with AMS/Neve, Martinsound (Alhambra, CA) now offers worldwide sales and service for Flying Faders, the leading moving fader automation system it created in 1988. Martinsound will now engineer and build systems for any console and is working on enhancements that will extend the system into the next millennium.
Circle 335 on Product Info Card

NEW NEUTRIK XLRs ▶
Neutrik (Lakewood, NJ) debuts the EaSZyCon Super Z Series of XLR connectors. Said to reduce assembly time by as much as 60%, Super Z Series connectors include a self-adjusting cable strain-relief and gold-plated, self-cleaning tuning fork contacts. Super Z Series XLRs accept a wide range of cable diameters, and a new latching mechanism assures positive mating with any male XLR.
Circle 336 on Product Info Card

FUJI PRO MDM TAPES ▲
Fuji Photo Film U.S.A. (Elmsford, NY) has expanded its pro audio products line (DAT, MiniDisc and CD-R) to include high-performance digital recording tapes for Alesis ADAT and Tascam DTRS-format modular digital multitracks. The DPD line of Hi-8mm tapes are offered in 30-/60-/113-minute lengths; the S-VHS DPA-42 has a 42-minute record time. Both are lubricated for smooth running during shuttle operations, with rugged binders for durability and include the color APRS studio labeling system and hard storage cases.
Circle 337 on Product Info Card

DENON PRO MINIDISC
Denon (Parsippany, NJ) debuts the DN-M991R MiniDisc recorder for pro applications. Features include auto recording start, cue point recording (up to five cue points per track), auto/manual track increment

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PREVIEW

control, relay recording for automatic continuous recording on multiple decks, an alphanumeric display of track ID, levels, timing data, basic editing functions and control capability via a PC keyboard for entering disc and track names. The DN-M991R accepts 32 and 48kHz data and offers stereo or mono recording (74 or 148 minutes per disc). I/Os include analog and digital XLR connectors, and the unit includes RS-232C, RS-422A D-Sub 9-pin and D-Sub 25-pin connectors for serial and parallel remote control. Price: $2,300.

Circle 338 on Product Info Card

BEYERDYNAMIC STUDIO CONDENSERS ▲

Beyerdynamic (Farmingdale, NY) unveils the MCE 90 and MCE 91, two large-diaphragm electret condenser mics. Both mics operate on 12 to 48VDC phantom power and feature high SPL handling, a transformerless design, linear frequency response and low self-noise. The MCE 90 (pictured) has a switchable attenuation pad and low-cut filter. The MCE 91 is a handheld version of the MCE 90, without the pad or filter. Both mics are priced at $649.

Circle 339 on Product Info Card

dbx DIGITAL OUTPUT CARDS ▼

dbx (Sandy, UT) offers two new digital output cards for dbx Blue and Silver Series processors. Designed to be installed in the 160S/160SL Compressor or the 786 mic preamp, the 704X digital output card offers 44.1/48/88.2/96kHz sample rates and can dither outputs to 16/20/24 bits using TPDF or SNR2 algorithms. Two noise-shaping algorithms can be used to lower the noise floor. I/Os are AES/EBU on a Neutrik XLR and S/PDIF on an RCA connector. Price: $799.95. The dbx 504X is designed for use in the dbx Silver Series, which includes the 566 Compressor, 576 Microphone Preamp/Compressor and the 586 Mic Preamp. The 504X card outputs at 44.1 and 48kHz sample rates and offers similar features to the 704X. Price: $399.95.

Circle 340 on Product Info Card

HOT OFF THE SHELF

EMTEC Pro Media and Alesis Corporation present a 45-minute video titled **Care and Feeding of Your ADAT**. Available from both companies, the video demonstrates basic cleaning/maintenance procedures for ADAT recorders. Call EMTEC at 888/295-5551 or visit www.emtec-usa.com ...**An AMS Neve CD-ROM on the Libra Live** digital on-air production console features a detailed overview of console functions, automation and advanced features. Discs are available from AMS Neve offices, or from www.ams-neve.com ...**Classic Microphones From the Golden Age of Radio** ($45, postage-paid) is a 43-minute videotape that demonstrates 12 classic microphones. Order from Barry Brose at 415/981-5010...**Pacific Research & Engineering's QuikBilt II** line of high-quality, low-cost modular studio furniture assembles easily using only screwdrivers. Call 760/438-3911 or visit www.pre.com...**The HHB MD80** is the first 80-minute MiniDisc available outside Japan. Call 310/319-1111 or visit www.hhb.co.uk...**A 20-page D.A.S. Audio Pro-Power Kits** brochure features component schematics and specs for seven loudspeaker kits, in addition to listing all D.A.S. drivers, horns and compression drivers. Call Sennheiser customer service at 877/DASNOWW...**The Cirrus Logic AC-97 V. 2.1-compliant codec** for PCs and embedded systems provides S/PDIF digital output. The CS4299 is designed to provide mixed-signal audio processing for Intel 810/20-based systems, features 20-bit architecture, and includes drivers for all major operating systems. Call 510/623-8300...**Jensen Tools offers the Miles Technology ACT-1 Audio/Video tester** for fast testing of any audio cable. For a catalog, call 800/426-1194 or visit www.jensentools.com...**The Apple Trax production library from Manhattan Production Music** has grown to 50 CDs. The latest releases are AT 49 Bad Attitude, a 60-track collection of bass driven rock, jazz and rockabilly, and AT 50 Drums of the World Vol. 2, a collection of world beat cuts. Call 800/227-1954 ...**Sweetwater Sound's 1999 New Gear Directory** is a 40-page companion to the much-larger Sweetwater 1999 Equipment Directory. For more information, call 800/222-4700...**Promusic's Atlantic Seven Music Library** is a collection of production music featuring vocal sound-alikes of famous pop and rock singers. Call 561/995-0331 ...**The 96-page Gepco International product catalog** has more than 350 audio, video and HDTV cables and cable-related products. Call 800/966-0069 or visit www.gepco.com. ■

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INDISPENSABLE

connect

WHIRLWIND DIs & SPLITTERS

Of course, you already know Whirlwind DIs and Splitters are indispensable. And, armed with this knowledge, you own several — if not dozens. So, consider this ad a tribute to your good taste. Reinforcement for choosing the industry standard again and again.

Stages, studios, and gig bags around the globe are loaded with these indestructible boxes. No matter what your interface challenge, nothing else compares to Whirlwind innovation, design and quality. Congratulations. You made the right choice.

whirlwind

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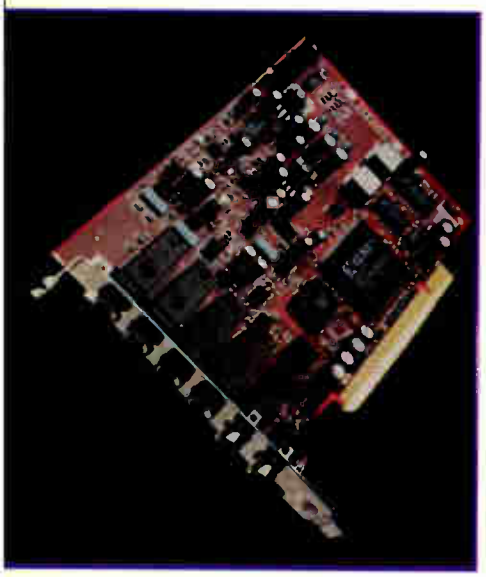
NEW SOFTWARE/HARDWARE FOR AUDIO PRODUCTION



DAL CARDDELUXE ▲

Now shipping is the CardDeluxe, the successor to the CardD sound card from Digital Audio Labs (www.digitalaudio.com). CardDeluxe is a PCI design, supporting resolution of up to 24 bits/96 kHz, and offering S/PDIF digital and balanced analog I/O. The card offers 4-channel operation and works with most 24/96-compatible software, including Cool Edit Pro, SAW and Cakewalk Pro Audio. It also supports DirectX and Windows95/98/NT, with ASIO drivers due out this quarter. Connections are ¼-inch TRS and S/PDIF digital in/out on gold-tipped RCA connectors; analog and digital I/Os may be used simultaneously. In addition, users can switch between +4/-10dB balanced/unbalanced operation (jumper-selectable). For channel expansion, an intercard sync connector from DAL can slave multiple cards to a single sample clock. Suggested retail is $595.

Circle 341 on Product Info Card

QDESIGN MUSIC CODEC 2

QDesign (www.qdesign.com) recently released QDesign Music Codec 2, offering higher-quality compression. Decoders and a basic version of the encoder shipped with the QuickTime 4 public beta from Apple; the full professional version is available from QDesign. Features of the new professional edition of QDesign Music Codec 2 include enhanced packetizer technology for minimizing effects of network dropouts for improved real-time streaming, plus QDesign's new AutoPilot technology, which dynamically controls audio processing and perceptual encoding parameters. Stereo imaging and frequency bandwidth aspects have been optimized, and ease of use has been improved.

Circle 342 on Product Info Card

PYRAMIX VERSION 3.0

Merging Technologies (www.merging.com) announced Version 3.0 of its Pyramix digital audio workstation. New features in this update include a surround mixer scalable from mono to 7.1, unlimited number of playback tracks, support for DirectX plug-ins, a fully editable clip-based gain envelope, background recording, dynamic insertion and removal of effects, faster and improved jogging, plus Windows 2000 support. Version 3.0 also supports Mykerinos, Merging's new PCI card. Mykerinos offers 32-bit floating point processing and 24-bit resolution with up to 144dB dynamic range, and it gives the choice of modular I/O daughterboards, offering either 16 I/O channels on 2+2 ADAT optical connectors, 8 I/O channels on mixed analog plus AES/EBU, 56 channels on MADI, 64 channels on IEEE 1394 or combined audio and video daughter card solutions.

Circle 343 on Product Info Card

MAYAH SENDIT CODEC VERSION 3.1 ▼

New from Mayah (www.mayah.com) is Version 3.1 of its Windows-based SendIt codec. The upgrade includes FlashCast technology, designed to automate complex technical procedures such as audio coding algorithms. In addition, audio codec detection with fast synchronization has been implemented, and the user interface has been simplified. SendIt 3.1 recognizes CCS CDQPRIMA, RoadRunner, Telos Zephyr, Dialog MusikTaxi VP, VP-Pro with Layer 2 and 3, mono and stereo, 1 and 2 ISDN B-channels.

Circle 344 on Product Info Card

JLCOOPER MCS3 MEDIA CONTROL STATIONS

JLCooper (www.jlcooper.com) is now shipping the MCS³ Media Control Station, available in five different versions. The MCS³ is a remote-control unit with transport, jog shuttle and editing controls, optimized for a variety of applications. Featured are a precision, optically encoded jog/shuttle mechanism, with separate concentric shuttle ring, allowing frame-accurate control of audio and video. Also included are transport buttons for record, play, stop, fast-forward, rewind plus 18 function keys and the new V/Stick navigation control. MCS³ is available in five dif-

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ferent versions, including USB, (Macintosh) ADB, MIDI/MMC, (Windows) RS-232, RS-422/9-Pin. The Mac, RS-232 and USB versions include software for customizing keysets for controlling software from Adobe, AVID, Media 100, Macromedia, plus systems from Emagic, Steinberg, Opcode, Mark of the Unicorn and more.

Circle 345 on Product Info Card

TIMELINE
TRANSAUDIO PIPELINE

TimeLine Vista (www.digaudio.com) recently introduced the TransAudio PipeLine, a Windows 95/98/NT-based file utility program for supporting backup, export and tape mode conversion of popular digital audio workstation file types. The application was designed to aid post production facilities that archive and convert a variety of audio files. File types read include Digidesign Pro Tools sessions, WaveFrame projects, Akai DD8, Tascam MMR-8, Zaxcom DEVA (broadcast .WAV), Sonic Solutions (on Mac HFS volumes) and OMF/Sound Designer II. The software also writes Digidesign Pro Tools, WaveFrame and OMF/Sound Designer II files. TransAudio PipeLine is based on the file backup and export capabilities of the Tascam MMR-8 modular digital multitrack recorder, developed by TimeLine Vista for Tascam. In addition to file backup and export, the software allows WaveFrame and Pro Tools files to be converted to TapeMode, which renders each track an audio file. Also included are the ability to delete EDL files, clean up unreferenced media files from a disk, and to change project sample rate and frame rate attributes. Retail price is $795.

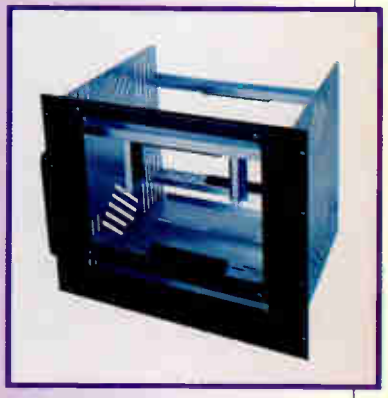
Circle 346 on Product Info Card

CORRECTION

The June "New Software/Hardware for Audio Production" column listed a $99 upgrade from Cool Edit to Cool Edit Pro. That offer was intended for select customers only and applies to certain versions of Cool Edit; call Syntrillium Software at 480/941-4327 for pricing information. *Mix* regrets the error.

UPGRADES AND UPDATES

Akai introduces its DD Version 3.01 software, featuring expanded file format compatibility, unlimited crossfade length between two cues on a single track, level-triggered recording and the ability to separate machine settings from project-specific settings. For more information, visit www.akai.com/akaipro/postpro…**New from Sonic Solutions** (www.sonic.com) is the AutoDVD Facility Automation system, **a new DVD production tool for the Sonic DVD Creator**. AutoDVD manages the entire DVD production process (MPEG-2 video encoding, audio encoding, multiplexing DVD VOBs and MPEG-2 transport streams, and writing to DVD-R or DLT) in an IP-based environment, which can be run from a Web browser. The system is incorporated into the workgroup-based **JVC DVD Archive system** (jointly announced by Sonic and JVC) for automatic encoding, storage and management of video and audio assets for archiving and distribution …**AMS Neve debuted AudioFile V. 2.5**, with a new 32-track option. Other new features include multilevel Undo. 2,000 cues per volume, 2,000 events and DVR—Digital Varispeed Record—and more. Visit www.ams-neve.com …**Steinberg's Nuendo** system now supports the **Windows NT** platform; for more information, check out www.steinberg.de… **Microboards** (www.microboards.com) announces **a package including an 8x CD recorder**, a Fargo Signature CD Color Printer, a Cedar autoloader, CD Face label editing software, Adaptec's Jam premastering software and more, for $6,995. Also from Microboards, the DSR8880 ($8,995) is an **8x tower CD-R duplicator** with eight 8x CD recorders and a Fusion DA link (to facilitate conversion from DAT to CD-R)…**HHB's** (www.hhb.co.uk) MD80 is **an 80-minute MiniDisc**, which is compatible with all recorders and players …**Otari debuted the StarTower expandable CD-R duplication tower** featuring eight 4x writers, with optional S/PDIF and A/D conversion modules. For more information, check out www.otari.com …**The Capybara•320** Sound Computation Engine from **Symbolic Sound** (www.symbolicsound.com) is a hardware-based multiprocessor accelerator for Kyma sound design software, based on multiple Motorola DSP56309 chips running at a composite clock speed of 320 to 2200 MHz. Prices start at $3,300…**Middle Atlantic's** (www.middleatlantic.com)



new RM-CPU-ATX rackmount **computer chassis** is fitted with a hard drive bay capable of housing three 3.5/5.25 disk drives, plus a rear panel that accommodates a standard ATX I/O panel, a removable front grille for filter replacement, a reset switch and LED power/HDD indicators… **Be Inc.** (www.be.com) announced the availability of a **new BeOS bundle**, including the 4.0 system release and the BeOS Bundle reference guide, The BeOS Bible, for $79.95. In related news, **Softjee** (www.softjee.com) released a line of MIDI applications for the BeOS …**Sonic Timeworks** (www.sonictimeworks.com) also announced BeOS support.■

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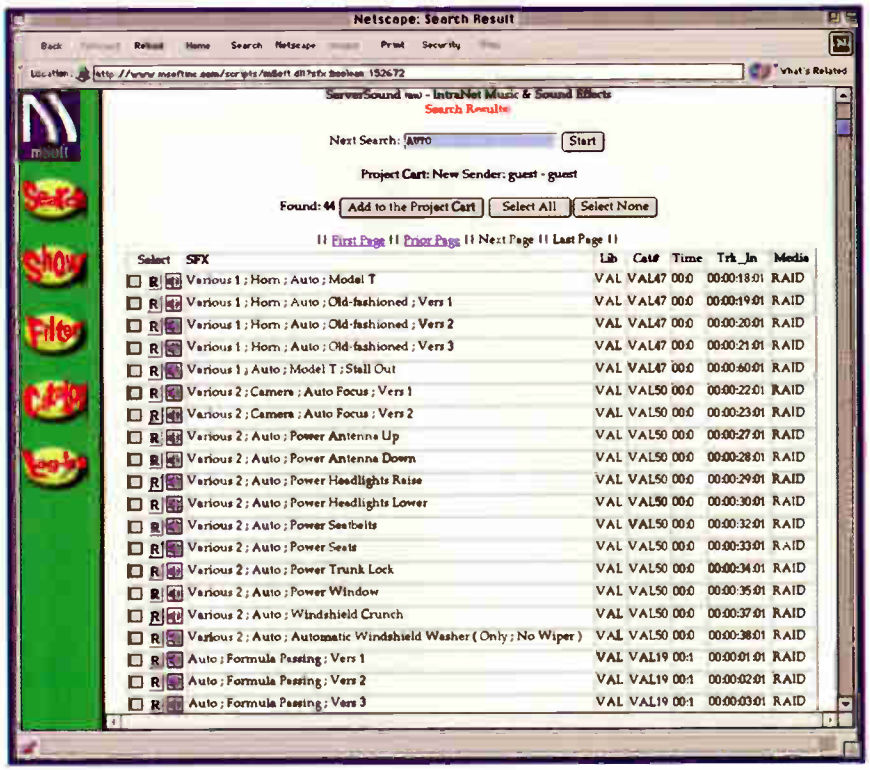
BROWSING WITH MSOFT

SERVERSOUND BRINGS INTRANETS TO AUDIO PRODUCTION

Most media coverage of the Internet and its Intranet offspring has focused to date on applications involving consumers or corporate users. But the client/server model that the Internet has popularized, as well as the tools that have been developed to make it run, is wide open in terms of potential uses. Essentially, if you've got the bandwidth on your network, an Intranet is a plumbing system that may be used to move all kinds of data from place to place. And a big chunk of the tool set—the browsing and server software—that has been created, tested and deployed for mass market use can serve as well in niche applications for specialized professional users.



ServerSound is an HTML-based, general-purpose multimedia search and retrieval engine.

One example of how these capabilities can be harnessed to the needs of audio production is ServerSound from mSoft Inc. in Woodland Hills, Calif. Debuted at last year's NAB, ServerSound is a server-based library system allowing for the search, audition and retrieval of sound effects and production music stored on RAID hard drive arrays. Borrowing from the model of e-commerce, ServerSound uses the "shopping cart" idea to let editors find the sounds they need and download them from a server to local drives, where they can be used in production. Because the user accesses the system using any standard browser, ServerSound is platform-independent, working with Mac, Windows and UNIX clients. And though designed primarily for Intranet use, it may be set up to allow access by remote users over the Internet.

"ServerSound is a general-purpose multimedia search and retrieval engine," says Amnon Sarig, CEO of mSoft. "Since it is HTML-based, it works with any content that you can digitize into a file that can be played back by a browser—be it video, audio, pictures or text." Despite this theoretical versatility, however, mSoft is clearly focused on the audio post-production market and has tailored the marketing and features of ServerSound with that in mind. It's an arena in which Sarig has long experience, having written the original DOS version of Gefen Systems' M&E software for search and control of CD jukeboxes. Sarig formed mSoft about 18 months ago to "solve the application problems of the post-production market."

One big difference from the development scenario of 11 years ago when Sarig first worked on the DOS product is that in the early days, every aspect of the system had to be created from scratch. By contrast, ServerSound builds as much as possible on off-the-shelf products that have been created to serve Internet and Intranet applications. For auditioning and file transfer, for instance, ServerSound takes advantage of the way that browsers such as Netscape Navigator or Microsoft Explorer may be configured to either download or display/play files of all different types. "A browser can be told how to talk to any executable pro-

BY PHILIP DE LANCIE

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gram," Sarig says. "Once you know what kind of file you are dealing with and what kind of helper application you want to use, the browser is simply a dispatch agent that can launch another program to play the file."

In Navigator, for example, the Applications page in the Preferences window (accessed in the Edit menu) allows the user to designate not only a storage location to which files may be downloaded, but also the software that will be launched when a given file type is encountered (see Fig. 1). Some media types, such as GIF images, are supported for display within the browser itself. Others, such as Shockwave or RealAudio, which are commonly "streamed" over the Internet, are supported by add-on "plug-in" software modules that work with the browser. Another approach is to designate an independent application that handles the file type—Pro Tools for Sound Designer II files, for instance—and to open it when that kind of file is encountered.

The fact that browsers are designed to let users specify how file types are handled means that mSoft doesn't have to create its own custom "client" software from scratch. Instead, the company has created HTML pages with forms through which the user accesses the specialized functions that mSoft has created for post-production. These deal mostly with quickly finding the right sound or music for a given situation. "We have tested our approach using physical CD libraries," says mSoft's Doug Perkins, director of sales and marketing. "We saw about a 500 percent increase of efficiency in the amount of work that an editor could do in a given amount of time."

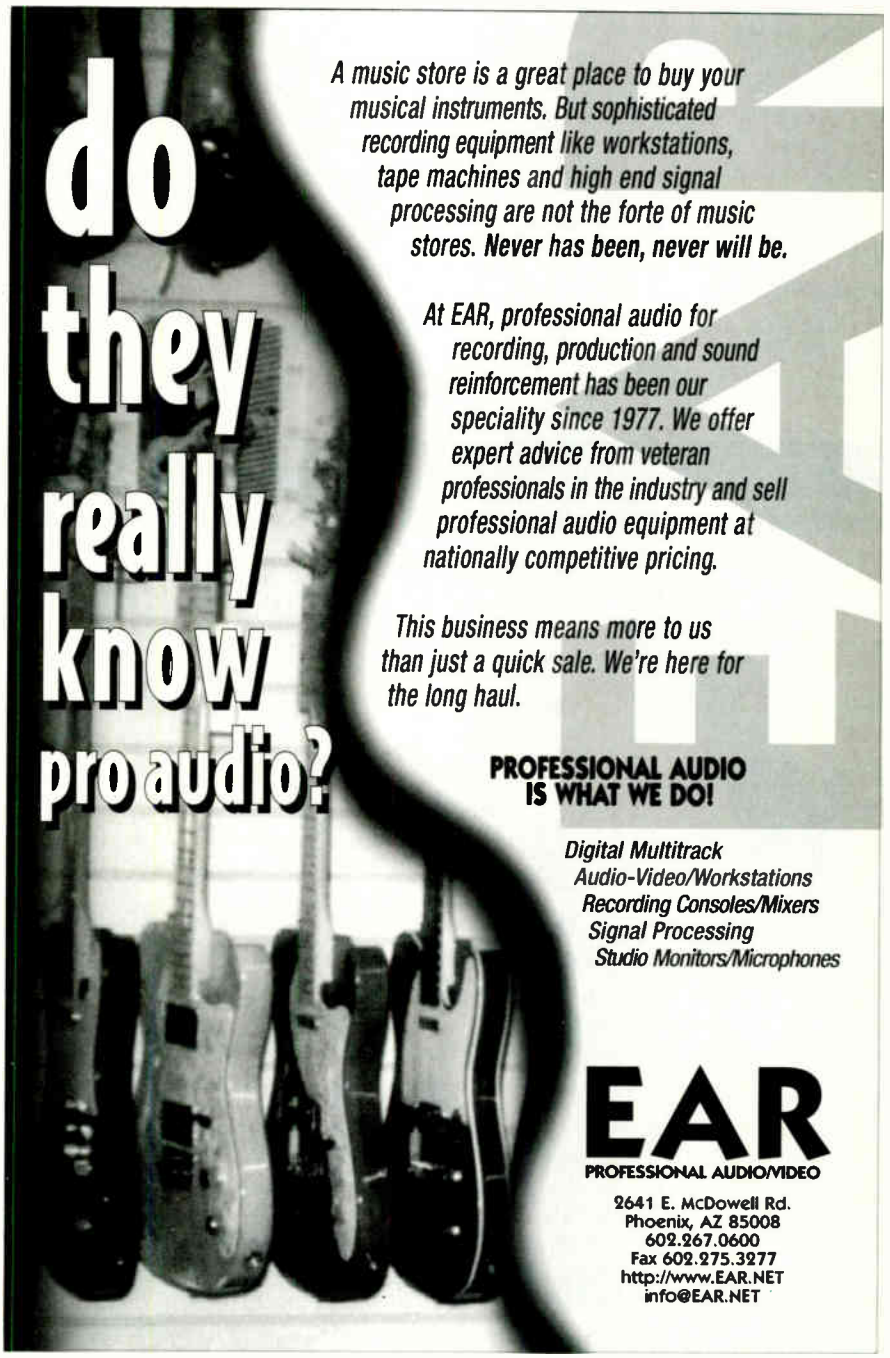
"ServerSound replaces the manual labor involved in thumbing through the catalogs of effects or music libraries," Sarig adds, "then looking for the CD you need, and perhaps finding that someone else is using it, or that it's scratched. Or it can replace a jukebox, which is a linear device that only one person can use at a time. The idea is to replace a one-person-at-a-time usage of your sound assets with one centralized library that supports multiple users querying on a multitasking level over a local area network."

GENERIC COMPONENTS

The ServerSound network uses generic components that are the same as those used for Intranets in all different fields (see Fig. 2). The server is Microsoft Internet Information Server, which runs under the Windows NT 4 operating system. The database that stores the information about all the effects and music on a given user's system is Microsoft SQL Server. The LAN may be any network from Ethernet 10BaseT up through Fibre Channel, though most of mSoft's clients use 100BaseT. "Since it is based on Internet technology," Sarig says, "the specific architecture of the network is transparent to us, as long as it supports the TCP/IP Internet protocol."

In part, what mSoft adds to this mix of off-the-shelf tools is the software that interfaces the component parts. "The actual ServerSound application," Sarig says, "is a CGI [common gateway interface] engine that we wrote to tie all these things together: the communication with the client, the communication with the Internet server, with SQL Server and with the operating system. We translate HTML page descriptions and queries from the client into the queries that SQL Server understands. You can do many different types of searches, such as Boolean, keyword and cross-reference."

Beyond the software that enables the search functionality, mSoft also includes the database itself. "We sell the ServerSound system custom-configured



CIRCLE #062 ON PRODUCT INFO CARD

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for each user," Perkins says. "The users tell us which effects and music libraries they own, and we specify a system that has enough drive space to store all those libraries. We transfer the audio from the CD libraries to those drives, and we provide a complete database for everything that is recorded on the drives, with all the information on each track or index on each original CD. Then we set up the server, deliver and install the system, and train all the editors and the system administrator."

In addition to information on the material actually transferred to a given user's drives, Sarig says, "we supply the database already loaded with data for all the commercial libraries of sound effects and music, so when they get the system, the text is already there ready to be searched." When searching, users can choose to look either in all libraries in the database or just those they actually own. If users find material that they may want to use listed in a library that they don't own, they can then make arrangements to buy it.

This concept is taken a step further in EdgeServer, an OEM version of ServerSound that is sold by Hollywood Edge. The system comes with 72 GB of Hollywood Edge sound libraries already recorded onto the drives. "The libraries are locked, so you can only hear the sounds in a low-resolution teaser, 8-bit mono," says Sarig. "To use the full-fidelity sounds, the user needs to prove to the system that he owns the physical CD. The system will ask for a random CD from the collection, and when you put it in the CD-ROM reader, it unlocks the system. If they don't own it, they can call Hollywood Edge and get the library unlocked."

If a customer buys additional sound libraries after purchase of ServerSound, the material must be transferred onto the system from CD, and links created between the database and the sound files. "The basic mastering software included with standard ServerSound requires about 30 minutes per CD," Perkins says, "and many times quite a

—CONTINUED ON PAGE 227

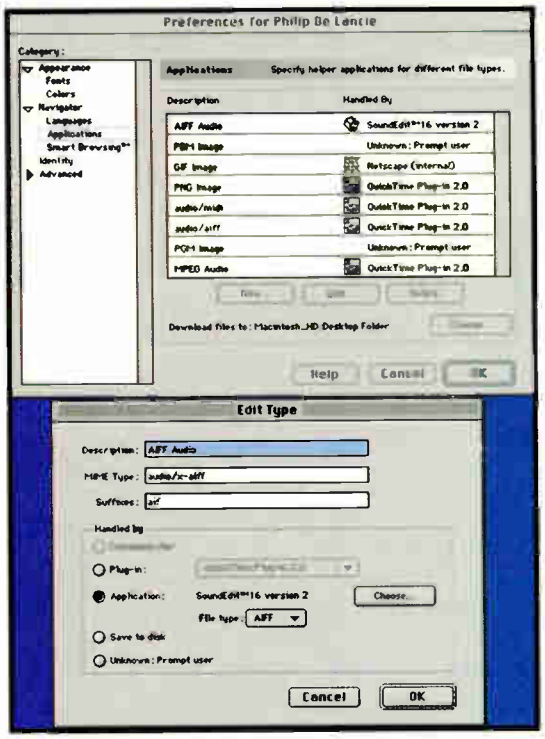

Figure 1: Netscape application preferences allow file storage location and launch application designation.

NEW TRUE MOBILITY™ WIRELESS SYSTEMS FROM SABINE

wireless 1-2 ad.qxds

Get Out of Jail – Free!

For wireless mics, FEEDBACK is like being in JAIL...
Break out with new True Mobility™ Wireless Systems!

Sabine Wireless Gives You What No Other System Can:
- Mobility with no feedback
- Maximum gain and clarity
- Compensates for all performers & conditions

30-Channel UHF · 16-Channel VHF · PLL Synthesized · True Diversity

Built-In Dual NiMH Battery Charger
The only wireless system that pays for itself! No more wasting batteries – always a fresh, long-lasting NiMH battery ready for your microphone or transmitter.

Sabine's FREE Targeted Input Processing includes:
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Secrets of the DAW Masters

"Some of the most distinctive processors anywhere."
(Bob Ludwig, *Gateway Mastering Studios*).

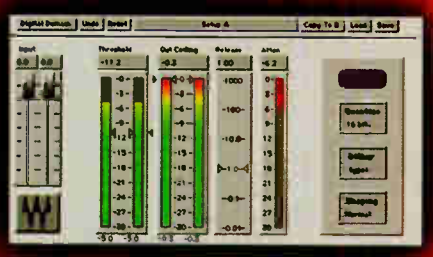
"Waves plug-ins provide powerful processing and accurate control for my film sound editing, design and mixing.
(Douglas Murray, *Species, Contact, English Patient, Twin Peaks*).

"Waves plug-ins are absolutely essential. No other company covers as many bases as Waves does. They're the genuine articles."
(Charlie Clouser, *nine inch nails*).

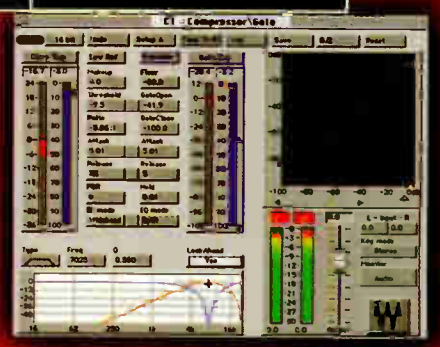
"$20,000 of gear, for one-tenth the cost in my Gold Bundle. Simple. Musical. Indispensable!"
(Brian Foraker, *Heart, Yes, Kiss*).

Plug-Ins For Audio Production

L1 STRETCHED THE CD FORMAT

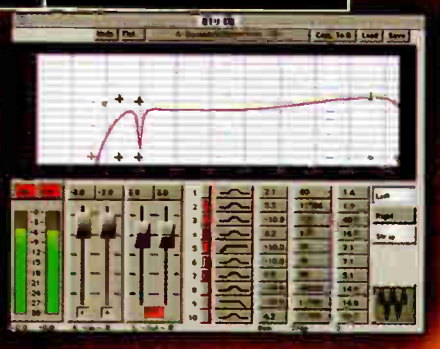


C1 UNPARALLELED PARAMETRIC COMPANDER



True Verb DEDICATED ROOM / SPACE EMULATOR

Q10 SURGICAL EQUALISATION



All processors shown are in the TDM Bundle (+2 more), the Native Power Pack (+1 more), and the Gold Bundle (+7 more). Check our web page for demos and details on 23 supported Mac & PC platforms.

WAVES
THE GENUINE ARTICLE

USA: 1-423-689-5395 ■ Rest of the World: 972-3-5107667
w w w . w a v e s . c o m

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CIRCLE #066 ON PRODUCT INFO CARD

HHB CIRCLE 5A

POWERED NEAR-FIELD STUDIO MONITORS

Poised to conquer another realm of studio products, HHB Professional has entered into the close-field monitor race. Currently HHB offers two two-way systems—the Circle 3 and the Circle 5—each available in passive and active versions. We tested the top-of-the-line Circle 5A, the amplified version of the larger speaker.

The 5A has a 1-inch dome tweeter and 8-inch woofer. The woofer is powered with 140W, while the tweeter receives 70W. Each Circle 5A weighs 28 pounds. Aside from the purple polymer cones on the woofers, I like the look of these monitors: precision construction with smooth curves. The 5A's back panel allows connections through either RCA or XLR jacks, with a switch for balanced vs. unbalanced input. Unfortunately, the master volume knob on each speaker is not stepped, which makes it difficult to match levels left to right. A metal bracket acts as a protective rollbar for the back panel; however, I found each to be bent after shipping.

A pair of Circle 5As has a suggested retail price of $1,399, and an optional Circle 1 subwoofer is $1,399. (Passive Circle 5s retail at $749/pair.) Other models in the HHB Circle Series include the smaller Circle 3A, with an internal amplifier, and the 3P (passive). HHB also offers a 5.1 package, including five Circle 5As and one Circle 1.

CRITICAL LISTENING

I set up a pair of Circle 5As about five feet apart, with the tweeters at ear level. Sitting about six feet from each speaker, I played a variety of DATs that I had mixed. Tracks ranged from jazz to country to hip hop, and were all mixed from 24-track 2-inch analog tape. None of these mixes had been through the

BY DAVID OGILVY

Lab Analysis: HHB Circle 5A Powered Monitor

by John Schaffer and Rob Baum

PHYSICAL CHARACTERISTICS

At first glance, there seems to be a lot of glitz in HHB's Circle 5A powered monitor. The woofer's cone and amp chassis are both a brilliant purple. All cabinet edges are nicely radiused and the woofer and tweeter are mounted on a sculpted, ¼-inch-thick bezel. The cabinet design appeared to have an elliptically shaped, flared bass reflex port, but closer inspection revealed that the port is a slot, exiting into a reduced-area, elliptically shaped port. Historically, this type of geometry is prone to low-frequency chuffing on loud, bass-heavy program material.

The black painted, textured cabinet is constructed of 0.60-inch-thick MDF. Internally, four sides and the back are lined with ¾-inch polyester foam. The back piece of foam lies directly on the components of the power amp, so there is no mechanical isolation between the amp and the transducers. The woofer, tweeter and amp are mounted into recessed areas using machine screws and T-nuts.

The 8-inch woofer has a purple, curvilinear, thermally formed polypropylene cone, and a plastic injection-molded vented frame. The cone is terminated on the outside by an inverted half-roll rubber

—CONTINUED ON PAGE 102

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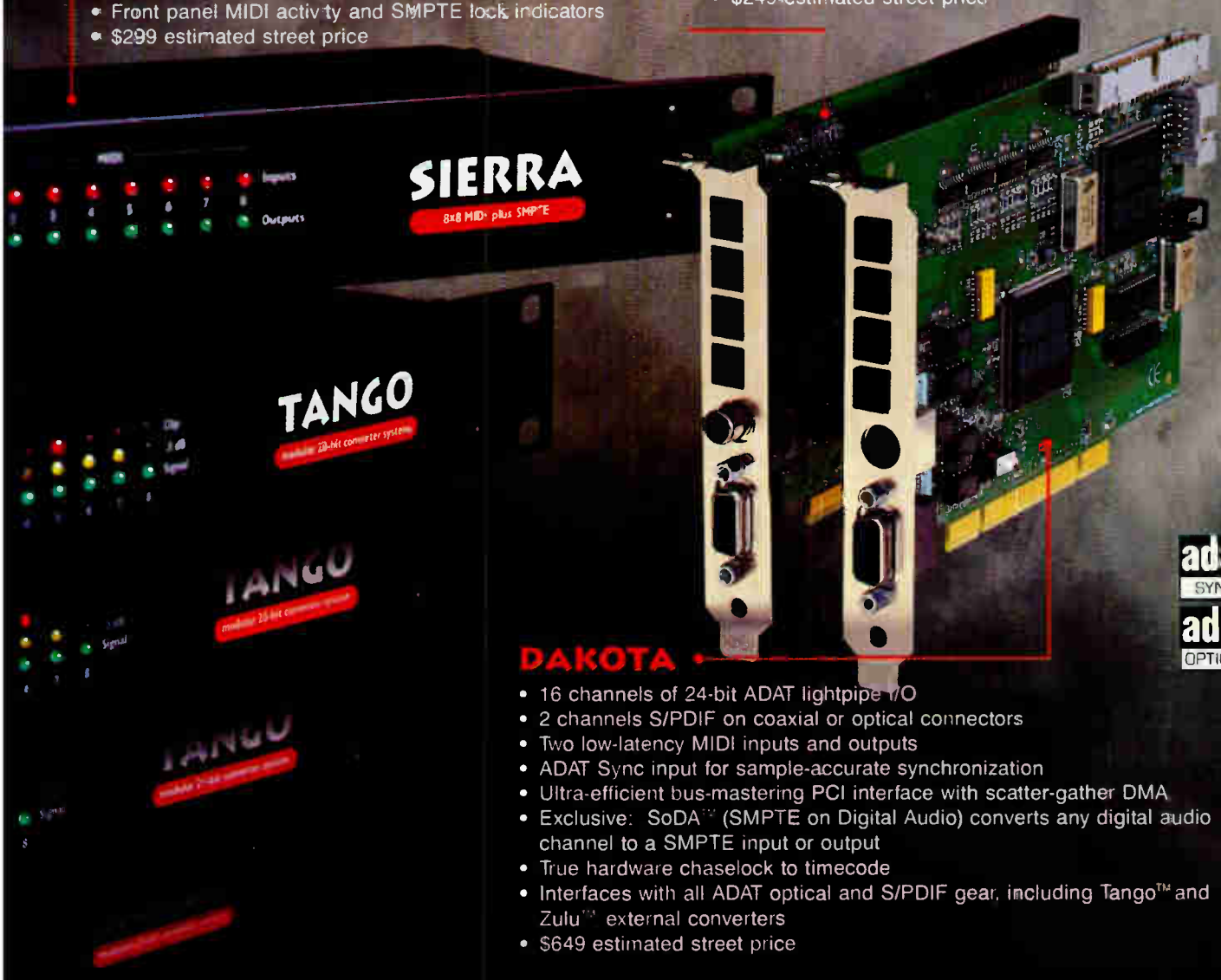

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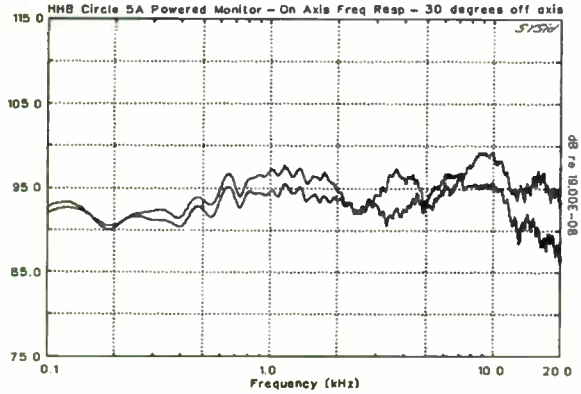
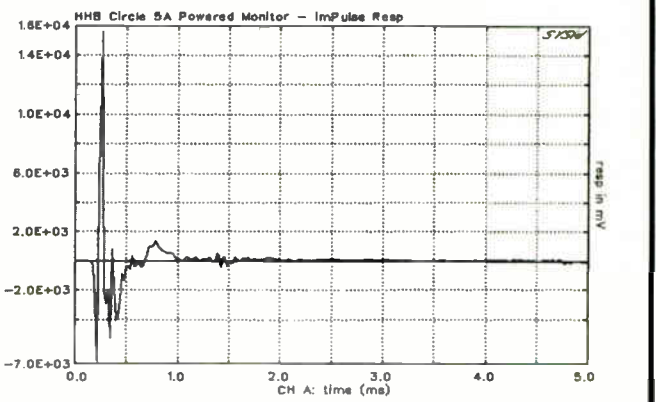
mastering process.

The thing that impressed me first was the fact that I didn't hear the speakers, I just heard the music. My mixes sounded the same, with all the instruments at the levels I had intended, but with a more detailed midrange. The added depth and clarity around 1 kHz, coupled with a pleasing top end, made me question the flatness of the frequency response curves. (One doesn't want a reference monitor to sound *too* good; in order for mixes to translate to the majority of stereo systems, the mixing speaker needs to have a flat frequency response curve.) However, when I moved out of the sweet spot, the 5As sounded fairly flat, much flatter than most speakers do off-axis.

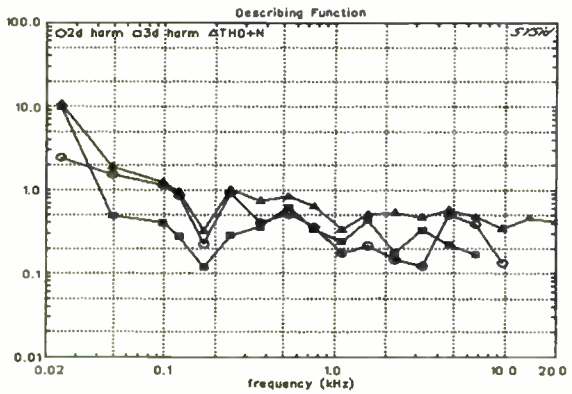
The high frequencies from the 5A are accentuated (see sidebar for lab analysis), but I didn't find them overly bright. I've heard many monitors intended for studio mixing that have a



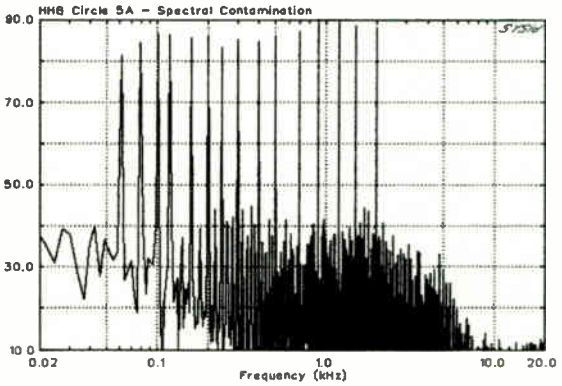
Frequency response on-axis and 30° off-axis. Off-axis response is smoother than the on-axis response.



Impulse response shows multiple transient peaks.



Distortion vs. frequency: Distortion is less than 1% beyond 100 Hz and 0.5% after 1,000 Hz. Key: THD+N = △ trace, 2nd harmonic = ○ trace, and the 3rd harmonic = ❑ trace.



Spectral contamination test compares a series of input tones (tall spikes) to speaker output. The resulting nonlinear distortion products show low self-noise (-45 dB).

—FROM PAGE 100, LAB ANALYSIS

surround. The neck of the cone is mated onto a 1-inch voice coil with a vented aluminum bobbin, and a 4.25-inch-diameter flat spider. The motor structure comprises a 3.95x0.7-inch ceramic magnet, attached to 0.22-inch-thick top and bottom plates. The motor is magnetically shielded with a bucking magnet. Input terminals are dual 0.25-inch male tabs.

The Morel DMS 20 tweeter has a 1-inch-diameter, treated cloth diaphragm mounted on a 4-inch-diameter, semi-horn-loaded plastic faceplate. The coil is cooled with ferrofluid and is on a vented aluminum bobbin. The non-shielded motor also uses a ceramic magnet. The pole piece is vented into a sealed plastic enclosure in order to lower resonance and linearize phase at the crossover. Input terminals are also dual male tabs, 0.11-inch wide.

The Circle 5A is a bi-amped, active-crossover design with 120 watts for the woofer and 70 watts for the tweeter. Bi-amping is more stable than routing the amplifier signal through a passive crossover, and over the course of an extended high-SPL mixing session there should be none of the usual variations in passive component values due to heating, which can cause changes in the crossover characteristics. The amplifier features a toroidal transformer, and a high-grade, glass-epoxy, double-sided circuit board. The ICs are socketed for easier servicing. The faceplate of the amp includes heatsinking fins, but the amp's ability to dissipate heat will be impaired by the glossy purple paint that covers the entire heatsink. There is a continuously adjustable volume control and switchable balanced XLR and unbalanced RCA inputs. A bracket on the rear

—CONTINUED ON PAGE 104

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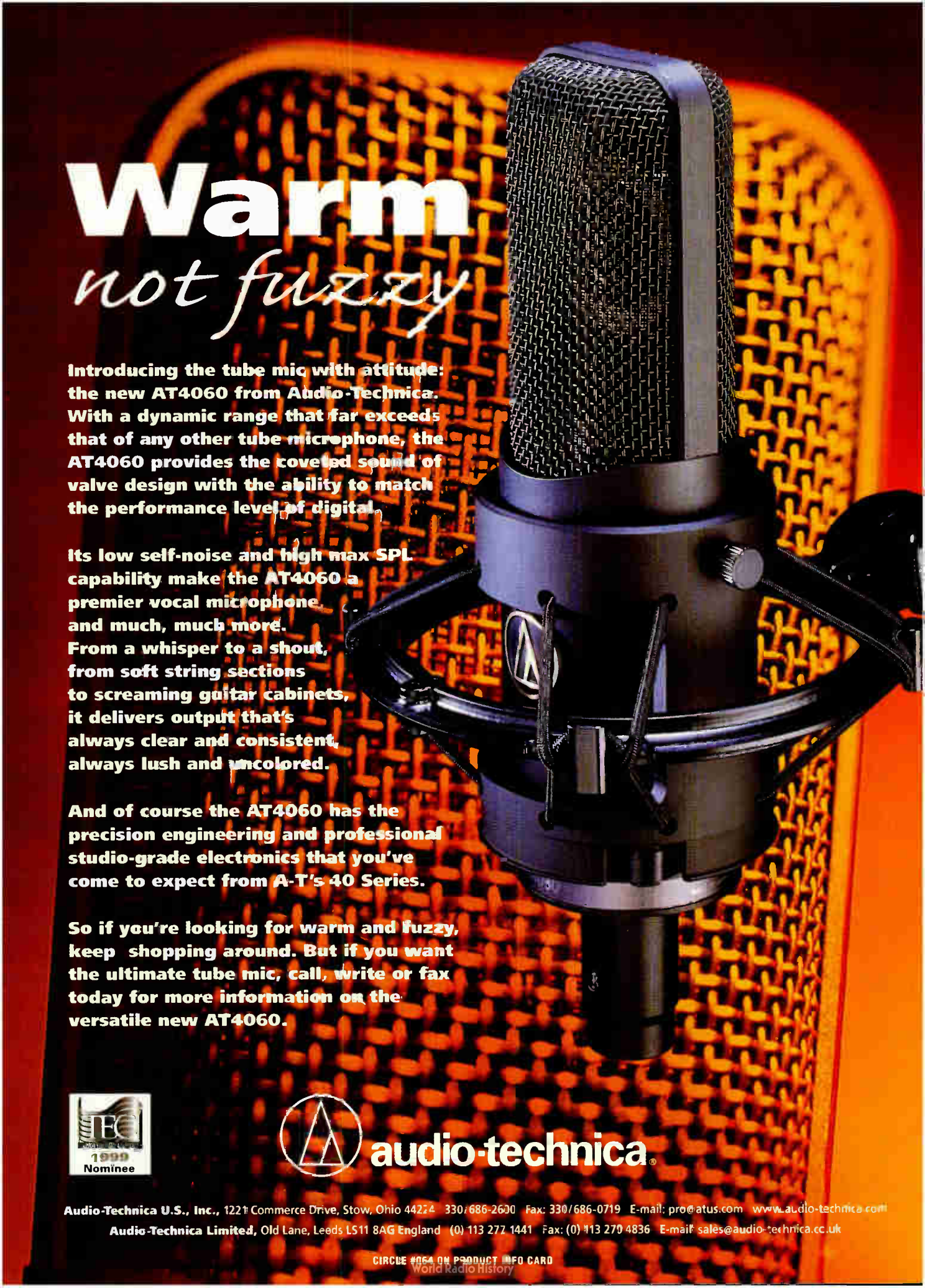

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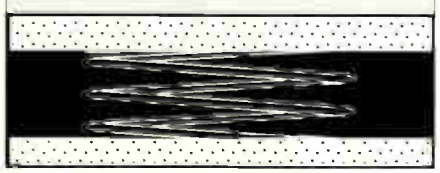

CIRCLE #067 ON PRODUCT INFO CARD

much more exaggerated top end. The 5As never exhibited excessive sibilance on the "S"s in the vocal track, or too much brightness from the cymbals. Kick drums translated very well, considering the size of the speaker, but with the master volumes on the speakers all the way up, the bass tended to break up, causing the Circle 5As to distort. Obviously, keeping the speakers within a more reasonable listening level is recommended.

THE NUMBERS, IN BRIEF

Although the lab analysis shows that the 5A's frequency response is less than flat, I found these speakers to be very true to mixes done with other speakers (primarily Genelec S30s and Yamaha NS10s). The bump in the 1,200Hz range is apparent, but this peak is so wide that it is smooth on the ears. Although there are narrower peaks at 4 kHz and 9 kHz, I never found the speaker to be edgy or harsh. In fact, long-term listening induced little or no ear fatigue. Eight-hour sessions were relatively painless, even at fairly loud levels.

These speakers seem very useful in a mixing situation where the band and engineer trade places and move around the room. For example, if I sat outside of the sweet spot, I heard a fairly flat response, but sitting in the sweet spot provided a slightly exaggerated focus, so I could move there to check for details like breaths and mouth noises in the vocal tracks. Thus, in a production situation, the band would hear what the mastered song may sound like, while the engineer hears more detail, due to a few well-placed peaks in the response curve. However, an engineer who doesn't move from the sweet spot may not find these speakers flat enough. As long as the engineer is aware of the difference between on- and off-axis listening, mixes produced on Circle 5As should translate well to the outside world. The same is true of many near-field speakers, but I found the 5A more pleasing to listen to, especially for long sessions.

HHB Communications, USA, 1410 Centinela Ave., Los Angeles, CA 90025; 310/319-1111; fax 310/319-1311; www.hhb.co.uk. ■

David Ogilvy is a freelance producer/engineer and works for the High Sierra Music Festival as archivist, which entails recording all three stages all day, for four days.

—FROM PAGE 102, LAB ANALYSIS

of the amp helps protect the heatsink, amp and the cables attached to it.

ACOUSTICAL CHARACTERISTICS

The on-axis frequency response of this system comprises three broad peaks and adjoining valleys. The first peak is about two octaves wide and more than 3 dB tall, centered near 1,200 Hz. The second peak is over a half-octave wide, 3 dB tall and centered around 4 kHz. The last peak is centered on 9 kHz, almost 4 dB tall and is close to one octave wide. The off-axis response is actually a little flatter than the on-axis response. After a broad (more than one octave) 2dB-tall peak from 5 kHz to 11.5 kHz, the response rolls off rapidly, 8 dB over the last octave.

The impulse response shows us that there might be a slight discontinuity near the crossover point. The multiple transient peaks are signs of unaligned devices. The decay is smooth except for a ripple 1.2 ms after the initial peak, possibly due to an internal cabinet reflection.

The distortion figures for the HHB Circle 5A are fairly low. Above 100 Hz, the THD remains below 1%, and gets lower (0.5% above about 400 Hz). Spectral contamination is a measure of distortion that is not harmonically related ("nonlinear") to the input signal, in this case, 15 tones. Spectral contamination figures correspond to subjective clarity: The larger the difference between the original signal and the distortion products, the better, so in this test a higher number is better. It appears the noise floor is around 45 dB down from the input signals, with a higher concentration of noise at the crossover point and above. ■

John Schaffer and Rob Baum are engineers associated with Menlo Scientific, an independent test facility in Berkeley, Calif. For information on testing methodology, visit www.mixonline.com.

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SOUNDSCAPE MIXTREME

MULTICHANNEL PCI AUDIO CARD

Lately, a lot of cost-crashing PC audio hardware and software releases have emerged, not the least of which is Soundscape's $549 Mixtreme PCI card. Mixtreme is another example of how the computer-based audio price floor is dropping so fast that it seems like some company might be paying us to record and edit with this stuff before too long. And the onboard DSP on the very affordable Mixtreme card is the latest way to adjust compression ratios, resolve clock problems, sync up delay taps and create thick digital mixes, all with a mouse.

The Mixtreme PCI card offers multichannel mixing, real-time effects and A/D conversion.

MIXTREME AND FRIENDS

Mixtreme is a multichannel PCI audio card with digital mixing, analog-to-digital conversion and a real-time effects plug-in architecture that works arm-in-arm with Windows-based audio programs to provide a full-service 16-track digital recording environment. For host CPUs overloaded by voracious audio platforms and power-soaking plug-ins, Mixtreme's dedicated chips are just the ticket for helping even the fastest Pentiums deal with demanding digital audio. Add any of the company's AD/DA-converter and format-translation boxes (and a growing list of third-party plug-ins) to the mix, and a Mixtreme-based system becomes an expandable multilingual translator between ADAT, TDIF and analog source signals that also happens to take a huge load off the host CPU.

The Mixtreme card comes with Soundscape's configurable V2 Mixer software and provides 24-bit digital, 16-channel mixing right out of the box. All channel architecture, plug-in configurations and signal routing are user-definable, allowing channel strips to be built one at a time or recalled from a good set of included mixer templates. Users can have as many as 64 channels with EQs, plug-ins and multiple routings up at a time, and each of Mixtreme's 16 buses can route internal or external I/O to any of the internal tracks. In the dawn of the 96kHz format, the Mixtreme maxes out at 48 kHz. But even without the high-octane, the card sounds great for any application not requiring the extra bandwidth. Several multiband parametric EQs come as standard equipment, and the company's optional Audio Toolbox ($325) adds a compressor, gate, expander, limiter, delay and chorus/flanger to Mixtreme's shiny new plug-in tool belt. A growing list of third-party plug-in developers supporting Mixtreme include TC Works' TC Reverb ($599) and TC Dynamizer ($699), plus a reverb plug-in module from Wave Mechanics ($349), and more may come soon.

Part two of a Soundscape system can include the SS8IO-1 ($1,695), a two-rackspace, 8-channel balanced XLR AD/DA audio interface with bidirectional TDIF port, ADAT Lightpipe in/out ports, programmable routing, front-panel presets and large LED meters. The unit's +4dB operation can be changed to -10dB levels via internal jumpers. Used as a stand-alone unit, the SS8IO-1 can provide format conversion for TDIF and ADAT signals when connected via clock with DA-88s, ADATs and other digital machines, or it can be used to add more channels to TDIF-savvy digital mixing consoles. Both Word Clock- and Super Clock-based digital equipment can be sychronized, and Soundscape SSHRD-1 DAW owners can upgrade their systems simply by connecting them via TDIF.

For integrating ADAT tracks, Soundscape's SS8IO-2 ($349) is a half-rack unit sporting the same 8 channels of bidirectional TDIF-to-Lightpipe conversion and Word/Super Clock connectors found in part of its bigger brother, the SS8IO-1. The IO-2's simple front panel has a power switch, 44.1 and 48kHz sample rate settings, selector buttons between TDIF/ADAT and internal/external clock sources, and the back panel houses TDIF port, Word/Super Clock and Lightpipe I/O connectors. Slightly more expensive is the IO-2's TDIF-to-analog interface partner, the SS8IO-3 ($599), which also provides sample rate and clock settings, Word/Super Clock and TDIF connectors. The 8-channel IO-3 has -30 and +3dB single-stage peak indicator LEDs per channel and eight

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pairs of gold-plated RCA connectors on the back panel. On the first SS8IO-3 we tested, the outputs on channels 3 and 4 were mono summed and had a slight flange-like sound, but a replacement unit performed flawlessly.

GETTING STARTED

The Mixtreme card supports Windows 95, 98 and NT 4.0 and needs at least a Pentium, 16 MB of RAM and a free PCI slot, though once it's up and running, the card takes over effects-processing chores and frees up the host computer to do a better job of running everything else. Platform support is wide, including Steinberg, Emagic, Cakewalk, Minnetonka and Sonic Foundry, and the future looks expandable, with new plug-in developers onboard and Soundscape's own S/PDIF and video sync board add-ons available.

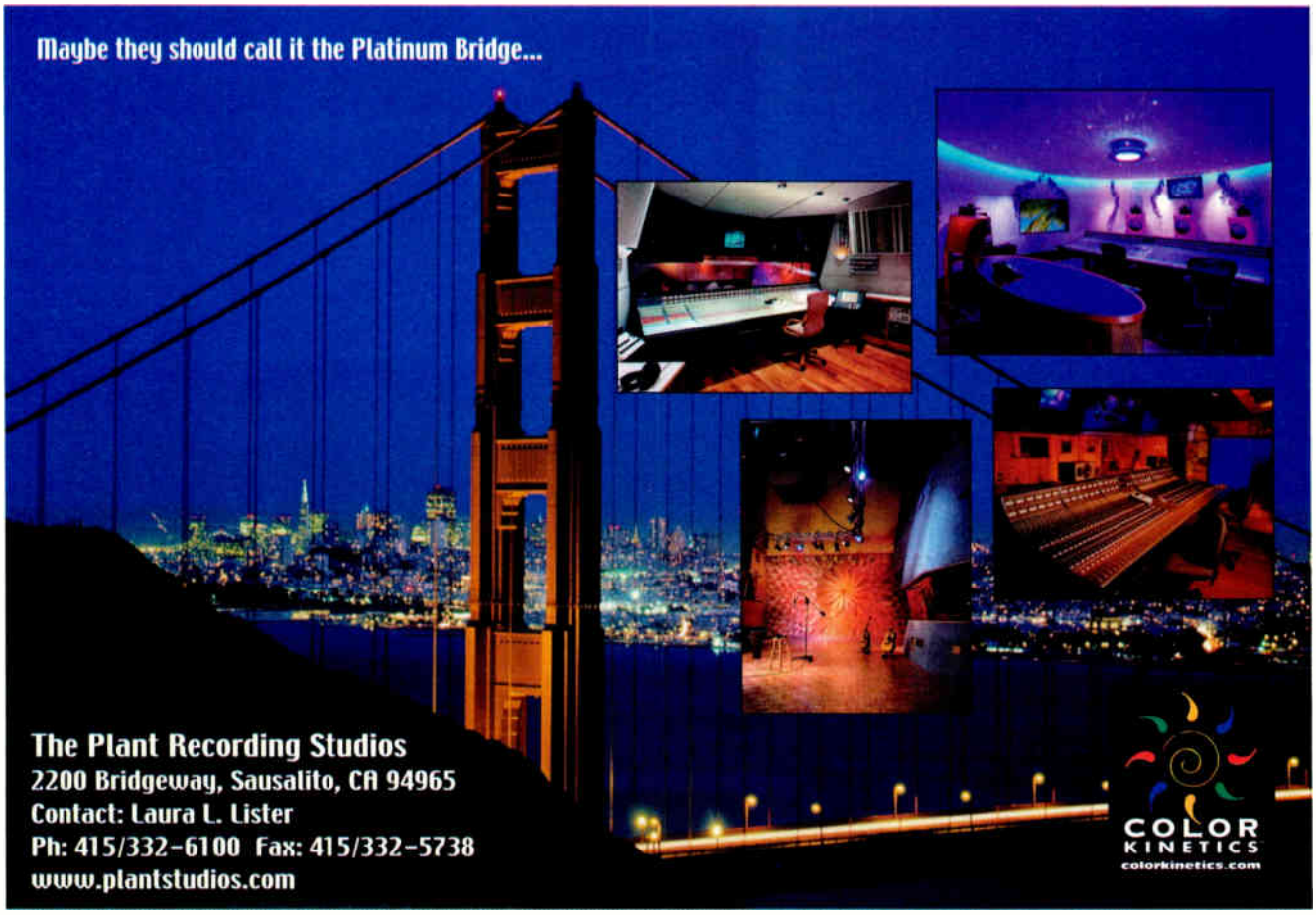
Installing and launching the Mixtreme main window is easy enough, and mic and line signals from the connected SS8IO-1 and SS8IO-3 boxes are recognized and routed automatically in the software via the provided 25-pin TDIF cable. Lively, latency-free on-screen signal meters respond to each input level change and to the most subtle mouse fader moves, a welcome relief compared to using Cubase's latency-prone controls running on the same Pentium PC system. Real-time reverb algorithms can eat up to 40% of total DSP power alone, so Mixtreme's dedicated processing capabilities have good system-wide benefits while providing "faster" reverbs.

Built-in EQ modules provide some good ways to mouse around with equalization.

Version 1.0's software crashed when launching Steinberg Cubase VST/24 and would not work in tandem with it, but after I installed the free 1.04 update, the two apps shared Windows system resources without fighting over IRQs and worked smoothly. Short of tendering the platform debate fires here, "plug and pray" still hounds even the best Windows audio hardware and software, though in all fairness, Soundscape and others like them provide a very stable ride once up and running beyond all the IRQ slot conflicts, BIOS settings and VGA incompatibilities.

Soundscape automatically installs a Windows Soundscape ASIO Driver into Cubase's ASIO device chooser, and a Cubase song file setup automatically loads and configures 16 VST tracks and Master/Monitor routing directly to the Mixtreme card via track inserts 1-16. Recording with and using Cubase 3.55 on the same machine as Mixtreme sped up noticeably, with screens responding faster and faders feeling less sluggish when not having to process the rich selection of VST plug-ins. The standard multimedia driver in Cubase can only get down to 700 ms of latency, which to me is an unacceptable delay of sound, fader and level response, but with Mixtreme, I was able to trim the host system's buffer size enough to get as low as 50 ms latency on a 200MHz PC, very livable. There's no MIDI driver currently ready for Mixtreme, though a free downloadable upgrade is planned.

Mixtreme's packaging and documen-



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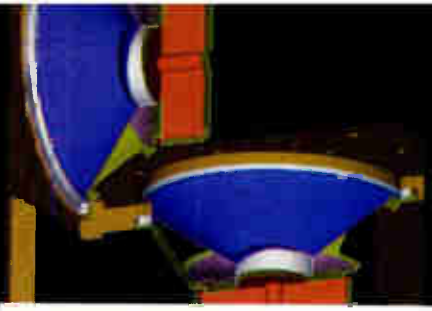

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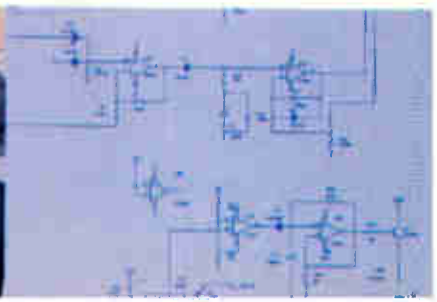

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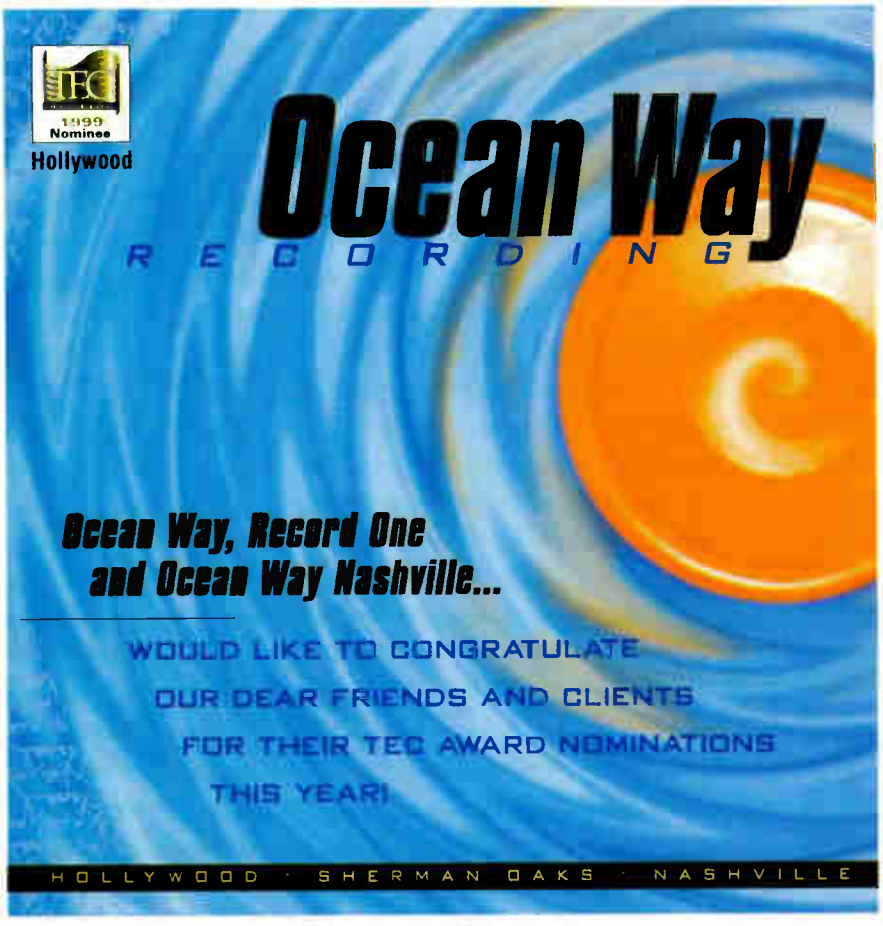
tation is a poorly designed combination of bad Styrofoam, multilingual labeling and sparse manuals with missing pages. The S88IO-1's manual is a large three-ring binder that dwarfs the 15 single-sided pages it holds, and though the longer Mixtreme manual goes into depth with each feature, it's a confusing mélange of typefaces, typos and a frustrating page-numbering system that repeats itself every few pages. Maybe the easy-to-use yet powerful software speaks enough for itself, but Mixtreme's underwhelming documentation and packaging need more work to better match what's inside.

V2 MIXER

Unlike Yamaha's DSP Factory multichannel PC audio card, which defers its software frontend to the recording/MIDI programs that support it, the Mixtreme card comes with a well-designed mixer interface that lets users either roll their own channel strips or choose from a library of presets right off the shelf. With the V2 Mixer software, channels can be individually configured as mono, mono in/stereo out, stereo/mono out or true stereo, and each saved mix can include up to 64 channels, depending on CPU speed limits. An easy-going gray interface surface, colorful track assigns and clear signal level meters per track are easy on the eyes for long sessions, and the built-in EQ modules provide some good ways to mouse around with equalization. Though I prefer the more precise on-curve mouse dragging capabilities found in EQ plug-ins like Waves' Renaissance EQ, Mixtreme's interface nonetheless provides intuitive ways to work with EQ curves and provide good-sounding and savable results.

Mixtreme's default channel strips have room enough for a comfortably sized main fader; horizontal pre-fade peak meter; fader, solo and fade group buttons; pan and I/O assignment pull-down menus; 2-band EQ; plus a couple of plug-ins, a channel sample delay line and more without having to scroll up and down to "reach" it all. A standard 15-inch PC monitor displays 12 channel strips and group and master stereo out strips at average screen resolutions without scrolling, and moving back and forth constantly between them all is easy when mixes go deep. Up to 99 fader groups and 99 solo groups are selectable from each mixer



CIRCLE #071 ON PRODUCT INFO CARD

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channel surface, and a host of nice touches show up throughout the program. Right-dragging the mouse fades selected channel faders without losing relative positions, and I appreciate that Mixtreme works in the background when running with other programs. This makes screen redraws, and response to them, go faster while putting off Mixtreme's CPU needs temporarily. The manual, though flawed, does provide a thorough tutorial on building tracks from scratch in Mixtreme, an intuitive process that allows custom strips to be created with an eye on individual system demands and personal preferences without cluttering the desktop.

A PLUG FOR DA PLUG-INS

Though currently only sporting onboard EQs, an optional add-on suite (Audio Toolbox, $325) and a sparse five third-party offerings to choose from as of this writing, the Soundscape dedicated plug-in architecture looks promising. Soundscape's SSHDR1-Plus workstation plug-ins will work with Mixtreme, and Dolby is shipping a $550 surround plug-in for Mixtreme, Aphex's Aural Exciter III plug-in is on the way, and another company is expected to come out with de-esser, de-noiser and other Mixtreme plug-ins in the near future. Stay tuned.

If you like lots of onscreen faders, there are plenty of them in Soundscape's plug-in modules; virtually each control is a vertical fader. I prefer the more touchy-feely, intuitive onscreen feel of other PC- and Mac-based audio tools, but the clean simplicity of each of the Mixtreme plug-in controls and good output are useful and precise for shaping sounds in their own right.

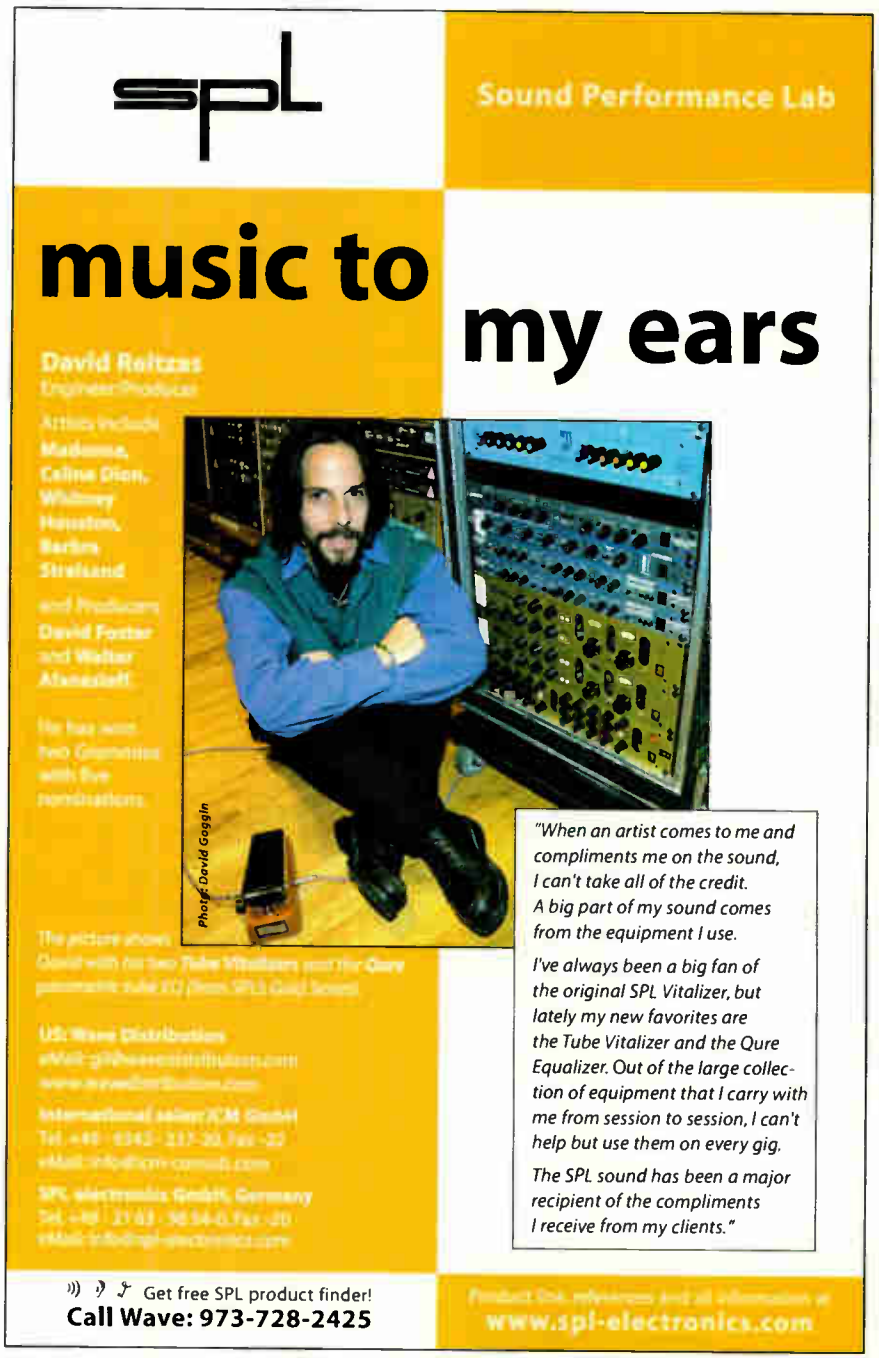
Soundscape's Audio Toolbox limiter has CD mastering and live audio applications and offers brick-wall limiting, and the delay plug-in gives the basic multi-tap mono, stereo and linked modes with a nice onscreen representation of the delay's signal route. TC's Dynamizer plug-in addresses mastering needs, and both TC and Wave Mechanics provide high-quality reverb algorithms to work with. As the VST plug-in's popularity increased Cubase's market share, perhaps the same will happen with the Mixtreme card, hopefully encouraging developers to take advantage of dedicated effects chips.

MIXTREMED

The Mixtreme card is $549, or $699 with S/PDIF I/O port card. Other prices include SS8IO-1 Audio Interface ($1,695); SS8IO-2 TDIF-to-ADAT converter ($349); SS8IO-3 TDIF-to-analog converter ($599); and the Soundscape Audio Toolbox Plug-In Pack ($325). Additionally, Soundscape offers the SS8IO-3/Mixtreme Bundle at $999 and a $749 SS8IO-2/Mixtreme Bundle.

Soundscape's flagship SSHDR-1 workstation is in many post, recording, film and mixing facilities, and Mixtreme's price point, power and quality should appeal to these users, as well as to project-based studios. Once installed and fully linked with Cubase, Mixtreme performed well at handling the lion's share of effects-processing, signal-routing and digital mixing chores, while giving the host CPU a break and providing easy-to-use digital format and clock conversion used with the company's analog-to-digital conversion units. Soundscape provides good technical service, years of PC audio know-how and, aside from gripes about PC/Windows, poor documentation and a pair of bad RCA outputs, its Mixtreme- and SS8IO-based studio is an expanding platform that's well worth the visit.

Soundscape Digital Technology Inc., 4478 Market St., Suite 704, Ventura, CA 93003; 805/658-7375; fax 805/658-6395; www.soundscape-digital.com. ■



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HIGH-END STUDIO MONITOR SHOOTOUT

ATC SCM-300A AND DUNLAVY SC-V

Editor's Note: One question that has nagged audio engineers over the years is whether high-end consumer speakers would be suitable as studio monitors, and how the two would compare. In the lower price ranges, the vast majority of consumer speakers are designed with marketing bumps in mind—a little boost here, a little sizzle there—to suit that all-important two-minute comparison on the showroom floor. However, in audiophile circles, where accuracy and linearity are prized above all else, the possibility of comparing studio monitors to home speakers is more like comparing apples to apples. With that in mind, John La Grou of Millennia Media put the ATC SCM-300A to the mat against the Dunlavy SC-V. Here are the results of that match-up.

For some years, Millennia Media's remote recordings were edited in the corner of a small room, on smallish monitors. Before long, with annual schedules exceeding 60 remote sessions, a better editing and listening environment was overdue. The construction of an improved working space in 1997 demanded an equally improved monitor system. This is the brief story of our experiences with two exceptional full-range loudspeakers tested at length in our new room.

Before jumping into the loudspeaker review, a little bit should be said about the new room. Starting from the ground up, acoustician George Newburn (at the time with acoustics design firm studio bau:ton, now with his own design group, Studio 440) specified plans for a 6,000-cubic-foot facility that included 9-inch solid concrete walls, acoustic uncoupling of floor, walls and columns, acoustically proportioned sawtooth wall sections, large random-diffusion arrays and thick wool carpet. The room measures 23x29 feet and is designed for a combination of editing, full-range critical listening, multitrack work and future expansion to surround applications.

Our design criteria specified a freestanding full-range monitor system. After spending two years auditioning dozens of large "audiophile" and professional monitors, the search was narrowed to a short list of candidates. Two were brought into the new room for lengthy comparison testing: the British ATC SCM-300A and American Dunlavy Audio Labs (DAL) SC-V.

THE SPEAKERS

Both speakers were auditioned in numerous room placements and positions. Final location was determined by achieving the most realistic imaging performance. Speakers were provided at least four feet of separation from walls. (It should be noted here that soffit-mounting the ATCs, something we did not attempt, will result in a 10Hz improvement in LF extension, from -6 dB at 30 Hz as a floor mount system to -6 dB at 20 Hz in soffit mount.)

The ATC SCM-300A system includes a proprietary, stand-alone, 140-pound chassis sporting tri-amplified (275-watt LF, 200-watt MF and 100-watt HF per channel), Class-A-biased stereo amplifiers and ATC-provided speaker cabling. The Dunlavy SC-Vs were driven with a pair of Pass Laboratories 300W Aleph 1.2 mono amplifiers placed behind each speaker and connected with 1-meter lengths of Goertz "MI-2" Alpha Core flat cable.

Playback devices for this test included a G&H Transforms CD transport and Panasonic SV-3900 DAT machine, both feeding AES digital into the Ultra-Analog-based 20-bit Manley Gold Reference DAC. Digital interconnects were Mogami 3080, while Mogami 2549 and MIT Pro-Line cables carried the analog signals; all terminated with gold-plated XLRs.

The Dunlavy Audio Labs SC-V is a four-way, 7-speaker tower (75x15x27-inch, HxWxD) strongly reminiscent of Mr. Dunlavy's former design, the highly acclaimed Duntech "Sovereign"—used in a variety of mastering rooms worldwide. The passive crossover is a first-order design. With narrow dispersion, patented phase and dispersion cor-

BY JOHN LA GROU

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rection, Wifa drivers and a non-ported enclosure, the SC-V is said to be "designed to reproduce the amplifier's electrical signal as closely as possible." Inputs are heavy-duty, bi-wired five-way binding posts. Various finishes are available. Our demo pair were delivered with furniture-grade light oak veneer. The SC-Vs are provided with matching floor-mount oak veneer pedestals.

Dunlavy's SC-V speaker complement includes dual 12-inch woofers, dual 7-inch low-mids, dual 3-inch high-mids, and a single 1-inch silk-dome tweeter. The SC-Vs weigh in at 305 pounds each. Frequency response is down 3 dB at 22 Hz and 24 kHz, measured on-axis at 12 feet. Nominal impedance is 3 ohms. Price: $16,000/pair.

The ATC SCM-300A is a soffit-mountable, three-way, 4-speaker cabinet (35x36x19-inch, HxWxD) comprising ATC's own Super Linear Magnetic Material speakers, including the company's often copied soft-dome, midrange driver. All speakers are driven directly from ATC's own integrated fourth-order, tri-amplifier system. Heavy-duty terminations are mated to a proprietary interconnection system. Finish of demo units was rubbed black lacquer. Other finishes are available.

The ATC speaker complement includes dual 15-inch woofers, a single 3-inch soft-dome midrange driver, and a single 1-inch tweeter. The company is wont to assert that, though its midrange driver is often copied, most contemporary copies are largely cosmetic—markedly lacking, as ATC points out, in areas of magnet quality, coil technology and suspension detail. The SCM-300As weigh 225 pounds each. Frequency response is down less than 2 dB at 50 Hz measured on-axis at six feet. Price: $33,899/pair.

PARAMETER	DUNLAVY	ATC
LF Accuracy	8	9
HF Accuracy	9	8
Overall Timbre Balance	9	7
On-Axis Imaging	9	8
Off-Axis Imaging	7	8
Personal Production Merit	9	8
Full/Thin	Very Full	Very Full
Spacious/Constricted	Very Spacious	Very Spacious
Clear/Veiled	Very Clear	Very Clear
Soft/Hard	Somewhat Soft	Somewhat Hard
Bright/Dark	Neutral	Somewhat Bright

Subjective comparisons, based on a 1 to 10 scale

LISTENING TESTS

A number of audio professionals participated in our listening comparisons. During the non-blind sessions, participants were encouraged to take as much time as possible with their own source material. Subjective evaluation language

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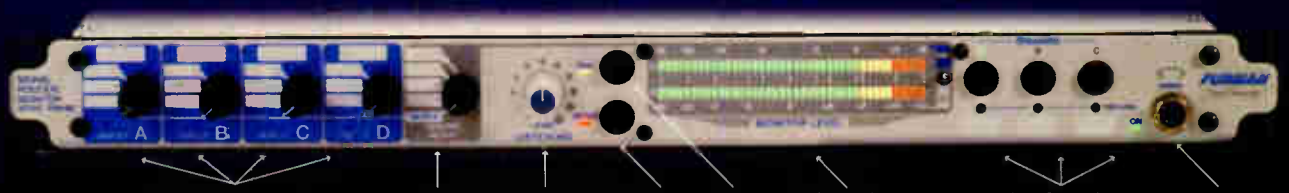

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and certain evaluation parameters were taken from AES Specification AES20-1996 (invaluable guidance for people doing their own speaker listening tests). Subjective opinions were noted in areas such as LF and HF accuracy, timbre balance, imaging, softness/hardness, fullness/thinness and so forth (see table on p. 114).

Though not surprising, one of the most instructive results of these tests is that speaker preference was sharply divided among musical tastes and expectations. Details will follow, but the oversimplified "executive summary" is this:

Audio professionals involved predominantly with pop/rock music generally preferred the ATC system, and those largely involved with acoustic and classical music generally preferred the DAL system. The reasons behind this will become clear as we look more closely at each speaker's performance and personality.

Perhaps the most obvious difference between these two monitors is their maximum SPL level. It's here where ATC fields a commanding advantage over DAL. A single ATC 300 cabinet will deliver an astonishing 121 dB SPL at less than .3% THD (with an additional 10 dB of headroom available!), an important consideration for loud pop music monitoring.

Due to a combination of active efficiency, patented and proprietary driver design (read: robust), and dual 15-inch drivers (vs. the DAL's dual 12-inch drivers), the ATCs are able to develop a massive amount of crystal-clean, room-pounding program material. These speakers offer a truly exhilarating experience. My advice? Wear effective ear protection around wide-open ATCs. Of course, as ATC points out, these speakers are not primarily intended for absolute SPLs—such "unlimited headroom," representatives of the company say, "translates into absolute clarity, openness and confidence with all types of source material."

Though the DALs don't play as loud as the ATCs, many listeners agreed that they did have an advantage in overall timbre accuracy, especially in the mid- and high-frequency regions. Comparing LF timbre purity between the two loudspeakers was not as clear-cut. Some sensed the ATC low-frequency drivers as "faster" and more "tactile" than the DAL, describing a more immediate "presence" of LF program.

I personally found that various low-frequency material seemed better suited to one speaker or another, with neither speaker proving consistently superior—again lending credence to the premise that no monitor system is optimal for all production goals.

For reasons probably related to the DALs' narrow dispersion, first-order crossover and phased tower orientation, their imaging characteristics are quite sensitive—much more so than the ATCs'. Slight changes in the DAL's width and toe angle can lead to significant changes in imaging.

The most convincing DAL imaging was achieved with a very wide 18-foot spacing and toe angle facing directly at the listening position. The DAL's narrow dispersion also demanded that the listener stay within a relatively small listening window. Although this is ideal for a single person playback arrangement (mastering suite, etc.), I'm not convinced of its relative merit in a playback environment where even a small group of people must congregate to listen critically. Speaker-to-listening position distance measured 12 feet (creating a triangle measuring 18x12x12 feet).

By contrast, the ATCs were less prone to image variation within a much larger range of width, toe and listening window. The positioning that seemed to capture ATC's ideal depth and focus was a width of 12 feet and a toe angle of about 10° inward. Speaker-to-listener distance was 12 feet, creating an equilateral triangle of 12x12x12 feet.

Over a course of weeks, audio professionals charted their perceptions of each loudspeaker with program material well known to them, scoring 1 to 10 in various performance categories. Not surprisingly, both speakers scored high in all categories, with none receiving a score less than 7. Overall, the DALs were given nominal preference in areas of overall timbre balance and on-axis imaging performance while the ATCs took preference in LF accuracy and off-axis image performance.

Both loudspeakers were considered suitably "full, spacious and clear." And while the DALs were perceived on average as "somewhat soft," the ATCs were considered by some as "somewhat hard." Keep in mind that many of these distinctions can be quite subtle. The scoring chart presents a complete summary of panelists' subjective testing.

As recordists of mostly classical music, we (Millennia) found particular benefit in the DAL's "difficult" imaging characteristics. No longer were our spaced omni recordings giving us the

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acceptable sonic positioning we had realized on wider dispersion, less surgically precise speakers. The DAL's narrow dispersion exposed weaknesses in center images, while pulling heretofore center-left and center-right images even farther toward the left/right extremes.

As we adjusted our recording techniques to increasing ratios of coincidence, vs. wide ambient wash, including higher percentages of true center and near center detail, the DALs revealed heretofore unrealized sonic subtleties—improving the sense of realistic presence and depth in our recordings.

Such changes to recording technique have so far retained a convincing image on less critical and wider-dispersion monitoring systems, as well. With this single improvement in tools, we've come a few steps closer to finding that elusive acoustic balance of panoramic precision, ambient realism and timbre accuracy.

In summary, I will say without hesitation that these are two of the finest loudspeakers available, yet they remain worlds apart in design philosophy—and neither system gave us everything we desired. If there was just some way to morph the best attributes of both. It's like that old saying "price, quality, delivery—pick two," except, in this case, it reads: "image, dynamics, timbre—pick your subtle trade-offs."

That said, let it be clear that what these speakers do, they do *exceptionally* well. One Sacramento, Calif., studio owner who participated in the test was so thoroughly impressed by the ATCs that he purchased an SCM-300 system for his own studio. At $25,000 per system, this is clearly not an impulse purchase but one that addresses a clear market need. Not surprisingly, both speakers have already been installed by numerous highly regarded audio facilities worldwide.

ATC, distributed by Precision Systems Integrated, 305 River Road., Tullytown, PA 19007; 215/949-8300; fax 215/949-8400; www.psintegrated.com.; www.atc.gb.net.

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John La Grou (info@mil-media.com) is a musician, engineer and would-be winemaker residing in the Sierra Nevada viticultural region of California.

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Audio-Technica has been dedicated to advancing the art and technology of electro-acoustic design and manufacturing since 1962. From a beginning in state-of-the-art phono cartridges, Audio-Technica has expanded over the years into high-performance microphones, headphones and other audio equipment. Best known for the 40 Series line of precision capacitor microphones, Audio-Technica strives to create innovative, problem-solving products in each new area it enters. Audio-Technica is proud to be a Gold Sponsor of this year's TEC Awards.

lexicon

dbx PROFESSIONAL PRODUCTS

Lexicon introduced the first commercial digital audio system in 1971. Since that time, Lexicon has continued to develop award-winning products for recording, broadcast, live performance and home theater. Lexicon systems subtly complement natural acoustics in classical recordings, add unique and impressive effects to popular music and movie soundtracks, and even shape the acoustics of some of the world's foremost concert halls.

More than 25 years ago, a young engineer named David Blackmer sat at his workbench trying to find something that would make music easier to record. Enter the VCA. With the launch of the dbx 160, the music industry sat up and took notice of the new company—dbx. The 165 was another turning point. The 165A has proved so popular that it is still manufactured today, exactly as it was 20 years ago. With the already popular 160S Stereo Compressor, the bar for creativity has been raised higher than ever.

digidesign
A division of Avid

Digidesign, a division of Avid Technology, Inc. (NASDAQ:AVID), is the leading digital audio production software and systems manufacturer for the professional music, film, video, multimedia, and broadcast radio industries. Digidesign's products integrate the tools required for CD-quality digital recording, random access editing, advanced signal processing, and digital audio mixing applications. Digidesign products are marketed in more than 30 countries worldwide, through a distribution network of value-added dealers, distributors and OEM relationships.

ALESIS

Alesis Corporation manufactures a full line of professional audio and musical instrument products capitalizing on its strengths in digital, analog, vacuum tube and transducer technologies. For 15 years Alesis has introduced some of the most innovative and popular tools for music and audio recording, performance and composition. The Alesis ADAT digital recorder helped create an entirely new musical environment—the project studio. From groundbreaking ADAT digital recording technology to innovations in keyboard technology, Alesis delivers revolutionary product solutions to the music and audio production industries.

World Radio History

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CONTINUED

Ex'pression Center for New Media is a total-immersion boot camp where artists and technicians in digital visual media and sound arts are taught every aspect of their crafts. During an intensive 14 months of study, students are taught by and work with the best practitioners and equipment that the industry can offer. Ex'pression is a licensed, post-secondary education facility located in the San Francisco Bay Area. Located in an imagination-inspiring 65,000-square-foot building, Ex'pression features classrooms, studios and labs designed by John Storyk of Walters-Storyk Design Group.

Founded in 1894 by Orville H. Gibson in Kalamazoo, Mich., Gibson has become the world's best known and most respected maker of musical instruments. The traditional motto Quality, Prestige & Innovation now applies to a large family of companies that make and sell the world's finest guitars, basses, banjos, mandolins, drums, keyboards, amplifiers, MIDI hardware and software, strings and accessories.

For 20 years, Meyer Sound has designed and manufactured high-quality loudspeaker systems, monitors, equalizers, and sound measurement tools for the professional audio industry. Founded in 1979, the company is a leading supplier of Self-Powered Loudspeaker Systems for theaters, arenas, theme parks, stadiums, convention centers, churches, and touring companies. Meyer Sound is also the chosen brand for world-class venues, including Carnegie Hall, the San Francisco War Memorial Opera House, the Santa Fe Opera House, Tampa Bay Stadium and the Providence Performing Arts Center. Products introduced in 1999 include the new UPM-1P, DS-4P and UMS-1P Self-Powered Loudspeaker Systems.

Founded in 1977, *Mix* is the world's leading publication for professional recording, sound and music production, with more than 40,000 subscribers in more than 90 countries. *Mix* covers a wide range of topics, including studio and location recording, audio for film and video, live sound production, facility design and acoustics and other subjects of relevance to audio professionals. *Mix* also publishes the *Mix Master Directory*, *Mix Edicion en Espanol*, two annual *Sound for Picture* supplements, and maintains a Web site, mixonline.com. *Mix* is the founding sponsor of the TEC Awards.

Panasonic
Broadcast & Television Systems Company

As one of the most respected brands in the world, Panasonic is known for building quality audio/video products for working professionals. The Professional audio group manufactures such notable products as the award-winning SV-3800 DAT machine and the critically acclaimed DA7 digital mixer. The Panasonic pro audio group also manufactures live sound mixing consoles, road-worthy amplifiers, and high-power, high-quality loudspeaker systems.

Solid State Logic

Solid State Logic is the world's leading authority in the design and manufacture of audio mixing consoles for the music, video, film and broadcast industries. Founded in 1969, and this year celebrating its 30th anniversary, SSL has expanded to its present 15-acre science park in Oxfordshire, England with satellite offices in New York, Los Angeles, Toronto, Tokyo, Paris and Singapore. SSL's unrivalled resources include R&D, manufacturing, training, service and product support. SSL's product range now encompasses large-scale analog and digital mixing consoles with specific models for the music, video, film and broadcast markets.

SONY

Sony Professional Audio is both an inventor and manufacturer of professional audio hardware technologies, with diverse offerings that include digital multitrack recorders, DAT recorders, MD recorders, CD players, signal processors, audio and broadcast mixers, digital consoles, wired microphones, wireless microphone systems, headphones, power amps and speakers.

Soundelux is widely acclaimed for providing the highest quality audio services to the entertainment industry. With five Academy Awards and 15 Emmy Awards, Soundelux's 1998-1999 credit list includes *Tarzan, Inspector Gadget, Big Daddy, Godzilla, Mighty Joe Young, The Prince of Egypt, The Negotiator, A Civil Action, Mulan, What Dreams May Come, Bulworth, The Man in the Iron Mask, The Siege, Instinct, For Love of the Game* and *End of Days*. Other films include *Braveheart, Jerry Maguire, Glory, The Last of the Mohicans, Courage Under Fire, Face/Off, JFK, In The Line of Fire* and *Born on the Fourth of July*.

YAMAHA

Yamaha is a leading manufacturer of innovative digital audio mixers, multitrack recorders, processors, loudspeakers, amplifiers and both acoustic and electronic musical instruments. Utilizing proprietary DSP technology, Yamaha leads the market with powerful digital mixing consoles for professional recording, post-production, sound reinforcement and installed sound applications. The newly formed Yamaha Commercial Audio Department is dedicated to servicing these diverse market segments.

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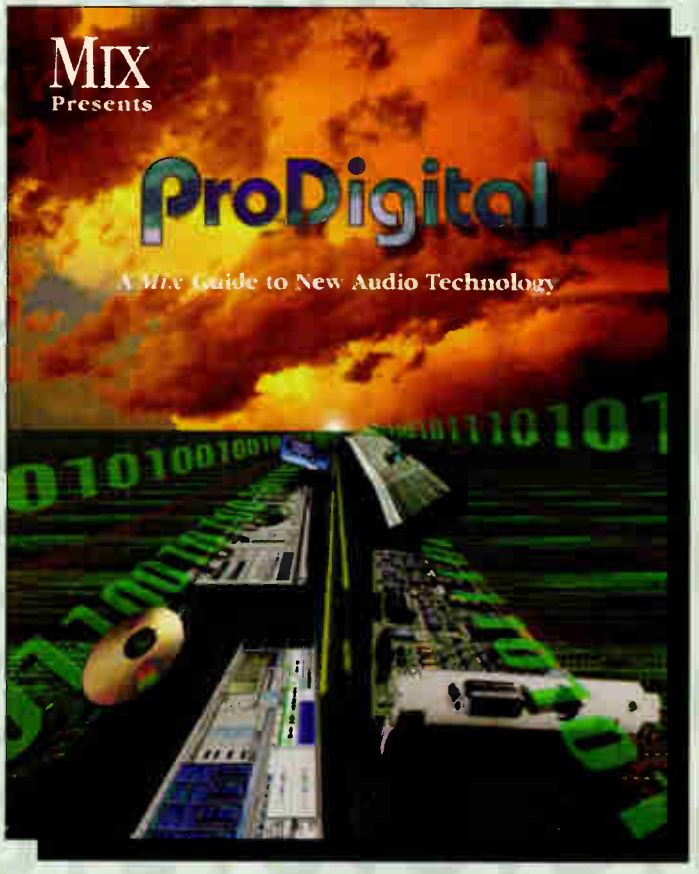

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World Radio History

I. OUTSTANDING INSTITUTIONAL ACHIEVEMENT

A. Acoustics/Facility Design Company

Russ Berger Design Group, *Dallas, TX:* During the eligibility period, RBDG provided design for a diverse group of clients on more than 60 projects, including: MasterMix, NFL Films Avant Post, MRG (Media Resource Group), Texas Instruments' DLP Facility, Four Seasons Media Productions, Recording Lair, Discovery Channel—Phase II, WPLN-Nashville Public Radio, National Sound and Faulconer Productions.

Pelonis Sound & Acoustics, *Santa Barbara, CA:* Eligibility-year projects include Don Davis, Calabasas, CA; Bob Kingsley's American Country Count Down, Weatherford, TX; Dr. John Larsen, Chicago; Pacific Microsonics, Union City, CA; Visual Concepts, Nicasio, CA; Glen Philips, Santa Barbara, CA; Harry Raben, Santa Barbara, CA; Carlos Castro, Sherman Oaks, CA; and Another Large Production, Los Angeles.

Studio 440, *Hollywood, CA:* Studio 440 is a full-service architecture and acoustic design firm specializing in technical spaces for music, film and video. Eligibility-year projects include music recording studios for NRG Recording Services and Promise Productions in Taipei, DVD mastering suites for Warner Hollywood, KTNQ/KLVE radio control rooms, video post and HDTV telecine bays for Post Logic, Hollywood.

studio bau:ton, *Los Angeles:* Eligibility-year projects include TK Disc Studios, Honolulu; O'Henry Sound Studios, North Hollywood, CA; Margarita Mix de Santa Monica, CA; DubeyTunes, San Francisco; In Your Ear Studios, Richmond, VA; Metropol/Babalu Internet Studio, Los Angeles; Enterprise dubbing stage, Burbank, CA; Master P Studio, Baton Rouge, LA; Silkk studio; Wilshire Stages, Los Angeles; Audio Resource, Honolulu; and Howard Schwartz Recording, New York, NY.

Walters-Storyk Design Group, *Highland, NY:* During the eligibility year, WSDG completed Lower East Side, New York; Guns for Hire–The Shooting Gallery–New York; Sony Professional–Oxford Presentation Room–New York; Carter Burwell–Private Studio, New York; Interium Services–Ft. Lauderdale; Electronic Arts Audio Production Facility–Vancouver, Canada; Ross School–East Hampton, Long Island; Sound on Sound, 5.1 Mixing Suite, New York; WETA– new radio facility–NPR station, Washington, DC; and Ex'pression Center for New Media, Emeryville, CA.

B. Sound Reinforcement Company

A-1 Audio, *Hollywood, CA:* Credits include (touring): Aerosmith, Van Halen, Barry Manilow, Johnny Mathis, Chicago, Motley Crue, Offspring, Stabbing Westward, Carrot Top, Chris Isaak, Morrissey; (premieres): *Prince of Egypt, Mulan, Armageddon, Jack Frost*; (events): ESPN XGames, New Year's Las Vegas, Showest, MTV Music and Movie Awards After Show Party, Nickelodeon Kid's Choice Awards After Show, Snowboarding Championships, Frank Sinatra's Celebrity Golf Tournament, Fender's Catalina Blues Festival, California Governor's Gala; (corporate industrials): A&M Associates, Running Fish, Ellen Michael, Holiday Inn, State Farm, and Days Inn; (installations): Caesar's Palace Las Vegas, Key Club.

Clair Brothers, *Lititz, PA:* During the eligibility period, Clair Brothers provided sound for Page & Plant, Elton John, Billy Joel, Garth Brooks, Tim McGraw, Stevie Nicks, Journey, Yes, Steve Miller Band and Backstreet Boys.

dB Sound, *Des Plaines, IL:* Eligibility-year credits include Rolling Stones "Bridges to Babylon" tour and "No Security" tour; Riverdance "The Show" (Lee Company) and "The Show" (Lagan Company); Savage Garden "To the Moon and Back" tour; Barney's Big Surprise European tour; Bill Graham "Celebration '99" tour; Promise Keepers 1998 and 1999 tour; and Showest Las Vegas.

Showco, *Dallas, TX:* During the eligibility period, Showco provided sound reinforcement for Eric Clapton, James Taylor, Janet Jackson, Family Values, George Strait's Country Music Festival, Vince Gill, Matchbox 20, Alanis Morissette, KISS, Phil Collins, Lauryn Hill, Limp Bizkit, Ozzfest, Genesis, 'N Sync, Lynyrd Skynyrd, Smashing Pumpkins, Alan Jackson, Black Sabbath, Everclear, John Fogerty, Moody Blues, Third Eye Blind, Blondie, Korn/Zombie, Reba/Brooks & Dunn, Hanson, Santana, Luther Vandross, Blondie, Smokin' Grooves, Kirk Franklin, Joe Satriani, Walt "Baby" Love and Megadeth.

Ultra Sound/Pro Media, *San Rafael, CA:* Merging forces in May of 1998, Ultra Sound/ Pro Media supplied complete audio services during the eligibility year for the Dave Matthews Band, Andrea Bocelli, Primus, The Goo Goo Dolls, The Other Ones, San Francisco Opera's "Opera in the Park," and outdoor concerts by the symphonies of San Jose, Stockton, Modesto and Napa Valley. The corporate show roster included meetings and product announcements for 3Com, Apple, E*Trade, Real Networks, NASCAR and Hewlett-Packard.

C. Mastering Facility

Gateway Mastering, *Portland, ME:* Eligibility-year projects include Sheryl Crow *The Globe Sessions*; Brian Setzer *The Dirty Boogie*; Burt Bacharach & Elvis Costello *Painted From Memory*; Arturo Sandoval *Hot House*; Goo Goo Dolls *Dizzy Up the Girl*; Jewel *Spirit*; The Cranberries *Bury the Hatchet*; John Fogerty *Premonition*; Everclear *So Much for the Afterglow*; Kenny Wayne Shepherd *Trouble Is*; Eagle Eye Cherry *Desireless*; and Steve Reich *Music for 18 Musicians*.

Bernie Grundman Mastering, *Hollywood, CA:* During the eligibility period the studios mastered projects for Alanis Morissette *Supposed Former Infatuation Junkie*, Smashmouth, Kenny G *Greatest Hits*, Master P *MP Da Last Don*, Snoop Dogg *Da Game Is To Be Sold, Not To Be Told*; *My Best Friend's Wedding, Bulworth, The Players Club* soundtracks, Silkk The Shocker, Cherry Poppin' Daddies, Yanni *Tribute*; Fastball *All the Pain Money Can Buy*, Janet *Jackson The Velvet Rope*, Brandy *Never Say Never*, 2Pac, Sublime and Paul Winter.

Masterdisk, *New York City:* During the eligibility year Masterdisk completed the following albums: Beastie Boys *Hello Nasty*, Whitney Houston *My Love Is Your Love*, Ben Folds Five *Whatever & Ever Amen*, The Smashing Pumpkins *Adore*, Everlast *Whitey Ford Sings The Blues*, Monica *The Boy Is Mine*, Limp Bizkit *3 Dollar Bill Y'all*, P.J. Harvey *Is This Desire?*, Crystal Method *Vegas*, Blur *13*, *Dr. Doolittle* soundtrack, DMX *It's Dark And Hell Is Hot* and *Flesh Of My Flesh, Blood Of My Blood*, and the *Anastasia* soundtrack.

Sony Music Studios *New York City:* Eligibility-year credits include Herbie Hancock *Gershwin's World*; Lauryn Hill *Miseducation of Lauryn Hill*; DMX *Flesh of My Flesh, Blood of My Blood*; Jay-Z *Hard Knock Life*; *Meet Joe Black* film score; *Practical Magic* film score; Wyclef Jean Presents the Carnival; Harry Connick Jr. *Come By Me*; Erykah Badu *Live* and "Sessions at 54th Street."

Sterling Sound, *New York City:* Eligibility-year credits include Metallica *Garage Inc.*; John Lennon *Anthology*; Bette Midler *Bathhouse Betty*; David Sanborn *Inside*; Britney *Spears ...Baby One More Time*; Busta Rhymes *E.L.E. Extinction Level Event: The Final World Front*; Backstreet Boys *Backstreet Boys*; Paul McCartney & Wings *Band on the Run*; Marilyn Manson *Mechanical Animals*; Hole *Celebrity Skin*; and Dave Matthews Band *Before These Crowded Streets*.

D. Audio Post-Production Facility

Howard Schwartz Recording, *New York City:* During the eligibility period, HSR worked on: voice recording for *Antz* (Dreamworks), *A Bug's Life* (Disney) and *Prince of Egypt* (Dreamworks); long-format television recording for World Cup Soccer (ABC); *Muhammad Ali* (Across The Street Productions) and *The Simpsons* (20th Century Fox); audio post for *Cosby*, television promos for HBO, MTV, NBC, CBS, ESPN and Disney; commercial recordings credits include the Budweiser Lizards, AT&T, IBM, American Express and Hershey's.

Soundelux Hollywood, *Hollywood, CA:* Eligibility-year projects include *Tarzan, Inspector Gadget, Big Daddy, Godzilla, Mighty Joe Young, The Prince of Egypt, Instinct, The Negotiator, A Civil Action, Mulan, What Dreams May Come, For Love of the Game, End of Days, Playing By Heart, The Siege, Bulworth, Urban Legend, A Simple Plan, The Man in the Iron Mask, The Rage: Carrie 2, Wrongfully Accused, Soldier, The Jack Bull, Major League 3: Back to The Minors* and *The Thirteenth Floor*.

Sync Sound, Inc., *New York City:* Eligibility-year credits include *The Century: America's Time/The Century* with Peter Jennings, a History Channel series and ABC News Special, NBC's *Homicide: Life on the Streets*, the HBO prison drama series *Oz*, MTV's animated series' *Daria* and *Celebrity Death Match*, the 1999 Academy Awards-nominated feature documentary *Lenny Bruce: Swear to Tell the Truth*, HBO Family's animated series *A Little Curious*, and HBO's concert special "Janet Jackson at Madison Square Garden."

Todd-AO Studios, *Hollywood, CA:* Eligibility-year credits for Todd-AO include *A Civil Action, The Exorcist* (reissue), *Meet Joe Black, Pleasantville, Prince of Egypt, Saving Private Ryan, Sliding Doors, There's Something About Mary, The Waterboy* and *BMM*.

Warner Bros., *Burbank & Hollywood, CA:* During the eligibility year, Warner Bros. Post-Production Services handled re-recording on 14 major motion pictures, including *The Matrix, True Crime, Analyze This, Star Trek IX, Blast From The Past* and *Message in a Bottle*. Sound editorial projects included *The Thin Red Line*, HBO's *Winchell* and *Deep Impact*. In addition, post-production was completed for the 1998/99 season on dozens of network television series such as *Friends, ER, The Drew Carey Show* and *Home Improvement*.

World Radio History

E. Remote Recording Facility

A tie in this category resulted in 6 nominations for Remote Recording Facility

Effanel Music, *New York City:* Eligibility-year credits include *Buena Vista Social Club* film soundtrack; Rolling Stones *No Security*; Grammy Awards; Garth Brooks *Double Live*; James Taylor *Live At The Beacon Theater*; MTV Video Music Awards; Aretha, Mariah, Celine, Gloria and Shania "Divas Live"; Patti LaBelle *Live! One Night Only*; VH-1 *Storytellers* featuring R.E.M., Shawn Colvin, Sheryl Crow, Tony Bennett, Tori Amos and Natalie Merchant; Bruce Springsteen, Billy Joel, Eric Clapton and Paul McCartney Rock 'n' Roll Hall of Fame induction; and VH-1 series *Hard Rock Live*.

Le Mobile Remote Recording Studio, *Vista, CA:* During the eligibility period, Le Mobile recorded Garth Brooks *Double Live*, Beastie Boys, Paula Cole, Cirque du Soleil "O," Further Festival "The Other Ones," Steve Miller, Social Distortion, and *MTV Movie Awards*. Film scoring included *Man on the Moon* and *T-Rex*.

Record Plant Remote, *Ringwood, NJ:* Eligibility-year credits include Bruce Springsteen, Metallica, Mariah Carey, Janet Jackson, Soul Asylum, Rod Stewart, John Mellencamp, Hootie & the Blowfish, Sugar Ray, Mary Chapin Carpenter, Silverchair, Cleopatra, Emmy Lou Harris, Bela Fleck, Nanci Griffith, DMX, Def Squad, Onix, Largo, Del McCoury, Jose Feliciano, Paul Winter and Bruce Hornsby.

Remote Recording Services, *Lahaska, PA:* Eligibility-year credits include The Academy Awards, Jimmy Buffet, Hanson, Live From the Met, Maxwell, Tito Puente, Rolling Stones, Jerry Seinfield, Shania Twain and Trisha Yearwood.

Sheffield Audio-Video Productions, *Phoenix, MD:* Sheffield's remote recording truck has traveled the U.S. and Canada to record and mix shows including the Cincinnati Symphony, New Orleans Jazz Fest, Puff Daddy, R.E.M./MTV, Aerosmith, Kirk Franklin, Tibetan Freedom Concert, Lenny Kravitz, Boston Pops and the Allman Brothers. Sheffield's 48-foot remote unit has a 48-input SSL and a 12-input Neve, along with a Genelec 5.1 Surround Monitor System.

Westwood One Mobile Recording, *Culver City, CA:* During the eligibility period, Westwood One was busy recording many artists for its syndicated concert series with its new mobile unit. Artists included Rod Stewart, Barenaked Ladies, Jimmy Page and Robert Plant, Garbage, George Clinton, Kid Rock and Ani DiFranco. Westwood One also provided audio facilities for the 1998 Playboy Jazz Festival, the Billboard Music Awards, the 1999 Super Bowl, and many MTV music-related specials.

F. Recording Studio

Capitol Studios, *Hollywood, CA:* Eligibility-year projects include records by Phil Collins, John Fogerty, Toto, Chris Isaak, Harry Connick Jr. Barbra Streisand, Rod Stewart, Vince Gill, Bob Seger, Ray Charles, Missy Elliot, Billy Idol, Big Bad Voodoo Daddy, Barry Manilow and Puff Daddy; movie work includes *Tarzan*, *Payback*, *Prince of Egypt*, *The Waterboy* and *South Park*; television: *Home Improvement*, *7th Heaven* and *The Simpsons*; and 5.1 surround mixes include The Rolling Stones, Trisha Yearwood, Eagles, Diana Krall; and rehearsals and pre-records for the Academy Awards.

Electric Lady, *New York City:* Eligibility-year credits include Shawn Colvin; Britney Spears; Blondie *No Exit* (album tracking); Tricky; Jonathon Richman; *There's Something About Mary* soundtrack; Foxy Brown *China Doll* (record and mix); Eagle-Eye Cherry; Mary J. Blige; Dave Matthews/Santana; JA Rule; Norenga *Norenga N.D.R.E.*; and DMX *Blood of My Blood Flesh of My Flesh*.

Ocean Way, LA, *Los Angeles:* During the eligibility period, Ocean Way recorded projects for Jewel, Alanis Morissette, Goo Goo Dolls, Natalie Merchant, Hole, *Hope Floats* sound-track, Beck, Madonna, No Doubt, Rolling Stones, Burt Bacharach and Elvis Costello (*Austin Powers*), Don Was, Sugar Ray, Semisonic, *Ally McBeal*/Vonda Shepherd, Smashmouth, Amanda Marshall & Carole King, Red Hot Chili Peppers, Ry Cooder, Ziggy and Steve Marley, Keb' Mo, Taxiride, Push Stars, Chris Isaak, Janice Robinson, Mylene Farmer and Lucinda Williams.

Right Track, *New York City:* During the eligibility period, Right Track recorded *Aida* soundtrack and CD, Mary J. Blige *The Tour*, Mariah Carey *Dnes*, Celine Dion VH-1 *Divas* DVD mix, Jim Hall & Pat Metheny *Jim Hall & Pat Metheny*, Herbie Hancock *Gershwin's World*, Lauryn Hill *The Miseducation of Lauryn Hill*, Whitney Houston *My Love Is Your Love*, Bette Midler *Bath House Betty*, Pavarotti & Friends, Public Enemy, Diana Ross, the *Snake Eyes* film score/soundtrack and James Taylor *James Taylor Live at the Beacon Theater* DVD mix.

The Village Recorder, *West Los Angeles, CA:* During the eligibility period, The Village was involved in projects for such artists as Tom Petty and the Heartbreakers, Red Hot Chili Peppers, Stevie Nicks produced by Sheryl Crow, Ricky Martin, LeAnn Rimes/Elton John, Brian Setzer Orchestra, Master P, Ringo Starr, Count Basie Orchestra, Tori Amos, Rosemary Clooney and Counting Crows, as well as soundtracks for the films *There's Something About Mary*, *Enemy of the State*, *Tarzan* and *Bowfinger* and TV shows *Ally McBeal*, *Tracy Takes On* and *South Park*.

II. OUTSTANDING CREATIVE ACHIEVEMENT

A. Audio Post-Production Engineer

Ken Hahn: Eligibility-year credits incluce HBO's "Janet Jackson Live at Madison Square Garden" in Dolby Surround; PBS Great Performances Carnegie Hall Opening Night '99: A Gershwin Celebration; NBC series *Lateline*; the Broadway cast albums for *Cabaret* and *Ragtime* (1999 Grammy Award nominees); HBO series *Real Sex*; Disney Channel's *Friends for Life*: *Living With AIDS*; and the HBO family animated series *A Little Curious*.

Chris Jenkins: During the eligibility year Chris Jenkins was re-recording mixer on *EdTV*, *BMM*, *Meet Joe Black*, *Lost in Space* and *Sliding Doors*.

Shawn Murphy: Eligibility-year credits include *Virus*; *Saving Private Ryan*; *Godzilla*; *Perfect Murder*; *Six Days, Seven Nights*; *A Simple Plan*; *A Civil Action*; *The Avengers*; *Prince of Egypt*; and *Psycho*.

Sue Pelino: Music perfomance show mixing: *Storytellers* (VH-1), including Sheryl Crow, Stevie Nicks, Rod Stewart, and Billy Joel; "James Taylor Live at the Beacon Theater," *Sessions At West 54th*, John Fogerty—*Premonition*, and The 1998 MTV Video Music Awards. Sound design: *Monday Night Football* (ABC Sports). Film/ Documentary Mixing: Encore movie channel premiere *The Lady With The Torch*, hosted by Glenn Close. The sound for this two-hour film was mixed in both Dolby Pro Logic and 5.1 surround.

Gary Rydstrom, Skywalker Sound: Last year, Gary Rydstrom was sound designer and re-recording mixer for *Saving Private Ryan*, *The Horse Whisperer* and *A Bug's Life*. For *Saving Private Ryan*, Rydstrom won two Oscars (Best Sound and Best Sound Effects Editing) and also won the British Academy Award, the Cinema Audio Society Award and the Motion Picture Sound Editors Award. *A Bug's Life* won the MPSE Award for Animated Feature. Rydstrom is Director of Creative Operations for Skywalker Sound.

B. Remote/Broadcast Recording Engineer

Guy Charbonneau: During the eligibility period, Guy Charbonneau recorded Cirque du Soleil "D," Garth Brooks *Double Live*, Beastie Boys, Paula Cole, Social Distortion, Michael Crawford, and numerous live broadcast performances for Kiss, Smashing Pumpkins and Sammy Hagar.

Ed Greene: Eligibility-year projects include The Academy Awards, Tony Awards, National Memorial Day Concert, Kennedy Center Honors, Christmas in Washington, Macy's Day Parade, Emmy Awards, Grammy Awards, People's Choice Awards and TV Guide Awards.

John Harris: During the eligibility period, John Harris worked on the *Buena Vista Social Club* film soundtrack; Rolling Stones *No Security*; Grammy Awards; Garth Brooks *Double Live*; *James Taylor Live At The Beacon Theater*; MTV Video Music Awards; Aretha, Mariah, Celine, Gloria and Shania *Divas, Live*; Patti LaBelle *Live! One Night Only*; VH-1 *Storytellers* featuring R.E.M., Shawn Colvin, Sheryl Crow, Tony Bennett, Tori Amos and Natalie Merchant; Bruce Springsteen, Billy Joel, Eric Clapton and Paul McCartney Rock 'n' Roll Hall of Fame induction; and VH-1 Series *Hard Rock Live*.

David Hewitt: Eligibility-year credits include Black Crowes, Miles Davis Tribute, Francis Dunnery, Neil Finn, Hanson, Live From the Met, Rolling Stones, Ringo Starr, Lucinda Williams and Trisha Yearwood.

Kooster McAllister: Kooster McAllister is chief engineer for Record Plant Remote, but in recent years he has been doing more independent mixing and recording outside of RPR. Eligibility-year credits include work with Mariah Carey, Janet Jackson, Sugar Ray, Vince Gill, Trisha Yearwood, LeAnn Rimes, Alan Jackson, Soul Asylum, Meatloaf, Silverchair, B-52's, Sawyer Brown, The Dove Awards, Jose Feliciano, Mary Chapin Carpenter, Bela Fleck, Nanci Griffith, Emmy Lou Harris, Cleopatra, DMX, Def Squad, Onix, Neal McCoy, Lorrie Morgan, Billy Ray Cyrus and Del McCoury.

C. Sound Reinforcement Engineer

Robert "Cubby" Colby: Eligibility-year credits include Janet Jackson World Tour (160 dates); Phil Collins Disney promo (tour for *Tarzan* movie); and music mixer for 1999 Grammy Awards. Colby recently won the 1998 House Sound Engineer Award from *Performance* magazine.

John Cooper: During the eligibility period, John Cooper mixed front-of-house for Wynonna. He also did a six-week tour with Kitaro and some mixing for John Hiatt.

World Radio History

Rich Davis: Rich Davis provided sound for Jimmy Buffett, Doc Severenson and His Orchestra, and Jackson Browne during the eligibility year.

Dave Kob: Eligibility-year credits include providing sound for Page & Plant and Pete Townshend.

Denis Savage: Eligibility-year credits for Savage include working for Celine Dion, mixing the live show and remixing live concerts in 5.1 for a television special.

D. Mastering Engineer

Greg Calbi: Eligibility-year credits include Paul McCartney & Wings *Band on the Run*; Cassandra Wilson *Traveling Miles*; Branford Marsalis *Requeim*; The Chieftains *Tears of Stone*; Harvey Danger *Flagpole Sitta*; Sleater Kinney *The Hot Rock*; Mercury Rev *Deserters Song*; Sparklehorse *Good Morning Spider*; Bob Dylan *Royal Albert Hall 66*; and Tony Bennett *Playground*.

Bernie Grundman: During the eligibility period, Bernie Grundman mastered projects for Chick Corea *Box Set*, Quincy Jones *From Q With Love*, Yumi Matsutoya *Best*, Jermaine Dupree *Presents Life in 1472 The Original Soundtrack*, Kenny G *Greatest Hits*, Lone Justice *This World Is Not My Home*, Paul Winter *Brazilian Days*,Tom Scott *Smokin' Section*, the *Primary Colors* soundtrack, John Pizzarelli, Caetano Veloso, *Dance With Me* soundtrack, Don Henley's Walden Woods Benefit, and The Carpenters (remastered first 11 albums, which he originally mastered).

Ted Jensen During the eligibility year, Ted Jensen worked on Dave Matthews *Before These Crowded Streets*, Marilyn Manson *Mechanical Animals*, Hole *Celebrity Skin*, Lenny Kravitz *5*, Fear Factory *Obsolete*, Dleander *February Son*, Collective Soul *Dosage*, Luther Vandross *Always and Forever: The Classics*, Cyrus Chestnut *Cyrus Chestnut*, Madonna *Ray of Light*, R.E.M. *Up*, Hanson *Live*, Fuel *Sunburn* and Peter Wolf *Fool's Paradise*.

Bob Ludwig: Eligibility-year projects include Sheryl Crow *The Globe Sessions*, Brian Setzer *The Dirty Boogie*, Burt Bacharach & Elvis Costello *Painted From Memory*, Arturo Sandoval *Hot House*, Goo Goo Dolls *Dizzy Up the Girl*, Jewel *Spirit*, The Cranberries *Bury the Hatchet*, John Fogerty *Premonition*, Everclear *So Much for the Afterglow*, Kenny Wayne Shepherd *Trouble Is*, Eagle Eye Cherry *Desireless*, and Steve Reich *Music for 18 Musicians*.

Denny Purcell: Eligibility-year projects include Dire Straits *Sultans of Swing-The Very Best of Dire Straits*, Garth Brooks *Double Live*, Deanna Carter *Everything's Gonna Be Alright*, David Wilcox *Underneath*, Bela Fleck *Left of Cool*, Jimmy Buffett *Beach Houses on the Moon*, The Dixie Chicks *Wide Open Spaces*, J.J. Cale *Live*, and Ricky Skaggs *Bluegrass Rules*.

E. Record Producer

Glen Ballard: Eligibility-year projects include Alanis Morissette *Supposed Former Infatuation Junkie* (produced with Alanis Morissette), John Hiatt *Have A Little Faith in Me*, John Hiatt *Greatest Hits*, and The Corrs *Queen of Hollywood, Talk on Corners*.

Tchad Blake: Eligibility-year projects include Lisa Germano *Slide*, Soul Coughing *El Dso*, Bonnie Raitt *Fundamental* and Wendy & Lisa *Girl Brothers*.

Rob Cavallo: During the eligibility year, Cavallo's projects included Goo Goo Dolls *Dizzy Up the Girl*, The Pretenders "Loving You Is All I Know" from *The Other Sister* soundtrack, Goo Goo Dolls "Iris" from *City of Angels* soundtrack, Alanis Morissette "Uninvited" from *City of Angels* soundtrack, Chris Isaak "Please" and "Walk Slow" (additional production) and "Breaking Apart" from *Speak of the Devil*, and Green Day *Nimrod*.

Sheryl Crow: Eligibility-year projects include Sheryl Crow *The Globe Sessions* and two Stevie Nicks songs for *Practical Magic* soundtrack.

David Foster: During the eligibility period, David Foster worked with Celine Dion, Brandy and Monica.

F. Recording/Mixing Engineer

Chuck Ainlay: Projects engineered and released during the eligibility period include George Strait, Vince Gill, Trisha Yearwood, The Mavericks, Martina McBride and The Dixie Chicks. Ainlay, who recently received an award for the most Top 10 records in the country charts, collaborated with Mark Knopfler and produced movie scores for *Wag The Dog* and *Metroland*.

Tchad Blake: Eligibility-year projects include Sheryl *Crow The Globe Sessions*, Bonnie Raitt *Fundamental*, Soul Coughing *El Dso* and Neil Finn *Try Whistling This*.

Ed Cherney: Eligibility-year projects include Rolling *Stones No Security*; Sheena Easton & Jeffrey Osborne "A Place Where We Belong"; Phil Perry "Mind Blowa"; Bonnie Raitt "Blue For No Reason" remix; Rolling Stones 5.1 DVD *Bridges to Babylon*; Peabo Bryson and Roberta Flack "The Gift"; and Jonnell Mosser "Stop In The Name of Love" and Rolling Stones "Honest I Do," both from the *Hope Floats* soundtrack.

Tom Lord-Alge: Eligibility-year credits include Hole *Celebrity Skin* (7 songs) "Celebrity Skin," "Awful," "Dying," "Use Once & Destroy," "Boys on the Radio," "Playing Your Song" and "Petals"; Marilyn Manson *Mechanical Animals*; Korn "Freak on a Leash"; No Doubt "New" for the *Go* soundtrack; Everlast-Santana "Hey Now"; Limp Bizkit "Sour"; Blink 182 *Enema of the State;* and Sarah McLachlan *Mirror Ball*.

Dave Reitzas: Eligibility-year projects include Madonna *Ray of Light* (1999 Grammy winner as engineer for Best Pop Album); Celine Dion *These Are Special Times*; The Corrs *Talk on Corners*; Puff Daddy and Jimmy Page "Kashmir" from *Godzilla*; Babyface *Christmas with Babyface*; and music from the motion pictures *Quest For Camelot* and *Living Dut Loud*.

III. OUTSTANDING TECHNICAL ACHIEVEMENT

A. Ancillary Equipment

Apogee PSX-100: This 2-channel, 24-bit system includes A/D and D/A converters in a 1U enclosure. I/O: ADAT, TDIF (Tascam), S/PDIF (coax/optical), 2x AES/EBU, auxiliary AES/EBU output. Sections can be used independently or linked for digital copying, format conversion, etc. Sampling rates: 44.1, 48, 88.2, 96 kHz. Features include Apogee's proprietary Soft Limit® for maximizing digital output level without overs, and UV22® for reducing 24-bit signals to 20- or 16-bit for CD and other applications.

BSS Soundweb: Soundweb, a networkable, programmable DSP sound system processing system, provides 8 analog inputs and 8 analog outputs as well as inputs and outputs for the 8-channel bi-directional network. Its 48kHz/24-bit A/D/A converters offer 100+ dB of dynamic range, and the unit can operate without a computer after the DSP program is loaded. Control is via contact closures and 47K audio pots (8 control ports), RS-232 or Soundweb 9010 network remote.

dB Technologies AD122-96 MkII: This stereo A-D converter meets and beats the new 96kHz and 88.2kHz standards with a true 24-bit digital audio datastream and super-low -126 dB noise floor. Exceptional linearity, accelerated transient response, minuscule quantization steps and low noise performance enable the AD122-96 MkII to ensure high-resolution digital audio. In daily use worldwide on demanding projects, this is the converter of choice among many industry leaders.

DK Audio MSD600M: Intended for broadcast and post-production audio monitoring and live/studio recording, the MSD600M Master Stereo Display is a combined phase meter, audio vector oscilloscope, multichannel level meter and spectrum analyzer with flat panel, color LCD TFT 640x480 resolution display. The unit is available in stereo and 8-channel/ surround versions.

Neotek MultiMax Surround Monitoring Controller: Not simply a level control, this comprehensive multiformat monitoring tool adds surround sound monitoring to your existing console. Multiple 7.1, 5.1 and LCRS surround sound mixes can be monitored and checked for compatibility in the various formats downmixed by DVD and DTV equipment. Multiple monitors: two front systems, two surround systems, stereo nearfields, and mono speaker. Hassle-free monitor setup with 16 individual speaker trims and built-in pink noise.

Neutrik Minirator MR-1: This powerful analog audio generator provides a comprehensive set of audio test signals required in professional audio environments. The lightweight, battery-powered instrument provides sinusoidal signals over the entire audio band from 20Hz-20kHz at levels as low as -76 dBu up to 6dBu. Alternative level units are dBV and Volts. A dedicated polarity test signal enables the user to unveil devices with inverse polarity.

B. Amplifier Technology

Bryston 9B-ST Pro: This superior quality, multichannel power amplifier delivers 120 watts at 8 ohms (200W at 4 ohms). The 9B-ST is a 5-channel amplifier intended for use in applications where compactness, versatility and expandability are of prime importance. Each modular channel contains all the electronic circuitry, connections and independent power supply. The chassis simply provides AC to each channel. As with all Bryston products, the 9B-ST has a fully-transferable, 20-year warranty.

Chevin Research Q6: The Q6 combines sonic accuracy, precision components, high slew rates and fast, dynamic response. Capable of 4-channel operation (600 watts per channel at 4 ohms), the Q6 weighs only 27 lbs. and fits in two rackspaces. With low distortion and noise, twin high-volume fans and a protection system for shorted and low

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the installed DPC-II Digital Production Console

- 160 Digital Channels
- Worksurfaces from 16 to 96 motorised faders
- 24 bit Conversion
- 96kHz operation
- Stereo, LCRS, 5.1, 7.1

THE WORLD'S LEADING FACILITIES ARE STAYING AHEAD..

- For the past two years, every couple of days one of the World's leading audio facilities has become a convert to a Soundtracs digital console.
- Their decision to go digital may vary but their reasons for selecting Soundtracs appear to be unanimous.
- Whether for post-production, broadcast or music, there isn't a more cost efficient digital production console offering the features and facilities, with the high level of automation and sonic integrity, than that provided by Soundtracs.
- These facts, reinforced by the Soundtracs premier software and hardware support, is simply enabling them to stay ahead.

POST PRODUCTION

MUSIC RECORDING

FILM SOUNDTRACK

CIRCLE #084 ON PRODUCT INFO CARD

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Tel: (+1) 516 249 1234 . Fax: (+1) 516 249 4854
email: sales@soundtracs.com . web: http://www.soundtracs.com

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impedance loads, the Q6 delivers no-compromise performance throughout the frequency spectrum, even under drastic operating conditions.

Crown CP660: This 6-channel amp offers six independent channels and takes the place of three 2-channel amplifiers, yet fits in a standard 2U chassis. It's ideal for surround-sound, zoning and background music applications. Any pair of channels can be easily bridged for double the power. Rear-mounted controls and connectors prevent unauthorized changes. A super-quiet, variable-speed fan provides just the right amount of cooling only when it's needed.

Demeter VTHF-300M: Designed for the studio or the road, the VTHF-300M power amplifier's all-tube high-fidelity design rivals the sound quality of other audiophile amps, yet sells for substantially less. Its power can drive any speaker with the accuracy, definition, fullness and fatigue-free listening that only tube amps can deliver. Offers Demeter custom design, Demeter selected tubes, hand-built construction in the USA with the best quality components and heavy-duty aluminum and steel chassis.

Mackie M2600: This 3U package delivers 2,600W (4 ohm bridged), 1300+1300W (2 ohm stereo), 850+850W at 4 ohm stereo or 500+500W (8 ohm stereo), with the ability to drive 2 ohm loads all night. Features include: 5-year warranty; 24dB Linkwitz-Riley electronic crossover with selectable crossover points; variable highpass filters; limiter; self start; superior T-design cooling; and gain controls calibrated in dB and volts.

OSC PowerLight 9.0 PFC: The most powerful audio amplifier available, this delivers 4,500 W/ch (2 ohms) from a 3U, 59-pound package. High-speed output components provide ultra-low distortion (<.02% SMPTE-IM; <.05% THD @ 2 ohms). It is the first amplifier to incorporate Power Factor Correction, a technological advance reducing AC current requirements by 40% for the highest efficiency of any linear amplifier. Other features: 4-step Class H output and line/load regulation for peak power output immunity to AC fluctuations.

C. Mic Preamplifier Technology

Aphex 1788: Eight channels of audiophile preamps with every function remote-controllable via PC, dedicated remote (1788R) or any MIDI controller. Placing the preamp as close as possible to the microphone, eliminating long mic lines and mic splitters, are proven methods of improving performance. Each channel has two separately trimmable analog outputs plus AES/EBU, TDIF and ADAT optical 24-bit digital simultaneously. The Microphone Output Limiter makes the 1788 virtually crash-proof.

Crane Song Flamingo: This 2-channel discrete Class A mic preamp operates in either a musically transparent mode or a variety of "vintage" modes. Two switches allow the selection of different sounds: the "FAT" switch increases the level of musical harmonics; while the "IRON" switch enhances low frequencies. They may be used in combination, thus providing a range of sounds from "clean" to totally "vintage." Gain is adjustable in 6dB steps to 66 dB.

Focusrite Platinum VoiceMaster: Whether spoken or sung, Platinum VoiceMaster™ provides the essential stage between microphone and recording medium for capturing every nuance of a vocal performance—amplifying, equalizing compressing, de-essing and expanding—even deliberately adding some harmonic distortion for effect. This rack-full of processing in one, easy-to-use unit has mic and line-level inputs for use with vocals, instruments and recorded tracks. Each processing stage may be switched independently.

Grace Design Lunatec: Built for field recording, the Lunatec V2 offers world-class mic preamplification in a rugged, portable package. Features include: 6-12 VDC power, gain range of 10-60dB with rotary switch controls, 10dB output trim controls, 48V phantom power, 2-position high-pass filter (switchable from 50/100 Hz to 75/125 Hz) with 6/12dB per octave slope, MS decoding and a five-year limited parts/labor warranty.

PreSonus M-80: This 8-channel mic/instrument preamp includes Jensen transformers, FET Class-A discrete input buffers and Jensen twin servo gain stage providing very high headroom (+28 dBu). Features: phase reverse, phantom power, 20dB pad, rumble filter, full output metering, Mix Bus assign with pan pot for stereo imaging, a unique IDSS control for adjusting harmonic distortion from 0.001% to 0.5% and servo balanced send and return jacks for external processing.

TC Electronic Gold Channel: This digitally controlled mic preamp/converter/tool system combines two analog mic preamps and two 24-bit A/D converters with a complete set of digital tools (digital equalizers, compressors, de-esser, Digital Radiance Generator™, MS encoder/decoder, time alignment DDL and RIAA equalizer). Outputs are AES/EBU, S/PDIF and TDS or ADAT channels simultaneously. Digital inputs allow for post processing and D/A conversion of previously recorded material.

D. Computer Software & Peripherals

BitHeadz Unity DS-1: This turns a computer into a full-featured, polyphonic, multitimbral professional sampler, re-creating sounds of acoustic instruments or any audio source with stunning realism, with all the features of dedicated hardware samplers. Extensive MIDI implementation allows real-time control of all parameters, layers, splits and full MIDI continuous control. The sampler's complete multitimbral stereo output can also be written to disk for use in other digital audio applications.

Emagic Logic Audio Platinum: Available for Windows and Mac OS, Logic Audio Platinum is a fully integrated digital audio recording and MIDI sequencing and scoring software package. It provides the entire combined feature set of the rest of the Logic Audio series and adds support for all Digidesign hardware and Soundscape's SSHDR-1. It offers a maximum of 96 audio tracks, numerous real-time DSP effects and complete DTP-quality scoring.

Glyph Trip: Proving to be a core building block for digital audio workstations, this 3-rackspace unit allows the user to choose up to six Glyph storage devices, custom- tailored to the user's specifications, with two high-output power supplies and dual fans for superior performance in difficult environmental conditions. Many studios have chosen a Trip with two hot-swappable hard drives, a backup drive and CD recorder.

RPG Diffusors Room Optimizer: The industry's first Windows 95/98 program that automatically determines optimum positions for the listener, loudspeakers and acoustical surface treatment in a rectangular room. Room Optimizer™ optimizes the speaker-boundary interference and modal coupling by combining geometrical image model and multi-dimensional optimization techniques to find the smoothest, flattest bass response. The program also optimizes the placement of mid/high-frequency absorptive and diffusive surface treatment at the specular reflection positions.

SEK'D 2496 Samplitude: This professional high-resolution audio recording, editing and mastering program for PC computers combines an award-winning 32-bit floating-point SEK'D audio engine with an intuitive—yet powerfully deep—graphic interface. Surround editing, a new MIDI engine and highly optimized code allow Samplitude 2496 to satisfy the most demanding audio, broadcast and project engineers. Harnessing the power of today's computers, Samplitude 2496 outperforms systems costing many times its price.

Sonic Foundry ACID: This loop-based music and production tool features multiple track looping and editing; real-time tempo or pitch change; automatic matching of tempo and pitch; unlimited loop tracks (based on system RAM); volume, pan and effect envelopes for each track; master or slave to SMPTE timecode; direct output to .WAV, .AIFF or .ASF; 16- and 24-bit audio support; DirectX Audio Plug-In support for multiple real-time effects; and Sound Forge/CD Architect support.

E. Microphone Technology

AKG C4000B: This mic incorporates a 1-inch dual-diaphragm condenser capsule with a gold-sputtered mylar diaphragm and an internal suspension. Electronics feature SMD technologies and a transformerless output stage for mechanical and electrical stability. Specs include: 20-20k Hz response; 137dB dynamic range; max SPL: 155dB (at 0.5% THD); and an equivalent noise level of 22 dB. Features include three selectable patterns, -10dB pad and a 12dB/octave LF filter.

Audio-Technica AT4060: Combining premium 40 Series engineering and vintage tube technology, the AT4060 Vacuum Tube Capacitor Microphone provides the coveted valve sound design without compromising the specs necessary to excel in today's diverse recording situations. The AT4060 features high max SPL capability, low self-noise, very high output, and dynamic range that far exceeds that of other tube mics. In every aspect, the AT4060 continues the tradition of excellence established by the 40 Series mics.

CAD VX2: This dual-valve condenser mic with separate tube amp and tube output circuits features dual custom-wound humbucking output transformers; CAD's Optema™ Series OS125 (1.25-inch diameter) and OS110 (1.1-inch diameter) user-installable capsules/heads with 3-micron-thick, gold-sputtered diaphragms; multi-pattern (cardioid, figure-8 and omni); detachable capsule/screen assembly for optional capsules with alternate frequency responses; 8 and 16 dB non-capacitive pad; and 80Hz highpass filter.

Neumann M147: Combining the K47 capsule (the modern version of the M7) with an ultra-modern transformerless tube circuit, the M147 mixes the best of vintage and current technology. Far from a neutral, laboratory-grade instrument, this microphone has character, and like its older cousins, the M147 brings out the best in certain sources without added equalization. With the lowest self-noise of any tube mic, it is fully compatible with today's ultra-quiet digital systems.

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Shure KSM32: Designed and built based upon years of Shure research and development, the KSM32 is a side-address, cardioid condenser mic outfitted with Class A, transformerless preamp circuitry. This virtually eliminates crossover distortion and brings improved linearity across its entire operating range. Its embossed, high-compliance, gold-layered Mylar diaphragm provides extended low-frequency response while improving environmental stability. This ultra-thin diaphragm enables it to accurately reproduce the transient response of any sound source.

Soundelux U95S: This variable-directivity studio mic utilizing vacuum tube electronics re-creates the prized sound of earlier classic mics with lower noise, greater headroom and improved stability. The capsule type is the K47-style, and the electronics feature an EF86 triode configured in a zero-feedback design. Output is through a unique large-core, wide-bandwidth transformer. Unit comes with linear power supply, shock mount and clip, cables and travel case.

F. Sound Reinforcement Loudspeaker Technology

Apogee Sound FH-4: This 3-way tri-amplified loudspeaker offers natural sound, even at high SPLs, from rock to opera and classical, and creates smooth arrays in both horizontal and vertical axes. Features: 15-inch horn-loaded LF. 10-inch cone mid on a large waveguide for outstanding pattern control, and a 2-inch throat HF. Special attention to the design of all three horns, provides ultra-rigid, highly damped construction while greatly reducing typical horn distortion characteristics.

Bag End TA6000-R: The TA6000-R combines a very compact enclosure with matched high-perfomance drivers utilizing the Time-Align® Technology, making the mic capable of higher fidelity and output than previously possible. At 27 pounds, and over 120dB SPL capability, the TA6000-R compares with systems of twice the size, cost and weight. Flying points, pole mount and multiple input connectors add all the convenient features to the system.

EAW KF400a: The KF400a Powered Virtual Array™ loudspeaker system is the first self-powered loudspeaker offered from EAW. The system optimizes performance and reliability for a wide range of portable and permanently installed sound reinforcement applications. The internal Close Coupled Power Module™ (CCPM) provides ample distortion-free amplification as well as sophisticated, transparent driver/amplifier protection circuitry and signal processing.

Meyer PSW-6 Cardioid Subwoofer: Debuting on Celine Dion's 1999 tour and at the new Raymond James Stadium in Florida, the PSW-6 is the first commercial sound reinforcement subwoofer to provide directional low-frequency control over two full octaves in a precise, cardioid-shaped coverage pattern. With over 15 dB less sound at the rear of the cabinet, the PSW-6 is a welcome solution for mid- to large-scale touring and installations.

Shure PSM 600: Available in both UHF wireless and hard-wired versions, PSM 600 systems deliver consistent, high-quality audio through proprietary E1 Earpieces, and feature body-pack functions offering performers direct control over volume, balance and Shure's exclusive MixMode™ feature. By eliminating traditional floor wedge monitors, performers using PSM 600 enjoy lower stage volumes with increased intelligibility. The reduction in onstage volume increases fidelity in the house mix while reducing the chance of feedback.

Turbosound TFM-330: This high-power biamplified stage monitor is designed for demanding pro applications. Its small footprint provides a highly efficient package that is ideal wherever high SPLs and exceptional intelligibility are required. The TFM-330 incorporates a custom 15-inch driver and a high-power 2-inch HF driver on a custom waveguide that provides essentially the same response at varying distances from the loudspeaker.

G. Studio Monitor Technology

Dynaudio/Munro M4+: The M4+ a is four-way active system using four 12-inch bass drivers, two 7-inch low-mid neodymium drivers, and specially-designed, double-magneted Dynaudio Esotar high-mid and HF units. Designed as a totally no-compromise, high-power loudspeaker system for use in the largest recording studio music monitoring applications, the M4+ is capable of providing accurate low-distortion monitoring at all power levels, maintaining exceptional quality under all drive conditions.

JBL LSR 28P: The LSR 28P Linear Spatial Reference bi-amplified monitor combines JBL's patented Differential Drive Technology with breakthroughs in psychoacoustic research. The 8-inch, two-way monitor was designed to accommodate a targeted set of response criteria for today's advanced production environments, such as multichannel production and broadcast. Three hundred watts of integrated amplification and optimized 36dB/ octavecrossovers provide optimum power and signal processing for unparalleled reference monitoring.

M&K Professional MPS-2510/5410: Designed and optimized for multichannel monitoring, the compact Miller & Kreisel Professional MPS-2510 monitor is certified by THX for pm3 applications. Used in numerous high-profile studios, five MPS-2510 systems were used during the production of Star Wars *Episode 1* at Lucasfilm's Skywalker Ranch. The reference-standard MPS-5410 amplified subwoofer is also pm3 certified. This 400-watt, dual 12-inch subwoofer combines with the 2510 for a true full-range monitoring system.

PMC IB1S: Features include: transmission-line design with 8-inch flat carbon-fiber woofer; 3-inch silk-dome midrange and 1-inch silk-dome tweeter; three pair binding-post inputs; magnetic shielding; studio stands and amplifier optional. Power handling is 500W with crossover points 380 Hz and 3.8 kHz; frequency response: 25-25k Hz; sensitivity: 89 dB; and impedance: 4 ohms.

Tannoy Reveal: This 2-way discrete system provides extremely detailed, dynamic sound with wide, flat frequency response, ideal for nearfield monitoring in project studios, mobiles, broadcast, audio post and AV applications. Reveal's soft-dome tweeter is matched with a long-throw bass unit using a hard-wired, low-loss crossover. Both drivers are magnetically shielded allowing operation close to video monitors.

Westlake Audio Lc 3w12: Comprising a 12-inch paper woofer, 6-inch midrange and 1-inch dome tweeter with a 100-watt power handling capacity and sensitivity of 91dB, the compact Lc 3w12 offers extensive electro-mechanical-acoustical dampening, integrated passive crossover for single or bi-amp operation and tremendous output. Frequency response is 40-18k Hz; impedance is 4 ohms nominal/3 ohms minimum. Inputs are dual- banana, five-way binding posts with bi-wire/ bi-amp capability.

H. Musical Instrument Technology

Akai S5000 Sampler: The Akai S5000 features DOS disk format and .WAV files as the native sample format. PC.WAV files can be loaded for instant playback from any PC-formatted HDD attached to the unit. The S5000 features up to 128 voices, 256MB of RAM and 16 analog outputs. ADAT I/O and 20-bit FX are also options. Standard features include dual MIDI, SCSI, word-clock, stereo digital I/O, PS2 ASCII keyboard input and a 6-inch graphic display.

Fender SFX Amplifiers: Fender's SFX series amps take the concept of live stereo to new levels of performance. The groundbreaking Stereo Field eXpansion Technology (patent pending) process pushes the sonic envelope to produce an actual psychoacoustic event. Stereo digital effects, combined with SFX Technology create an amplifier system capable of projecting 300 degrees of rich, layered stereo tone.

Korg Trinity V3: The Trinity V3s combine the critically acclaimed sounds of Korg's PCM-based Trinity keyboards with the power of the DSP-based Z1 synthesizer, in 61/76/88-note instruments. This enables Trinity V3 to cover a wide range of synthesis methods, including PCM, analog, digital and physical modeling.

Kurzweil AES (Audio Elite System): This 88-key, weighted-action professional keyboard includes all the standard K2500 features, V.A.S.T.® (Variable Architecture Synthesis Technology) and sampling, 128MB RAM, orchestral and contemporary expansion boards, stereo piano board, 2GB hard drive, external CD-ROM drive, two DMTi (Digital Multitrack Interface) digital patchbay/converters, K83 option, Live Mode, KDFX 8-channel DSP and huge sound library with 40 Kurzweil CD-ROMs.

Roland JP-8080: This analog modeling synthesizer module offers an advanced Analog Modeling sound engine with 10-note polyphony, powerful External Audio Synthesis unlike anything on the market today, a unique built-in Voice Modulator, and SmartMedia storage capability-all in a cool, retro-styled 6U rack-mount module with 40 knobs and sliders for easy sound shaping.

Waldorf MicroWave XT: Housed in a 5U rack-mount/desktop chassis, this spectral wavetable synthesizer provides 44 knobs for sound editing, and features: a Multi Mode with 8 individual instruments. 10 voices, 256 sounds, 64 ROM wavetables, 32 RAM wavetables (64 waves per wavetable), 500 waves, on-board apreggiator, four integrated effect units, real-time control of all parameters,one stereo input and two stereo outputs.

I. Signal Processing Technology/Hardware

Antares ATR-1: Based on Antares's proprietary Auto-Tune pitch correction technology, the ATR-1 seamlessly corrects the pitch of a vocal or solo instrument, in real time, without distortion or artifacts, while preserving all of the expressive nuance of the original performance. Features include the ability to define custom scales, variable

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speed correction, MIDI control of target pitch, a Song Mode for live performance use and balanced I/O with 56-bit internal processing.

Lexicon MPX 100: This true stereo dual-channel processor offers 24-bit internal processing, 20-bit converters and S/PDIF digital output. Powered by a new version of Lexicon's proprietary Lexichip™, the MPX 100 has 240 presets with classic, true stereo reverb programs such as Ambience, Plate, Chamber and Inverse, as well as Tremolo, Rotary, Chorus, Flange, Pitch, Detune, 5.7-second Delay and Echo. Dual-channel processing provides completely independent effects on the left and right channels.

Line 6 Pod: The direct recording tool for musicians who record guitar, this uniquely shaped, fully programmable stereo desktop unit delivers a wide range of legendary amp tones and authentically recreates the sound of miked speaker cabinets, with 16 TubeTone Amp Models, 16 pro quality digital effects and integrated cabinet/speaker/mic emulation technology.

Manley Massive Passive EQ: The Massive Passive from Manley Labs takes a fresh, yet old approach in equalization. Besides tubes, what makes this EQ different is the return of inductors and capacitors for tone shaping, along with new parameters that redefine parametric equalizers. But it is the "sound" of the unit that makes it a favorite. Phrases like "stunning clarity" and "modern classic" are consistantly applied to describe the Massive Passive.

Millennia Media NSEQ-2: Millennia's NSEQ-2 offers both pure Class-A vacuum tube signal path or pure Class-A all-discrete FET signal path, selectable at the touch of a button. Sporting an elegant platinum-bronze finish, large hand machined aluminum knobs, 3/8-inch thick radiused front panel, and illuminated push button switching, the NSEQ-2 sets industry precedents in both sonic and cosmetic artistry.

TC Electronic M3000: The M3000 is the first reverb product to incorporate TC's VSS-3™ (Virtual Space Simulation) technology. The goal was to create realistic room simulations by combining the directivity and tone of a space's early reflections with a harmonically smooth reverb "tail". Advanced "ray tracing" techniques were used to build models of numerous spaces, ranging in size from phone booths to stadiums. The M3000 features two independent "engines" and TC's DARC™ early reflection processor chip.

J. Signal Processing Technology/ Software

Aphex Big Bottom Pro: Everyone wants more low-end, but traditional EQ, "contour" controls and subsonic synthesizers can cause amps and speakers to overload. Multiband compressors can reduce bass articulation. The Aphex Big Bottom Pro TDM plug-in provides deeper, fuller bass without any muddiness and without increasing peak output. It is based on the analog circuit in the Aphex Model 104, but with additional controls over corner frequency, phase and auto tracking.

Line 6 Amp Farm: This guitar recording plug-in for PCI-based TDM uses Line 6's revolutionary new patent-pending physical modeling technology called TubeTone to bring the warmth and feel of classic tube guitar amplifiers to Pro Tools TDM systems. Process a direct guitar signal as you record, or process prerecorded tracks and tweak your amp sound right up to the final mix with full automation of all controls.

Power Technology DSP-FX Virtual Pack: The first Direct-X plug-in bundle to combine professional quality with low CPU usage (allowing multiple simultaneous real-time effects on most PCs), the DSP-FX Virtual Pack's 11 effects include StudioVerb and AcousticVerb reverbs, Optimizer look-ahead peak limiter, Aural Activator spectral enhancement tool, multi-element chorus, pitch-shifter, analog style flanger, 20-band paragraphic EQ, multi-element delay, auto-panner and tremolo.

Steinberg Declicker 2: This real-time click/pop suppressing plug-in is the ideal tool for restoring audio from old recordings or for removing digital distortion and clicks from hard disk recordings. Settings for different types of recordings include declick, depop and quality-quantity reduction. It is designed to interpolate drop outs, clicks and short scratches up to 60 samples long. It uses adaptive processing, has floating point accuracy and processes up to 24-bit audio files.

TC Works Master X: This Pro Tools TDM version of the industry standard Finalizer™ technology features multi-band expansion, compression and limiting, all optimized for mastering applications. Other features include high resolution metering, clip counter, adjustable crossover points, uncorrelated dithering and look-ahead delay for zero overshoot. MasterX supports all PCI, 24 and 24IMix systems. Two instances can be run on a single 24IMix DSP, testimony to the highly efficient use of system resources.

Waves Renaissance Compressor: Waves Renaissance Compresor has married vintage analog techniques with the extraordinary flexibility of digital. Available on more than 30 Mac and PC platforms, users range from Skywalker to Nine Inch Nails. Waves ARC auto-release technology, with both Opto-emulation and distinctive Electro Compression modes, is at the heart of the engine. The deceptively simple and classic 5-control interface lets users create what they need using this extraordinarily versatile wide-band compressor.

K. Recording Devices/Storage Technology

Alesis M20: This pro-quality 20-bit 8-track MDM records in the new ADAT Type II or original ADAT format on standard S-VHS tape and is designed for commercial recording, high-end video and film/post studios. With its servo direct-drive transport, the M20 is engineered for demanding applications and includes built-in SMPTE/EBU timecode, a jog/shuttle wheel, an analog aux track, an optional remote, optional meter bridge and more.

ATR Service Co. Large Format ATR-102: Redesigned and rebuilt to accommodate the emerging 1-inch, 2-track analog format, the Large Format ATR-102 lowers the noise floor by 3dB/channel (compared to a half-inch version). This allows recording at lower levels to increase tape headroom for more "punch" without sacrificing musical detail. And noise reduction is not required at 15 ips, so there is no risk of losing subtle musical nuances in the encode/decode process.

Euphonix R-1: A digital replacement to linear tape-based multitrack machines, this multitrack recorder features MADI, AES/EBU or analog I/O, .24-bit clarity and random access flexibility. Its Reel-Feeling and provides cut/copy/paste/editing capability. An available SL-156 interface allows direct transport control and track arming from SSL G-Series consoles. The R-1 combines superior sound quality and solid reliability with track count expandability.

Otari RADAR II: Designed for recording music or handling video post-production RADAR II represents the ultimate in random-access hard-drive recording. One RE-8 II System Controller provides easy access to system functions for up to two RADAR units. The combination of simultaneous recording on all 24 tracks in true 24-bit audio, editing and multiple sync capabilities, provides an extremely powerful multitrack recorder at an affordable price.

Quantegy GP9 Grand Master Platinum: The first new pro analog mastering tape introduction in more than five years, GP9 draws on Quantegy's 40 years of analog tape manufacturing experience to offer the most durable and sonically superior analog tape ever produced. GP9 features extended high- and low-frequency response, higher oxide to binder ratio and optimal flexibility to ensure top performance. GP9's metal reel features thicker flanges and is colored red for easy identification.

Tascam DA-45HR: The world's first 24-bit high-resolution DAT recorder, this 3-rackspace unit has both XLR balanced and RCA unbalanced analog and AES/EBU and S/PDIF digital I/O connections. Word Sync In and Thru facilitate integration into larger digital environments. With pristine audio quality, a wealth of features and the ability to integrate into any audio production environment, the DA-45HR is unique in the audio world.

L. Workstation Technology

AMS AudioFile 98: Combining the familiar AudioFile control layout with the latest 24-bit processing, AudioFile 98 provides new levels of editorial performance. Removable hard drives are standard, speeding studio turnaround and project transfer. New hardware and options include MADI support and AMS Neve's multi-machine control system. AudioFile 98's version 2.50 software includes: Digital Varispeed Record effects creation tool; 64 levels of Undo and Redo; and an intelligent archiving system for automated retrieval of project elements.

Digidesign Pro ToolsI24 MIX: The advanced 24-bit audio production and digital mixing system for Macintosh and Windows NT platforms, Pro ToolsI24 MIX integrates pro recording and editing functions with world-class automated mixing, real-time DSP processing and mastering functionality. The system can process up to 64 simultaneous audio tracks in a TDM-based mixing environment and supports ProControl with DigiFaders for traditional console operations and tactile settings.

Event Layla: A digital audio interface for PC and Macintosh computers, Layla™ features a PCI bus card and rackmount audio interface with eight balanced 20-bit (128xover sampling) analog inputs, ten balanced 20-bit (128x oversampling) analog outs, S/PDIF stereo digital I/O, word clock/superclock, MIOI In/Out/Thru; and 24-bit resolution throughout the internal audio path. Operates with all ASIO-based and .WAV device driver compatible applications. Includes PC multitrack recording and editing software.

World Radio History

FOUR NEW PIECES OF SOUND ADVICE

PROTEA SERIES DIGITAL EQUALIZERS

GQX SERIES GRAPHIC EQUALIZERS

MQX SERIES MINI GRAPHIC EQUALIZERS

PQX SERIES PARAMETRIC EQUALIZERS

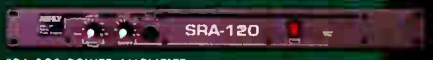
XR SERIES ACTIVE CROSSOVERS

VC SERIES REMOTE CONTROLLERS

MX SERIES MIC MIXERS

LX SERIES LINE MIXERS

CLX SERIES COMPRESSOR/LIMITERS



SRA 120 POWER AMPLIFIER

FTX SERIES POWER AMPLIFIERS

MRA SERIES POWER AMPLIFIERS

Renowned the world over for our unparalleled standards of sound quality and construction, Ashly provides the solutions audio professionals demand. Whether you are a contractor or an engineer working in a broadcast facility or a place of worship, in the studio or on stage, Ashly has the equipment to make you more effective. Take our new Protēa line, for example—it offers fully digital 24-bit processing with remarkably intuitive analog control. We've recently added to the Protēa line with a pair of parametric EQ's: the 2.24PS and the 4.24PS, both of which are easily controlled by our new Protēa System Software (which runs on a PC). Plus, we've added the MX-406 Six-channel Mic/Line Mixer. It's perfect for providing integrated mixing for applications which require balanced ins and outs. Finally, our new VCM-88 Eight-channel VCA Matrixing Level Controller interfaces with just about any other system you might be using, providing greater flexibility than ever before. Give us a call—or stop in at your local Ashly dealer—to see how we can optimize the sound and operation of your setup. After all, who couldn't use a little sound advice?

PROTEA PARAMETRIC EQUALIZERS NEW!

Both the 2-channel 2.24PS and the 4-channel 4.24PS can be controlled by your PC with Ashly's Protēa System Software. Both give you 24-bit AD/DA and 24-bit processing, as well as 12 bands of fully adjustable parametric EQ. Additionally, each has high- and low-shelf and high- and low-pass filters, compressor/limiter and time delay, all with full MIDI compatibility.

MX-406 SIX-CHANNEL MIC/LINE MIXER NEW!

Six balanced XLR or 1/4" inputs, stereo output, Mic/Line level switch, low-noise mic preamp circuitry, 2-band EQ per channel, aux input-send-return, six channel inserts, three-position input gain switch, six-step LED metering, 48-Volt phantom power, and headphone output.

VCM-88 EIGHT-CHANNEL VCA MATRIXING LEVEL CONTROLLER NEW!

Eight channels of remote level control, RS-232 interface connector, MIDI In and Thru, PC control using Protēa System Software, internal channel patching for flexible signal routing and matrixing, internal selection of Crestron, AMX, MIDI, or RS-232 protocol, internal channel pass-though for cascading multiple units in parallel, signal-present LED's on each channel, RD-8/RW-8 compatible.

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CIRCLE #085 ON PRODUCT INFO CARD

World Radio History

Voter's Guide 1999 TEC AWARDS

Lexicon Studio: This line of professional hard disk recording hardware components interface with your favorite software to provide professional recording results. Supporting both the PC and Mac platforms, Lexicon Studio is capable of up to 32 voices from a variety of I/O options. Lexicon Studio provides recording, editing, mixing and DSP effects for a complete and professional workstation solution.

Mark of the Unicorn Audio 2408: The latest breakthrough in computer-based hard disk recording, offering 24 simultaneous channels of I/O in an economical 1-rackspace interface for under $1,000, the 2408 includes 24 channels of ADAT optical, 24 channels of Tascam TDIF, eight channels of analog, stereo S/PDIF, expansion to 72 channels, 24-bit recording, sample-accurate sync, AudioDesk™ sample-accurate workstation software and compatibility with all major audio software packages for Mac and Windows.

SADiE 24.96: The SADiE 24.96 digital audio workstation is designed for applications such as music editing, film/TV post-production, telecine transfer, speech editing and multi-media. The system is capable of 192kHz editing and mixing, full surround-sound panning and can be configured to provide up to 32 inputs and outputs. Standard features include RS-422 machine control, time compression/ expansion, PQ editing, AutoConform, built-in timecode support and eight channels of I/O.

M. Sound Reinforcement Console Technology

Allen & Heath Icon: Icon offers an incredibly powerful digital mixer with user-friendly automation, plus a rack's worth of built-in compressors, gates, effects, graphic EQs and even a 600W/channel power amp in the DP1000 model. All functions are accessed at the push of a button, making the Icon simpler to use than a regular mixer amp.

Amek Recall RN: This new incarnation of the successful Recall live performance desk features new input modules with a Rupert Neve-designed mic amp and EQ section. Also, Amek's celebrated studio automation package, Supertrue, can now be ordered in addition to Showtime, the console's existing live automation system. As a result, Recall RN is equally at home in live mixing/recording or studio tracking environments.

ATI Paragon Monitor: This 64-input automation-capable monitor mixing console is capable of up to 20 stereo monitor mixes, ideal for in-ear and/or wedge monitor mixing. Inputs feature ATI's award-winning high-voltage mic preamps, 4-band parametric EQ, patented ATI compressor and a parametric noise gate. The P2 has multiple solo buses, insert points and extensive metering facilities. The standard frame has 48 input spaces and eight stereo line returns with EQ.

Crest Audio V12: Designed for demanding concert and theater applications, the V12 comes in four frame sizes, allowing ideal configuration and reconfigurations as needed. A few mode switches can transform the board into a full-featured monitor console capable of generating up to 28 mixes. Other features include a direct-coupled low phase-shift design, reconfigurable output topography, a 12-channel VCA system, extensive EQ and both mono and stereo matrix systems.

Harrison Live Performance Console (LPC): This groundbreaking new console provides a comprehensive solution for theater and fixed venue sound reinforcement applications. Harrison has applied its automation technology—initially developed for the film and post-production markets—to a sound reinforcement console specified by Showco. The LPC fulfills the true definition of Instant Recall in a live console with every setting recallable at the touch of a button.

Soundcraft Broadway: Offering complete audio reset capability, Broadway's analog audio racks are remote from the control surface elements, with control data between the units carried over Ethernet. Assignable control surfaces allow fast access to any size audio frame, with Assignable Channel Strip providing direct access to all channel functions. Broadway's up to 120 inputs and 32 group/aux buses offer large-frame capability, yet let users decide how large or small a surface to employ.

N. Small Format Console Technology

Allen & Heath GS-3000: This 8-bus, in-line analog desk for commercial/project recording studios and sound reinforcement use is available in 24/32-input frame sizes. Features include twin-fader, dual-path inputs, two patchable tube preamps, 100mm "A" path faders on all mic/line inputs, 60mm "B" path faders, 16 dual stereo inputs, 4-band British EQ with two sweepable mids and six auxes.

Digidesign ProControl: This world-class integrated control surface for ProTools 24, Pro Tools 24 Mix, and Pro Tools 24 Mix Plus systems provides high-quality, hands-on control of the Pro Tools TDM mixing, editing and DSP processing environment with a comprehensive monitoring section. ProControl's flexible modular design, expandable in 8-channel packs to 32 channels, along with its 100mm touch-sensitive moving DigiFaders, total recall and automation make it ideal for pro music and post-production applications.

Mackie Digital 8 Bus: This 56-input, 72-channel, fully automated digital mixer features 24-bit ADCs/DACs, Apogee UV-22 Super CD Encoding, 32-bit internal signal processing with dynamic and snapshot automation of volume, pan, mute and effect parameters, 25 smooth 100mm motorized faders, 12 aux sends per channel, built-in meter bridge and connections for optional SVGA monitor, Ethernet, QWERTY keyboard and mouse, tape transport controls and jog/shuttle wheel.

Panasonic WR-DA7: This compact digital console features 32 inputs with 8 buses (with moving faders), 24-bit A/D and D/A converters, expansion cards for ADAT/TDIF/AES-EBU/SPDIF interfacing, MIDI Machine Control (MMC), 4-band parametric EQs and dynamics on every channel, 50-scene memory, 5.1 surround sound mixing and a combination of 32 analog and digital inputs plus six aux return inputs for a total of 38 inputs.

Spirit Digital 328: Designed to operate like an analog 8-bus console with immediate access to all parameters on dedicated front-panel controls, Digital 328 features 16 mic/line and five stereo inputs with a total of 42 inputs at mixdown, 16 digital tape returns on both Alesis ADAT optical and Tascam TDIF formats, 3-band fully parametric EQ, four auxes, two Lexicon effects processors, two dynamics processors and 100mm moving faders, along with snapshot and dynamic automation capability.

Yamaha 01V: Yamaha's newest digital mixer entry, the 01V provides budget-conscious users with an extensive feature set, well suited to both professional recording and live sound reinforcement applications. Its 24 inputs, six buses, six aux sends, direct outs, internal dynamics and EQ, dual 32-bit effects processors, motorized faders, snapshot memory, I/O modularity and linking capability all contribute to the 01V's "high-value" profile.

O. Large Format Console Technology

Amek 9098i: Designed by Mr. Rupert Neve, the 9098i has one of the most extensive and comprehensive feature sets ever presented. Intended for audio multitrack recording/mixing of the very highest quality, in stereo, LCRS, LCRSS or 5.1 surround modes, the 9098i is available in standard frame sizes from 48 to 120 mono in-line channels (rising in increments of 8 channels) although its flexible, modular chassis system enables almost any configuration to be built.

AMS Neve Libra Post: Harnessing the power and functionality of the company's flagship Digital Film Console (DFC) for the wider world of video post-production, the single-operator Libra Post is available in frame sizes of 12, 24, 36 or 48 faders, providing control of up to 96 fully featured channels of digital audio. Format flexibility, from mono or stereo up to 8-channel surround, is provided, while a dedicated monitor panel provides inserts for surround matrix/processing.

D&R Octagon: This digitally controlled analog multiformat production console designed for film/post and surround mixing combines the advantages of an analog audio path with fast repeatable digital control in 7.1, 5.1 and all surround formats.

Solid State Logic Axiom-MT: The Axiom-MT combines SSL's digital expertise with a control surface that's instantly familiar to anyone who's used one of the world's 1,500 SSL multitrack consoles. Axiom-MT has 48 multitrack buses, 12 main mix buses, 12 aux buses and more than 200 mix returns and up to 96 fully-featured channels providing all the traditional SSL in-line facilities, with every control dynamically automated, including surround panning on both large and small faders.

Ballots must be postmarked no later than Tuesday, August 31, 1999

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Project studios running Pro Tools 24... should strongly consider buying an AD-8000... Highly recommended!
—Mike Collins, Sound On Sound

"The AD-8000 is a very flexible box...a natural companion to MDMs and DAWs. This one is going to turn some heads."
—Frank Wells, Audio Media

"...a complete digital toolkit which could quickly find itself the hub of a digital systems for high-quality recording, flexible dubbing and multiformat transfers" **—Dave Foister, Studio Sound**

...We just call it "The heart of digital audio."

CIRCLE #086 ON PRODUCT INFO CARD

SINCE ITS INTRODUCTION, the AD-8000 has rapidly become an industry standard for high-quality A/D and D/A conversion. Owners and reviewers alike agree: the Apogee AD-8000 delivers a uniquely flexible, versatile conversion solution for any facility. And it's an Apogee — it sounds great! Quite simply, it's the heart of digital audio.

"I stopped a mix [on Prince of Egypt] to use the AD-8000 because it sounds so much better," **—Alan Meyerson, engineer with Hans Zimmer.**

"If you're doing any recording whatsoever on to digital, the AD-8000 is a prerequisite," **—Simon Franglen, music producer on the movie Titanic.**

"Nothing else I've used sounds so much like analog... I've never heard a digital system like it." **—Don Was, producer, Bonnie Raitt, Rolling Stones etc.**

"It's the sound of the AD-8000 we like most of all: we're using it on all our projects!" **—Marty Frasu & David Newman, Oscar-nominated for the music to *Anastasia*.**

"The AD-8000 is a massive improvement: it makes Pro Tools sound like a 2-inch tape machine!" **—Juan Patiño, producer with Lisa Loeb.**

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BY TOM KENNY

POST·SCRIPT

SOUND FOR FILM

AN OPEN LETTER TO PRODUCTION MIXERS

PART 1

by Larry Blake

This is not so much a column as it is an olive branch. That is, I think that there has been plenty of talk back and forth between production and post-production sound people, much of it idle, misinformed criticism and finger-pointing. These two columns (part two appears next month) will be an attempt to open up lines of communication between the two camps. I will attempt to relate the reality of what happens on the set to the needs of those of us who follow the production mix.

Let's start off by saying outright that you production sound crews get nowhere near the amount of latitude you need to do a top-notch job. As always, I place the majority of the blame on the director, who is either willing to live with the downside (large amounts of looping), or is unable to hear the difference, both technically and creatively. If the director really wants to get the track on location, we know that it can be had either by careful planning or, worst-case, in the form of wild lines with cameras and noise-producing machines turned off. Good production sound has tremendous production value, no doubt about that.

I feel compelled to put right on the table an issue that always comes up in discussions with production sound mixers. "People in post don't realize what we go through on the set to get a track out there in the real world." If you are getting complaints from post people saying "Why didn't they take care of that generator?" or "Why did they use radio mics?" (when you had to deal with two cameras, one real wide and the other real tight), or "There was no room tone for this scene," or...then I would say that your real-world macho words have some validity.

But no sound editor or re-recording mixer that *I* know of would make comments like that. Most are very aware of the situations that you have to deal with, and if pretending that post lives in an ivory tower is what gets you through the night, then be my guest. Our complaints involve not the horrible situations that you are thrown into, but instead concern your assumptions and your reactions to those situations based on what you *think* will work later on—in transfer, in dailies, by picture editorial, by sound editorial and by the dialog re-recording mixer. Knowledge of the specific problems you had to deal with on a given film is unimportant, because I assume that *every* film has bizarre production sound problems that are not the fault of the production mixer.

But certain reactions to horrible on-set conditions do not help the final product. A common mistake is equalization. Almost five years ago, in a vain attempt at retiring some of my more frequent complaints, I wrote about how much the issue of EQ on production bothers me. I said it very cogently then, so I won't try to reinvent the wheel:

"The idea that putting EQ on production tracks can 'save the dailies' is such a load of crap. If the recording was good in the first place, then EQ will only make that recording sound worse. Or, stated another way, if you feel you need to add extensive EQ (other than a steep highpass around 80 Hz for rumble or a mid boost to help a radio mic poke through clothing), then the chances are something else is fundamentally wrong, most likely the mic being in the wrong place. In these cases, EQ will *still* only make things worse. I don't even need to get into the idea that headsets are not suitable B chains with which to make EQ decisions. Plus the fact that you're not hearing everything cut together.

—CONTINUED ON PAGE 138

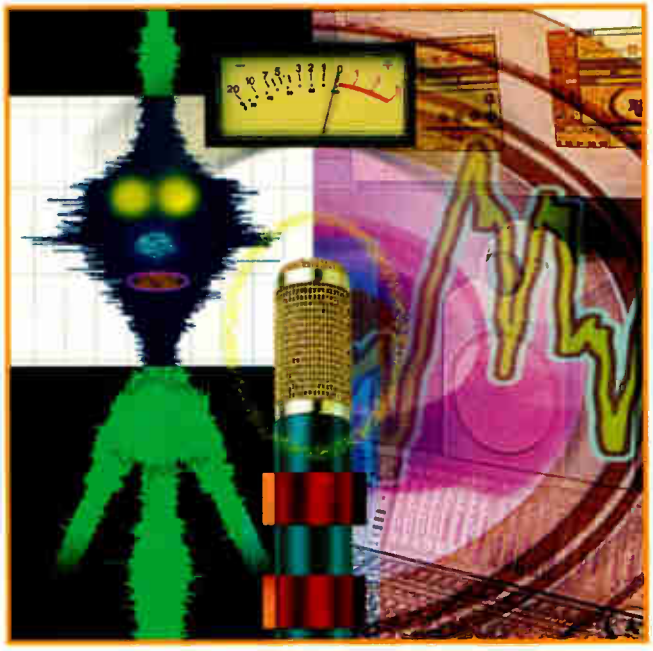

ILLUSTRATION: TIM GLEASON

World Radio History

WHAT'S NEW IN SOUND EFFECTS LIBRARIES

by David John Farinella

As the information superhighway fulfills its promise of speeding sound effects to us at a moment's notice, it's sometimes hard to believe that there was a time when sound effects discs took weeks to arrive. And when they did arrive, occasionally they were of shoddy quality and would sometimes take hours to sort through, catalog and make functional. Those days have passed, and now companies are looking for better and easier ways to make their libraries accessible to a greater number of end-users, all the while making sure that their files are at higher resolution and ready to pop in a production.

That said, the latest craze of downloadable single files or entire libraries has been hampered by a bevy of issues. Not only is the Internet's increasingly narrow bottleneck a concern, but so are any number of software compatibility problems and the high cost of putting those files on the Web. Right now, it seems most companies allow for auditioning sounds on the Web, and a quick perusal of home pages allows for more specific searches, but it may be a year or two before downloading a particular door slam for insertion into the Toyota spot is a matter of course. With those factors in mind, as well as the need to have the files within reach, the overwhelming feeling is that the compact disc method of distribution will not disappear any time soon.

The Internet has, however, allowed post houses, such as Sound Dogs, and individuals like Frank Serafine to offer their own libraries online. In fact, one quick search for sound effects on excite.com yielded over a million links to some of the more established companies as well as to some of the more obscure ones.

One thing is for sure. As the number of general sound effects catalogs have grown over the years, demand seems to be decreasing. So, companies like Sound Ideas are turning more and more to specialized discs. As Sound Ideas president Brian Nimmons explains, "I think what is happening is that there are a lot of general libraries out there, and we don't need another general library. However, more specialized libraries are coming to the marketplace, like our 'Open and Close' series, which was a very narrow focus on door openings and closings, and different performances of everything. We're finding ourselves looking at more niche categories of sounds and going out and recording them."

Here are some more of

—CONTINUED ON PAGE 136

SOUNDS IN SPACE, SPACE FOR SOUNDS

DIALOG MEETS MATH AT M.I.T.

by Eric Rudolph

One of the beauties of the academic world is that research in one area often has cross-disciplinary benefits in another. Mechanical engineering breakthroughs might end up benefiting NASA, genetic research can end up being a boon to farmers. Now, sound-for-picture pros may soon reap exciting benefits from research being done into making impractical locations easily viable for filmmakers, thanks to some bold work by the folks at the Massachusetts Institute of Technology's Media Lab and others on the digital frontier.

"Integration of Observations" is the term used at M.I.T. to describe merging a group of still-photographic views of a scene into a three-dimensional digital model of the actual scene, allowing complete freedom of digital manipulation for picture and sound.

Imagine a background matte in which the plate could be viewed from any angle or perspective imaginable and into which the camera could enter and perform moves such as a 360-degree spin. This technique could eventually allow films to be set in locations that are impractical, too dangerous or too small to accommodate a film crew.

Dr. V. Michael Bove Jr., principal research scientist and head of the object-based imaging group at the M.I.T. Media Lab in Cambridge, Mass., along with his students, made a 3-D model of a house from still photographs and integrated actors into the scenes in NTSC

—CONTINUED ON PAGE 144

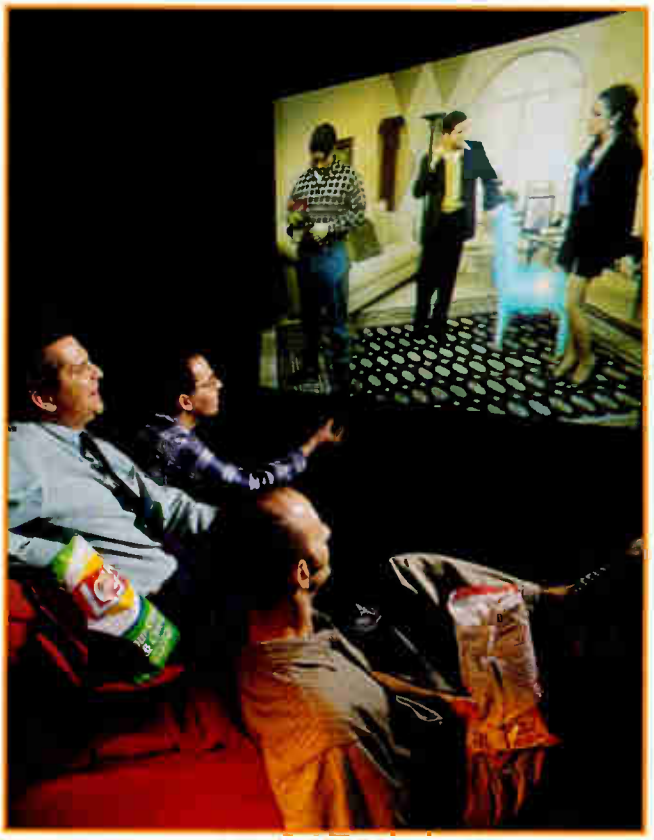

PHOTO: WEBB CHAPPELL

V. Michael Bove Jr. (left) and Stefan Agamanolis (right) view Hypersoap, as Jon Dakss uses the laser pointer to "video shop."

World Radio History

—FROM PAGE 135, SOUND EFFECTS LIBRARIES
the latest sound effects releases, and where to find them.

CREATIVE SUPPORT SERVICES
www.cssmusic.com; 800/468-6874
Ten years ago Creative Support Services released its first sound effects package with the idea of becoming the most useful library available, rather than the biggest. The company now has seven CDs of 800 effects available. Last January CSS released E-EFXIV and there's another pair of releases ready to go, though there's no firm release date yet. All of these sound effects are downloadable in CD-quality on a discrete-cut basis from the site.

DE WOLFE MUSIC LIBRARY
www.dewolfemusic.com; 800/221-6713 (In NY: 212/382-0220)
Don't let the "music" in the name fool you: With 1,500 effects files spread over 20 CDs, the De Wolfe collection is a convenient library for end-users. Discs called Horror and Construction were released in 1998, and there are no current plans for another release. There is no audio available on the Web site.

EAST-WEST COMMUNICATIONS INC.
www.soundsonline.com; 800/833-8339
After years of selling a number of other companies' collections, East-West decided to jump into the waters with both feet and release its own. The company's

offerings include Foley SFX, a ten-CD set, and Academy Series SFX, a 30-CD collection. With the combination of its original sound design discs and the number of collections for distribution, East-West's Web site features 10,000 downloadable sound effects.

FRESH PRODUCE
www.freshmusic.com; 800/545-0688
Started seven years ago as Fresh Music Library (now up to 57 discs), the company developed the Fresh Produce

Sound Library last year. More than just a pure sound effects library, the nine-disc Fresh Produce series combines effects and production elements. The company's latest disc is a vocal disc with all the letters of the alphabet and call numbers in multiple versions, in multiple pitches, in short and long versions. Though sounds and music can be auditioned, buyers cannot yet download sounds from the site.

THE HOLLYWOOD EDGE
www.hollywoodedge.com; 800/292-3755
Along with its already impressive list of catalogs, The Hollywood Edge will be releasing a number of new selections this fall, including The Hollywood Edge Foley Series (a five-CD set of doors, weapons, horses, fights, impacts), Premier Edition 3 (a ten-CD set of general categories), Explosions (two-CD set) and a Sci Fi SFX set. Perhaps the biggest addition, though, is the new Apocalypse Now set (reviewed in *Mix*, June 1999), which is spread over five CDs and features aircrafts, vehicles, weaponry (including napalm) and backgrounds. The Apocalypse Now collection was created in conjunction with Francis Ford Coppola's American Zoetrope company. Though the company has designs on making its Web site audio-able, there is no firm timetable.

JONATHAN HELFAND MUSIC & POST
www.jhmp.com; 212/647-9500
The Designer Sound® Library was developed by Jonathan Helfand and Clive Smith as a tool kit for sound design. The three-CD collection includes two discs of music-based sound effects created by Smith, and one CD of noise-based files from Helfand. A second CD of Helfand's

noise files is in development and will include files that Helfand says he can't find anywhere else. The CDs are currently distributed by The Hollywood Edge, and Helfand is looking into setting up download capabilities on the site.

OMNI MUSIC
www.omnimusic.com; 800/828-6664
Known mostly for its music library, Omnimusic has a 15-CD sound effects library that also features pre-produced environments. The company's three latest editions—Crime, Sci Fi and Natural Disasters/Environments—include both effects files and environments. Two of Omnimusic's music discs, the Zap series and Logo Magic, also have sound effects applications. The company is in the process of adding its effects files to the Web for both audition and download.

SOUND IDEAS
www.sound-ideas.com; 800/387-3030
As the largest sound effects supplier, Sound Ideas is looking for new ways to expand its reach. With that in mind, the company will be releasing a 14-CD ambience collection at the AES convention

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www.dolby.com/pro

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in New York this year. The 300-plus tracks will feature background ambiences from every continent on the globe, including North America, South America, all across Europe, Africa, the rain forests of the Amazon and Red Square in Russia. Sound Ideas currently has a co-venture with Sound Dogs in Los Angeles, where individual sound effects are available for download, or libraries can be purchased and delivered the old-fashioned way.

SOUND WORKS

www.soundworks.com; 800/HOT-SOUND

This fall Sound Works will enter the sound effects business by introducing the High PerformaX HPX Sound Effects Library. The library is geared toward high-end post-production clients working on motion pictures, games, interactive content and broadcast media. The initial release will include ten to 15 discs of files the company has been accumulating for its own projects. Each disc will come with detailed documentation, and the files will be offered in .WAV and SDII formats for use on both Macs and PCs. Hand in hand with the release, Sound Works is building its online capability so customers will be able to audition, and eventually purchase, individual sounds.

VIDEO HELPER

www.videohelper.com; 212/633-7009

After spending four years producing music libraries, the folks at Video Helper decided to take the sound effects they were recording and release them to the public. The initial disc had about 350 sound design elements that had been recorded and then run through various effects processors. Two years ago, they released Noise Generator, a set of four discs with almost 2,000 elements. The sounds were recorded organically and then twisted to make them edgier. The company's Internet site offers demos of the Noise Generator tracks and the complete music library.■

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

—FROM PAGE 134, AN OPEN LETTER

LEAVE IT ALONE!"

EQ on production is so dangerous and wrong-headed. These judgments are best left for the relative calm of post-production, where we can tweak the frequencies, making sure that there is no harm being done to the voice. Why risk screwing with the sonority of the track while playing some sort of futile, ephemeral game of being a hero in dailies?

There is no way you can really know *what* should be EQ'd, and how, until you hear everything in context. That is, with cut dialog (split and filled and massaged by dialog editors), sound effects and music playing. Sometimes we only need to worry about noise during one part of a scene, and there is no way anyone can predict this.

Mind you, I'm not saying that you production mixers aren't capable of doing this. I'm saying that *no one*, not me, you or the man in the moon should be doing this type of malarkey in production. Nothing is more important than microphone position, and following from that, once you give it your best shot on production in that regard, you're a hero in my post-production book. If there is HMI whine or ballast noise, we'll hear it and take care of it in due time.

I strive in post-production to keep the cleanest possible chain. I use Massenburg or Focusrite EQ in the dialog premix and very light compression in the final mix only. I put in a Dolby Cat 43 or 430 maybe once every second FILM, and rarely use gating or any other noise-reduction device. With great microphone position (regardless of what noises are present on the set) and smooth dialog editing (crucial!), it can sound wonderful and rich and pure.

Before I go any further, let me make one point clear: I am, if anything, *more* pissed off at my fellow post-production dialog re-recording mixers for trying to justify *their* jobs by tweaking knobs needlessly. It just destroys me that so many of them have everything but Krups coffee makers in their precious "dialog chains": de-essers, limiters, gates, notch filters, graphic EQ, Cat 43/430, and compressors inserted everywhere you look! Give me strength! I agree with you that post-production mixers can really screw your hard-earned tracks; however, two wrongs don't make a right, and processing your tracks before their time is ultimately harmful. (I say "processing" because I mean to include not only overall EQ, but also, God forbid, gating and notch filtering. Sometimes the processing involves messing with phase—as in different phase on a boom and a radio that both have a clear shot at an actor—in an attempt to

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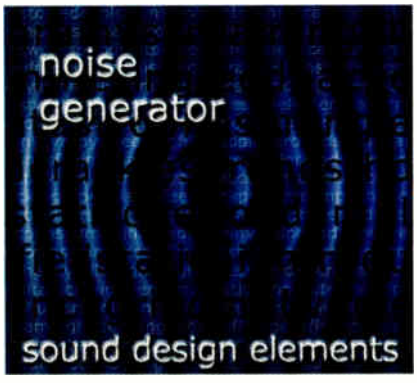

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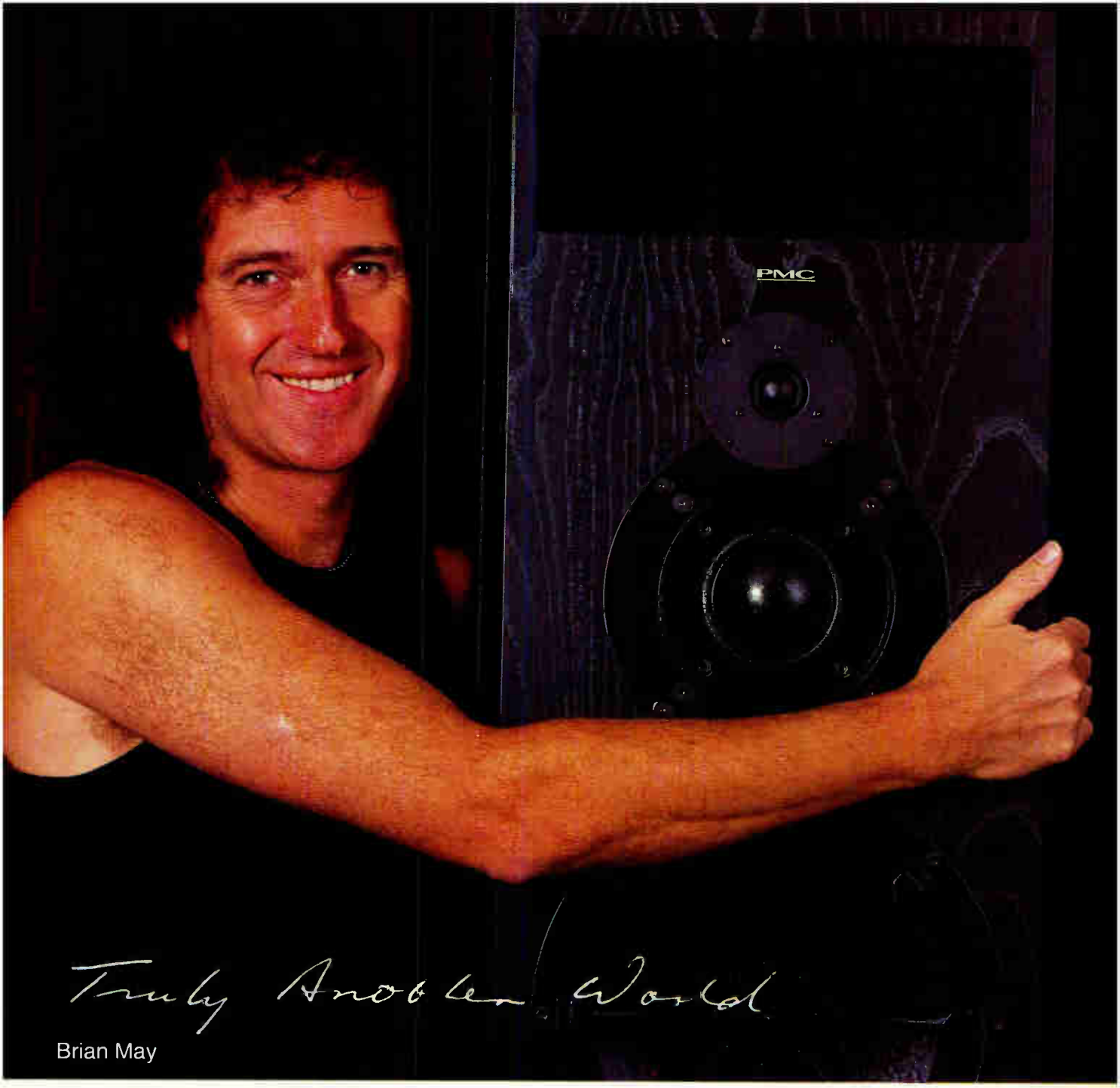

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reduce background noise. Please, let's not go there.)

The other "big" issue is splitting tracks. This is much more complex and subjective than EQ in my book, because it has so many facets. The problem occurs with extreme reactions in either direction: either recording only one track all of the time or spreading everything, even simple scenes, to hell and breakfast across four or eight tracks. First, let's talk about the dangers of the single-track approach.

Something that I have recently become aware of is the problem that production mixers have with the handling of their material by picture editing assistants. In the past, this was not really an issue because all transfers were made by an experienced person in a machine room who read your logs (most of the time). And if they didn't, when it came time for sound editing, the sound editors knew that they were going to reprint everything again. Therefore, if the production mixer had carefully separated a scene across two tracks, the post sound people would be certain to take advantage of this.

In today's situation, the production mixer might hand in a DAT that will be transferred by an assistant in the picture editing department, under an edict from the picture editor to reduce everything to a single track. Thus, material that was supposed to be evaluated separately—and was duly noted in red ink on the sound logs—now sounds phasey.

This situation has resulted in a defensive approach by many of you production mixers in which you hand in single-track material almost exclusively, even if you're recording on a stereo Nagra or DAT. "I want it to be *my* mix in the film; I don't want to give these guys in post a chance to screw me over." I've heard it over and over. Let's take a look at the implications that the "my mix" approach to production recording has on the final product.

First, and not to belabor the obvious, this almost always means that there is a lot of *mixing* going on here, as in fader moves and equalization. Yes, such a track might play okay in dailies, but when they get to sound editing and the dialog premix, problems will rear their ugly heads. A lot of fader moves on location *de facto* means that the track will be less consistent and smooth, and the all-important "fill" within a take cannot be found.

As was the case in my earlier argument against equalization, you are making decisions without perspective. You don't know how the scene will play (except as a single, uncut shot in dailies), and you are doing irreparable harm to the final product by removing our options. (By the way, I don't mean to let the picture department off scot-free. I'm going to deal with the picture department issue in detail next month.) I'm doing a lot of criticizing here, but what am I proposing?

If you can get everything in one track, as in one boom or crossing between two booms (i.e., not simultaneous), or between a boom and a plant, or with one boom, but using a plant to grab a line or two...then put it on one track and it will be easiest for us to deal with.

But there are so many instances where splitting tracks across two is really helpful and desired by those of us in post. Ironically, one of the big benefits is when there is much background noise, and by recording two sides of the scenes (two booms, boom and a radio, two radios, etc.) full up, without fading in and out, it gives us that much more to play with in post because of our never-ending search for fill and room tone—all the more necessary when combating noise.

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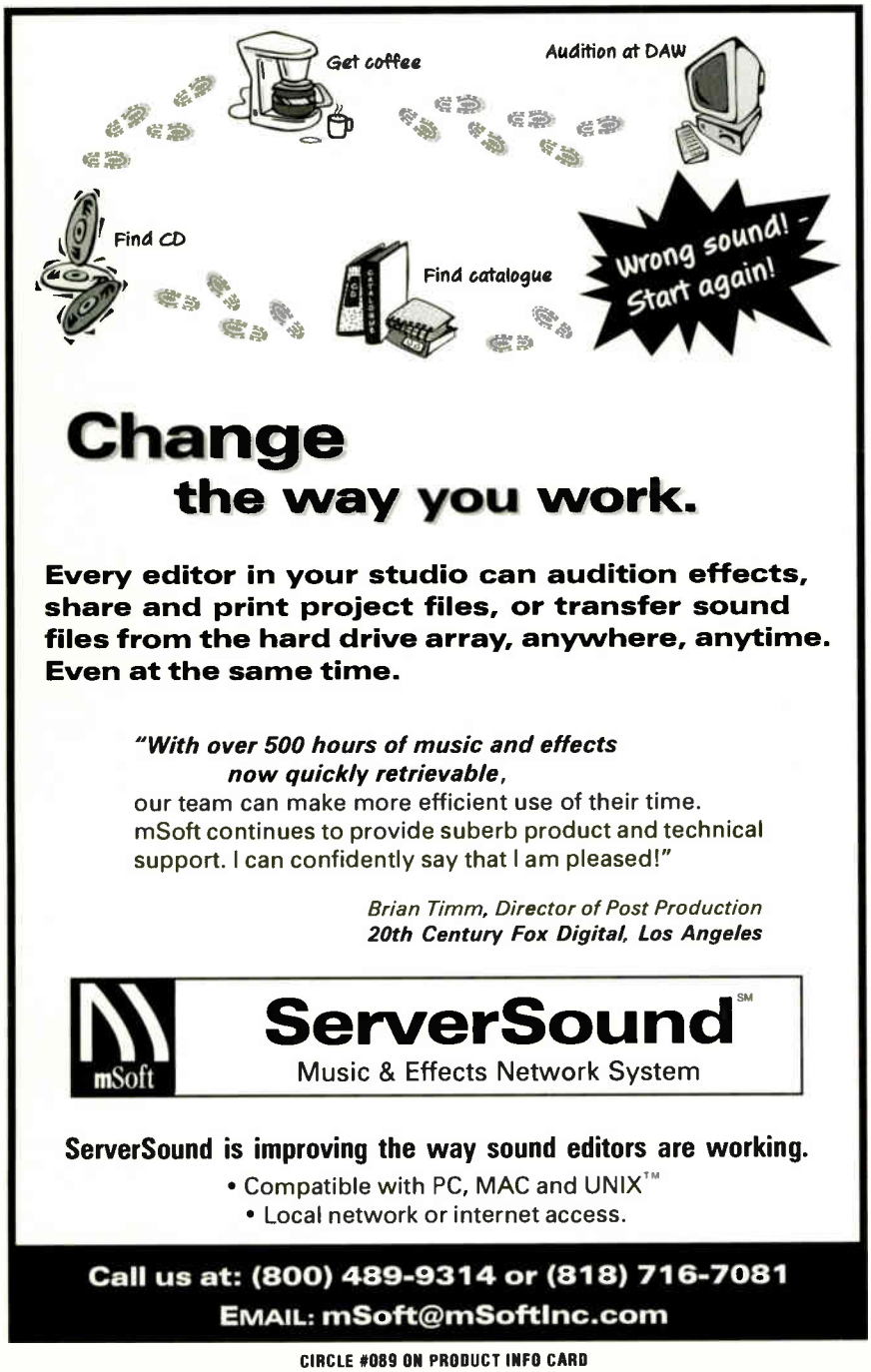

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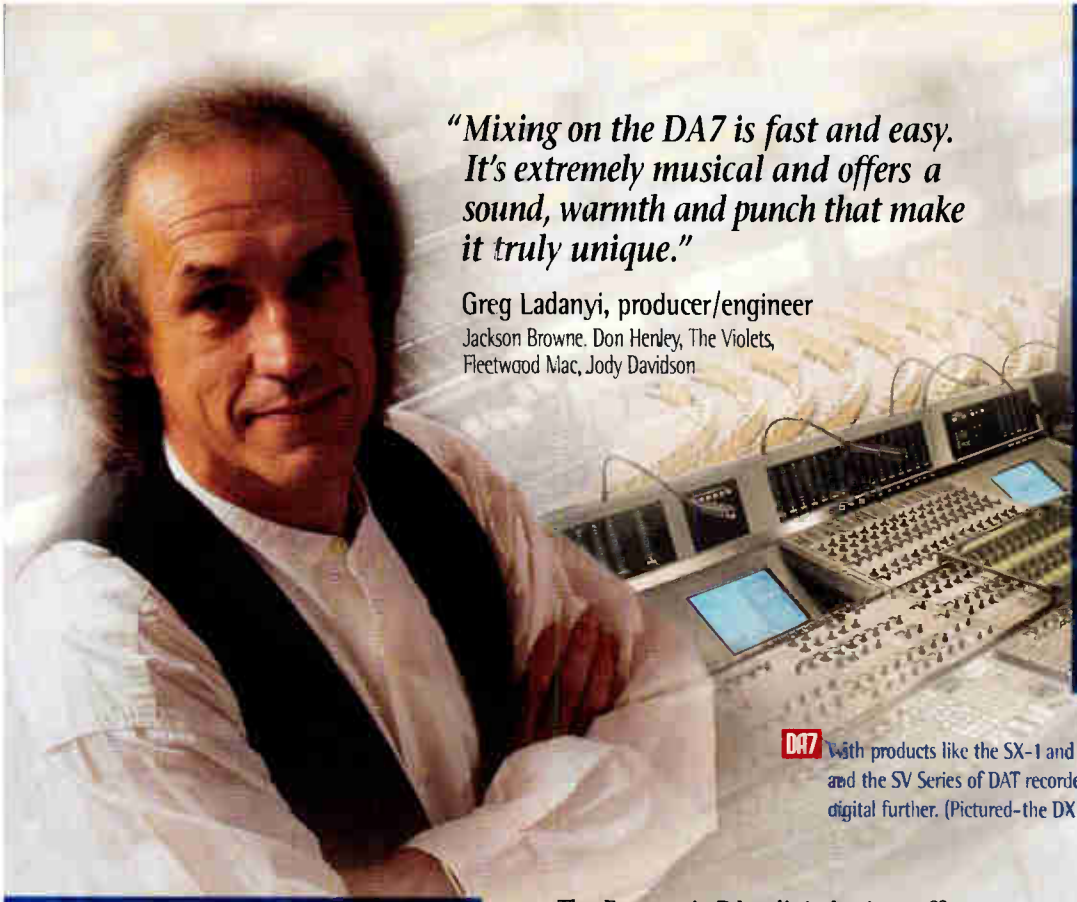

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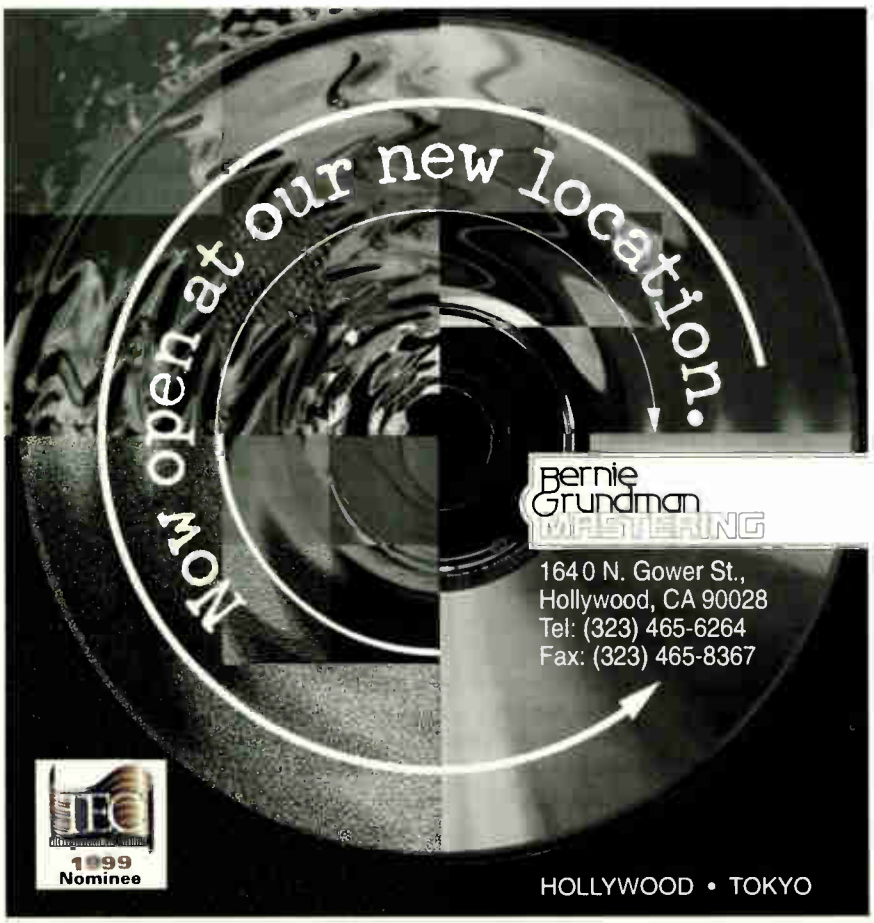

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mix, or think you can't, it's just that it's better for the movie if you don't. If you miss a cross, it's missed forever—and we all agree that the "craft" of acting, as in repeatability, ain't what it was years ago. Of course, if you have three radios or booms open, you have to start making some decisions and do some mixing, but what I'm referring to applies to a large percentage of scenes. Splitting material over two tracks is also helpful when a radio mic is problematic; it's painful when a hit brings the whole track down with it.

Sure, if there are no overlaps and no bad ambient noise to speak of, a skilled boom operator can cue between on-camera and closely off-camera dialog. But if there is any sort of distance, or any problematic background noise (that would be changing with the cueing, thus robbing us of consistent fill), then get your third person to handle that boom if at all possible (politically, physically and logistically).

I am often asked, when I request that both sides be put down full up, with no fading, "What about overlaps?" Yes, this technique works well, no matter how much or little the actors overlap. It just doesn't matter. And yes, I'm aware that the off-camera recording will sometimes not acoustically be optimum, and sometimes there's even a chance of camera noise, but any way you slice it, I feel that it's a big help for us to have those additional, clean readings.

Now, let's take this track splitting to the next level: If two is better, then four or eight is mo' better, right? Wrong! Simply put, two tracks is the exact point of diminishing returns. Two are enough to give useful separation in the large percentage of scenes. Of course, I am excepting the "you gotta do what you gotta do" Altman-esque situations—three cameras with zoom lenses, ten principal actors and nothing scripted. Here is where multitrack on production has a place.

I should note that recording across two tracks takes more than two times longer to edit and mix than a single track. You listen to each track separately, and then together, to check for phasing or, as the case may be, which is the preferred one (as when both actors are better with actor A's radio mic...we've all seen this one). So, with this in mind, you might see why I think that just splattering every scene across four or eight tracks as a matter of course makes the dialog editing time rise logarithmically. At this point, the returns are indeed "diminishing."

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It has been suggested that you can have it both ways, your "mono dailies w/EQ, etc." mix on one track, plus stuff spread across three (let's not even mention seven) other tracks, pre-processing. You end up with a mind-numbing number of combinations: the dailies track vs. each of the other three, or which combination of the other three. This all has to be sorted through twice, and we don't have the time, either during dialog editing or premixing, to sort through, eye-exam-style, going between "this...and this." I know that idea seems nice and clean and sensible, but it's fraught with problems.

Although I have been wanting for a long time now to write an open letter to my colleagues in the field, the most recent impetus was a series of exchanges on a thread in the rec.arts.movies.production.sound newsgroup. There were a total of 94 posts before the thread fell off everyone's radar. It was a real learning experience for all, and I think it would only be fitting to carry this dialog further. Beginning August 1, when this issue hits newsstands and mailboxes, I will start a thread titled "Production and Post-Production Cooperation." And, of course, stay tuned for next month's wrap-up.

If you want to contact me directly, I can be found at P.O. Box 24609, New Orleans, LA 70184, fax 504/488-5139, or via e-mail at swelltone@aol.com. ■

Larry Blake is a sound editor/re-recording mixer who lives in New Orleans for reasons too numerous to mention, although one of them would have to be that he will be hard to find once this column comes out.

—FROM PAGE 135, SOUNDS IN SPACE

video resolution. Bove and his students then did some interesting things with the audio as well.

"We sent a photographer to a house none of us had ever visited and asked him to photograph the entire interior, making sure each photograph overlapped to some degree. Using computers programmed to understand perspective vanishing points, we built a 3-D model of the rooms in that house and shot actors on a three-sided blue screen. We then were able, in post, to synthesize any viewpoint in the house and drop the actors into that view," Bove explains.

Bove and his researchers also recorded audio and processed the tracks in a similar manner. "The audio sources are assigned to correspond to objects in the video model so that when we render the model to produce an image, we also render the sound in a corresponding way. As a result, the sound level is calculated to correspond to the spatial location of the object as it appears in the video."

Bove thinks this linkage between the visual and audio will eventually result in much more productive post-production sessions. "This approach will combine some aspects of post with production," he says. "The idea is not to put anyone out of a job but to allow post-production people to be more productive" by removing some of their more mundane tasks and, more importantly, by giving them more creative tools and freedom.

Bove's group has also been doing exciting work digitally separating different audio sources that have been recorded to the same track. This research might eventually result in eliminating the need for actors to be followed around by boom microphones to obtain clean dialog tracks, and it could also eliminate the need for looping necessitated by unwanted noise on the tracks.

"Imagine a film or video set with several stationary microphones placed around the space," Bove says. "Say there are two actors speaking at the same time. Each mic will pick up a different mix of the two voices; one mic will have more of one voice, and another will have more of the other voice, depending on the mic's position relative to the sound sources.

"The key to separating these audio sources is knowing the percentage of each sound that went into each microphone in terms of intensity," he continues. "To learn those proportions you need a search strategy that will figure out those weightings. We have developed equations that tell you the percentages of each sound source picked up by each mic."

It is all in the math, of course, Bove says: "If mic 1 gets 70 percent of Source A and 30 percent of Source B, that's a linear system of equations, and those equations are written as a matrix. You can compute the inverse of a matrix and multiply the output of the various mics by that inverse and get the individual sound sources back again, in effect unmixed, assuming you have as many microphones as sound sources."

However scientifically straightforward that sounds, the real world, as

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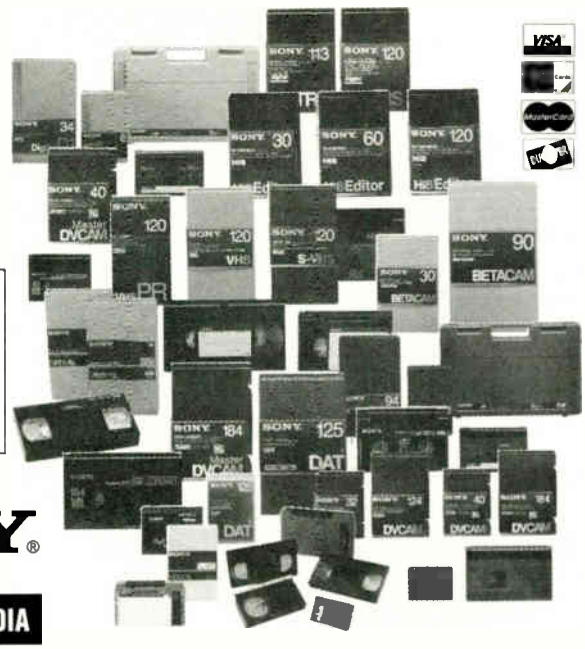

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usual, presents some pesky problems.

"If the space in which you're recording has reverberations, as most do to some degree, then you also have those acoustical effects imposed on the sound sources," Bove explains. "You have to first undo those effects in order to unmix the various sound sources. Our research is yielding useful results in allowing us to do the unmixing of the overlapping sounds and to undo the acoustical effects of the room. However, at this point we do not have enough separation to make this approach actually useful for recording. We're not at the point of being able to get rid of boom mics that follow actors around, but that is the direction in which we're heading."

This unmixing requires a huge amount of computational power, however. "You're not going to be doing this on a PC anytime soon," he acknowledges. "We're using several 500MHz UNIX Alpha workstations, and even with all that power we're not doing it in anything like real time."

Another benefit of this approach to post-production would be the elimination of unwanted sounds from tracks. "Say you're shooting a 19th-century historical drama and a jet airplane goes overhead during an otherwise wonderful take," Bove says. "Rather than scrapping the take or bringing the actors into the studio at a later date to loop the dialog, you would be able to move the aircraft sound to another audio channel and have a perfectly clean dialog track."

This all points to a future where "a lot of the decisions that are being made in visual and audio production will be postponed to post-production. You will be able to change things in post, such as moving the camera three feet to the left, or using a different focal length. And analogous things will be done in audio.

"Basically what will happen is that people who work with real sound and real moving images will enjoy the same degree of freedom that those who work with synthetic audio and video have had for a while," Bove concludes. "In the virtual world you can manipulate the images and sound in myriad ways and it all still works. But in the real world, you either got it on the set or you didn't. Increasingly, those working with real sound and pictures will have the same flexibility as those dealing with virtual material." ■

Eric Rudolph is a freelance writer based in New York City.

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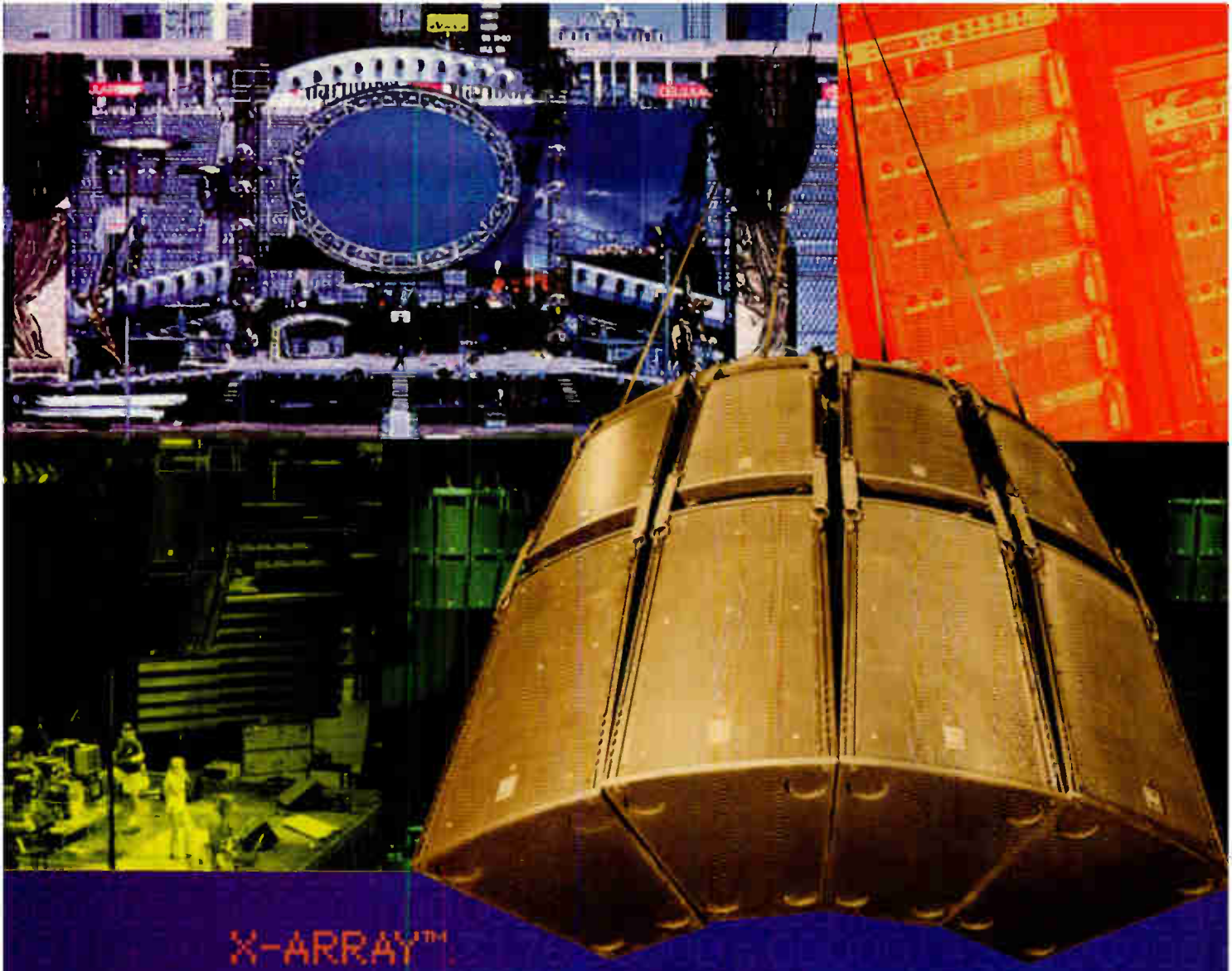

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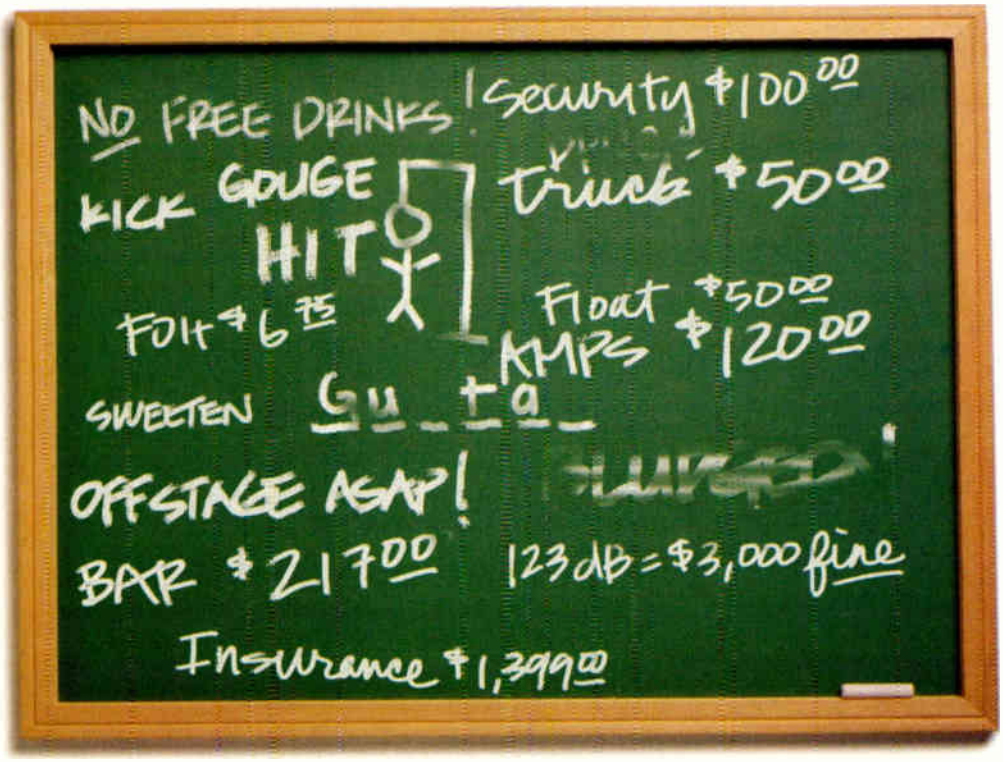


ILLUSTRATION: MIKA CHSAKI

As a broad generalization, it can be said that most sound mixers get their start in live sound by one of three routes: with a band, with a sound rental company or with a club. For engineers who cut their teeth in clubs, not much in the following article will come as a surprise. Rather, this article will answer some questions for engineers who have had little experience with club sound systems. And club sound veterans should find the comments of our interviewees thought provoking. (See sidebar for background on the engineers.)

"I've always found that it's best to advance the shows," says independent engineer Gary Hirstius. "Know what you need ahead of time, and if possible get the venue to advance their list of gear to you. And try to work with what they've got, especially if you're working in a situation where there's more than one band on the show." In general, a club will expect to be contacted by an incoming act's sound and lighting engineers, and a failure to communicate indicates a lack of professionalism. "We insist that bands make contact with us before the show, and we actively seek them out," says David Wells, production manager for the House of Blues, Sunset Strip. "Our talent buyer will contract the show and give us a contact number. On local acts, it can be tougher because they're not as well-organized, and generally you're speaking to the bass player or somebody's brother."

At the very least, a visiting engineer should mail or fax a stage plot and input list to the club's production manager, along with any requests for particular items of outboard equipment. E-mail is also useful, and some clubs can be advanced over the Internet. Bimbo's 365 Club, San Francisco, for example, offers "hidden" pages on the club's Web site that are specifically designed for visiting engineers (www.bimbos365club.com/techinfo).

BY CHRIS MICHIE

BUDGET FOR FX

Most of the clubs mentioned in this article have a comprehensive inventory of outboard processors, but inevitably there are times when an incoming act requests a device not in stock. In some L.A. clubs, says Michael Faber, a former house engineer at the Roxy, "you get a pretty hard-nosed approach. You say, 'Look, this is what we've got. Either you can work with it or you can't.' There's not a lot of flexibility. Now, if they have some kind of budget, we'll bend over backwards and we'll go get them what they need."

However, before renting any additional equipment, it is important to determine who will cover the cost. "Mostly it would just fall in the lap of the production," says Roly Garbalosa, an independent engineer. "In other words, if I'm running production for them, I go to the pro-

—CONTINUED ON PAGE 156

World Radio History

SEAL

Return of the Human Being

What makes a sound engineer happy? Near the top of most engineers' wish lists are good equipment, a sensible itinerary, a comfortable tour bus and cooperative musicians, but perhaps the most smile-inducing factor is the opportunity to mix for a favorite artist. For Stewart Bennett, system engineer and FOH mixer for Showco (Dallas), lightning has struck twice. Last year Bennett was out with John Fogerty, mixing FOH for the *Blue Moon Swamp* tour, and now he is mixing for another of his favorite artists, British soul sensation Seal. Absent from the touring scene for over a year while completing his latest album for Warner Bros., 1998's *Human Being*, the 6-foot-4 singer/songwriter joined the summer touring parade in May with a series of concerts in theaters, interspersed with indoor/outdoor sheds. *Mix* attended the Concord Pavilion show in the San Francisco Bay Area on May 21.

PHOTOS: STEVE JENNINGS

Seal performs at the Concord Pavilion during the Human Being tour. Seal is using Ultimate Ears UE-5 ear molds, manufactured by Westone Labs, and a Shure PSM 600 Personal Stereo Monitor ear monitor system; the vocal mic is a Shure wireless with a Beta 87 capsule.

FOH mixer and Shawco system engineer Stewart Bennett at the Yamaha PM4000. The 24 flown Prism cabinets are supplemented with eight subwoofers on deck.

"I've been a fan since the first record, back when I was still hanging speakers for the Bee Gees," says Bennett, referring to Seal's eponymous 1991 release, which included the dance hit "Killer" and the radio-friendly "Crazy." As anyone familiar with Seal's three Trevor Horn-produced albums is aware, the artist's sound is distinctive and highly polished, often featuring rhythm-driven grooves overlaid with multiple vocal tracks, techno flourishes and an extensive catalog of studio effects. "With a producer as inventive and complex as Trevor Horn, it ends up being really difficult to try to reproduce all of the textures and nuances of the album, but I've really tried to keep the spirit," says Bennett. "I constantly go back and listen to the recordings, and I definitely try to keep [my mix] at least in the spirit of the record. That's what I strive for."

HOT MUSICIANS

Bennett's task is made somewhat easier by the fact that Seal has put together a crack touring band that includes some of the world's most respected and in-demand musicians: David Sancious, musical director and keyboardist, drummer/percussionist Brian Blade, bassist Tony Levin and guitarist Michael Landau, with backing vocals provided by Mike Harvey and Paul Mabin. Not surprisingly, this band of pros reproduces Seal's catalog of delicate ballads and up-tempo dance numbers with discipline and aplomb.

For FOH, Bennett has selected a 52-input Yamaha PM4000, though he admits he would have preferred a Midas XL-4 had one been available. The board's first 32 inputs are taken up with band and vocal inputs, the remainder functioning as return faders

BY CHRIS MICHIE

—CONTINUED ON PAGE 152

World Radio History

The Cranberries

Touring the theater circuit to promote *Bury the Hatchet*, The Cranberries made effective use of the Internet to boost ticket sales. The first leg of the tour, which will continue in sheds and arenas through the fall, has already sold out.

"Dolores is using ear monitors, which has reduced the vocal level onstage dramatically," says monitor engineer Martyn Rowe. "With the lower stage levels, we don't have so much of a problem with the other bandmembers trying to hear themselves." Dolores O'Riordan is using the Shure PSM 600 ear monitor system and Ultimate Ears UE-5 drivers. "We used to use the UE-2, which is the one with the open back," recalls Rowe. "Now the UE-5, the one with the double driver, sounds the best to me. Dolores and I are really happy with it."

Guitar technician Kevin Zazzara, pictured with O'Riordan's Gibson 335 and Guild acoustics. All feed into Marshall heads via Shure UC1 wireless transmitters.

In addition to Dolores O'Riordan (vocals, guitar, keyboards), The Cranberries include Noel Hogan (guitars), Mike Hogan (bass) and Feargal Lawler (drums, percussion). "For this tour we have two extra musicians onstage," says FOH engineer Davy Moire. "An additional guitarist, Steve Damarchi, plays the electric/acoustic Parker guitars, and Dolores' brother-in-law Russell Burden plays keyboards for a few numbers. She didn't want to be tied down to keyboards except for the one number she does.

"Showco is our P.A. company," continues Moire. "For most of these theater tour shows the configuration is like today—two wide, four deep, on top of four subs. I think the P.A. sounds great in this configuration. When we go back out into the sheds and arenas, where the coverage is crucial, we'll probably go out with about five wide, six deep, and eight or ten subs a side."

World Radio History

TEXT AND PHOTOS BY STEVE JENNINGS

"I'm carrying a Harrison 56-input SM5, a slightly older board, but it was ahead of its time when it came out," says monitor engineer Martyn "Ferrett" Rowe, who praises the SM5's mic preamps. "For monitors we're using the Showco SRM, which is a really nice, flat, neutral wedge and sounds exactly how you want." Rowe's rack includes a dbx 900 series, Klark Teknik DN360 graphic equalizer, Furman PL-8 power module and two Klark Teknik DN716 digitol delay systems.

"I'm trying to wean Dolores away from the wedges," says Rowe, who points out that O'Riordan is only using one ear monitor. "She likes to hear the audience, she wants that audience reaction. I tried using audience mics, but she didn't like what they were doing to the mix. So one of the things I am doing is delaying the ear monitors to the wedges. It's a 4½ millisecond delay, which seems to produce an out-of-head experience rather than being directly in your ear. [Without the delay], you gotta make the wedge 120 dB to be comparable to the ear. So that's been helping a lot."

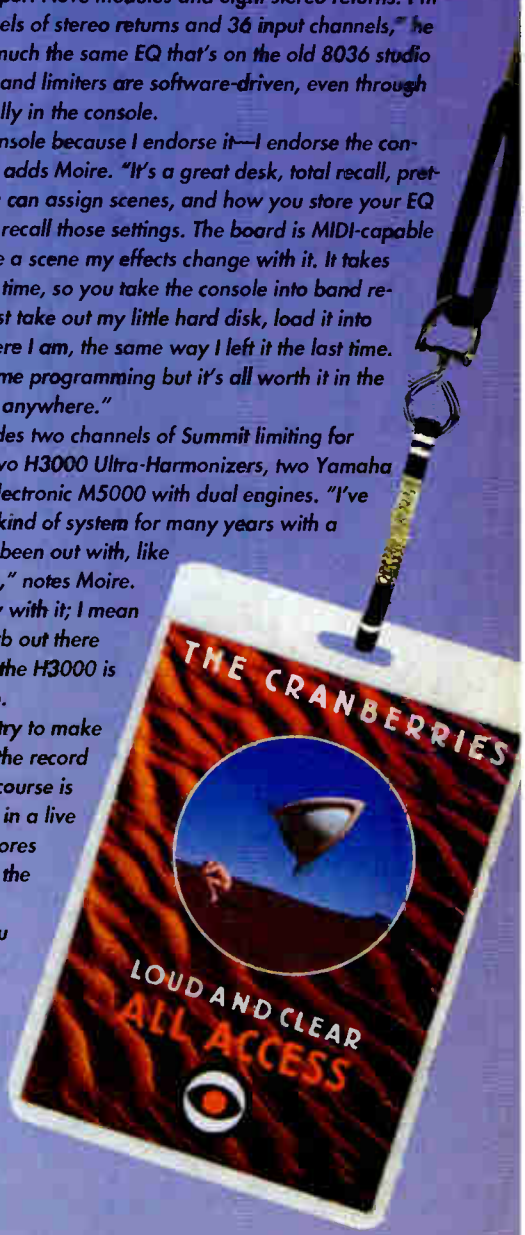
The Cranberries endorse Shure microphones. "We have a complete Shure line-up, including the new KSM32 mics which we've used to replace Sennheiser 409s on the guitar and bass amps" says monitor engineer Rowe. "For the drums we're using two Shure VP88 stereo microphones for overheads, so we have four channels of overhead. We're using the VP88s in a wide spread cardioid pattern, which gives a complete stereo overhead picture of the kit. And vocalwise, Dolores is using a wireless U2/Beta 58A. The only time she uses a cabled mic is when we roll out a keyboard for one song; other than that it's pretty standard—Beta 52s on kick drum, SM98As, etc."

FOH engineer Davy Moire is using an Amek 56-input Recall console. "The Amek has 48 Rupert Neve modules and eight stereo returns. I'm using about 16 channels of stereo returns and 36 input channels," he explains. "It's pretty much the same EQ that's on the old 8036 studio console. All the gates and limiters are software-driven, even through the hardware is actually in the console.

"I don't use the console because I endorse it—I endorse the console because I use it," adds Moire. "It's a great desk, total recall, pretty cool. I like how you can assign scenes, and how you store your EQ settings and how you recall those settings. The board is MIDI-capable so every time I change a scene my effects change with it. It takes a lot of programming time, so you take the console into band rehearsals. But then I just take out my little hard disk, load it into the hard drive and there I am, the same way I left it the last time. Yes, it takes a lot of time programming but it's all worth it in the long run—I can recall anywhere."

Moire's rack includes two channels of Summit limiting for O'Riordan's vocals, two H3000 Ultra-Harmonizers, two Yamaha SPX1000s and a TC Electronic M5000 with dual engines. "I've been using this same kind of system for many years with a number of bands I've been out with, like Duran Duran and Live," notes Moire. "I've been very happy with it; I mean there's no better reverb out there than the M5000, and the H3000 is pretty sweet; it's clean.

"Every tour I do, I try to make it sound as much like the record as possible, which of course is always a compromise in a live situation anyway. Dolores is a poet, so of course the vocals are always the number one things you want to get through. I always want the audience to hear and understand the words, so I set the band right behind the vocals."



World Radio History

—FROM PAGE 149, SEAL

for various reverbs and effects. Bennett's mixing philosophy is straightforward—he selects all inputs direct to the 4000's stereo bus and mixes on the VCA subgroups, using only a pair of mute groups for between-song patter and specials. Though Bennett has a pair of Meyer Sound HM-1s positioned on the meter bridge, they are not delayed for use as cue speakers. "I use them as a reference when I'm setting up the system," explains Bennett, pointing to the Showco Prism® control rack that forms the back wall of his FOH compound.

At Concord, a 12,500-capacity shed with a covered seating section and a horseshoe-shaped lawn, Bennett and assistant system engineer Dave Lagodzinski rigged the Prism system in two 12-cabinet arrays. Hung three across and four deep, and supplemented by four sub-bass cabinets per side, the Prism system looked less than imposing, though it certainly provided enough SPL for the audience under the Pavilion's roof. (House engineer Skip Spragens supplemented the touring production with a four-position delay system made up of JBL Concert System components, all fed from an FOH matrix mix.) The surprisingly slim profile of the Prism system draws approval from production designer and LD Butch Allen, who likes the fact that "the Prism system hangs out of the look."

PHOTO: STEVE JENNINGS

Seal's monitor engineer, John "Roscoe" Protsko, with the Yamaha PM4000M. Backing vocalists use Mackie submixers to control their in-ear mixes. Inputs include stereo band mix, all vocal channels and reverb returns.

CHOICE EFFECTS

Bennett nailed down his effects choices during a week of pre-tour production rehearsals in early May. Seal's vocal mic is a Shure wireless with a Beta 87 capsule, which is routed through a Tube-Tech CL1B compressor and a dbx FS900 card cage containing dual 902 de-essers (a spare vocal mic is patched to a Summit TLA 100A and the second 902). "I picked the Tube-Tech as the primary vocal compressor because of the sound, and also because Showco had one available," comments Bennett. "As it turns out, I've since discovered that Trevor Horn won't record Seal without a Tube-Tech. It was a nice coincidence."

For most of the vocal delay effects, Bennett is using a TC Electronic 2290, with one side of a Lexicon 224X providing additional vocal reverb. Backing vocals (a pair of hard-wired Beta 87s) are routed through a Summit DCL 200 dual compressor/limiter and two dbx 902 de-essers. "The primary background vocal effects are stock programs on the Ultra-harmonizer. The SPX990 is for a second background vocal effect," says Bennett. Completing Bennett's effects rack are two Yamaha SPX1000s, which he uses as drum reverbs, and the remaining side of the Lexicon 224X, which finds use as a general instrument reverb.

Bennett's second rack is mainly dedicated to dynamics. Four dbx 160A compressor/limiters are distributed among the two kick drum channels and Tony Levin's two bass direct channels. (Levin plays several basses, including an electric stand-up and an electric cello, and also doubles on synthesizers, but mixes all his inputs to two outputs. For more details on Levin's gear, see his touring diary at www.papabear.com.)

TRIGGERING THE GATES

Three Drawmer 201 dual gates are patched into the kick, snare and toms channels. Rather than rely on the drum mics themselves to trigger the gates, Bennett has mounted piezo-electric triggers inside the drums. "Using triggers to open the gates via the key inputs extends the dynamic range," explains Bennett. "Because the triggers are fairly well isolated from the other drums and general stage noise, you can lower the threshold, which makes the gates more useful." Bennett uses two Klark Teknik DN504 quad compressors on the six guitar channels (guitarist Landau plays both electric and acoustic instruments, as does Seal on some songs) and on the two drum overhead mics. "I compress the overheads because I use them both for cymbals and for the overall drum sound," explains Bennett. "I find that the compressors effectively 'automix' the balance between the overheads and the toms."

Completing the dynamics package, Bennett points out a UREI 1178 stereo limiter that keeps David Sancious' stereo keyboard outputs within bounds, and a Behringer Ultrabass subharmonic synthesizer, which Bennett uses as an effect for some of the more dance-oriented tunes. "As far as special effects go, we only reproduce one item from the record, which is a funky-sounding drum loop," says Bennett. "Some of the things [on the records] you just can't reproduce live." Nevertheless, Bennett relies on a small loose-leaf binder (actually a snapshot photo album) that holds cue cards for each song; he reorders the cards to match each show's set list. "Seal is in the habit of working up multiple arrangements of certain songs, so not all my notes are completely accurate, but at least I can remind myself of the essential cues," says Bennett.

In order to be able to review his own mixes, Bennett has set up a comprehensive recording rack that includes a Tascam D1000 digital mixer, a Tascam DA-88 recorder, a Panasonic SV-3700 DAT recorder and a Tascam CD-RW5000 rewritable CD recorder/player. Typically, Bennett records a "dry" CD direct from the board mix for musical director Sancious, and he sends the stereo mix to the DA-88, along with a stereo audience "mix" picked up via a Crown SASS-P stereo PZM mic positioned at FOH. "If I need to make a more representative board mix for somebody, I can dub the multitrack down to stereo, using the D1000 to delay the board mix to time align with the audience mics," he explains.

The setup also allows Bennett to rehearse cues by playing back recordings of the band. Using the PM4000's subgroups as recording buses, he breaks the mix down to eight discrete instrument and vocal tracks and records them on the DA-88. "I used the system quite a bit in production rehearsals and I can still set it up when I need to," Bennett says. "If the

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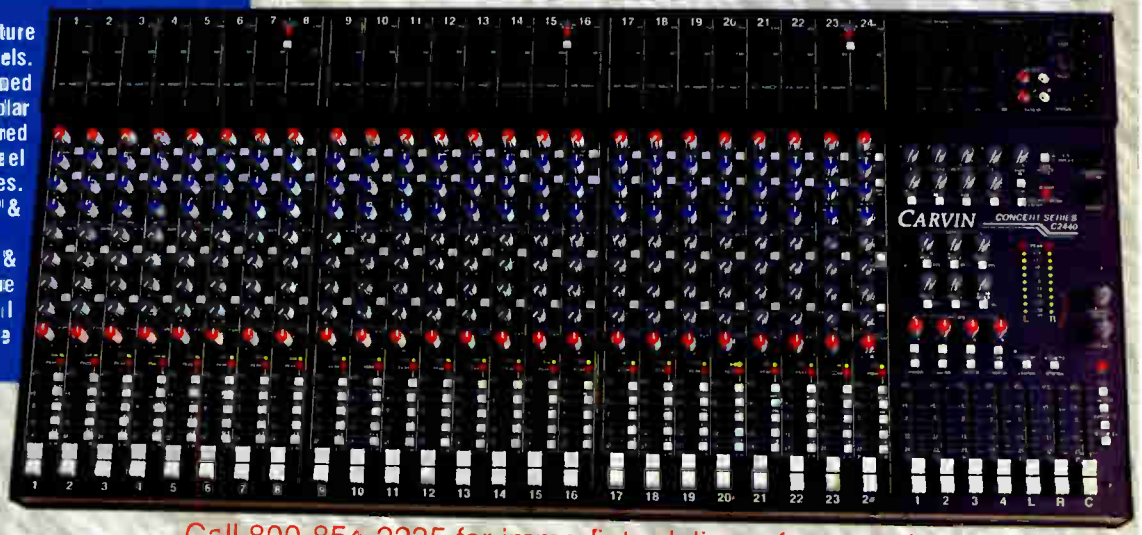

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band works up a new song at soundcheck, I can record it and then rehearse aux send cues after they've left the stage."

FEW MICS ONSTAGE

With the exception of the guitar amps and the drums, all the instruments onstage are picked up through Countryman DIs. Drum mics are mainly from Shure: an SM91 and a Beta 52 on kick; SM57s on snare (top and bottom); and SM98s on toms and doumbek, a timbale-like percussion instrument. Overheads are AKG 414s, hi-hat is an AKG 460, and, even though the mics have been out of production for years, guitar amps are miked with AKG D-12s. "They're big, they're fat," says Bennett. "They don't necessarily work for every guitar rig, but Showco happened to have some available."

John "Roscoe" Protsko has been Seal's monitor mixer since 1995, though the artist's less-than-grueling road schedule has left Protsko with time to get involved in other pursuits. "It was Scott Peets of the Design FX recording truck who turned me on to these," says Protsko, pointing at eight API 3124 preamps in the rack next to his PM4000M in stage-left monitorworld. "We had to work without these for the first gig of the tour because we were using the house system, and half the band turned around and said, 'What's happening?' All but two of the band are using in-ear monitors, so they could really hear the difference." The API preamps are used on all four vocal channels, bass and acoustic guitars. "Seal is really sensitive to compression in his monitor mix," says Protsko, "but these preamps almost make it unnecessary."

Protsko sets up wedges for guitarist Landau, drummer Blade and band leader Sancious, though the keyboardist also has ear monitors available if he wants them. Everyone else is using the Shure PSM 600 Personal Stereo Monitor ear monitor system, with a wireless setup for Seal and hard-wired beltpacks for the other musicians. Both backing singers control their own in-ear mixes via Mackie submixers, which Protsko feeds with a stereo band mix and splits of the vocal channels. Protsko also creates stereo reverb return mixes for the vocals, which the singers can mix in to taste.

Seal's ear molds are UE-5s from Ultimate Ears, manufactured by Westone Labs. "They have the best definition of all the models I've heard," says Protsko. "I've been fortunate that Seal has been through just about all of them, so I've heard quite a few different ones. He's happiest with UE-5s and I agree with him on that." Protsko has an Aphex Dominator in the signal chain but admits that "it's there because Seal owned it when I started working with him—I never see it work. I have it set to kick in when you start hitting the limit on the Shure system, but we never get that loud. I keep it really quiet most of the time."

However, Protsko does have compressor inserts on the hi-hat and overhead channels. "Brian Blade keeps time on the quiet sections, and for the musicians to hear them, the cymbal channels have to be quite loud," explains Protsko. "If there was a cymbal crash, it could be quite painful, hence the compressors." Other outboard gear that Protsko makes use of includes a Lexicon 480L reverb for both lead and backing vocals, plus Seal's

PHOTO: STEVE JENNINGS

Left to right: backing vocalists Mike Harvey and Paul Mabin, guitarist Michael Landau, drummer Brian Blade, bassist Tony Levin, musical director David Sancious, Seal. Lighting design by Butch Allen.

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occasional acoustic guitar. "I also have a Yamaha REV5 for Michael Landau's acoustic guitar," concludes Protsko.

WEARING TWO HATS

As chief system engineer, Bennett is responsible for flying and tuning the P.A., in addition to setting up and operating the FOH mix position. Without intending to slight Bennett's mixing abilities in any way, *Mix* asked if it wasn't a little unusual for an artist of Seal's stature to tour without a "name" independent FOH mixer. "The climate of the industry is such that artists are increasingly looking to their sound companies to provide the engineers," responded Bennett. "I would agree that having someone who is completely dedicated to the artistic side of mixing and can give it his complete attention might produce better results sometimes, but it's becoming a luxury. Not everyone wants to pay the extra salary and travel expenses, and there are also benefits to having a system engineer mixing at FOH. For example, I really know the nuts and bolts of the Prism system and can make adjustments for the venue more easily, whereas a guest engineer might make demands on the system that are physically impossible to satisfy."

In fact, Bennett was tapped for the gig by Seal's production manager, Mark Spring. "Mark was production manager on the John Fogerty tour," explains Bennett. "Fogerty has historically used his sound company's engineers, and I've worked with Showco for ten years, so I was a candidate. Mark offered me the Seal gig based on the relationship we developed during the Fogerty tour."

Though the Concord Pavilion was far from sold out, the audience was enthusiastic and greeted the opening bars of Seal's more familiar songs with roars of appreciation. The 18-song set, evenly divided among songs from all three albums, featured enough up-tempo tunes to prompt continuous dancing in the aisles and female admirers thronged to the lip of the stage, eager for Seal's attention. And, whether or not he could reproduce every effect "just like the record," Stewart Bennett was happy mixing FOH for an artist whose music he admires. ■

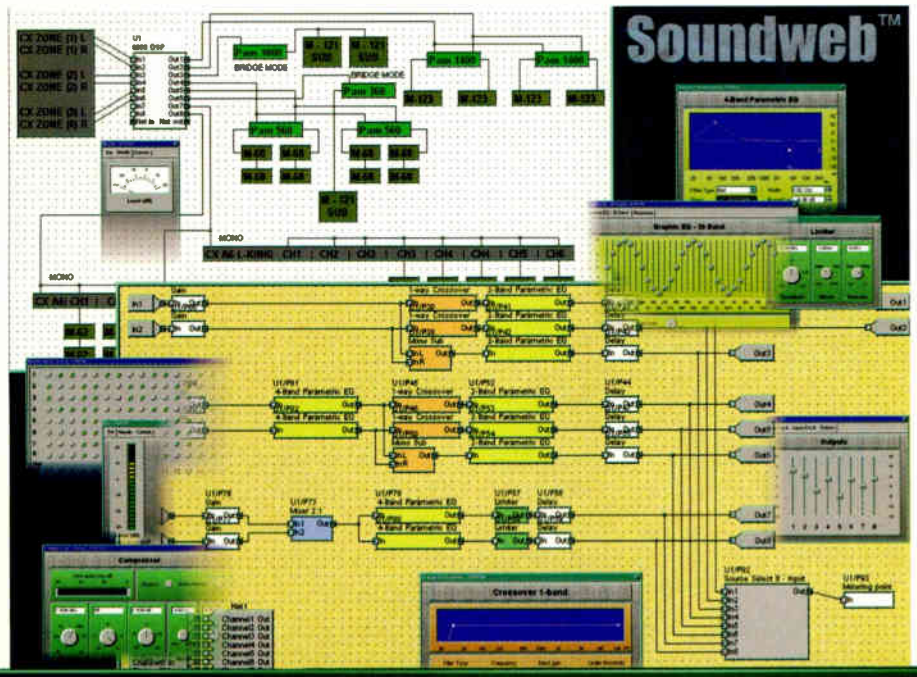
Chris Michie is a Mix *technical editor.*

—FROM PAGE 148, CLUB ENGINEERS

moter and say, 'Look, your act wants such-and-such. We don't have it, but I can rent it for you, and this is how much it costs.' And I'll put it back in the promoter's lap."

Even when a production is self-contained, it is generally advisable to advance the show, if only to confirm access. The China Club in New York City is on the third floor and may be reached only via an elevator. "It's definitely not the elevator size of my choice, but at least there is an elevator," comments the China Club's George Georgiades. And at the House of Blues, Sunset Strip, there's no backstage proper or loading dock, and load-in is across the dance floor and up a ramp to the stage. "The trickiest thing for us is band changes and turnaround," says Wells. "We don't have room for rolling risers and we don't have wings, so it's a precision maneuver to strike gear for the opening acts. But we have some terrific in-house backline gear, and, in the best case, all the bands will use the same drum kit and guitar amps."

"As long as communication is established before the show and you talk to everybody, then everybody's on the



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same page," concludes Garbalosa. "The only time I've run into problems is when people show up, I haven't talked to them, and they ask for the world."

TUNING THE SYSTEM

In general, it is safe to assume that a club will provide a house sound system adequate for the space. The premier clubs in major cities are almost certain to offer a professional-quality system, often including components familiar to touring engineers. For example, Irving Plaza in New York City has four Meyer Sound MSL4s and four 650P subwoofers per side. "We've had everyone here from Motorhead to Eric Clapton," says house engineer John Burns. "We've had thrash, heavy metal, orchestras, everything, and everybody loves the MSL4s." At the Mayan Theater, L.A., the house P.A. is a Crest-powered Renkus-Heinz system based around CE3T cabinets. The 1,500-capacity club, a restored theater, typically features local salsa acts, but it also operates as a dance club with a DJ. "There are six Renkus-Heinz subs under the stage and three on each side, right under the proscenium," says Garbalosa.

Even when a club system is made up of familiar components, it may sound quite different in an unfamiliar environment, and visiting engineers may want to tune the P.A. to their

***MIX* WOULD LIKE TO THANK THE FOLLOWING FOR SHARING THEIR EXPERTISE AND EXPERIENCES:**

Scott Burke is production manager at Bimbo's 365 Club in San Francisco. Formerly an independent tour manager, Burke was "always in the music business in one fashion or another. Either playing, or something." He wound up at Bimbo's after being introduced to the owner by a mutual friend.

John Burns was house sound engineer at New York City's Irving Plaza for four years before joining Jeff Webster in the production office. "I helped put the system together," says Burns. "I built the monitors and monitor system."

Michael Faber got his start in a Grand Rapids, Mich., club and mixed for B.B. King, The Temptations, the Four Tops, "and a lot of the Motown stuff," before moving to Los Angeles in the mid-'80s, where he began mixing at the Roxy. Now working for Fairview AFX, an A/V company based in Tulsa, Okla., Faber was most recently on tour with Manhattan Transfer and Bette Midler.

Roly Garbalosa is an independent engineer based in Los Angeles, working mainly at the Mayan Theater, a restored legitimate theater that specializes in Latin, salsa and "tropical" music.

George Georgiades is originally from Ohio and was involved in setting up sound for the original Agora clubs in Cleveland, Columbus and Akron. On the road with Billy Squier at 17, Georgiades is now production manager of the China Club, New York City. "We opened June 23, 1985, and I was there from day one." Of the club's booking policy, he says "It's A to Z. I go from not doing a band for two weeks to doing five bands in one night. One of the owners got married recently, and we had a cover band, and then we had Irish bagpipes because he's Irish, and then we went into a swing night."

Gary Hirstius, who now lives in Annapolis, Md., worked for seven years as a house engineer at Lou Adler's Roxy Theater in Hollywood, Calif. He also toured with Rick Nelson for seven years. He produced punk bands in the '80s and recorded the Circle Jerks, X and the Dead Kennedys. Hirstius has now been working for Don Was as both a live and recording engineer for nine years.

David Wells has been production manager at the House of Blues, Sunset Strip, Los Angeles, for five years. A musician, band tech and self-taught sound engineer, Wells started doing sound in clubs and has toured with David Lindley, Los Lobos, Ry Cooder and Joe Walsh.

Mike Willemain is chief audio engineer at the Wildhorse Saloon, a Nashville concert club with extensive audio and video recording facilities. A 1998 ACM Club of the Year, the Wildhorse features entertainment seven nights a week and is frequently used for film and video shoots for broadcast. "The whole house is really production-friendly," says Willemain. "I've got co-ax, tri-ax, and audio runs all over the house, a three-way audio split and we even have facilities for cameras and audio on the outside of the building. It's really rigged for media." Willemain's experience includes 11 years as a professional musician and 12 years in sound reinforcement and recording. ■

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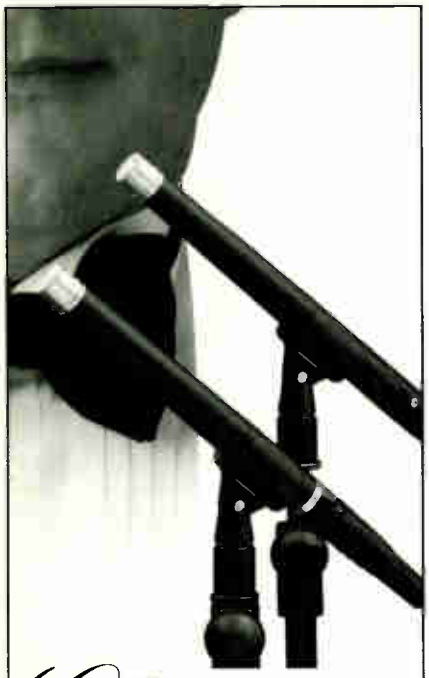

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own preferences. "As a road engineer, I go through a fairly extensive tuning of the rig," says Faber. "I start with pink noise and go to a few CDs that are very well-known to me. And after that I do a soundcheck—if you're going to tune the vocal range, you'd better get some vocalists up there."

"I've got 15 or 20 EQ programs that I've saved from outstanding evenings," says Georgiades, listing some of the notable engineers who have worked at the China Club. "A lot of people have come through, and I've saved their curves, so when they want to come back, there it is."

NEWSFLASHES

The Band's Levon Helm owns a new restaurant/nightclub, **Levon Helm's Classic American Cafe**, in New Orleans. The venue opened last December and features an all-Klipsch Professional loudspeaker system, comprising four trapezoidal KP-362 cabinets flown over the stage, two KP-362s hung horizontally under the edge of the underbalcony, and two more hung vertically on each side of the stage; there are also eight KP-262s hung as sidefills around the dance floor and onstage, and four KP-480 subwoofers are lined up across the front of the stage...Remote recording company **Effanel Music** purchased an Otari RADAR II digital multitrack recorder. The unit was used for the 1999 **Rock and Roll Hall of Fame** induction celebration, as well as this year's **Grammy Awards** and **VH-1**'s *Divas* concert. Audio-Technica provided dozens of microphones for the *Divas* special, which was held in April at Manhattan's **Beacon Theater**...**The Nashville Arena**, home of the new NHL team the Predators, has been re-cabled by Gepco to provide for 17 different TV camera positions. Gepco also provided all new cabling for **Giants Stadium** (East Rutherford, NJ)...Loudspeaker manufacturer Meyer Sound announced that it will open a satellite office in Madrid, Spain. The new branch will provide full factory services, including system design, tech support, and an authorized service center with the SIM System II for self-powered products and MATE system for calibrating and repairing processor-based systems...At the **Busch Gardens Theme Park** (Tampa, FL), Sabine FBX Feedback exterminators, Power-Qs and Graphi-Qs are being used for live shows throughout the park. All of the theme park sound reinforcement gear was specified by system designer Brian Rudolph. Sabine also reports that nine of its FBX-1020Plus units will be used to control feedback at the **Makkah Holy Haram Mosque** in Mecca, Saudi Arabia; the installation is to take place in November...In Philadelphia, the **Edge nightclub** has installed a D.A.S. Audio speaker system, as has Manhattan's **Float club**...**Audio Analysts** (Colorado Springs, CO) is out on tour with **Shania Twain**, **Enrique Iglesias**, **Wynonna**, **Bruce Springsteen** and others this summer...**Beach Sound** (Miami Beach, FL) purchased a 32-channel Allen & Heath GL2200 console. This company specializes in sound reinforcement for large corporate events, as well as for touring performers...**Sound Com Corp.**, one of the largest systems contractors in Ohio, purchased seven Klark Teknik DN7204 digital audio delay lines...The **Turning Stones Casino** (Verona, NY) has purchased 48-channel Soundcraft Series Five and SM20 consoles for its main showroom. The installation was managed by contractor Jim Messinger of **Brown Sound** and Jeff Bollinger of **Sentec**. The P.A. for the showroom will also feature an EAW LCR speaker cluster powered by Crown amps and will accommodate approximately 600 people...JBL reports that the **Abundant Life Christian Church** in Bangor, ME, has installed a JBL Venue Series sound system, including a central cluster of two VS3218s hung over the altar, two VS2110 mid/high packs on each side of the altar, and two Sound Power Series SP 212A delay stacks at the rear of the church...**Sheffield Audio-Video Productions**' remote audio truck was used to capture this year's **Jazz & Heritage Festival** in New Orleans. Engineering was handled by Keith Keller, Greg Troyer and assistants Tom Kline and Bill Saltzer. Acts recorded included **Willie Nelson**, **Ray Charles**, **Santana** and others...The new **House of Blues** in Las Vegas has an Electro-Voice X-Array loudspeaker system and 52-channel Midas XL200 FOH and monitor consoles. The gear was installed by **db Sound** (Des Plaines, IL). San Francisco's **Moscone Convention Center** installed nine of Electro-Voice's new FRX-640 speaker systems in Halls A, B and C as part of the facility's paging system. ■

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New Sound Reinforcement Products

MCCAULEY THREE-WAY WEDGE

McCauley Sound (Puyallup, WA) announces the SM950-2 stage monitor, a full-range, three-way system with a single 15-inch woofer and a coaxial 10-inch/2-inch midrange woofer/compression driver. With a provisionally rated power handling of 900 watts RMS and a frequency response of 70 to 23k Hz, the SM950-2 can function either as a stage wedge (two usable angles) or a full-range small-venue P.A. Construction is ¾-inch, 12-ply Finland birch with integral carrying handles. Designed for active three-way use, the system may be supplied with a bi-amp passive crossover network. Preliminary price: $3,145.

Circle 314 on Product Info Card

dbx CROSSOVERS ADD XLRS ▼

dbx (Sandy, UT) now offers its 223 and 234 active crossovers with XLR I/O. Both the 223XL ($299.95) stereo two-way/mono three-way and stereo three-way/mono four-way 234XL ($349.95) have rear-panel stereo/mono switches, LF mono subwoofer output, 40Hz low-cut and a range of channel crossover frequencies. Controls include master input controls, crossover frequency select pots and band output controls. LEDs indicate mono/stereo operation and x10 frequency select. Additional features include Linkwitz-Riley 24dB/octave filters, internal power supply and selectable AC voltage.

Circle 315 on Product Info Card

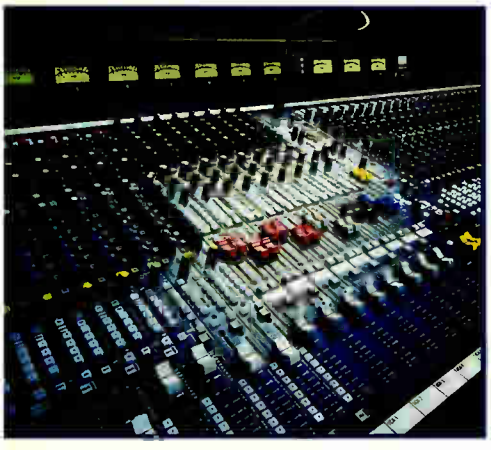
IVIE PROGRAMMABLE DSP ▶

Ivie Technologies' (Orem, UT) 626 Digital Signal Processor is a programmable rackmount processor offering two inputs, up to six outputs, and a range of EQ, dynamics control and delay options. Configured via a PC screen and Ivie's AudioNet+™ software, the 626 offers up to 49 parametric EQ filters and a range of shelving and high- and low-cut filters. Eight compressor/limiters and nine digital delays are available in various system configuration templates. Additional features include built-in pink noise and sine wave generator, password protection and a facility for remote access via modem. Price: $2,270.

Circle 316 on Product Info Card

▼ SOUNDCRAFT SERIES FOUR

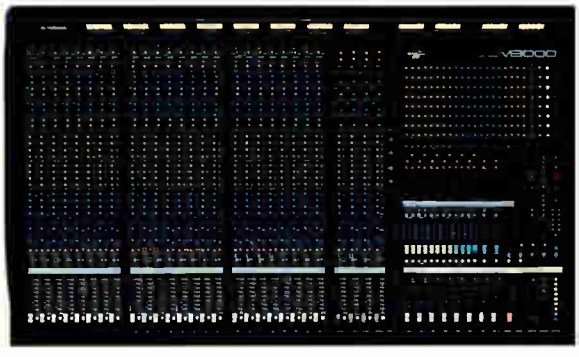
The Series Four console from Soundcraft (Nashville) is available in 24/32/40/48-input frame sizes (each supplied with four additional stereo inputs), includes an automation package, and offers eight VCAs and ten aux sends (four of them mono/stereo switchable). Similar in layout to the larger Series Five console, the Series Four offers 4-band EQ with parametric mids and sweep shelving/bell on the LF and HF bands, eight mute groups and a 16x8 output matrix. The Showtime™ automation (requires an external PC) includes snapshot recall of many console functions, including storage of outboard effects and dynamics settings. Prices range from $27,950 to $41,950.



Circle 317 on Product Info Card

YAMAHA 24-CHANNEL M3000 ▼

The M3000 console from Yamaha (Buena Park, CA) is also available in a 24-channel version featuring 24 mono inputs, four stereo inputs, eight VCA groups and 128 mute groups (recalled by means of console switches, a numeric pad or via MIDI change messages). Channel EQ is 4-band with modifiable Q and sweepable high-mids and low-mids. The Yamaha Group/Aux Diversity System allows the M3000's 16 output groups to be used as group or aux outputs, or as a combination of the two. An 8-output matrix mixer combines the 16 groups, the stereo output bus and two additional sub-in buses. Additional features include 12 VU meters, switchable phantom power, talkback system and internal oscillator. Price: $10,995.



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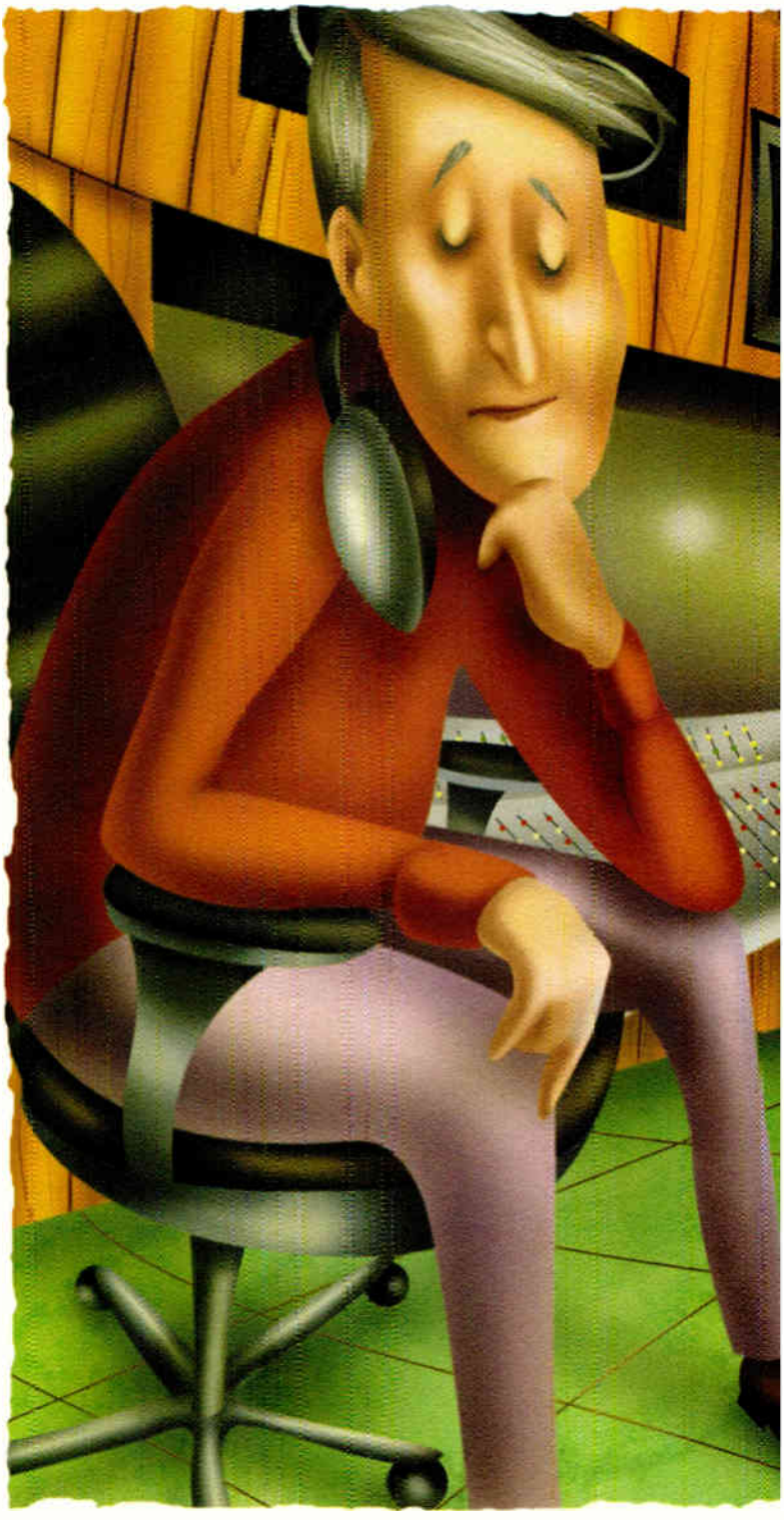
World Radio History

Zen and the Art

A Little Advice for Those



A recording school graduate journeyed to a multiroom facility in a major market. He sought out the studio manager and said earnestly, "I have mastered the automation system on the SSL. How long will it take for me to get a paying gig here?"

The studio manager's reply was casual. "Six months." Impatiently, the student answered, "But I have knowledge of Pro Tools|24 and all of its plug-ins. I never received any grade lower than an A-minus. I am prepared to make records and do microphone endorsements. Now, how long will it take me to get a paying gig here?" The studio manager thought for a moment. "20 years."

Transitions are scary. Being born is no picnic, puberty has kids hitting the wall like bugs on a windshield. A new phenomenon of the last couple of decades is the transition of college-educated young adults leaving the hallowed studios of audio academia and catapulting themselves into the professional world. Résumés and demo CDs in hand, these larval Clearmountains face uncertain odds as they try to convince would-be employers that giving them a chance is worth the risk.

BY STEPHEN WEBBER

World Radio History

of the First Gig

Caught Between School and a Workplace

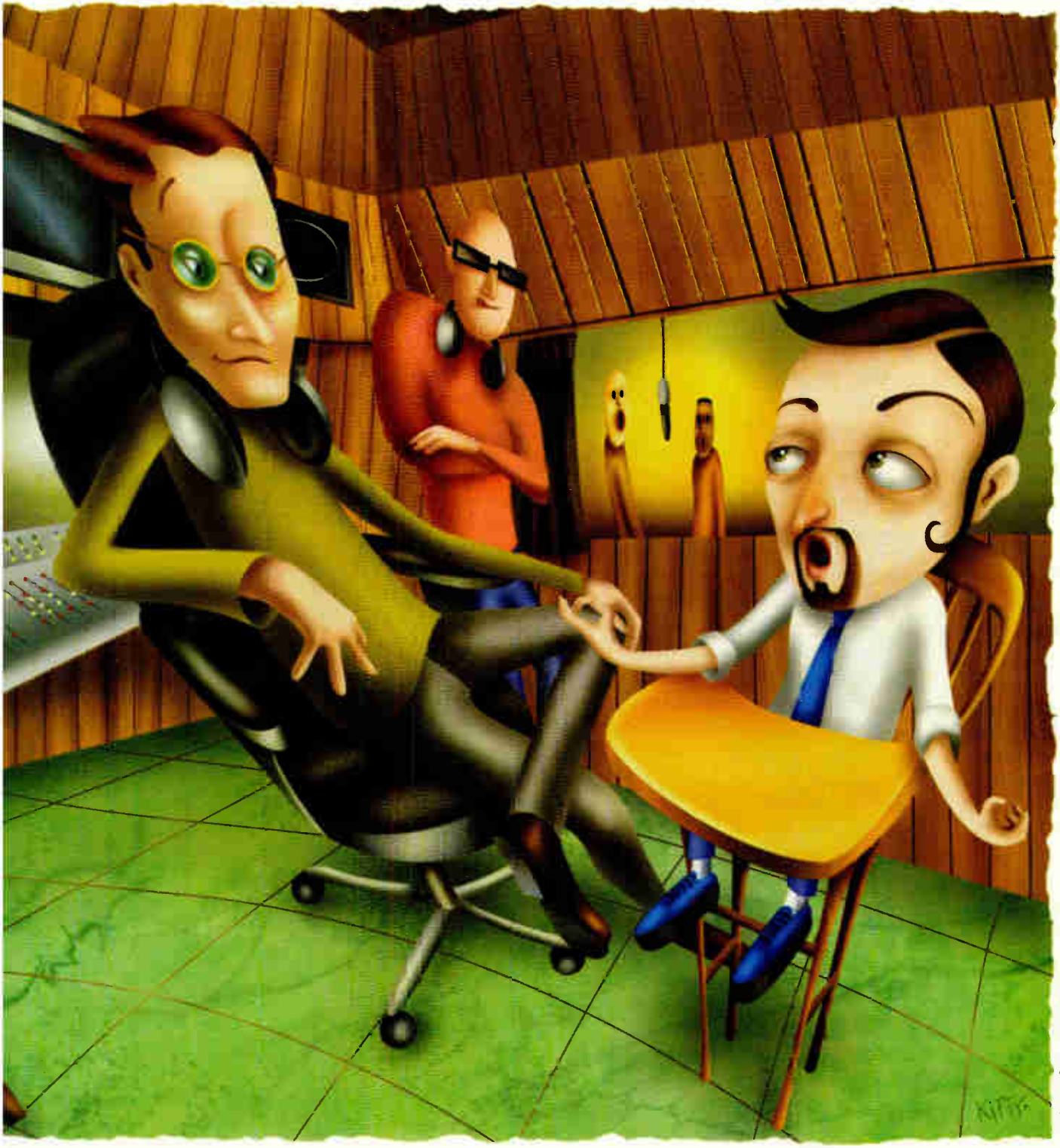


ILLUSTRATION: KITTY MEEK

World Radio History

These graduates face skepticism, some of it well-founded. There are enough stories of greener-than-asparagus college- or trade school-educated weenies copping an attitude on the first (and often the last) day of their new studio gig. We educators give the "you may think you know it all, but you're still just starting out" speech as often as we check our e-mail.

Things have improved. By and large, the alumni of the better programs are proving themselves through hard work, skill and professionalism, sans the attitude.

Still, the job search for the right first gig can be a challenging experience.

For many, this is the first time in their lives that school has not been the focal point. One thing that school does well is impose structure: The semester starts now, take these classes, produce these projects, learn these skills, etc.

By comparison, the structure of the real world, especially the job search, is much more cryptic. The requirements are not written in a syllabus; there is no step-by-step guide.

This article may be the closest thing you'll find, so get out those yellow highlighters.

THE JOURNEY

By the time commencement rolls around many graduating students already have enviable entry-level gigs lined up at major studios, post houses and labels. Some have promising internships, both paid and unpaid, that will lead to paying gigs if prodigious amounts of hard work are applied.

Others have lots of leads, recommendation letters, a plan of action, a budding network, and they can't wait to hit the ground running in L.A., New York, Nashville, London, Tokyo or Seoul. Some are less clear about their plans. Their goals are not as developed, and their time is spent focusing on caution and contingency plans more than imagination and aspiration.

Are there identifiable attributes that students who have significant early success in the job market have in common? The answer is yes, and here's a partial list.

DESIRE

Knowing what you want and then letting yourself *really* want it is vital when it comes time to look for a job. And here's a rather Zen paradox: Entry-level people who are willing to work for free are the first to land the paying gigs. You may not like this rule, but it's true. Those of you who know that you've just gotta get into the studio no matter what, because it's in your blood and it's what you were put on this Earth to do—you are well ahead of the pack!

Follow your bliss. Work hard. Become invaluable. Find what you do best, go for it with every fiber of your being, and the money will follow.

In general, the higher you are shooting—the more significant the facility or company—the lower down on the totem pole you're likely to start out. And at first, the number of hours you put in won't be reflected in the pay you take home.

This is paying your dues, and if you think you got that over with at school, you'd better go ahead and take the software job because your attitude is probably going to be pretty grim. How long

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you spend paying dues depends on many factors, and attitude tops the list.

This doesn't mean to be naive, or to let yourself be taken advantage of for years. During your search, you may encounter situations that don't feel right. If the studio is a mess, if maintenance is shoddy (especially if no one seems to care), if there is no one to look up to and learn from, or if it just doesn't feel like the right fit, it may not be the place for you.

If this is the case, don't burn bridges, but learn when and how to move on gracefully.

A PLAN

One thing I enjoy about my gig is helping students with their job search.

Some students come to me with a plan. They'll be moving to Nashville (or New York, or L.A.) on June 1. They've already faxed résumés to a dozen places. They have two interviews set up over spring break.

They'd like me to be a part of this plan by looking over their résumé, adding a letter of recommendation and advising them as to anyone who might be looking for someone with their specific skills and career goals. Perhaps I could put them in touch with some recent alumni who are already working in that market?

Entry-level people who are willing to work for free are the first to land the paying gigs. You may not like this rule, but it's true.

There are also students with little idea of where they want to go from academia, and it's difficult to give concrete assistance to people who don't yet know what their desires are. "I just want to get some kind of job in music," students sometimes tell me.

"I guarantee you will get what you want," I reply.

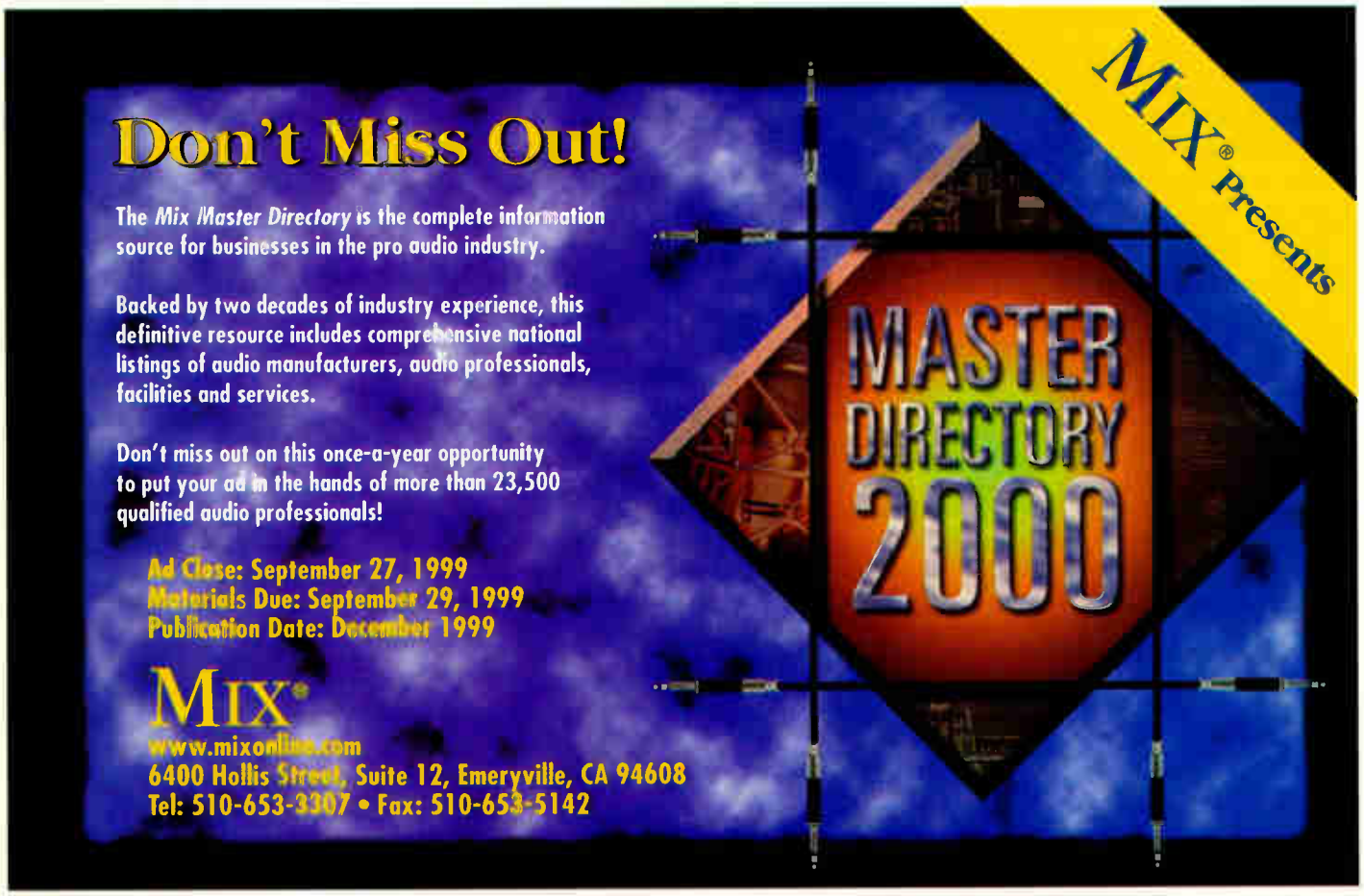
"Really?"

"Well, it may be working the counter at Tower Records, but if your goal is just to get 'some kind of job in music,' you'd almost have to walk out in front of a bus to not reach your goal." Kind of a crummy goal, though.

But if this is you, don't panic. Put some time into brainstorming what you really want. Think about what you enjoy doing most, and try it on for size. The next time you meet someone, instead of introducing yourself as a student, replace that label with your future profession.

"I'm a producer," or "I'm an engineer." Notice how that feels. As you fill in your plan, try to refine it: "I eventually want to produce R&B, but for the next couple of years I'm going to throw myself into a label or studio gig in New York so I can prove myself and meet as many people as possible."

Once you do this, you'll be amazed by how many people will come forward to help: They know someone at a studio in New York, or they recom-



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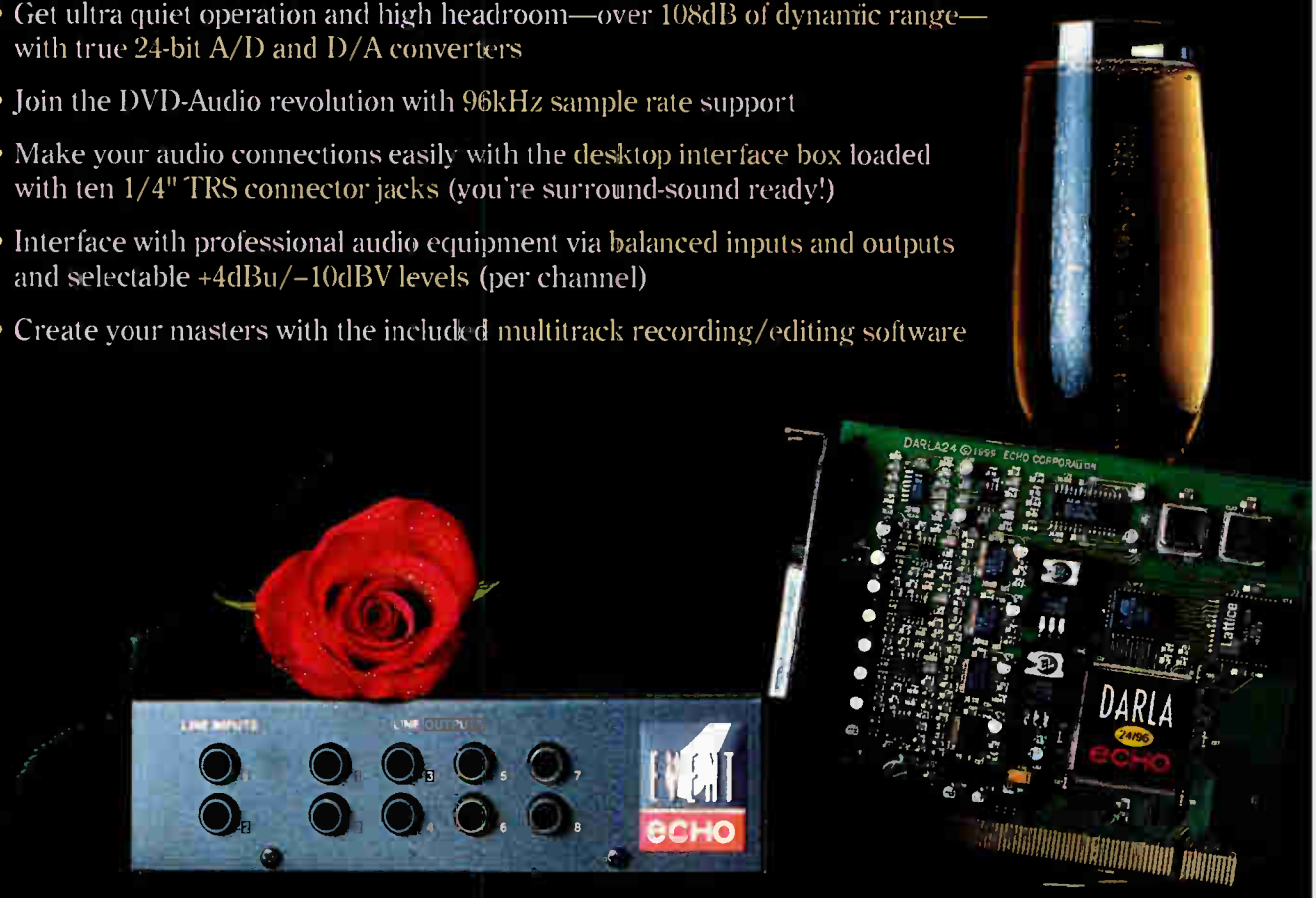

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mend a professor because she's recording an R&B project for a New York client, or they say, "Really? I'm headed for New York, too! Maybe we can share an apartment."

For every classmate like this that you befriend, your network potentially doubles. Your chance for success increases.

APPROPRIATE CONFIDENCE

Self-confidence is an essential ingredient to making it outside the academic world. Students who have had the courage to challenge themselves will have developed more of the self-assurance they need to tackle the job market. With confidence at a peak, you want to convince a prospective employer that passing on you when you're starting out and such a bargain, would be a loss.

But can't too much wind in your sails lead to the kind of attitudes that spell poison for entry-level people? How do you find the appropriate level of confidence that doesn't reek of overconfidence? Try keeping in mind that you may have been a big fish in a small pond at school, but as you swim out into deeper waters you're more like a guppy. Maintain confidence, but spare the attitude.

A healthy dose of fear will help keep overconfidence in check. Fear doesn't mean that something's wrong. If you're putting yourself into challenging situations, you'd be foolish not to feel terrified now and then. Acknowledge your fear, treat everyone with respect, and let your enthusiasm help you keep moving forward.

PERCEPTIVENESS

Confidence without perceptiveness can be calamitous. You need to be able to read the engineer, the studio owner, the client or the second engineer—whomever you're assisting. You'll find that you'll develop an appropriate, and probably different, way of working with each that suits their personal style. Who can you joke with, for example, and when? And who requires you to take a more quiet, reverent attitude toward your work? Coming on like gangbusters, and inserting your outrageous side into every exchange, may not be the best way to start

World Radio History

out. Take some time to observe. Take the time to learn the way things work at the new place you'll be calling home.

People skills are essential, an intangible prerequisite to studio work. You'll need to be able to get along well with everyone on a project, from a button-down advertising executive to a 19-year-old rapper who's never been in a real studio before.

EXPERIENCE

There is little doubt that prior experience will put you ahead in the job search. This experience can range from a full-time internship at a major facility during the summer before your senior year, to a part-time job or internship while you were in school, to running your own demo production studio out of your apartment or dorm room.

Geoff Zanelli, a dual major in Music Production and Engineering and Film Scoring was able to land an internship at Media Ventures in Santa Monica the summer before his final year. He proved himself to the point that when he graduated, Media Ventures hired him on full time.

While in school, Brett Blandon ran "Dorm Room Studios," supplying recording services to Songwriting and Performance majors. Brett still owns a small demo studio, and he has parlayed the confidence and people skills gained from this experience into his current position as studio manager at Ocean Way Nashville.

Don't discount any job experience you've had when it comes time to writing your résumé or telling a potential employer about yourself. It may seem unrelated that you were assistant manager at the local video store during high school, but if you gained experience in customer service, handling money and supervising employees, those are important, transferable skills.

ONLY THE BEGINNING

I hope this advice helps. I could offer plenty more (I didn't even get into the specifics of developing relationships or spotting opportunities, or concepts such as follow-through and maturity), but hopefully by the time *Mix*'s next education issue hits the stands, you'll already be throwing yourself into your new career full throttle, and experiencing eternal bliss. ■

Stephen Webber is an Emmy-winning composer and professor of Music Production and Engineering at Berklee College of Music in Boston.

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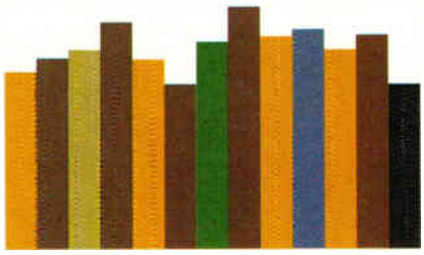


Off the Shelf

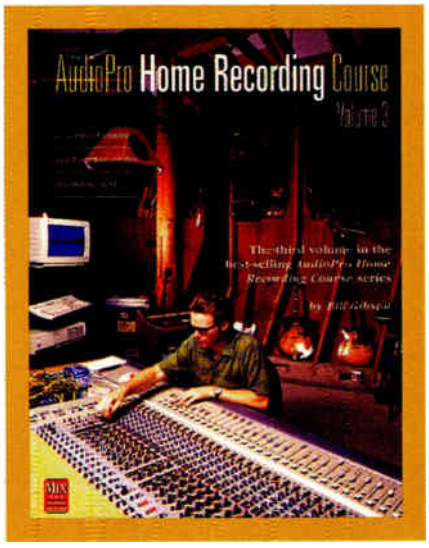
NEW AUDIO AND RECORDING BOOKS

THE AUDIOPRO HOME RECORDING COURSE VOLUME 3

By Bill Gibson
MixBooks
800/543-7771; www.mixbooks.com

Attending a top recording program is the best way to get a well-rounded, in-depth education in audio production techniques. However, due to financial or geographic considerations, such a path is impossible for many students, and for people in these situations, home study is often the only available alternative.

Three years ago, producer/engineer/composer/studio owner Bill Gibson debuted his *The AudioPro Home Recording Course*, a 245-page text focusing on recording basics such as mixing, equalization, signal processing and guitar and drum miking. The book included two CDs so readers could hear audio examples of studio techniques. The success of the original course led Gibson to follow with a second edition, *The AudioPro Home Recording Course, Volume 2*, emphasizing mixing techniques, along with a section on session organization and methods of recording bass, piano, vocals and synths.



Continuing the "cut to the chase" approach and listen-as-you-learn CDs used in his two previous books, *The AudioPro Home Recording Course Volume 3* expands the series with a new book/CD that delves into digital recording (with hard disk and MDMs), recording software and plug-ins, advanced MIDI and audio synchronization, digital mixing, and mastering the final product.

Without a doubt, the strength of *The AudioPro Home Recording Course* is Gibson's down-to-earth writing style, which leans heavily on providing practical tips and power user secrets for getting the sound you want. Additionally, the CDs aptly demonstrate the principles in the text, allowing the student to assimilate difficult-to-describe or subtle concepts easily (and quickly). Priced at an affordable $59.95 per volume, *The AudioPro Home Recording Course* puts novices on the fast track for creating some great tracks of their own.

—George Petersen

World Radio History

THE NEW STEREO SOUNDBOOK

By Ron Streicher and F. Alton Everest
Audio Engineering Associates
800/798-9127; www.stereosoundbook.com

Nearly a decade in the making, this second edition of the 1991 *The New Stereo Soundbook* builds on the original and provides a thorough, yet eminently readable examination of nearly every aspect of stereo audio creation.

Fourteen chapters explore the topic in detail, from the early stereophonic demonstrations of the 1880s and the work of pioneers such as Blumlein and Fletcher in the 1930s, up through modern multichannel surround systems. The book also presents a solid foundation for the understanding of the human auditory process, looking at the physiological, perceptual and psychoacoustic aspects of the stereo "illusion." Other chapters detail topics such as binaural recording, 2-channel and multichannel stereo microphone techniques, coincident vs. spaced-pair approaches, pseudostereo and a section on optimizing the listening space. As an added bonus, the book includes a complete reprint of Blumlein's 1931 patent on stereo techniques, which even today provides fascinating reading.

Authors Streicher and Everest have done an exemplary job of presenting this sometimes-difficult material in a clear, understandable manner, with dozens of illustrations and graphics. At $54.50, *The New Stereo Soundbook* is an important work that's a must-read for anyone serious about stereo. —*George Petersen*

ACOUSTICS: ARCHITECTURE, ENGINEERING, THE ENVIRONMENT

By Charles M. Salter Associates Inc.
William Stout Publishers
415/391-6757; www.stoutbooks.com; www.cmsalter.com

Charles Salter is not the first name in recording studio acoustics, though perhaps he should be. Projects on which his company has provided acoustical consulting include the Skywalker Ranch Technical Building, the Dolby Laboratories Screening Room, the Todd-AO Scoring Stage and Off Planet Entertainment, to name just a few. But he's a generalist in every sense of the word. Clean sound is his life, whether it be for noise control in the Oakland Federal Building, testifying in court as a specialist in audio forensics, or noise dampening in a variety of trendy restaurants. Other projects include the San Francisco Museum of Modern Art, the Monterey Bay Aquarium and his own Presentation Studio, where clients get an interactive feel for the properties of various materials.

Last year, the Salter team put out an immense and extremely comprehensive coffee-table book on acoustics, including numerous case studies and more than 300 full-color graphs, photos and illustrations of the fundamental principles. There is something for everyone, whether an attorney, building project manager, design professional or recording professional. After opening with a basic history of acoustics, the book quickly moves into chapters on fundamental principles, psychoacoustics and hearing, environmental noise and sound insulation. Of particular interest to *Mix* readers would be the chapter on "Room Acoustics," which was written by David Schwind and appeared in *Mix* as an excerpt in August 1997.

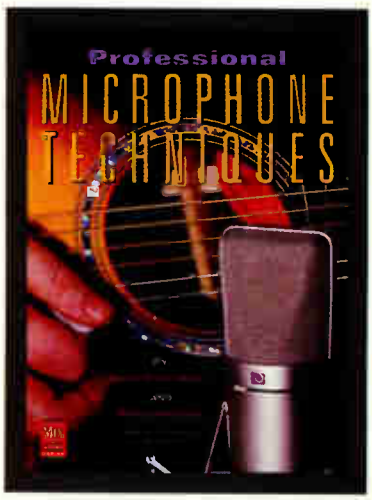
Each chapter is written by a working professional, in his or her area of expertise. So the reader is provided with insights into mechanical and electrical systems, sound amplification systems, audio/visual presentation, cost analyses, legal issues, building vibrations...the list goes on. Also included are a comprehensive glossary of terms, a backgrounder on each contributor and a detailed index.

Priced at $75, *Acoustics: Architecture, Engineering, The Environment* would seem a must for any recording school program, if only for its fundamental approach and clear, concise explanations of complex topics. It should also find a home on the coffee table of any recording studio, big or small, commercial or private. After all, it's all about the sound.
—*Tom Kenny*

PROFESSIONAL MICROPHONE TECHNIQUES

By David Miles Huber and Philip Williams
MixBooks
800/543-7771; www.mixbooks.com

There are LOTS of books on the subject of microphones, but *Professional Microphone Techniques* ($39.95)



World Radio History

takes the reader beyond the usual text. Rather than simply presenting reams of theory, the book provides a short section on basics and fundamentals, followed by dozens of examples that reveal insider techniques for microphone use and placement.

Illustrated how-to sections cover both vocals and instruments ranging from accordions (traditional as well as bandoneons and concertinas) to xylophones and zithers, along with dulcimers, doumbeks, didgeridoos and dobros. Fortunately, there's also more than equal attention to more common studio instruments, such as drum sets, piano, Leslie cabinets, horns, guitar and bass. And taking the process one step further, *Professional Microphone Techniques* includes an audio CD that allows the reader/listener to hear the various effects of microphone placement techniques.

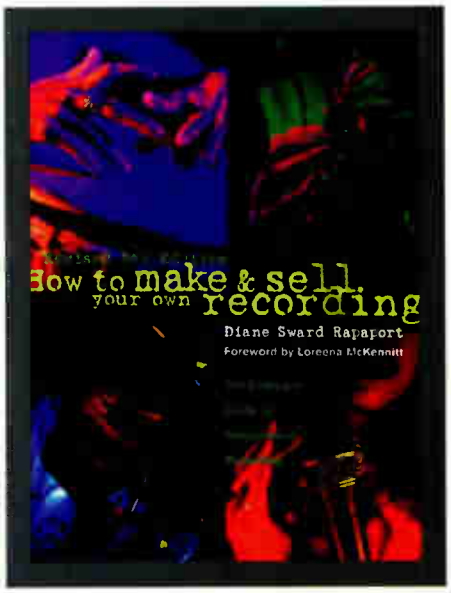
Written by best-selling audio author David Miles Huber (whose *Modern Recording Techniques* established itself as a standard text in audio schools worldwide) and Philip Williams, a noted engineer and founder of several acoustic music labels, *Professional Microphone Techniques* is a well-written, concise and informative guide that opens new avenues for creativity and could save a lot of time and trouble for beginners and studio pros alike.

—George Petersen

HOW TO MAKE AND SELL YOUR OWN RECORDING

By Diane Sward Rapaport
Jerome Headlands Press
520/634-8894; www.kspace.com/jhp

This book, now in a revised fifth edition, originally came out in 1978 when there were relatively few places musicians



could turn to learn about the intricacies of how to put out an independent record. It was a fine book then and it's an even better book now, updated to reflect changes in technology (MIDI, ADATs, sampling, etc.) and the music industry. This is not the place to get highly detailed recording information, but there are a couple of chapters that lay out the basics of recording in a very clear and concise way, and present the reader with many different options for managing a recording project.

Other chapters in this $32.95 book deal quite specifically with various issues connected to putting out an independent record: mastering, manufacturing, distribution, artwork/ printing, copyrights, contracts, promotion and financial matters of every kind. The text is peppered with real-life examples that illustrate some of the ideas in the book, and there are step by step instructions for how to write a business plan and make a timetable for completing different kinds of projects. All in all, the book is a great starting place for anyone brave (or crazy) enough to want to make and market their own recordings.

—Blair Jackson

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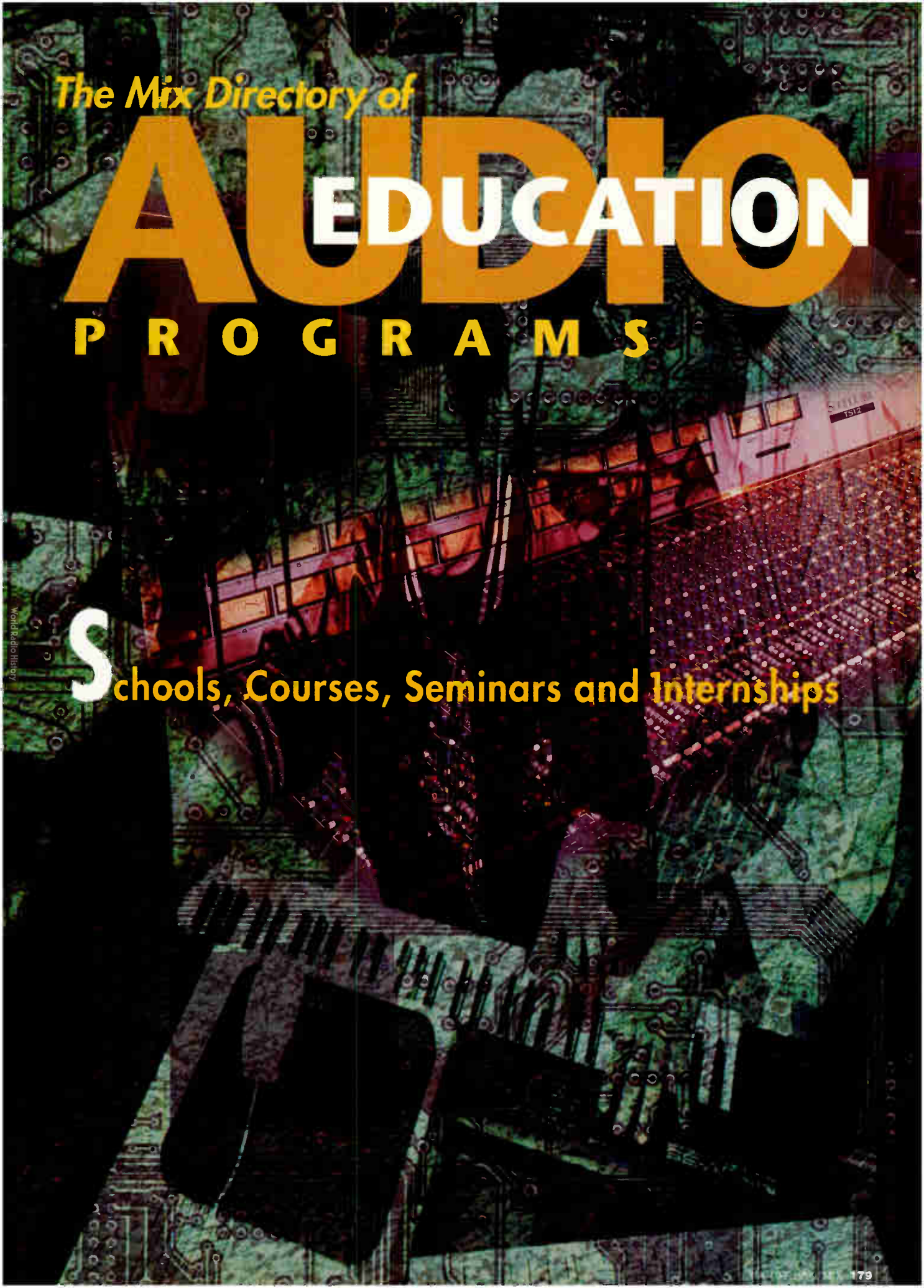

The Mix Directory of AUDIO EDUCATION PROGRAMS

Schools, Courses, Seminars and Internships

World Radio History

The Mix Directory of AUDIO EDUCATION PROGRAMS

Choosing the Right School

Welcome back, prospective students. It's been a year since *Mix* last published a directory of audio education programs. This year's guide includes more schools and programs than we've ever offered before, and we hope you find it useful in your school search.

Every month, the 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* can not 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.

What we've tried to do by offering this audio education directory is to provide a starting point for doing that research, so that you can find the school that suits you. To produce this latest directory, we've consulted a number of sources and made all participation in it free. That's why this is the most comprehensive listing of programs that *Mix* has offered to date. (But if you are affiliated with a program we have not included, please let us know who you are so we won't leave you out next year!)

The first step to choosing a suitable audio education program is to review the directory. We strongly suggest that you then request brochures and course catalogs 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.

As you wade through all of this material, keep in mind the following 15 points; these have appeared in *Mix* before but we find that, like our directory, they warrant repeating.

Good luck!

—The Editors

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 résumé 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 who 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

THE SCHOOLS

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

EASTERN SCHOOLS

AMERICAN UNIVERSITY

4400 Massachusetts Ave NW., Washington, DC 20016-8058 **Phone:** 202/885-2751 **Fax:** 202/885-2723 **E-mail:** vbrown@american.edu **Web site:** www.kotzebue.physics.american.edu **Degrees/Certificates offered:** 4-year BS in Audio Technology; 2-year MS Interdisciplinary. **Program and Facilities description:** Unique in that it is housed in the Department of Physics, the Audio Technology program concentrates on the technology of electronic recording and reproduction of sound, using both the technical expertise of our faculty and the hands-on professional experience of adjunct professors. The main control room features a 24-track analog studio with hard disk recording capabilities. Mixdown is to DAT with the ability to burn CDs on-site. Our electronic music lab has various analog and digital synthesizers, samplers and MIDI controllers.

ART INSTITUTE OF PHILADELPHIA

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

BARTON COLLEGE

Barton College Station, Wilson, NC 27893 **Phone:** 919/399-6487 **Fax:** 919/237-4957 **E-mail:** grcse@barton.edu **Web site:** www.barton.edu **Degrees/Certificates offered:** Bachelor of Science in Recording Technology. **Program and Facilities description:** Extensive 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; 4 Tascam DA-88s; Mac computer with Pro Tools, Sound Designer, Master Tracks Pro 5 and Finale; Kurzweil K2000S with VAST system; Yamaha SY-88 and Roland JV-80. The computer lab has 12 workstations, each with a Mac computer.

BELMONT UNIVERSITY

1900 Belmont Blvd., Nashville, TN 37212 **Phone:** 615/460-6000 **Fax:** 615/386-4516 **Degrees/Certificates offered:** Bachelor of Music with a major in Commercial Music (emphasis in Performance, Music Technology, Music Business or Composition and Arranging). **Program and Facilities description:** Music students at Belmont are trained in the fundamentals of music and given opportunities to explore and expand their musical interests and talents. The individual artist is the focal point of instruction. Integrated understanding is emphasized through numerous opportunities that put classroom learning into application in performing ensembles. Practical, real-life opportunities abound through interaction with the faculty and master classes by noted musicians in all genres. Belmont's program is one of the first commercial music programs in the country.

BERKLEE COLLEGE OF MUSIC

1140 Boylston St., Boston, MA 02215 **Phone:** 800/421-0084, 617/747-2222 **Fax:** 617/747-2047 **E-mail:** admissions@berklee.edu **Web site:** www.berklee.edu **Degrees/Certificates offered:** 4-year Bachelor of Music Degree or Professional Diploma. **Program and Facilities description:** The Music Synthesis 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 is composed of active music industry professionals. Classes, studios and labs are supplemented by year-round lectures and clinics by a host of visiting artists. Facilities include ten multitrack acoustic/project/post-production studios, three synthesis labs with 34 digital workstations and two MIDI-equipped ensemble rooms.

CAYUGA COMMUNITY COLLEGE

197 Franklin St., Auburn, NY 13021 **Phone:** 315/255-1743 **Fax:** 315/255-2117 **Web site:** www.cayuga-cc.edu **Degrees/Certificates offered:** 2-year A.A.S. in Audio Production, 2-year A.A.S. in Telecommunications Technology, 2-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. Industry internships are required.

FINGER LAKES COMMUNITY COLLEGE

4355 Lakeshore Dr., Canandaigua, NY 14424 **Phone:** 716/394-3500 **Fax:** 716/394-5005 **E-mail:** admissions@snyflcc.fingerlakes.edu **Web site:** www.fingerlakes.edu **Degrees/Certificates offered:** 2 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+ square-foot recording room. Installed in the control room is a Mackie digital 8-bus console with 24 tracks of Tascam DA-88s. Editing and mastering is done on hard disk via a Mark of the Unicorn 2408, using Samplitude Studio. Final mixes can be recorded onto DAT, MD or CDRW.

FIVE TOWNS COLLEGE

305 North Service Rd., Dix Hills, NY 11746 **Phone:** 516/424-7000 **Fax:** 516/424-7008 **E-mail:** d.cohen@ftc.edu **Web site:** 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 of Music 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 8-, 16-, 24- and 48-track world-class recording studios, a television production facility and sound stages 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

3300 University Blvd., Winter Park, FL 32792 **Phone:** 800/226-7625 **Fax:** 407/678-0070 **E-mail:** admissions@fullsail.com **Web site:** www.fullsail.com **Degrees/Certificates offered:** Associate Degrees in Recording Arts, Show Production and Touring, Film and Video Production, Digital Media and Game Design. **Program and Facilities description:** Full Sail offers hands-on training in a world-class 33-studio multimedia complex. This complex includes consoles such as the Neve VR with Flying Faders automation and Recall, an 80-channel/160-input SSL 9000J with Total Recall and Ultimation and the Neve Capricorn digital console. The curriculum includes courses in Sound for Motion Pictures and Television, Recording Engineering, Audio for Post Production, Sound Design, Sound Reinforcement and Concert Lighting, MIDI, Digital Audio Workstations and Advanced Recording.

FUTURE MEDIA CONCEPTS

305 E. 47th St., New York, NY 10017 **Phone:** 212/888-6314 **E-mail:** info@fmctraining.com **Web site:** www.fmctraining.com **Degrees/Certificates Offered:** Manufacturer's Certificate of Merit. Courses range from 5 days, for the 2-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 manufac-

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AUDIO EDUCATION PROGRAMS
EASTERN SCHOOLS

turer-authorized training in non-linear audio and video editing, 3D animation, webpage development, 2D 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, & evening class schedules. Satisfaction guaranteed. Financing available.

HAMPTON UNIVERSITY DEPARTMENT OF MUSIC

Hampton, VA 23668 Phone: 757/727-5237 Fax: 757/727-5084

HARRIS INSTITUTE FOR THE ARTS

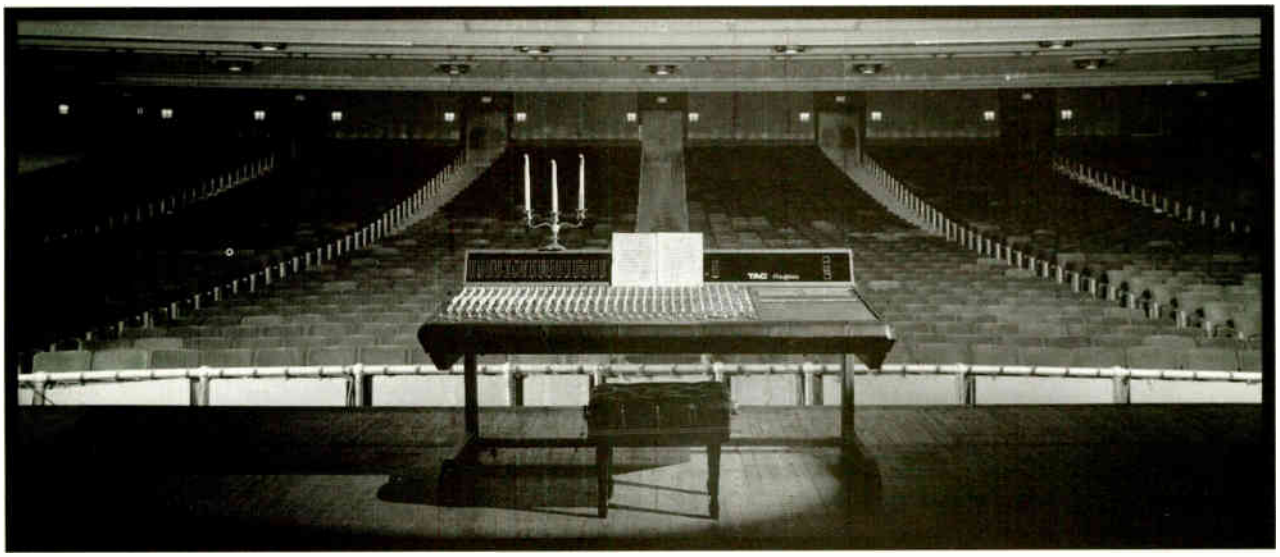
118 Sherbourne St., Toronto, Ontario Canada M5A 2R2 Phone: 416/367-0178 Fax: 416/367-5534 **E-mail:** harrisi@interlog.com **Web site:** www.ampsc.com/~harris **Degrees/Certificates offered:** 1-year (12 months) Producing Engineering Diploma, 1-year (12 months) Recording Arts Management Diploma. **Program and Facilities description:** Harris Institute offers 76 courses on the business, technical and creative aspects of the music industry. The Diploma Programs are taught by a faculty of 54 active industry professionals, complemented by a wide range of guest lecturers. The 2,500-sq.-ft. facilities include Pro Tools in the audio post-production suite, a MIDI/multitrack suite and 24-track digital multitrack control room. Programs culminate in the formation of production and management companies as well as internship placements at studios and companies throughout the music industry.

INSTITUTE OF AUDIO RESEARCH

64 University Place, New York, NY 10003 Phone: 212/677-7580 Fax: 212/677-6549 **E-mail:** larny@aol.com **Degrees/Certificates offered:** Diploma in Recording Engineering and Production. Licensed by NYS Education Department, accredited by ACCSCT. Program transfers as approximately 1 year toward Bachelor Degree. **Program and Facilities description:** Intensive 6-month program exposes students to every facet of today's 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-sq.-ft. Greenwich Village facility in the heart of NYC's most exciting music scene. Financial aid for eligible students.

LEBANON VALLEY COLLEGE OF PENNSYLVANIA

Department of Music, Annville, PA 17003 Phone: 717/867-6285 Fax: 717/867-6390 **E-mail:** hill@lvc.edu **Web site:** www.lvc.edu **Degrees/Certificates offered:** 4-year Bachelor of Music in Music Recording Technology. **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.



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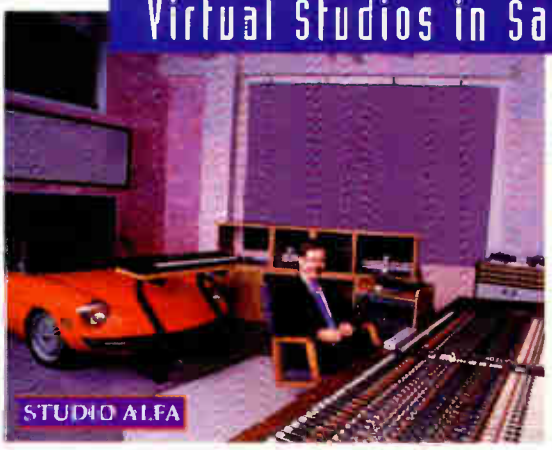

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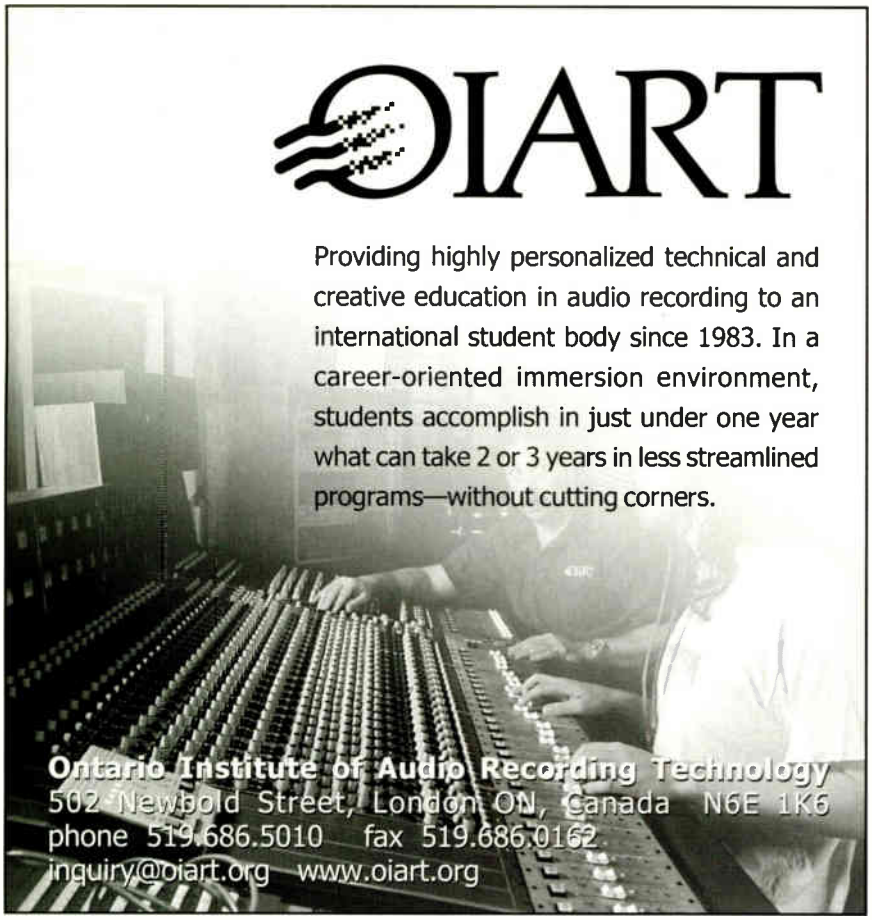

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11380 N.W. 27th Ave., Miami, FL 33167 Phone: 305/237-1159 Fax: 305/237-1589

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555 Sherbrooke St. West, Montreal, Quebec, Canada H3A 1E3 Phone: 514/398-4535 Fax: 514/398-8061 E-mail: wieslaw@music.mcgill.ca Web site: www.music.mcgill.ca/mmt Degrees/Certificates offered: 2-year M.A. 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 with technical ear training to improve auditory perception and hands-on experience working with live musicians in groups ranging from solo to full symphony orchestra. Three fully equipped control rooms, four performance venues, three post-production editing studios, a separate 4-studio suite for electroacoustic music, multichannel audio research lab and two computer labs.

MIDDLE TENNESSEE STATE UNIVERSITY

P.O. Box 21, Murfreesboro, TN 37132 Phone: 615/898-2578 Fax: 615/898-5682 E-mail: record@mtsu.edu Web site: 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 and surround sound mixing. Hard disk/post-production studio, MIDI laboratory, maintenance laboratory and 5.1-channel screening room. Eight TEC Award nominations, NARAS student award, AES and SMPTE chapters.

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 Web site: www.musitechnic.com Degrees/Certificates offered: Computer Assisted Sound Design (1 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 a knowledge of data-processing principles, MIDI synthesis, digital sound reproduction and computer-assisted sound design, enabling students to work contemporary studios and MIDI workshops.

NASSAU COMMUNITY COLLEGE

One Education Dr., Garden City, NY 11530 Phone: 516/572-7446 Fax: 516/572-9791 E-mail: musoff@sunynassau.edu Web site: www.suny

World Radio History

nassau.edu **Degrees/Certificates offered:** 1-year certificate in Studio Recording Technology. **Program and Facilities description:** This three-semester program is designed to introduce students to music and recording technology, provide a broad perspective on the music industry, and to acquaint students with musical structures. 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.

NORTHEASTERN UNIVERSITY

Department of Music, 351 Ryder Hall, Boston, MA 02115 **Phone:** 617/373-2440 **Fax:** 617/373-4129 **Web site:** www.neu.edu **Degrees/Certificates offered:** 4-year BS in Music Industry; 4-year BS in Music Technology; 4-year BA in Music Literature and Performance.

NY INSTITUTE OF FORENSIC AUDIO

P.O. Box 189, Colonia, NJ 07067 **Phone:** 732-574-9672 **Fax:** 732/381-4523 **E-mail:** owlmax@aol.com **Web site:** 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.

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5609 Fishers Lane, Rockville, MD 20852 **Phone:** 301/230-9100 **Fax:** 301/230-9103 **E-mail:** omega@omegastudios.com **Web site:** 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 for Advertising; 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 **Web site:** www.oiart.org **Degrees/Certificates offered:** 1-year, college-level diploma in Audio Recording Technology. **Program and Facilities description:** An outstanding, competitively priced private school offering highly personalized quality instruction for 15 years to an international student body. In a rigorous program, both practically and academically, students accomplish in 11 months what usually takes two or three years in a college setting. First in Canada to achieve certification from both Avid and Digidesign as an Avid Authorized Education Centre for instruction in Pro Tools. More hands-on training than any other recording engineering program in Canada. No hidden fees.

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1 East Mount Vernon Place, Baltimore, MD 21202 **Phone:** 410/659-8110 **Fax:** 410/659-8102 **E-mail:** apk@peabody.jhu.edu **Web site:** www.peabody.jhu.edu/recording-arts **Degrees/Certificates offered:** 5-year Bachelor in Recording Arts, 2-year Master's in Audio Recording and Acoustics. **Program and Facilities description:** Comprehensive math/science/music-based degrees in recording arts. Fully automated digital facilities; see Web site for additional information.

RECORDING ARTS CANADA, ONTARIO

PO Box 11025, 984 Hwy. #8, Stoney Creek, Ontario, Canada L8E 5P9 **Phone:** 888/662-2664 **Fax:** 905/643-7520 **E-mail:** admissions@recordingarts.com **Web site:** www.recordingarts.com **Degrees/Certificates offered:** 1-year diploma in audio engineering and multimedia production. **Program and Facilities description:** Recording Arts Canada is a unique school that offers students an 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 techniques audio, music and multimedia professionals use every day. At Recording Arts Canada we provide sophisticated technology, audio technology, quality theoretical instruction and extensive practical activity within a small group format so that our students graduate as skilled and employable professionals.

RECORDING ARTS CANADA, QUEBEC

34 Chemin des Ormes, Ste-Anne-des-Lacs, Quebec, Canada J0R 1B0 **Phone:** 514/224-8363 **Fax:** 514/224-8064 **Web site:** www3.sympatico.ca/inst.enreg **Degrees/Certificates offered:** 1-year diploma programs in Audio Production, 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

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269 W. 40th Street 2nd Flr., New York, NY 10018 **Phone:** 212/944-9121 **Fax:** 212/944-9123 **E-mail:** saeny@cybernex.net **Web site:** www.sae.edu **Degrees/Certificates offered:** 9 month/18 month Audio Technology Diploma (full time/part time); 7.5 month/12 month Multimedia Producer Diploma (full time/part time); 2-year Bachelor's in Recording Arts (in conjunction with Middlesex University, London); 2-year Bachelor's in Multimedia Arts (in conjunction with Middlesex University, London). **Program and Facilities description:** SAE Institute of Technology is the largest audio and multimedia institute in the world, with over 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:** selectsound@cmp-express.com **Web site:** www.selectsound.com **Degrees/Certificates offered:** Recording Technologies One: 12 weeks, 3 credits; Recording Technologies Two: 10 weeks, 3 credits; Recording Technologies Three: 10 weeks, 3 credits; MIDI Production: 10 weeks, 3 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:** 410/628-6280 **Fax:** 410/ 628-1977 **E-mail:** bill@sheffieldav.com **Web site:** www.sheffieldav.com **Degrees/ Certificates offered:** Certificate approved by Maryland Higher Education Commission. AudioWorks: 290 hrs/six-month full-time audio engineering program. VideoWorks: 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. AudioWorks: basic audio engineering, advanced audio engineering, advanced audio lab, MIDI, nonlinear digital audio editing and live sound/remote recording. VideoWorks: 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.

STATE UNIVERSITY OF NEW YORK COLLEGE AT FREDONIA

1146 Mason Hall Fredonia, NY 14063 **Phone:** 716/673-3151 **Fax:** 716/673-3154 **E-mail:** kerzner@ait.fredonia.edu **Degrees/Certificates offered:** BS in Sound Recording Technology, BFA in Media ARTS, BS in Communications. **Program and Facilities Description:** The highly respected and comprehensive Fredonia SRT program is based within the National Association of Schools of Music-accredited Fredonia School of Music. A musical audition is required in addition to mathematical skills. A wide variety of internships at leading facilities are regularly available. Students learn on analog 2- and 24-track systems as well as Pro Tools and Sound Tools workstations. MDMs, MIDI/sampling labs; students receive a minimum of 650 hours of hands-on studio lab.

TREBAS INSTITUTE, ONTARIO

410 Dundas St. East, Toronto, Ontario, Canada M5A 2A8 **Phone:** 416/966-3066 **Web site:** www.trebas.com **Degrees/Certificates offered:** 1-year diploma programs in Audio Engineering, Recorded Music Production, Music Business Administration, Film/Television Production, New Media Development and 3D Animation; B.A. (Hon.) Degree in Sound Technology (2 years, following 1-year diploma in Audio Engineering) in partnership with the Liverpool Institute for Performing Arts. 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. TEC Award nominee, 1989 and 1990, Recording School of the Year.

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451 Saint Jean St., Montreal, Quebec, Canada H2Y 2R5 **Phone:** 514/845-4141 **Web site:** www.trebas.com **Degrees/Certificates offered:** 1-year diploma programs in Audio Engineering, Recorded Music Production, Music Business Administration, Film/Television Production, New Media Develop-

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ment and 3D Animation; B.A. (Hon.) Degree in Sound Technology (2 years, following 1-year diploma in Audio Engineering) in partnership with the Liverpool Institute for Performing Arts. 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. TEC Award nominee, 1989 and 1990, Recording School of the Year. Courses offered in choice of French or English.

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1953 Riccardo Ave., Fort Myers, FL 33901 **Phone:** 941/332-4246 **Fax:** 941/332-4246 **E-mail:** aiannucci@aol.com **Web site:** www.unitygain.com **Degrees/Certificates offered:** Certificate of Graduation upon completion of the 48-week Audio Recording Comprehensive Program. **Program and Facilities description:** Whether your desire is to become an engineer, a studio manager/owner, a producer or simply an educated audio enthusiast, Unity Gain offers a four-level program designed to prepare you to excel in the area of your choice. The Institute's multitrack recording facilities enable the student to learn on state-of-the-art equipment, with an emphasis on hands-on instruction in recording, production, audio-for-film/video, sound reinforcement and MIDI.

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 **Web site:** uhavax.hartford.edu/acoustics **Degrees/Certificates offered:** BS Engineering (BSE); BS Mechanical Engineering; Optional EE minor. **Program and Facilities description:** There are two ways to incorporate Acoustics into an undergraduate Engineering degree at UH: 1) Acoustics and Music BSE program, which combines an engineering degree program emphasizing acoustics & vibrations with course work at the Hartt School of Music; 2) The Mechanical Engineering BSME with Acoustics Concentration program. Graduates are employed by numerous audio equipment manufacturers, acoustical consulting firms and graduate schools in acoustics. Facilities: Anechoic chamber, B&K dual-channel FFT/RTAs, Modal Analysis/CADP2 software, DAT, portable SLMs, three studios with multitrack analog/digital recording, Pro Tools software.

UNIVERSITY OF MAINE AT AUGUSTA

46 University Dr., Augusta, ME 04330 **Phone:** 207/621-3267 **E-mail:** richard@mail.caps.maine.edu **Web site:** 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 **Degrees/Certificates offered:** Bachelor of Music in Sound Recording Technology. **Program and Facilities description:** The primary program, the BM 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

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P.O. Box 248165, Coral Gables, FL 33124 Phone: 305/284-2247 Fax: 305/284-6475 E-mail: kmoses@miami.edu Web site: 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 have completed their electrical engineering degree and engage in research in DSP programming, psychoacoutics and synthesis. Our facilities and faculty members (including Ken Pohlman, Will Pirkle and Joe Abbati) are known for their excellence.

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EASTERN SCHOOLS

newhaven.edu **Web site:** www.newhaven.edu **Degrees/Certificates offered:** 4-year BA in Music & Sound Recording; 4-year BS in Music & Sound Recording; 4-year BA in Music. **Program and Facilities description:** The Music & Sound Recording Programs instruct students in three interrelated areas: 1) music history, theory and aesthetics; 2) musicianship; and 3) sound recording methodology and technique. Music Industry adds courses in copyright law, contracts, accounting, marketing and management. The new professional recording facility features a Tascam ATR80 24-track recorder, DA-88 digital recorders and model 600 console, UREI and JBL monitors, Apple Macintosh computers, digital editing and mixdown, and extensive outboard and MIDI gear. Facilities also include 16-, 8- and 4-track studios and workstations.

UNIVERSITY OF NORTH CAROLINA AT ASHEVILLE, MUSIC DEPARTMENT

One University Heights, Asheville, NC 28804-8510 **Phone:** 704/251-6432 **Fax:** 704/254-7160 **E-mail:** cmcknight@unca.edu **Web site:** www.unca.edu **Degrees/Certificates offered:** BS in Music with Recording Arts; BA in Music with a Concentration in Jazz Studies; BA in Music (general music studies). **Program and Facilities description:** The BS in Music with Recording Arts 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 facilites 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

CENTRAL SCHOOLS

ASPEN MUSIC FESTIVAL AND SCHOOL

2 Music School Rd., Aspen, CO 81611 **Phone:** 970/925-3254 x122 **Fax:** 970/925-3802 **E-mail:** school@aspenmusic.org **Web site:** www.aspen.com/musicfestival **Program and Facilities description:** The Edgar Stanton Audio Recording Institute is an intensive 4-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 ten students to ensure maximum individual attention.

AUDIO ENGINEERING INSTITUTE

6610 Buffalo Hills, San Antonio, TX 78256-2330 **Phone:** 210/698-9666 **Degrees/Certificates offered:** Basic and Advanced Audio Engineering classes, each lasting ten weeks. **Program and Facilities description:** Courses meet on Monday nights, 6:30 to 9:30 pm. Classes are taught by Gold and Platinum Record winner Marius Perron III. Students are trained 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.

BROWN INSTITUTE

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

THE CLEVELAND INSTITUTE OF MUSIC

11021 East Blvd., Cleveland, OH 44106-1705 **Phone:** 216/791-5000 **Fax:** 216/791-3063 **E-mail:** tjk11@po.curv.edu **Web site:** www.cim.edu **Degrees/Certificates offered:** Bachelor of Music (BM) 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. Tascam DA-98, Pro Tools, Sonic Solutions and Yamaha 02R digital multitrack recording/mixing; Lexicon, TC Electronics, Yamaha, Macintosh and Sony computers. Audio Technica, Neumann, Seinnheiser, 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, sound with picture. 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@popmail.colum.edu **Web site:** www.colum.edu **Degrees/Certificates offered:** 4-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/non-linear production, audio system analysis, and acoustical design and analysis.

DEPAUL UNIVERSITY SCHOOL OF MUSIC

804 W. Belden Ave., Chicago, IL 60614 **Phone:** 773/325-7260 **Fax:** 773/325-7264 **E-mail:** rbeacraf@wppost.depaul.edu **Degrees/Certificates offered:** 4-year Bachelor of Science in Music. **Program and Facilities description:** The DePaul Sound Recording Technology Program is designed to prepare students for a career in the recording field. DePaul SRT students take the standard music core classes in addition to specialization in electronics and computer science. Recording classes and practicums take place at Streeterville Recording, a facility featuring state-of-the-art consoles and equipment. Students also refine their skills at Studio DePaul, the on-campus recording facility.

ELMHURST COLLEGE

190 Prospect, Elmhurst, IL 60126 **Phone:** 630/617-3500 **Fax:** 630/617-3738 **E-mail:** kevino@elmhurst.edu **Degrees/Certificates offered:** BM in Music Business, BS in Music Business, BM in Music Education, BA in Music. **Program and Facilities description:** Located in the Chicago metropolitan area, Elmhurst College is a nationally accredited institution. In addition to classwork in music, business

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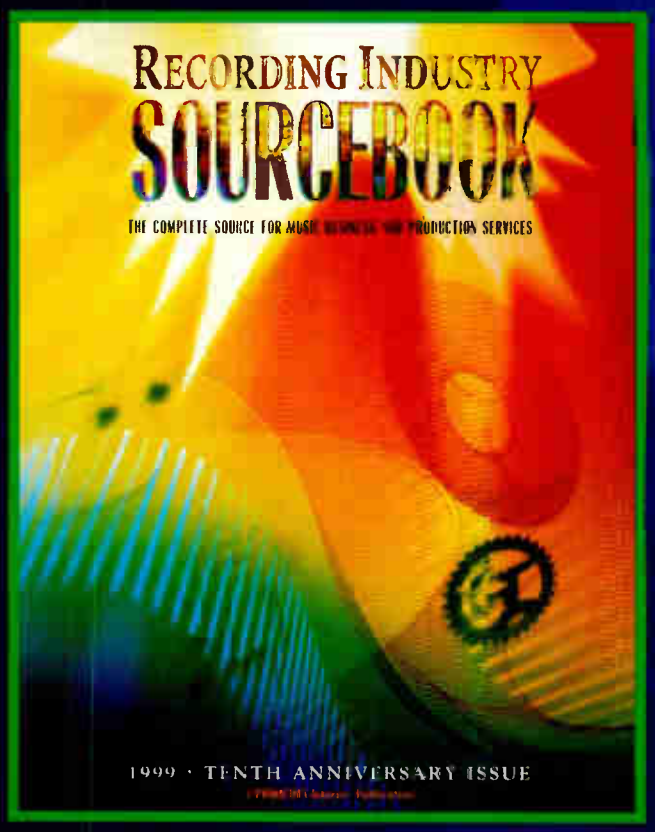

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GRAND VALLEY STATE UNIVERSITY

301 West Fulton St., Grand Rapids, MI 49504 **Phone:** 616/771-6754 **Fax:** 616/336-7215 **Degrees/Certificates offered:** Electrical Engineering with Music minor.

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 **Web site:** www.hccs.cc.tx.us/nwcollege/audt/main.htm **Degrees/Certificates offered:** 1-year certificates in Audio Engineering, MIDI/Electronic Music and Video Production; 2-year AAS Degree in Audio Engineering; 1-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, CDRs Akai, Alesis, E-mu, Korg, Peavey, Roland, Yamaha synthesizers. Studios I, VII: 30 PowerMac/Korg workstations. Studio VIII: linear and non-linear video editors.

INDIANA UNIVERSITY SCHOOL OF MUSIC

Bloomington, IN 47405 **Phone:** 812/855-1087 **E-mail:** bejrober@indiana.edu **Web site:** www.music.indiana.edu/som/audio **Degrees/Certificates offered:** AS in Audio Technology, BS in Audio Recording. **Program and Facilities description:** Training in audio recording, reinforcement and media production, multitrack studio techniques emphasized (AS), classical music engineering and producing emphasized (BS). 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; 1,200 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 South Smithville Rd., Dayton, OH 45431 **Phone:** 937/258-8251 **Fax:** 937/258-8714 **Web site:** www.icbroadcasting.com **Degrees/Certificates offered:** Associate Degree programs in Applied Science of Communication Arts in Television and Radio and 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 located in Dayton, OH. 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 offered 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 **Web site:** 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.

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MUSIC TECH MUSICIANS TECHNICAL TRAINING CENTER

304 Washington Ave. N., Minneapolis, MN 55401 **Phone:** 800/594-9500, 612/338-0175 **Fax:** 612/338-0804 **E-mail:** matt@musictech.com **Web site:** www.musictech.com **Degrees/Certificates offered:** Associate of Applied Science Degrees in Music: Emphasis, Music Production (two year), and Recording Technology (two year); Diploma programs in Recording Engineer Course/Engineer Major and Production Major (one year). **Program and Facilities description:** Highly selective, in-depth courses for career-oriented students. State-of-the-art facilities in the heart of Minneapolis music industry. Nationally recognized faculty. Accredited institutional member of the National Association of Schools of Music. State-of-the-art recording studios—SSL, Studer, Pro Tools. Waiting list for some programs. Please apply early.

NORTHEAST COMMUNITY COLLEGE

801 East Benjamin Ave., Norfolk, NE 68702 **Phone:** 402/644-0506 **Fax:** 402/644-0650 **E-mail:** northeastaudio@yahoo.com **Web site:** http://alpha.necc.cc.ne.us/hdocs/la/audrprog.htm **Degrees/Certificates offered:** 2-year Audio Recording Associates degree. **Program and Facilities description:** Located in Northeastern Nebraska, Northeast Community College's Audio Recording program combines thorough academics and 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.

NORTHEASTERN UNIVERSITY DEPARTMENT OF MUSIC

351 Ryder Hall, Boston, MA 02115 **Phone:** 617/373-2440 **Fax:** 617/373-4129 **Web site:** www.neu.edu **Degrees/Certificates offered:** 4-year BS in Music Industry; 4-year BS in Music Technology; 4-year BA in Music Literature and Performance.

OBERLIN CONSERVATORY OF MUSIC TIMARA DEPTARTMENT

Oberlin, OH 44074 **E-mail:** Richard.Povall@oberlin.edu **Web site:** www.timara.oberlin.edu/ **Degrees/Certificates offered:** 4-year Bachelor of Music (major in Technology in Music & Related Arts); 4-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:** redefer@ouvaxa.cats.ohiou.edu **Web site:** www.tcomschool.ohiou.edu **Degrees/Certificates offered:** Bachelor of Science in Communications. **Program and Facilities description:** The Audio Production Sequence incorporates coursework in multitrack recording, music production, theater, music, electronics, film, business among others. Facilities include an Amek Big 28x24 console with SuperTrue Automation, 24 tracks of ADAT, several Digidesign Pro Tools digital audio workstations, a wide assortment of mics and processing gear. The school is also equipped with both Avid and Media 100 video workstations as well as a 13-station Macintosh MIDI/digital audio lab.

PARKLAND COLLEGE

2400 West Bradley Ave., Champaign, IL 61821 **Phone:** 217/351-2200

RECORDING INSTITUTE OF DETROIT

14611 9-Mile Rd., Eastpointe, MI 48021 **Phone:** 888/683-1743 **Fax:** 810/772-4320 **E-mail:** recordingi@aol.com **Web site:** www.recordingeq.com **Degrees/Certificates offered:** Recording Engineering & Production Certificate: 39 weeks/447 clock hours; Second Recording Engineer Certificate: 36 weeks/313 clock hours; Recording Technician Certificate: 7-19 weeks/83 clock hours. **Program and Facilities description:** Operating since 1975, with extensive training in recording, music composition and production. Students attend 12 hours per week for 39 weeks, completing two recording courses, two music courses and an internship, with lab, video viewing and in-school study as needed. We have three major studios, dedicated student control room and four student workstations. Equipment includes SSL and 02R consoles, PC/Mac hard disk recording, DA-88, ADAT and 48-track analog recorders. Small classes, relaxed and comprehensive.

RECORDING INSTITUTE OF DETROIT SAGINAW ANNEX

707 Federal Ave., Saginaw, MI 48607 **Phone:** 888/683-1743 **E-mail:** recordingi@aol.com **Web site:** www.recordingeq.com **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.

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RED WING/WINONA TECHNICAL COLLEGE
308 Pioneer Rd., Red Wing, MN 55066 **Phone:** 612/385-6300 **Fax:** 612/385-6368

RIDGEWATER COLLEGE, AUDIO TECHNOLOGY PROGRAM
2 Century Ave., Hutchinson, MN 55350 **Phone:** 800/222-4424 **Fax:** 320/587-9019 **Web site:** www.ridgewater.mnscu.edu/index.htm **Degrees/Certificates offered:** 2-year Diploma in Audio Technology; 2-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 learn Yamaha 02R, DAL V8 digital audio workstation, Renkus-Heinz Audio Ease and Ears, and many other specializations.

SOUTHERN ILLINOIS UNIVERSITY
Box 1771, Edwardsville, IL 62026-1711 **Phone:** 618/650-3900 **Fax:** 618/692-5988 **E-mail:** rhaydon@siue.edu

SOUTHERN METHODIST UNIVERSITY ELECTRONIC MUSIC STUDIOS, DIVISION OF MUSIC
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SOUTH PLAINS COLLEGE

1401 College Ave., Levelland, TX 79336 **Phone:** 806/894-9611 **Fax:** 806/894-5274 **E-mail:** istoddar@spc.cc.tx.us **Web site:** www.spc.cc.tx.us **Degrees/Certificates offered:** Associate Degree in Sound Technology. **Program and Facilities description:** Two 24-track recording studios, one 8-track demo studio. Consoles include Sony 36-channel, Amek Mozart 36-channel, Mackie 32-channel, fully-equipped MIDI lab, video production facility. South Plains College's Sound Technology Program was founded in 1980 and modeled after the program at Belmont University in Nashville. Because it is a junior college, it offers professional audio education at extremely affordable prices.

SOUTHWEST TEXAS STATE UNIVERSITY

601 University Dr., San Marcos, TX 78666 **Phone:** 512/245-8451 **Fax:** 512/396-1169 **Web site:** www.swt.edu/music

SYNERGETIC AUDIO CONCEPTS

8780 Rufing Rd., Greenville, IN 47124 **Phone:** 812/923-0174 **Fax:** 812/923-3610 **E-mail:** brenda@synaudcon.com **Web site:** www.synaudcon.com **Program and Facilities description:** "Week of Audio Training" week includes sound reinforcement system setup and system design. Four CEUs given with the week-long seminar. "System Set-Up" 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 "System Set-Up" 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

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 **Web site:** www.uc.edu/ **Degrees/Certificates offered:** BFA in Theatre Design and Production, emphasis in theatre sound; MFA in Theatre Sound Design **Program and Facilities description:** CCM's sound design programs encompass a broad range 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. Facilites include three well-equipped theaters, a sound design studio and extensive reinforcement and playback equipment. Entrance is by on-site portfolio review. Please contact the CCM Office of Admissions for information: 513/556-5463.

UNIVERSITY OF COLORADO-DENVER COLLEGE OF ARTS AND MEDIA

Campus Box 162, P.O. Box 173364, Denver, CO 80217-3364 **Phone:** 303/556-2795 **Fax:** 303/556-2335 **E-mail:** roypritts@aol.com **Web site:** www.cudenver.edu/public.cam **Degrees/Certificates offered:** 4-year BS in Music: Music Engineering or Music Industry Studies; 6th year, Master of Humanities or Engineering or Learning Technologies; 7th year, PhD 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 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:** 313/936-0425 **Fax:** 313/763-5097 **E-mail:** msimoni@umich.edu **Web site:** www.music.umich.edu **Degrees/Certificates offered:** Bachelor of Music in Music Technology; Bachelor of Fine Arts in Music Technology; Bachelor of Fine Arts in Media Arts.

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 **Web site:** www.umkc.edu **Degrees/Certificates offered:** Master of Fine Arts (MFA) 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: 1) Design—interpretation, collaboration and idea development. 2) Technical Skills—mastering tools of production with 24-track analog and Pro Tools. 3) History—research, text analysis and dramatic history. 4) Production—artistic merging of design, history and technical skills through the experiences of numerous and varied productions. 5) Entrepreneurship—study of the business of the profession and career growth.

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AUDIO EDUCATION PROGRAMS

CENTRAL SCHOOLS

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 **Degrees/Certificates offered:** 4-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; and the college is moving to its own dedicated building in 2001.

UNIVERSITY OF TEXAS

CMA 6.118, Austin, TX 78712 **Phone:** 512/471-6695 **E-mail:** vmh@mail.utexas.edu

UNIVERSITY OF WISCONSIN, OSHKOSH MUSIC DEPARTMENT RECORDING TECHNOLOGY PROGRAM

Oshkosh, WI 54901 **Phone:** 920/424-4224 **Fax:** 920/424-1226 **E-mail:** messner@uwosh.edu **Web site:** 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 3206. **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

ART INSTITUTE OF SEATTLE, AUDIO PRODUCTION DEPARTMENT

2323 Elliott Ave., Seattle, WA 98121 **Phone:** 800/275-2471 **Fax:** 206/269-0274 **E-mail:** dyert@aii.edu **Web site:** www.ais.edu **Degrees/Certificates offered:** 2-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 and multiple DAW workstations. The school also offers Video Production, Multimedia/Web Design and Web Site Administration degrees, with labs including a BetaSP on-line, Avid and Media 100. Assistance in obtaining internships and employment is available.

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 **Web site:** 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 renowned music programs with prominent faculty and musicians. Guest audio faculty have included John Eargle, Bob Ludwig, George Massenburg. Activities include: learning equipment, software and advanced recording techniques, involvement in CD, concert and studio

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CALIFORNIA RECORDING INSTITUTE

1137 Howard St., San Francisco, CA 94103 **Phone:** 650/324-0464 or 800/9000-MIX **Fax:** 650/321-4772 **E-mail:** virtmixr@hooked.net **Web site:** www.CaliforniaRecording.com **Degrees/Certificates offered:** 2-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 program also utilizes "The Virtual Mixer," which uses 3D visuals of the mix to teach "Mixing Theory." Serious internship program and placement assistance. Classes in The Art and Technology of Production, Equipment Maintenance, Music Theory for Engineers, MIDI, Computers and Hard Disk Recording and more.

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 **Web site:** www.csuchico.edu/mus/rcrd **Degrees/Certificates offered:** 4-year BA in Music with an option in Recording Arts; 4-year BA in Music with an option in Music Industry.

CALIFORNIA STATE UNIVERSITY, DOMINGUEZ HILLS

1000 E. Victoria St., Carson, CA 90247 **Phone:** 310/243-3318 **E-mail:** rbutler@dhvx20.csudh.edu **Web site:** www.music1.csudh.edu **Degrees/Certificates offered:** 4-year BA Audio Recording; 4-year BA 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 & Panasonic Digital 5.1 mixing consoles, 48 tracks of DA-98 and ADAT format multitrack recording, Pro Tools and Sonic Solutions DAWs and hi-res mastering equipment.

COLLEGE OF SANTA FE

1600 St. Michael's Dr., Santa Fe, NM 87505 **Phone:** 800/456-2673 **Fax:** 505/473-6133

CONSERVATORY OF RECORDING ARTS & SCIENCES

2300 East Broadway Rd., Tempe, AZ 85282-1707 **Phone:** 800/562-6383 **Fax:** 602/829-1332 **E-mail:** cras@amug.org **Web site:** www.cras.org **Degrees/Certificates offered:** 6-month Master Recording diploma. **Program and Facilities description:** The Master Recording program is a 22-week-long comprehensive audio engineering and music business program. Classes are limited to 12

students. It is the only accredited school authorized by Avid to teach Digidesign course 135, which certifies Pro Tools engineers, and the only program that requires an internship for graduation. The program exposes students to 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:** nadine@xnewmedia.com **Web site:** www.xnewmedia.com **Degrees/Certificates offered:** 14-month

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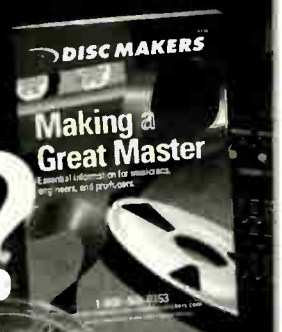

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diploma program in Sound Arts; 14-month diploma program in Digital Visual Media. **Program and Facilities description:** Ex'pression Center for New Media is a total-immersion boot camp where artists and technicians in digital visual media and sound arts will be taught every aspect of their crafts. During an intense 14 months of study, students will be taught by and work with the best practitioners and latest equipment that the industry can offer. Graduates will be prepared to immediately assume sought-after jobs in any of the arts and high-technology centers around the world.

FULLERTON COLLEGE
MUSIC DEPARTMENT
321 East Chapman Ave., Fullerton, CA 92832-2095
Phone: 714/992-7296 **Fax:** 714/447-4097

LONG BEACH CITY COLLEGE
4901 East Carson St., Long Beach, CA 90808
Phone: 562/938-4309 **Fax:** 562/938-4118 **Web site:** www.lbcc.cc.ca.us **Degrees/Certificates offered:** AA with emphasis in Commercial Music, 10 certificates in Music, Radio or Television—each requires 3-5 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 CITY COLLEGE
CINEMA/TELEVISION DEPT.
855 N. Vermont Ave., Los Angeles, CA 90029
Phone: 213/953-4545 **Fax:** 213/953-4545

LOS ANGELES
RECORDING WORKSHOP
5278 Lankershim Blvd., North Hollywood, CA 91601 **Phone:** 818/763-7400 **Fax:** 818/763-7447 **E-mail:** larw@idt.net **Web site:** idt.net/~larw **Degrees/Certificates offered:** 7-mo. Recording Engineer Certificate; 7-mo. Audio-Video Production Certificate. **Program and Facilities description:** Locat-

ed in North Hollywood, close to more than 1,300 studios, we offer hands-on training in our 17,000-sq.-ft., 16-studio facility featuring: Solid State Logic 4000 G+ with Ultimation, 4-station Pro Tools Lab, 4-station AVID 1000 Lab, and 4-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.-4 p.m.

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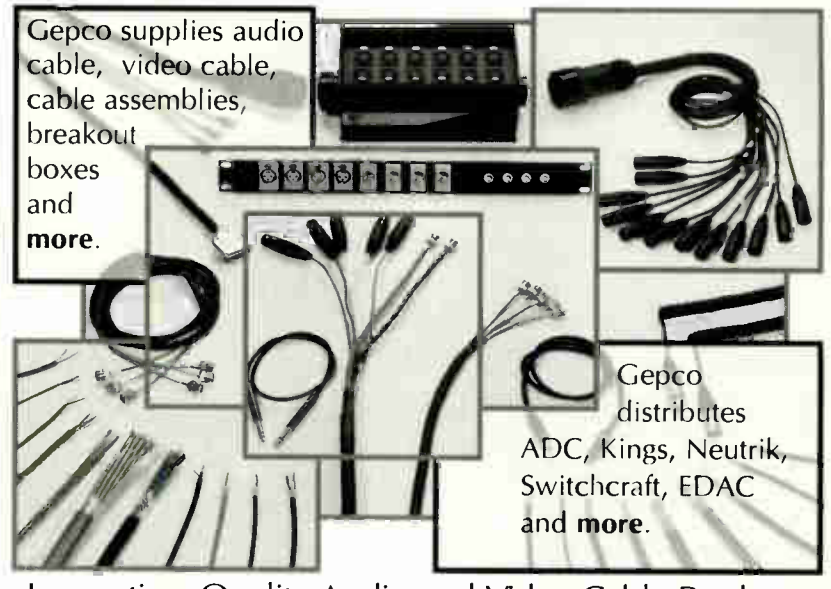

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LOS MEDANOS COLLEGE
2700 East Leland, Pittsburg, CA 94565-5197 **Phone:** 510/439-0200 **Web site:** www.losmedanos.net **Degrees/Certificates offered:** 2-year Recording Arts Certificate or Associate Degree. **Program and Facilities description:** 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, ten MIDI stations.

MIRACOSTA COLLEGE MUSIC DEPARTMENT
One Barnard Dr., Oceanside, CA 92056 **Phone:** 760/757-2121, ext. 6438 **Fax:** 760/795-6817 **E-mail:** yliang@mcc.miracosta.cc.ca.us **Web site:** www.miracosta.cc.ca.us/info/acad/music/default.htm **Degrees/Certificates offered:** AA in Music—all certificates are 2-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 ext. 1577 **Fax:** 909/487-9240 **E-mail:** music@msjc.cc.ca.us **Degrees/Certificates**

offered: Audio Technologies Certificate; 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 24, Lexicon, Alesis and QSC. Additionally, we offer both digital and analog recording. The new $2-million facility features five recording studios, three independent control rooms and a music computer lab. California resident enrollment fees $12 per unit; out-of-state fees are higher.

MUSIC VIDEO PRODUCTIONS
9030 Eton Ave., Canoga Park, CA 91304 **Phone:** 818/709-5809 **Fax:** 818/709-7846

RECORDING CONNECTION
8033 Sunset Blvd., Ste. 4042, Hollywood, CA 90046-2427 **Phone:** 800/295-4433 **Fax:** 310/826-8064 **E-mail:** musicbiz@earthlink.net **Web site:** 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 & 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

SAN FRANCISCO STATE UNIVERSITY
1600 Holloway Ave., San Francisco, CA 94132 **Phone:** 415/338-1111 **Web site:** www.sfsu.edu **Degrees/Certificates offered:** 1) Broadcast & Electronic Communication Arts Dept.: B.A and M.A. 4-year degree program. 2) 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 & TECHNOLOGY
1900 Pico Blvd., Santa Monica, CA 90405 **Phone:** 310/434-3700 **Fax:** 310/434-3709 **E-mail:** vanallen_philip@smc.edu **Web site:** academy.smc.edu **Degrees offered:** 2-year computer animation certificate, 2-year interactive media certificate,

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certificate in audio engineering coming in 2000-2001. **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, ProTools 24 Mix, Premier and PhotoShop. Facilites 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 **Web site:** www.SFaudio.net **Degrees/Certificates offered:** 2-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 **Degrees/Certificates offered:** Recording Engineering Certificate, 10 months (720 clock hours). **Program and Facilities description:** Recording Engineering and Audio/Video Post Production taught in a state-of-the-art facility. Among the many subjects taught are analog and digital recording techniques, synchro-

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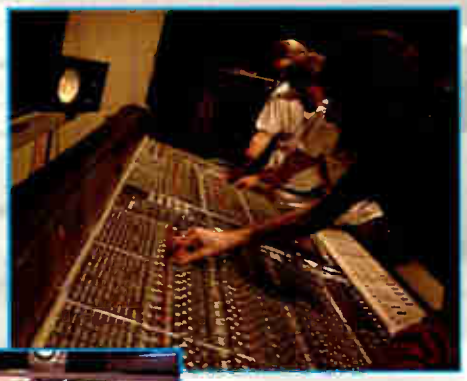

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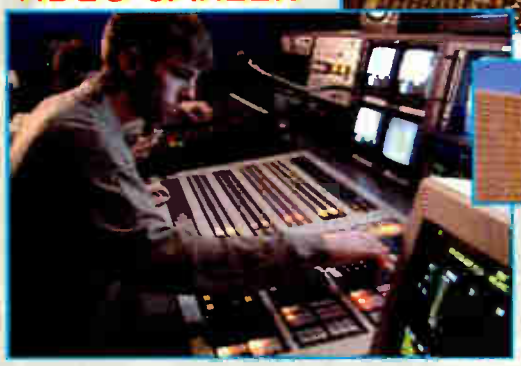

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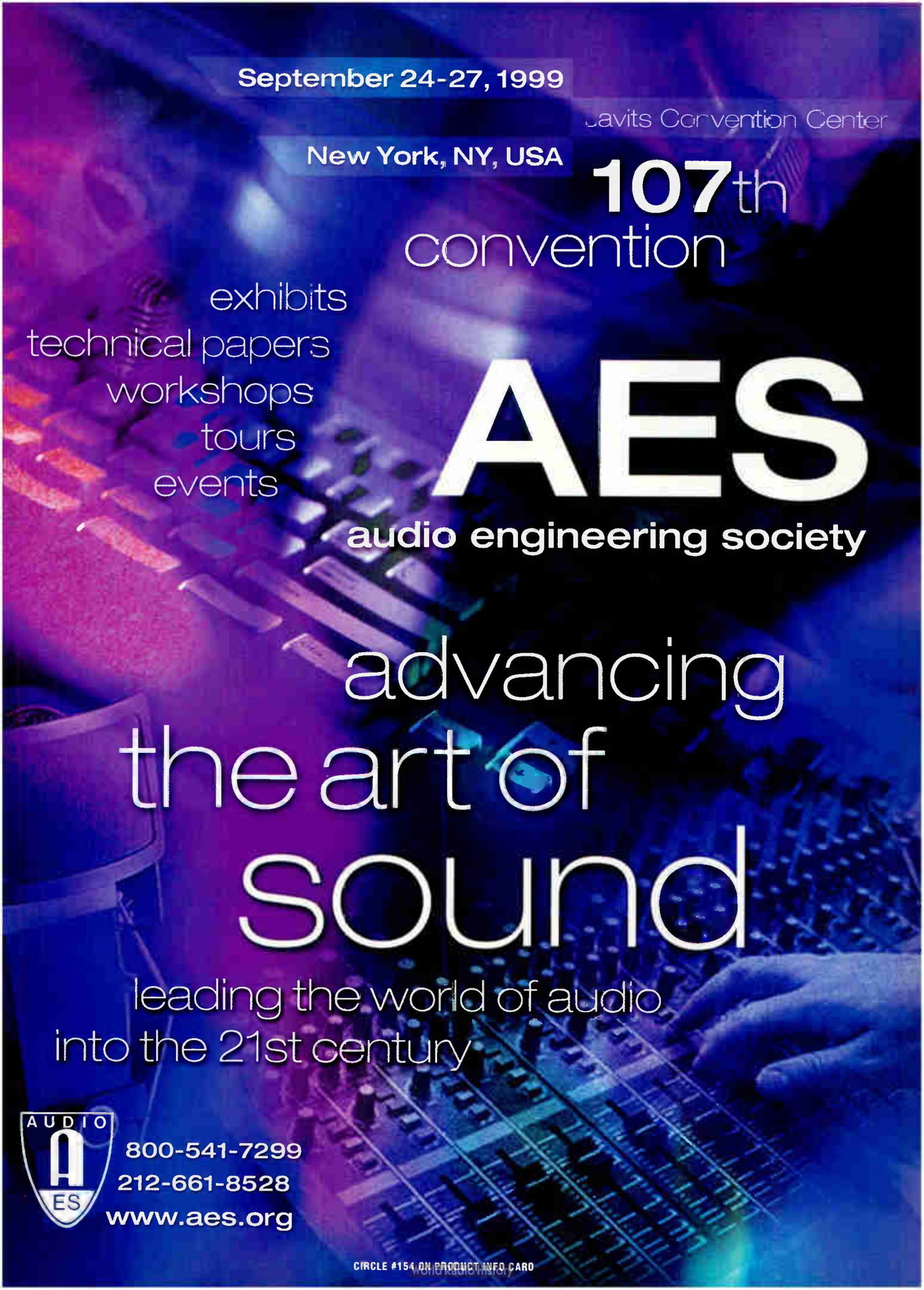

CIRCLE #154 ON PRODUCT INFO CARD
World Radio History

COAST TO

The Horn of Zeus (L to R): Rob Beaton, Mark Weber and Pete Scaturro

PHOTO: MAUREEN DRONEY

L.A. GRAPEVINE

by Maureen Droney

In a nifty building just off the boardwalk in Venice, Horn of Zeus Music Production has set up shop. HOZ specializes in producing what they call "modern music" for a wide range of projects: television and film productions, singer/songwriters, bands and advertising agencies. To do that they offer a blend of technical and creative services including sound design, music arranging, recording and mixing, and television and film scoring.

The brain trust at HOZ comprises musician/composer/producer Pete Scaturro, engineer/producer Rob Beaton and assistant engineer Mark Weber, who formed the company in 1998. When I visited, they'd just finished up four tracks with cult guitar hero Buckethead for his upcoming CD, tentatively titled *Monsters and Robots* and set for release on the Cyber Octave division of Higher Octave Records.

"Higher Octave is traditionally a new age-type label, and I don't think they could fit Buckethead in their roster," laughs Scaturro. "So they had to start a whole new branch for him. A lot of great people worked on the record, like Les Claypool and Brain of Primus, Bootsy Collins and Bill Laswell. We're pretty excited to have some tracks on this record."

Some of the tracks HOZ completed for *Monsters and Robots* were started almost ten years ago, when Scaturro first met Buckethead. But the music has been in limbo while Buckethead searched for the right label.

Scaturro, a Bay Area transplant, is no stranger to combining the genres. He was keyboardist for the San Francisco band Limbomaniacs and has worked with George Clinton and P-Funk, the Disposable Heroes of Hiphoprisy, William Burroughs and Chris Isaak. He has composed a lot for TV—clients have included the program *Unsolved Mysteries*, the Disney Channel, FX network

—CONTINUED ON PAGE 210

NY METRO REPORT

by Gary Eskow

I walked past the Virgin Records store on Times Square several times on my way to BMG Studios. Eventually I realized that although BMG has a Broadway address, you have to enter the building on a side street—or by strolling through Virgin, as I did.

BMG is concentrating on mixing and remastering work these days. The old RCA Studios had six live rooms, but BMG decided to get out of the live area, says Bobby Gordon, director of studio operations. Instead, the company put in a mix room, a small overdub room for radio IDs and 15 mastering suites.

BMG's business is divided among several different groups. Those include its classical reissue division, which turns out about 25% of the company's work, and its special products division, which handles reissue work, compilations, retail mail orders and premiums. Another quarter of the pie is devoted exclusively to the work that BMG turns out for *Reader's Digest*. Outside projects account for the other quarter of the company's billings.

According to Russ Hamm, whose company—G Prime—represents Weiss Engineering Ltd., BMG owns more Weiss 24-bit/96k converters than any other single studio. "When we purchased the Weiss converters two years or so ago, 24-bit was just beginning to be discussed," Gordon says. "The Crystals that would make them a reality weren't available, so they shipped with 20-bit converters.

"Daniel Weiss offered us an attractive upgrade path, so we knew that we were going to be able to move into the 24-bit realm as soon at it was possible to do so. We went to 24/96 in November of '98, when we sent the units over to Switzerland to be updated."

Lots of steam has been spent debating whether anyone outside the business gives a hoot about moving beyond 16-bit/44.1 technolo-

—CONTINUED ON PAGE 211

G Prime's Russ Hamm, BMG Classics senior producer Nathaniel S. Johnson and BMG Studios engineer Michael Oliver Drexler at BMG Studios

PHOTO: HOWARD SHERMAN

World Radio History

COAST

NASHVILLE SKYLINE

by Dan Daley

Nashville's already complex studio business environment is getting even more complicated. **Lou Gonzalez, owner of Quad Recording in New York City, has come to an agreement to purchase Quad Studios in Nashville.** The fact that the names of the two facilities are virtually the same is pure coincidence; Gonzalez founded Quad in New York in 1978 and has built the facility into a five-room complex in Times Square, with all SSL consoles, including a pair of 9000J boards and the first music application M-T digital console in the U.S. Nashville's Quad was founded by legendary producer Norbert Putnam in 1970 as a single-room facility where he eventually produced many of Nashville's nontraditional records of that decade, by artists including Jimmy Buffett, Joan Baez, Dan Fogelberg, Kris Kristofferson, Brewer & Shipley, Pousette-Dart Band, Donovan, John Hiatt, J.J. Cale, the Flying Burrito Brothers, and the New Riders of the Purple Sage.

Putnam sold his Quad in the early 1980s, and it was subsequently taken over by a group of investors led by Ron Kerr, who also owns Sound Stage Studios in Nashville, and who expanded it into a four-room facility. No dollar figure on the sale was available at press time, but the price was estimated at more than $1 million, including the property and the current equipment complement. The facility includes a vintage Neve, a Trident A-Range, a Sphere and a Magnum.

Country superstar Ray Price (left) was in at Ocean Way Nashville with producer Randal Jamail (right) recording and mixing a pop project patterned after classic works by Frank Sinatra and Tony Bennett. The tracks were mostly cut live with Price fronting a 38-piece orchestra on some tracks. Rik Pekonnen engineered; Jamail and Steve Tilish mixed.

Gonzalez's first job in his long pro audio career was as a disc jockey playing country music on Long Island's WTHE in the 1960s, and that experience fostered a lifelong love of the genre. He says he plans to modernize the facility considerably, probably reducing the number of studios to three and significantly enlarging one of them once he begins construction in earnest in the fall. He also expects to replace some of the consoles with newer SSLs, though he is leaning toward keeping the Neve as a tracking board. He also plans to retain most or all current employees, including longtime studio manager

—CONTINUED ON PAGE 212

SESSIONS & STUDIO NEWS

NORTHEAST

Pie Studios in Glen Cove, NY, has been busy with a variety of projects, including overdubbing and mixing for Doolittle Records artist **Todd Thibaud**'s new album, Little Mystery. **Jordan D'Alessio** engineered the sessions for Thibaud and for another Doolittle act, **Mount Pilot**, whose self-titled album was produced by **Dan Baird**... Sessions at **Superdupe Recording** (NYC) included commercials for Alka-Seltzer, Arista Records, AT&T, barnesandnoble.com, British Airways, Burger King, Campbell's, Coca-Cola, Colgate, ESPN, HBO, Prudential, VISA and numerous others... Meanwhile, over at **East Side Audio** (NYC), mixers **Tom Goldblatt, Todd Miller, Todd Hrinda** and **David Browning** worked on spots for AT&T, Avon, Volvo, Clairol, Nicorette, Tropicana, Old Navy and others...At **Mixed Nuts** (NYC), **Mark Schultz** has been doing work on a pair of television shows, *Student Bodies* and *Fox Files*; mixer **Peter Buccellato** recorded sound effects for the children's program *Mazy*...Dream Theater tracked their new self-produced CD at **BearTracks** (Suffern, NY). **Doug Oberkircher** engineered, assisted by **Bryan Quakenbush**. The same engineering team worked on a new project by **Jason Miles**, as well...Congratulations are in order for Manhattan's **The Magic Shop**, celebrating its tenth anniversary. Among recent clients were **Cibo Matto, Joan Osborne, Paula Cole, Sean Lennon, Lou Reed** and **Luscious Jackson**. You gotta love a studio whose celebratory slogan is "Ten Years and Still Not Bankrupt!"...At **Indre Studios** in Philadelphia, the grind band **Brutal Truth** was in to finish mixing their latest release, *Live From Planet Earth*, for Relapse Records with engineer and studio owner **Michael Comstock**...Mastering work at **M Works** in Cambridge, MA, included projects by **Duke Robillard**, the **Gigolo Aunts, Paquito D'Rivera, Deborah Henson Conant**, the **White Heat Swing Orchestra** and more...At the Weehawken, NJ, studio **HarariVille**, **Rob Harari** finished mixing **Fred Jacobs**' new album, *Jacob's Ladder*. The recording was produced by **Randy Klein**, with **Matt Sietz** assisting...

NORTHWEST

At **Different Fur** (San Francisco), producer **Lee Townsend**, engineer **Christian Jones** and assistant **Adam Munoz** completed albums for **Pothole, Bobby Hutcherson** and the

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World Radio History

—FROM PAGE 208, L.A. GRAPEVINE

and David E. Kelley Productions—and created music for numerous commercials, including pieces for excite.com, Sega, Creative Labs and Kraft Foods.

"We have two areas that we're focusing on," Scaturro says. "One is doing album production. So far this year we've worked primarily with new artists, like the Oakland-based band The Chums, who are kind of power pop-rock, and the L.A. duo called Ultrahorse, who are two Mexican-American guys who write in a Brit-pop style that's a pretty interesting clash of cultures."

Beaton also hails from the Bay Area. He paid his dues at Sausalito's Record Plant, where he worked on records with Todd Rundgren, Tony! Toni! Tone!, Thomas Dolby, Santana and Van Morrison. He has produced records for a number of independent record labels, including Road Runner and the *rock en español*-focused Aztlan.

Not surprisingly, the work-in-progress facility that houses Horn of Zeus has a San Francisco SOMA (South of Market Street) industrial vibe to it. Originally a post office, it features high ceilings and skylights with a decor that's a combination of severe and whimsical.

PHOTO: MAUREEN DROKEY

Dusty Wakeman in Mad Dog's live recording room

Scaturro's main axes are a Synclavier 3200 and Pro Tools|24. Beaton handles mixing chores on a Trident TS24 console with a built-in ADAT rack above the board, and with the addition of some fine outboard including an Avalon 737, a dbx 586 and 566 and Genelec and Tannoy speakers with a Bag End subwoofer system. They also have an Otari MX-80 that they like to run at 15 ips.

"We figured out our three main goals for the year 2000," Scaturro says. "To produce a Top 10 single, to write and produce a national ad campaign and write the theme for a hit television show or movie."

In Burbank I decided to catch up on Mad Dog Studios, where co-owner and producer/engineer Dusty Wakeman gave me a quick tour of the facility's large live recording space. On the day I stopped in, the building, which encompasses 2,400 square feet of the 6,000-square-foot Mad Dog complex, was

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locked out with producer/engineer Bill Kennedy's tracking date for new Roadrunner artists Downer.

Fitted with a Meyer P.A. and an assortment of large, windowed baffles that have both hard and soft surfaces, the space provides almost unlimited flexibility. It's light and airy with high ceilings, a concrete floor, and wall-and-ceiling treatments that keep the sound from being overly live.

"It's kind of in between a rehearsal room and a more formal recording situation," Wakeman says. "You can configure the room a lot of different ways, depending on whether you want more or less isolation. For example, I just cut a live, big band dance record with 20 musicians where I set the horn players up on two levels of risers, made a vocal booth and then lined up the guitar, bass and B3 against the wall.

"Because of the size of the room, it's amazing how much separation you can get, if that's what you want," he says. "We just did a soul/funk record for singer Rhett Frazier where we baffled things off; when you soloed the overheads you could barely hear the rest of the instruments in them.

"On the other hand, it's a great room if you're going for a more live sound, where a little leakage can be a beautiful thing," Wakeman adds. "I'm a fan of that style of recording—if you've got musicians who can play, I always say leakage is your friend. Like for bass, once the sound goes through the kick drum and the tom mics and that low end gets added, everything just gets huge. That's something you can't duplicate any other way."

The stage's current console is by Malcolm Toft. "It's basically a Trident 80B with upgraded electronics," Wakeman says. "It's got Uptown automation and it sounds good, but we tend to use it just for monitoring because we have a lot of outboard mic pre's."

Those preamps include API, Hardy and Presonus Audio Electronics M80s, which Wakeman finds a good value. "I'm a fan of Hardy M1s," he says, "and these have the same Jensen transformers."

The room comes with two DA-88s or a 2-inch 16-track MCI analog recorder—there's an in-house Pro Tools|24 system available also. Other amenities include a kitchen, a comfy lounge and, of course, parking. ■

Got L.A. news? Fax Los Angeles editor Maureen Droney at 818/346-3062 or e-mail msmdk@aol.com.

—FROM PAGE 208, NY METRO REPORT

gy. "We're client-driven, that's a given," Gordon says. "The bottom line for us is that the response from our clients has been outstanding. The difference between these converters and any of the others we tested them against is obvious."

While at BMG, we stopped in on a session that senior producer for reissues Nathaniel S. Johnson was conducting. BMG principal remastering engineer Michael Oliver Drexler was seated at a Sonic Solutions workstation as an early 1970s Boston Symphony performance of Carl Orff's *Carmina Burana* was being transferred.

"I coordinate and supervise three teams in the BMG Classics reissue program," Johnson says. "One of our junior producers had the Weiss converters installed in his room as a test, although I wasn't aware of it at the time. Over a period of a month or so I noticed that the projects coming through his room were superior to the stuff the rest of us were turning out—the stereo image was wider and had greater detail, the dynamic range more closely resembled the originals, and all of the music simply sounded better. I went to Bobby and told him how I felt, and he said that he was happy to get another opinion that confirmed the rest of the staff's."

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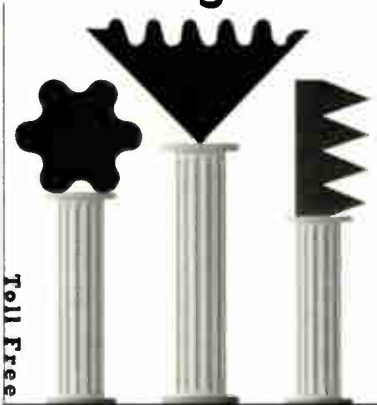

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Also on the equipment front, BMG is waiting for the delivery of two Genex 8500s. "We're gearing up for 5.1 mixing," says Gordon. "We've decided to keep our mix room analog for the time being, but we need a way to be able to get a 6-channel mix out of the room and into our Sonic Solutions High Density Suite. We were originally using tielines for stereo information and converting in the mastering room. We did this because there was no medium that we knew of that could hold 75 minutes of information at 24/96.

"But the coming of the Genex 8500 has now made this possible. The 8500s offer eight tracks at assignable sampling rates. We will mix down to the 8500 6-channel discrete—with the Weiss converters on the front end, only using the 8500s as a storage medium—and then take it into a mastering suite, dump it into Sonic and begin the mastering process. We wouldn't have invested in this digital pathway if we weren't convinced that having [material] archived at 24/96 will be seen as essential and forward-thinking at some point in the future." ■

E-mail your New York news to New York editor Gary Eskow at scribeny@aol.com.

—FROM PAGE 209, NASHVILLE SKYLINE

Kelly Pribble. Renovations and acoustical redesigns to Quad will be done by Gonzalez himself, who personally built all five rooms at New York's Quad.

As for the business climate in Nashville, which has seen significant changes in terms of studio closings and consolidations, Gonzalez says that the changes that have taken place have made Nashville a stronger market, one that he feels is ready to rebound. "I'm just happy to have a studio of my own in Nashville, that's all," he notes. "I'm not here to make a lot of money. But I'm not here to lose any, either." He adds that it is too early to comment on a rate structure for the studio. He also says that he will actively encourage some of his New York clients to use the Nashville facility. This is the first time a major studio owner from another major market has taken a significant position in Nashville since Ocean Way owner Allen Sides and House of Blues Recording owner Gary Belz created Ocean Way Nashville as a joint venture in 1996.

Even as Gonzalez was signing the papers on Quad, another major move

World Radio History

was in the works in Nashville. Emerald Recording owner Dale Moore acknowledged that he has made a bid to acquire East Iris Studios. The studio, which opened in 1997 with an 80-input SSL 9000 and was designed by Tom Hidley, has been quietly entertaining bids in the wake of a split between the facility's financier and owner, Burt Wilson, and his stepson, Chuck Allen, who conceived and operated the studio business. The facility cost in excess of $3.5 million to build and outfit. Insiders, however, indicate that the facility could sell for less than half that.

Moore, who engineered the bailout of Masterfonics, tells me that East Iris would fit perfectly into Emerald's ongoing plan of expansion by acquisition. "In terms of size and technology, it fits in with the rest of our operations," he says. "We have several rooms, but this would fit the bill as a midsized, technologically upscale tracking, overdubbing and mix room. Its 80-input 9000 in that control room makes it a great mix studio, and that would free up the 9000 that we got when we acquired Masterfonics' Tracking Room studio to dedicate it to tracking dates."

Moore says he plans to expand The Tracking Room's SSL 9000J from 64 inputs to 80 in the near future, making both consoles completely compatible in terms of size. What Moore would be getting in addition to the equipment at East Iris is the real estate, which wasn't part of the Masterfonics deal and which is conservatively estimated to be worth more than $1 million before the studio. The acquisition, if it were to take place, would also make Emerald both the largest facility in the region and the most geographically diverse, with three separate locations.

Moore says that his spate of acquisitions has been well-timed, both for him and for Nashville's studio community. "There were a lot of people who got beat up pretty bad in the last few years here," he notes, "and it's easy to see why: Rates are down; Emerald's rates are actually lower today than they were in 1985. This consolidation is necessary and good—it's allowed us to offer an entirely new range of pricing for expanded services that wouldn't have been possible otherwise." For instance, Moore notes that clients who use any three of Emerald's facility services—tracking, overdubbing, mixing, mastering, digital editing—receive a 5% discount off their total bill. "We priced those services out piecemeal, and the discount is still a better deal for us and for them than individual pricing," says Moore. For clients who do an entire project within Emerald's facilities, Emerald will throw in three free hours of its satellite radio tour promotion division, allowing artists to promote their projects to national radio.

On the other hand, Moore states flatly that such synergies aren't enough to sustain even a truncated number of major facilities in Nashville. "We're going to have to take the time to educate the client base here that these rooms are worth more than what they're currently paying for them," he says. "We've done our best to establish a network of rooms that a wide variety of clients can use at a wide variety of price points. But it's still a steal for what they're getting. They're going to have to start supporting reasonable rate structures in the future. Otherwise, they're going to run out of quality rooms." ■

Send Nashville news to Dan Daley at danwriter@aol.com or fax 615/646-0102.

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SESSION SPOTLIGHT

KIDS ON STAGE

A TENNESSEE MIRACLE

by Rick Clark

Williamson County, immediately south of Nashville, is the fastest growing and most affluent county in Tennessee. It's a place where commercial and residential developers are having a high-dollar party putting up overpriced homes and shopping malls where there were once scenic hills and farms. It's also the location of a laid-back rural outpost known as Leiper's Fork.

While most Williamson County schools have the highest test scores in Tennessee, something was terribly wrong at Leiper's Fork's Hillsboro School which was ranked among the worst in the state and was known as a dumping ground for both problem students and problem teachers.

This fact was not lost on Aubrey Preston, a visionary entrepreneur and resident who thrives on turning "minus" situations into "pluses." Preston knew that he had an uphill battle trying to figure out ways to turn the school around. Instead of focusing on traditional academics, however, he decided to bolster one area where other local schools were weak: the arts. He reasoned that if Hillsboro became Number One in that area, other areas of the school's curriculum would be stimulated and it would become a desirable place for kids to be.

With the help of singer/songwriter Gene Cotton and others, Preston created the Kids On Stage Foundation two years ago. The idea of the program was to provide not only high-quality instruction in music, theater and visual arts, but also to help children develop life skills such as self-confidence and resourcefulness.

He turned to one of the assets unique to the Nashville area—its music industry talent and equipment and instrument manufacturers—and pitched them for support. Representatives at Mackie immediately got excited about Kids On Stage and made substantial contributions of consoles, power amps and other equipment. Epiphone Guitars and Slingerland Drums also got the bug and donated loads of gear.

Kids On Stage went to the county school system and negotiated a deal that was low-risk for the schools, while ensuring that the program would maintain control of the resources and educational thrust.

The program (which also has a summer music camp) has been running with great success since the summer of 1997. It has attracted an incredible list of artists and industry pros such as Michael McDonald, Larry Carlton, John Hiatt, The Judds, Tim McGraw, Faith Hill, Michael Rhodes, the Dixie Chicks, Hal Ketchum, Chester Thompson, Scott Hendricks, Mark Collie, Shelby Lynn and Jon Anderson (of Yes) who have donated

Deana Carter with students at the Kids On Stage Summer Academy songwriting class

PHOTO: STEVE UNDERWOOD

World Radio History

their time as teachers and performers and their gear.

For the design and implementation of the performance and recording spaces, studio designer and engineer Gary Hedden kicked in his skills. In the area of recording, the approach is hands-on. Students are taught basic concepts of sound and encouraged to create and record their own music.

"We bring in bands from around the county, and the kids mike them and make 24-track recordings and do the mixdowns," says Rick Wheeler, director of Kids On Stage. "So we provide them with a number of opportunities for real-life recording situations."

While *Mix* spoke with Wheeler in the control room, student Mike Schuppan began burning a CD of a track his band Widgett co-wrote with critically acclaimed singer/songwriter John Hiatt and recorded at the school's studio. On our way to the "garage band" practice space, we bumped into Michael McDonald. He was working with another group of kids who were clearly enjoying themselves. The atmosphere throughout was relaxed and positive.

At the end of each school year, Hillsboro throws an event called Hillstock and the town shows up in support.

"We put a major professional P.A. system and stage out against the Natchez Trace, and all of the teachers and the community come out and dress like Woodstock." Preston enthuses. "We've done this twice and it's great. The stage is kind of the magnet, and Hillstock is the 'big gig.' If you've ever been in a garage band, the gig is what you are working for."

Preston says the effect of Kids On Stage on the students has been overwhelmingly positive: "There isn't one kid in this school who doesn't have some kind of outlet or some way to be somebody, and Kids On Stage helps make that a reality." ■

—FROM PAGE 209, SESSIONS & STUDIO NEWS

prolific guitarist Bill Frisell. And Howard Johnston engineered Tuck & Patti's latest, *Paradise Found*, with additional engineering by Justin Lieberman and Mark Slagle ...Xtreme New Media Studios (Bellevue, WA) has been keeping busy tracking original orchestral sessions for high-end video games and various theme parks. Composer Michael Giacchino was in cutting tracks for DreamWorks Interactive's *Warpath: Jurassic Park*, and composer Bill Kidd recorded some of his music for the new Islands of Adventure theme park in Orlando, FL...At Studio D in Sausalito, CA, Third Eye Blind tracked a new single for a forthcoming film soundtrack. TEB leader Stephan Jenkins produced, with Jason Carmer engineering and Mike Cresswell assisting...

SOUTHWEST

Doug Pennick was in at Houston Sound Studios producing the Canadian group Vertical After for Interscope. Also for that label, Ann Nesby was in with producer Herb Middleton...Tab Benoit was in Houston's SugarHill Studios working with co-producer/engineer Andy Bradley on a new CD for Vanguard Records, due in the fall...Glen Campbell overdubbed vocals at Chaton Studios in Phoenix for the upcoming Private I/Island-Mercury release *Patsy Cline Duets* with associate producer Jim Ervin and engineer Otto D'Agnolo...Arlyn Studios in Austin, TX, has been busy with a variety of sessions, including Kenny Wayne Shepherd in with producer Jerry Harrison and engineer Karl Derfler; Neil Young in with producer Ben Keith and engineer Larry Greenhill; and the Butthole Surfers cutting with producer Paul Leary and engineer Stuart Sullivan...

NORTH CENTRAL

Big doin's at Chicago Trax: In mid-June Limp Bizkit played one of their infamous "guerrilla shows" on the roof of the studio as an adoring throng of several thousand thrashed in the parking lot below. In the studio itself, R. Kelly was producing the band Diamonds in the Ruff for his Rockland imprint. Stan Wood and Ian Mereness engineered. And Tranquility Blue worked on their new project with engineer Tom Carlisle. TB's Mike Kendall produced that one...A Mary Chapin Carpenter track recorded live by engineers Buzz Kemper and Steve Gotcher of Audio for the Arts (Madison, WI), has turned up on Carpenter's new CD, *Party Doll and Other Favorites*. The song, "I Take My Chances," was originally part of a concert broadcast for AFA's weekly radio program, *Mad City Live*...The venerable

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Midwest titans **Styx** did a considerable amount of tracking and mixing for their new CRC album at **Hinge** in Chicago. Styx leader **Dennis DeYoung** produced, while Hinge engineer **Craig Bauer** handled the technical end. Bauer also engineered the new Atlantic Records CD by jazz keyboard ace **Brian Culbertson**...**Echo Park Studios** in Bloomington, IN, had **John Mellencamp** in for a pair of live-in-the-studio broadcasts, engineered by **Paul Mahern**. Studio co-owners **Mark Hood** and **Mike Wanchic** engineered for singer **Sue Medley's** latest, and Hood was in the control room helping the **Midcoast Jazz Project** get its new big band music to tape...

SOUTHEAST

Angie Aparo finished overdubs for his new Melisma Records release at **Elysian Fields Studios** (Boca Raton, FL) with producer **Matt Serletic** and engineers **Keith Rose** and **Mark Dobson**...LaFace recording artists **Outkast** were in at **Doppler Studios** in Atlanta tracking material for a new disc on their own Earthtone Records label. **Ralph Cacciuri** engineered, assisted by **Jason Rome** and **Steve Fisher**. Also at Doppler, **Rico Lumpkins** and **Dallas Austin** were in cutting strings for a new artist named **Vega**. **Caram Costanzo** engineered...**Hank Williams Jr.** mixed his latest project at **Starstruck Studios** in Nashville. **Chuck Howard** produced, **Jeff Watkins** and **Daniel Kresco** engineered. **Reba McEntire** was also in with co-producer **Keith Stegall**, tracking and overdubbing with engineers **John Kelton**, **Mark Nevers** and **Daniel Kresco**...At **Tree Sound Studios** in Norcross, GA, **Edwin McCain** finished tracking his sophomore record in Studio A with **Matt Serletic** producing, **Noel Golden** engineering and producing some tracks, and **Shawn Grove** assisting. And producer **Brendan O'Brien** was in at Tree doing overdubs and mixes for **Michael Penn's** upcoming Fifty Seven Records release. **Nick DiDia** engineered, with Grove, **Karl Egsieker** and **Robert Hannon** assisting...

SOUTHERN CALIFORNIA

Mix engineer **Rob Chiarelli** was in **Larrabee North** (Universal City, CA) mixing tracks for Red Ant artists **Himalayaz** and **Skinny Bones Jones**, and the Interscope act **Neutral**. The Neutral track was produced by **Cisco** and **Dru Hill**...**Grandmaster Recorders** in Hollywood had producer **Steve Lindsey** tracking the new **Fishbone** release for Hollywood Records. **Brad Cook** engineered with **Andrew Alekel** assisting. Also **Pat Smear** was in producing a new power trio, with **Brian Kehew** engineering and Alekel assisting... Recent work at **CMS Mastering** in Pasadena included **Ron Boustead** handling a new single release for chart-toppers **Sixpence None the Richer** and a live album by Latina superstar **Vikki Carr**...Engineer **Tommy Vicari** mixed the song "Obvious" (produced by **Rob Hoffman** and written by **Heather Holley**) for RCA artist **Christina Aguilera** at **O'Henry Studios** in Burbank...At **Record Plant** in L.A., producers **David Foster** and **Mervyn Warren** were in SSL-4 with mixer **Humberto Gatica** working on **Barbra Streisand's** latest project. **Adam Olmsted** assisted. In the same Record Plant room—presumably not at the same time—**Aerosmith** cut tracks with producer **Pat Leonard** and engineer **Ross Hogarth**. And **Toni Braxton** was in SSL-2 with producer R. **Kelly** and engineer **Joey Donatello**, assisted by **Andrew Hasegawa**...

STUDIO NEWS

Adrian Carr Music Designs Mastering (NYC) has been refurbished and updated to accommodate 5.1 mixing and other new services. Joining the studio's complement of top-notch equipment (Sonic Solutions custom USP digital editing system with No Noise, Sony Super Bit Mapping, etc.) is a CEDAR sonic restoration and remastering system...**Catalyst Recording** (Charlotte, NC) purchased a new Soundcraft mixing console...**Bernie Grundman Mastering** (L.A. and Tokyo) has installed Pacific Microsonics' Model One HDCD processors in all their stereo mastering rooms. Additionally, Grundman is putting Model Two HDCD processors for the DVD-Audio and surround mastering rooms in each location, and for new studios currently under development in Europe...**The Toy Specialists** (NYC) has added a Sony 3348HR digital recorder, Pro Tools MIXplus 24 and and Otari RADAR II 24-track to its already impressive arsenal. The new gear is slated for the TransferMAT Room...**Studio Atlantis** in Hollywood, CA, is building a new state-of-the-art mix room. Designed by **studio bau:ton**, the room will feature a John Musgrave-modified Neve VR60 with Flying faders, two Studer A-800 recorders, Pro Tools|24, lock-to-picture capability, and an Augspurger 5.1 surround monitoring system. Studio Atlantis was known as **Music Box Studios** before it was purchased earlier this year by Jon Newkirk. Target date for the grand opening is September. ■

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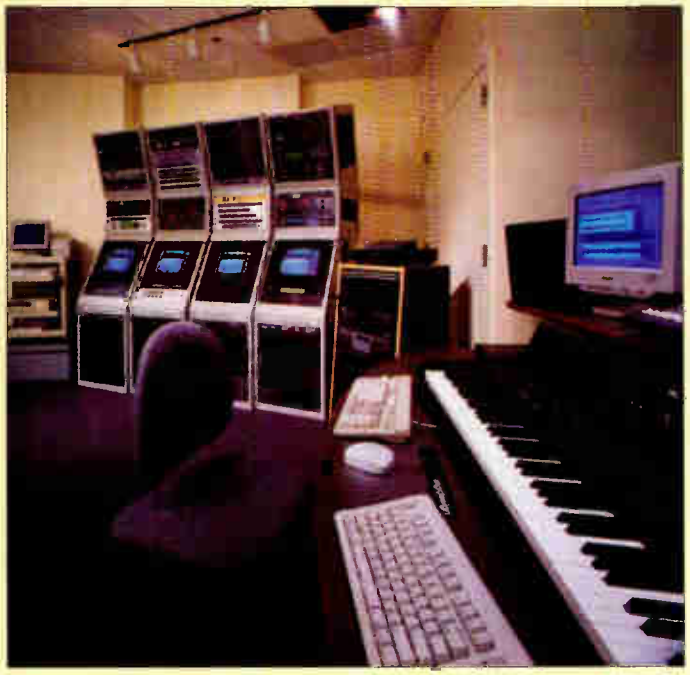

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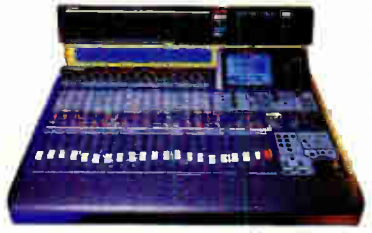

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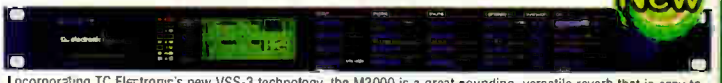
- Boost and cut over three bands with the Spectral Balance Controls
- Soft Clipping and Look Ahead Delay.
- Finalize Matrix for 25 variations in style and rate
- Optimize overall level with the Automatic Make-Up Gain
- Extra compression in each band using Emphasis keys
- Record fades from the built-in Digital Fader or the optional TC Master Fader via MIDI.
- Connections include AES/EBU, S/PDIF, Optical Toslink & MIDI I/O's
- High Res LED Metering of I/O & multi-band gain reduction

M3000 Professional Reverb — New



Incorporating TC Electronic's new VSS-3 technology, the M3000 is a great sounding, versatile reverb that is easy to use. Combining ultimate control of early reflections with a transparent reverb tail, the art of reverberation is brought to a new level. Whether it's a phone booth, cave or concert hall, the M3000 delivers high-quality ambience.

FEATURES–
- VSS-3 VSS-3 Gate, S.D.R.E. & REV-3 reverbs as well as Delay, Pitch, EQ, Chorus, Flanger, Tremolo, Phaser, Expander/Gate, Compressor and De-Esser
- 300 high-grade factory presets including Halls, Rooms, Plates, Ambience, Gated Reverbs, and more
- Up to 300 user presets in internal RAM and 300 more using an optional PCMCIA card.
- Dual engine configuration featuring 24-bit A/D/D/As.
- Connections include AES/EBU, Coaxial S/PDIF, Optical Tos-Link/ADAT & analog XLR I/Os, MIDI IN/OUT/THRU, Clock Sync and External Control.

Lexicon

MPX1 Multi-Effects Processor

The MPX-1 is truly an outstanding multi-effects device. Using Lexicon's Lexchip, it offers outstanding reverb or ambience as well as a separate processor for effects for awesome power in the studio or on the road.

FEATURES–
- Intuitive user interface for easy editing, built-in help.
- Balanced Analog I/O (1/4" & XLR)
- 56 effect algorithms
- Digital Inputs & Outputs (S/PDIF @ 44.1KHz)
- 18 Bit A/D; 20 Bit D/A Conversion, 32-bit processing
- >90dB of Dynamic Range
- Intelligent Sorting by Name, Number, Application, etc.
- Parameter Morphing
- Dynamic MIDI® patching & MIDI automation

COMPRESSORS

PreSonus

ACP88 8 Channel Compressor

Stemming from their popular ACP8, the ACP88 comprises eight channels of compression, limiting and noise gating for a variety of studio applications. It features individual side chain for each channel and it's attractive blue anodized finished lets you show your true sonic colors.

New

FEATURES-
- 8 separate compressors/gates with individual controls.
- Servo balanced or unbalanced inputs & floating balanced or unbalanced outputs
- Individual side chain jacks for spectral compression and a separate sidechain jack for gate processing.
- Each channel boasts full gain reduction metering, compression threshold indication & gate open/close.
- Front panel buttons include hard/soft knee compression, peak/auto compression, bypass, gate range and link.
- Link feature uses a unique summing bus for multiple combinations of master/slave link setups.

dbx

Model 566 "Silver Series" Compressor

The new Silver Series introduces a 2 vacuum tube circuit design making the 566 no ordinary compressor. Loaded with features including custom designed analog VU meters that monitor tube level, gain reduction, or output levels. Full sidechain functionality, including sidechain monitor, Contour function allows low frequency material to pass through the threshold without triggering un-musical compression effects.

FEATURES-
- Hand selected Premium 12AU7 vacuum tubes
- +4/-10 operation
- Drive control for a wide variety of great tube effects
- PeakPlus limiter on each channel
- Complete sidechain, OverEasy, and Auto function
- Optional TYPE IV Conversion System outputs
- Separate 1/4" sidechain insert send and return

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HARD DISK RECORDERS

Roland

New

VS1680 Digital Production Studio

The new VS-1680 Digital Studio Workstation is a complete 16 track, 24-bit recording, editing, mixing and effects processing system in a compact tabletop workstation. With its advanced features, amazing sound quality and intuitive new user interface, the VS-1680 can satisfy your *wanderlust*.

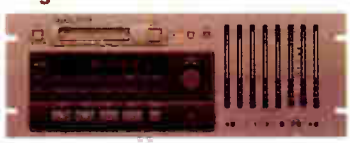
FEATURES–
- 16 tracks of hard disk recording, 256 virtual tracks.
- 24-bit MT Pro Recording Mode for massive headroom and dynamic range.
- Large 320 x 240 dot graphic LCD provides simultaneous level meters, playlist, EQ curves, EFX settings, waveforms and more.
- 20-bit A/D D/A converters
- 2 optional 24-bit stereo effects processors (VS8F-2) provide up to 8 channels of independent effects processing.
- New EZ routing function allows users to create and save various recording, mixing, track bouncing, and other comprehensive mixer templates for instant recall.
- 10 audio inputs: 2 balanced XLR-type inputs w/ phantom power, 6 balanced 1/4" inputs, and 1 stereo digital input (optical/coaxial)
- 12 audio outs: 8x RCA, 2x stereo digital & phones.
- Direct audio CD recording and data backup using optional VS-CDR-16 CD recorder.

DIGITAL MULTI-TRACK RECORDERS

TASCAM

DA-88 Modular Digital Multitrack

The standard digital multitrack for post-production and winner of the Emmy award for technical excellence, the DA-88 delivers the best of Tascam's Hi-8 digital format. Its Shuttle/Jog wheel and track delay function allow for precise cueing and synchronization and the modular design allows for easy servicing and performance enhancements with third-party options.



FEATURES–
- 1:48 minutes record time on a single 120 min tape
- Expandable up to 128 Tracks using 16 machines
- User-definable track delay & crossfade
- Shuttle & Jog capability
- Auto punch with rehearsal
- SMPTE, MIDI and Sony 9-Pin sync capability
- Options include RC-30S/848 Remote Controllers, IF-88AE/IF-88SD digital interfaces, MU-Series meter bridge, MMC-88 MIDI machine control interface, SY-88 Sync Card

DA-38 Digital Multitrack for Musicians

Designed especially for musicians, the DA-38 is an 8 track digital recorder that puts performance at an affordable price. It features an extremely fast transport, Hi-8 compatibility, rugged construction, ergonomic design and sync compatibility with DA-88s.

ALESIS

ADAT M20 20-bit Digital Audio Recorder

The M20 represents Alesis commitment to meeting the high-standards of world-class audio engineers, producers, studio owners and high-end video and film post production studios. A new professional digital multi-track, the M20 records 20-bit for outstanding sound quality. Combined with a host of production features like SMPTE/EBU, the M20 is a powerful tool.

FEATURES–
- SVHS Recording format - up to 67 minutes recording.
- 18-XLR connections (9 in and 9 out) as well as a 56-pin ELCO connection.
- 24-bit, 64x oversampling recording. 20-bit, 128X oversampling playback
- Digital I/O
- Includes LRC remote and a digital cable.

ADAT XT20 Digital Audio Recorder

The New AOAT-XT20 provides a new standard in audio quality for affordable professional recorders while remaining completely compatible with over 100,000 ADATs in use worldwide. The XT20 uses the latest ultra-high fidelity 20-bit oversampling digital converters for sonic excellence, it could change the world.

FEATURES–
- 10-point autolocate system
- Dynamic Braking software lets the transport quickly wind to locate points while gently treating the tape.
- Remote control
- Servo-balanced 56-pin ELCO connector
- Built-in electronic patchbay
- Copy/paste digital edits between machines.

ADAT LX20 Digital Audio Recorder

The most affordable AOAT ever made, the new LX20 features true 20-bit recording at a price you won't believe. Compatibility with all other AOATs and digital consoles, the LZ20 provides the same sync options and digital inputs as the big brother XT20 at a lower price point.

CD RECORDERS

FOSTEX

CR200 Professional CD Recorder

The Fostex name is not all this CD Recorder has to offer. The CR200 features S/PDIF I/Os, balanced XLR analog input, 5 record modes as well as a full function remote. A great choice for burning CDs in any studio or home recording environment.

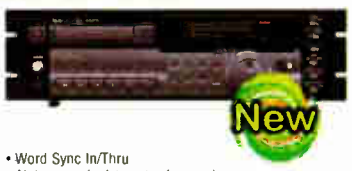
FEATURES–
- Converts any input signal to CD 44.1kHz standard
- Uses both Professional and Consumer CD formats
- S/PDIF Inputs and Outputs for versatile interfacing.
- AES/EBU In, XLR Balanced Ins, Unbalanced Ins & Outs
- 5 Record Modes, Recoros To Red-Book Standards
- IOs Recorded Automatically
- Durable Platter Mechanism Resists vibrations
- Full-function Remote Included

STUDIO DAT-RECORDERS

TASCAM

DA-45HR Master DAT Recorder

The new DA-45HR master DAT recorder provides true 24-bit resolution plus standard 16-bit recording capability for backward compatibility-making this the most versatile and great sounding DAT recorder available. With support for both major digital I/O protocols plus the ability to integrate the machine into virtually any analog environment, the DA-45HR is the ideal production tool for the audio professional.



New

FEATURES–
- Word Clock
- 24-bit A/D and 20-bit D/A with dither
- XLR balanced and RCA unbalanced analog I/O
- AES/EBU and S/PDIF digital I/O
- Word Sync In/Thru
- Alphanumeric data entry for naming programs
- Independent input level adjustment capability
- Output trim for XLR balanced analog output
- Optional RC-045 Remote Controller

Panasonic SV-3800

The SV-3800 & SV-4100 feature highly accurate and reliable transport mechanisms with search speeds of up to 400X normal. Both use 20-bit O/A converters to satisfy even the highest professional expectations. The **SV-4100** adds features such as instant start, program & cue assignment, enhanced system diagnostics, multiple digital interfaces and more. Panasonic OATs are found in studios throughout the world and are widely recognized as the most reliable DAT machines available on the market today.

FEATURES–
- 64x Oversampling A/D converter for outstanding phase characteristics
- Search by start ID or program number
- Single program play handy for post.
- Adjustable analog input attenuation, +4/-10dBu
- L/R independent record levels
- Front panel hour meter display
- 8-pin parallel remote terminal
- 250x normal speed search

FOSTEX

D-15 Pro Studio DAT Recorder

The new Fostex D-15 features built in 8Mbit of RAM for instant start and scrubbing as well as a host of new features aimed at audio post production and recording studio environments. Optional expansion boards can be added to include SMPTE and RS-422 compatibility, allowing the D-15 to grow as you do.

FEATURES–
- Hold the peak reading on the digital bargraphs with a choice of 5 different settings
- Set cue levels and cue times
- Supports all frame rates including 30df
- Newly designed, 4-motor transport is faster and more efficient (120 minute tape shuttles in about 60 sec.)
- Parallel interface • Front panel trim pots in addition to the level inputs

D-15TC & D-15TCR

The D-15TC comes with the addition of optional chase and sync capability installed. It also includes timecode reading and output. The D-15TCR comes with the further addition of an optional RS-422 port installed, adding timecode and serial control (Sony protocol except vari-speed)

SONY PCM-R500

Incorporating Sony's legendary high-reliability 4O.D. Mechanism, the PCM-R500 sets a new standard for professional DAT recorders. The Jog/Shuttle wheel offers outstanding operational ease while extensive interface options and multiple menu modes meet a wide range of application needs.

FEATURES–
- Set-up menu for preference selection. Use this menu for setting IOG level sync threshold, date & more. Also selects error indicator.
- Includes 8-pin parallel & wireless remote controls
- SBM recording for improved S/N *(Sounds like 20bit)*
- Independent L/R recording levels
- Equipped with auto head cleaning for improved sound quality.

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TUBE MICROPHONES

AKG

SOLIDTUBE
TUBE MICROPHONE

The SOLIOTUBE combines the best of solid state and tube technology to provide a "warm" sounding microphone suitable for professional recording applications.

FEATURES–
- Large diaphragm condenser
- Integrated pop screen surrounds the capsule, reducing excessive pop noise
- ECC 83 (12AX7) vacuum tube which provides perfect transfer characteristics
- Includes elastic shock mount
- Low-cut switch, Ground lift switch

audio-technica.

AT4060

Combing premium 40 series engineering and vintage tube technology, the AT4060 delivers a versatile and competent studio microphone. Low-noise and high SPL capabilities make the AT4060 a premier vocal mic as well as strings, guitars and other demanding applications.

FEATURES-
- 20 - 20,000 Hz freq response
- Dual gold-vaporized large diaphragm elements
- Includes the AT8560 power supply, AT8447 shock mount, rack mount adapters and case

MICROPHONES

SHURE

KSM-32

The new KSM32 side-address microphone features an extended frequency response for open, natural sound reproduction. Suitable for critical studio recording and live sound production, Shure steps up to the plate with another classic.

FEATURES-
- Class A, transformerless preamplifier circuitry for improved linearity across the full frequency range.
- Exceptionally low self-noise and increased dynamic range necessary for highly critical studio recording.
- 15 dB attenuation switch for handling high SPLs.
- Switchable low-frequency filter to reduce vibration noise or to counteract proximity effect.
- Great for vocals, acoustic instruments, ensembles and overhead miking of drums and percussion.
- SL model also features an elastic shock mount which greatly reduces external vibrations.

BPM
CR10

Hand-crafted in East Berlin, the BPM CR10 Studio Condenser Mic features a full frequency response for competition against the best of the best.

FEATURES-
- 1" Gold diaphragm
- Suitable for most guitar and vocal recording applications.
- Includes Custom Aluminum Road Case, XLR-cable, wind screen and elastic suspension.

SAMPLING

AKAI
New

S5000 & S6000 Studio Samplers

Akai is proud to announce its next generation of samplers with the introduction of the S6000 and the S5000. Building upon Akai's legendary strengths, both machines feature up-to 128-voice polyphony and up-to 256 MB of RAM. They use the OOS disk format and .WAV files as the native sample format allowing standard PC .WAV files to be loaded directly for instant playback - even samples downloaded from the Internet into your PC may be used.And of course, both the S6000 and S5000 will read sounds from the S3000 library.

FEATURES–
- OS runs on easily upgradeable flash ROM.
- 2x MIOI In/Out/Thru ports for 32 MIOI channels
- Stereo digital I/O and up to 16 analog outputs.
- 2x SCSI ports standard
- Wordclock connection
- Optional AOAT interface provides 16 digital outs
- .WAV files as native sample format

S6000 ONLY FEATURES–
- Removable front panel display
- User Keys
- Audio inputs on both the front and rear panel allow you to wire the S6000 directly into a patchbay from the back and override this connection simply by plugging into the front.

E-MU
E-mu Systems, Inc.

E6400 Professional Sampler

The e-6400 from EMU features an easy interface that makes sampling easy. Automated features like looping, normalizing and more allow you to flexibly create your own sound palettes or access any of the 400 sounds provided on 2 COs for unlimited sound creation. It is upgradeable to 128M8 of RAM (4M8 standard) and features 64 voice polyphony, 8 balanced analog outputs, SCSI, stereo phase-locked time compression, digital re-sampling and more. A dream machine.

MIC PREAMPS

Focusrite
Green 3 "Voicebox MKII"

The Voicebox MKII provides a signal path of exceptional clarity and smoothness for mic recording, combining an ultra-high quality mic amp, an all new Focusrite EO section optimized for voice, and full Focusrite dynamics. The new MKII now includes a line input for recording and mixdown applications.

FEATURES-
- +48V Phantom power, phase reverse, and a 75Hz high-pass filter.
- Mute control and a true-VU response LEO bargraph are also provided
- Includes a Mid-Parametric band with controls especially designed to enhance vocal characteristics.
- Single balanced Class A VCA delivers low distortion and a S/N ratio as low as -96dBu
- Dynamics section offers important voice processing functions such as compression and de-essing combined with a noise reducing expander.

dbx 586 Vacuum Tube Mic Pre

The DBX 586 Vacuum Tube Dual Mic Preamp uses hand selected and matched premium 12AU7 vacuum tubes ensure ideal characteristics for a warm, distortion free signal path. Custom designed analog VU meters monitor tube level insert path or output levels well Line/Instrument and mic inputs make the 586 versatile enough to use with virtually any input source.

FEATURES-
- Mic or line/instrument inputs on each channel. +4/-10 operation.
- Drive control for a wide variety of great tube effects
- 3-Band EO with sweepable frequency
- Optional TYPE IV Conversion System outputs
- Separate 1/4" insert send/return on each channel

JOE MEEK VC1 Studio Channel

The Joe Meek Studio Channel offers three pieces of studio gear in one. It features a transformer coupled mic pre, compression and a professional enhancer together in a sleek 2U rackmount design!

FEATURES-
- 48V phantom power, Fully balanced operation
- Mic/Line input switch
- High pass filter for use with large diaphragm mics
- Extra XLR input on front makes for easy patching
- Compression In/Out & VU/Compression meter
- Enhancer In/Out switch and enhance indicator
- Internal power supply 115/230V AC

MONITORS

KRK SYSTEMS, INC.

M6000/S
Studio Monitors

The KRK M6000/S are designed for close-field monitoring. A smooth frequency response in a compact size make these units portable and efficient.

FEATURES-
- High power handling
- 62Hz - 20kHz, ±3d8.
- Compact and portable
- Low distortion
- Smooth frequency response
- Custom Gray finish.

Hafler
TRM-8
Powered Studio Monitors

Winner of Pro Audio Review's PARExcelence Award in 1997, Hafler's TRM8s provide sonic clarity previously found only in much more expensive speakers. They feature built-in power, an active crossover, and Hafler's patented Trans•nova power amp circuitry.

FEATURES-
- 45Hz - 21kHz, ±2dB
- 75W HF, 150W LF
- Electronically & Acoustically matched

MACKIE.

HR824

These new close-field monitors from Mackie have made a big stir. They sound great, they're affordable, they're internally bi-amped. "What's the catch?" Let us know if you find one.

FEATURES-
- 150W Bass amp, 100W Treble amp
- Full space, half space and quarster space placement compensation
- Frequency Response 39Hz to 22kHz, ±1.5dB

TANNOY

Reveal

The latest playback monitor from Tannoy, the Reveal has an extremely detailed, dynamic sound with a wide, flat frequency response.

FEATURES-
- 1" soft dome high frequency unit
- Long throw 6.5" bass driver
- Magnetic shielding for close use to video monitors
- Hard-wired, low-loss crossover
- Wide, flat frequency response
- Gold plated 5-way binding post connectors

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World Radio History

—FROM PAGE 20, WHY TWO, ¿QUE?

terruption in their booking schedule would mean a reduction of local revenues in the area of $220 million, they will be covering the expense of bringing in Y2K specialists from Seattle.

At least 15 guys I ride with have told me that they will not be riding on J1-2K, but I have to admit that this one is a bit of a stretch. None of these guys can commit more than two *hours* ahead, much less six months.

SO WHAT'S REALLY GONNA HAPPEN?

For those readers just released from maximum security isolation this week, here's the scoop. Almost every computer-based device that knows what time it is also knows the date. And that, of course, is what this whole thing is about. It seems that in the infinite wisdom of many of the designers of such devices, it was assumed that the world would cease to exist long before 2000, so why bother to design to cover it? Others may argue that these designers never dreamed that something they developed in 1980 would still be in use in 2000. Well, with China still using the abacus, what's left of Russia still using CPM mainframes that are dumber than a $3 RPN solar calculator from Radio Shack, and the U.S. using 20-year-old Atari videogame systems to land planes, I guess they were wrong.

REAL TROUBLE

Airports really do have potential for trouble. Some of the air traffic control gear in today's towers is from the mid-1800s, and was originally steam-powered, but was upgraded to Z-80-based digital technology the day you were born. They would like to stop the systems, reset the date to 2K and see what pops, but they are so overloaded that they can't take the time to do the testing. I hear that the lost revenue potential from shutting down for a night to test these things would be almost as much as in the plastic surgeon scenario.

Hospitals may have trouble as well—everything there date-stamps.

And, of course, the government will surely come to a screeching halt, but I'm not so sure anyone will find out for a couple of years. Any car with an OBD 1- or 2-type system management computer is suspect, as these cars print time- and date-stamped service histories covering every time you have red-lined, turned too fast, fouled a plug or even burned cheap gas.

REAL BULL

We all know that any system that uses a timer/clock chip is suspect, and the projections are anything from a mild annoyance to the end of civilization.

There are literally hundreds of new companies making millions and millions doing nothing but going out to other companies and testing for Y2K compliance. Damn! Why the hell am I working so hard on DAWs and VST plug-ins when all I really have to do is print some business cards, slide over to the closest office building with a few color pictures of crashed airliners and tell them that I will test their systems for $75K to see if they are compliant? I mean, all you have to do is arrange to go in at night (tell them it is to avoid loss of daytime working hours), install updated copies of all applications known to go psycho on J1 (anything that says Microsoft and perhaps a few others), reset all their computers to 2K and see what fries. And the next morning you offer to rewrite all the custom system stuff that died for $350K, and move on to the next office.

As for all that talk of massive power grid failures? I am not getting all wired about that either. I have a fireplace, and I have carried a .40 caliber auto for years anyway.

HOW TO RING IN THE NEW YEAR

Well, I'm not staying up nights worrying about this. I never go out on New Year's Eve anyway, for exactly the same reason that I won't on 2K—increased probability of crashing. Far more pain, suffering and death will be caused by alcohol-related crashes than computer-related ones.

Of course, there is the fear that the stoplight management computers will crash, leaving intersection decisions to the alcohol-soaked brains of the New Year's partygoers. Now, *that's* a chilling thought, isn't it?

And as for all that talk of massive power grid failures? Again, I am not getting all wired about that either. I have a fireplace, and I have carried a .40 caliber auto for years anyway.

AND JUST WHY DID I WRITE ABOUT THIS IN *MIX*?

I do recommend that you take the time to set every piece of gear in your studio and home to 2K, just to see what happens. And I suggest that you do it now, not in December.

But we have some special considerations, as well. In our industry, we archive EDLs, document dates, billings, audio sample files. We even save EQ settings from our favorite VST plug-ins. Think about DAW automation files. All those alternate mix automation files sitting forgotten on your shelf. Hell, *any* files.

So, like the rest of Earth's users, we have to assure that our hardware and our system and application software know that, contrary to the original designer's vision of the far future, 2000 *will* probably happen. But then we, the recording guys, have to also make sure that all our little plug-ins and add-ons, along with their visible and hidden files, their trick little copy-protection cheats and files, and all their dated libraries and undo recovery lists, behave rationally, even as we careen helplessly toward 2001, when we all become fetuses again while our computers become Commodore 64s.

HOW DID WE GET HERE?

Criminal shortsightedness, or given the jaw-dropping profit being made by the creators of both the hardware *and software* that we must now replace, perhaps criminal insightfulness?

WHERE DO WE GO FROM HERE?

I started this column strictly as a satirical vehicle—to toy with the Y2K paranoia, but as I worked on it, I became more and more alarmed, and as a result I am going out to price a 75kW Honda generator as soon as I turn it in.

Oh, yeah. Don't call to wish me a Happy New Year. I *just* found out while testing stuff for this column that my *phones* will crash...forever. The monster GTE office system in my home is too old to be updated. ■

Damn!

World Radio History

—FROM PAGE 26, AUDIO 101

sion when all technical hell breaks loose, and you're going to have to take care of it.

If I can inject a personal note, my baptism of fire happened this way: I had been on my first job at a radio station for about six months, when my boss decided to take off to Europe for a couple of weeks, leaving me in charge. As I drove home one night after work, I heard the station go off the air in the middle of a record, as if someone had literally just turned the transmitter off. I panicked, turned my car around, and discovered to my horror that all of New York City had gone completely dark. At least I knew it wasn't my fault. And I also knew there wasn't a heck of a lot I could do to fix it.

But I digress—hopefully, that's not the kind of problem you'll face on your first job. What you'll face will, of course, be blamed on you, even if it was caused by an act of God or the bad soldering technique of a maintenance tech who was fired three years ago. So learn what happens when an audio cable develops a short, when a hard drive loses its directory, when a motorized fader loses its motorvation. Learn the workarounds: how to patch around a bad cable or mixer channel, how to get a computer to boot from an emergency external disk, and how to salvage files from a munged drive.

And finally, do take care of yourselves. School can be fun, and for many of you it's the first time you're out of your parents' sphere of influence and you're ready to do some serious partying. You're entitled to have a good time out of—and sometimes even in—class, but please, don't go nuts and do things that you'll kick yourself for in a few years. If you have personal habits that are going to get in the way of doing your work, now is a good time to break them—it's going to be much harder later. Try to get out of the studio once in a while and get some exercise (and yes, I take it back, you may need sunscreen). Eat well: Late-night sessions are a great excuse to lay in mass quantities of junk food, but if that's all you're shoveling into your system, it's all too easy to get sick.

School is going to be hard. If it's easy, if there's no challenge, if you can breeze through everything based on what you learned on your own, then the program you're in is no good for you. Yes, there are some people with enormous amounts of native talent they can apply to an audio career, but even they won't be able to get by for very long without hard study of the basics, and an understanding of how the industry works. On the other hand, school is a much more protective environment than you're going to find anywhere afterward, so it can be a good opportunity to ask yourself questions about who you are and what you want to do. Work things out. Talk to your peers and your teachers. Butt some heads. Stretch some minds. Enjoy the experience. And remember that your education won't really begin until after you leave here. ■

Paul D. Lehrman has taught in the Sound Recording Technology program at the University of Massachusetts Lowell since 1987. He thanks the alumni of that program for inspiring this article. And meanwhile, after being out of school himself for almost 25 years, Paul is currently finishing up a Master's degree. Visit his thesis at http://s2n.org/ballet.

World Radio History

—FROM PAGE 98, MSOFT

bit longer if many indexes are involved. To speed up the process, they can use Pro/Master, an add-on to the standard ServerSound software that reads the CDs, converts, records, splits to indexes, and links audio to the database."

APPLICATION INTEGRATION

Once a search is initiated and successfully matched, a user may audition the sounds in ServerSound's browser window and choose sounds to put in a "Project Cart." As noted above, you can configure your browser to support playback through commonly available plug-ins (QuickTime for AIFF files, for instance). But you may also buy mSoft's own browser plug-in, which not only supports playback of files in AIFF, SDII and .WAV formats, but also offers additional integration with commonly used sound editing and mixing applications.

"If you use our plug-in," says Sarig, "you enjoy real-time conversion of sound files, and the ability to talk to proprietary hard drives on systems such as WaveFrame or Avid, or to talk directly to an open Pro Tools session. We sell two plug-ins, one for PC and one for Mac."

Explaining the integration mSoft's plug-ins offer with Pro Tools, Sarig says: "Let's say you are in Pro Tools. You have your browser open in the background, with the ServerSound search page loaded. In the middle of the session you need a gunshot. You switch to the browser, type in 'gunshot,' audition seven, eight, ten gunshots, find the one you want, and with one click in the browser environment, the sound is transferred directly into your Pro Tools session bin, ready to be dragged into your session."

For workstations such as WaveFrame that use their own proprietary hard drives, the system takes a different approach. "The user works in the browser," Sarig says, "to search for and audition the sounds he is interested in from files on ServerSound. Then he creates a project or spot, which may have anywhere from one to several hundred sounds. Once he has a spot, with a click of a button he downloads the entire sound selection from the server into the proprietary hard drive in the WaveFrame, and then he can use the sounds for spotting on the WaveFrame itself." NetWave, an OEM version of ServerSound specifically for WaveFrame users, is available directly from WaveFrame.

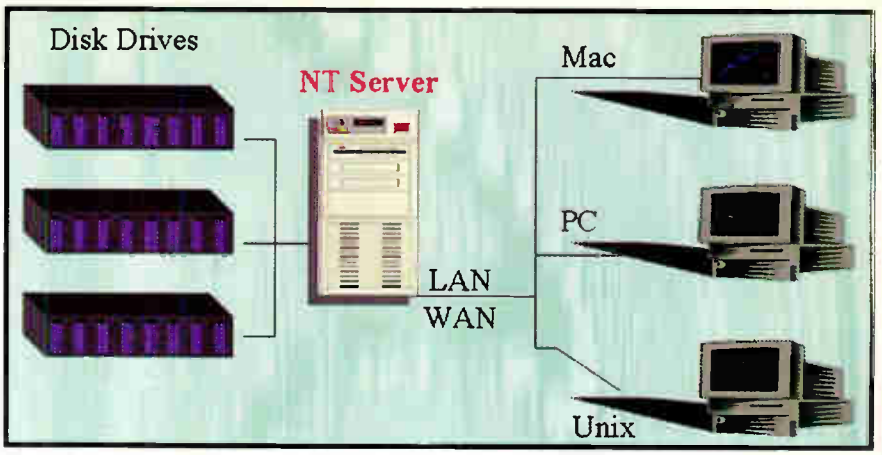

Figure 2: The ServerSound network uses generic, all-purpose components.

Sounds that have been revised by editors can be uploaded back to the server, becoming part of the collection of sounds open to use by others in the facility. ServerSound can be set up to automatically poll the client drives mounted on a system, looking for changed files on a specified schedule; or files may be manually uploaded back to the server and added to the database.

Working with six full-time employees and three outside consultants, mSoft has so far delivered 18 systems to facilities including 20th Century Fox Digital in Los Angeles, Buttons Sound in New York City, MatchFrame Video in Burbank, Calif., Grand Central in London, England, and Weddington Productions in North Hollywood, Calif. The company has also collaborated with Weddington's award-winning sound supervisor Mark Mangini to create an add-on module for ServerSound called ProSpotter 900, a sound-design management tool for the overall supervisor on a project such as a feature film. "They get the film in, create a name for the project, and then break it down into reel, scene and spot levels," says Perkins. "At that point they create directions for the individual spots, telling exactly what the collection of sounds is supposed to be: a particular type of gun, heard off camera, then a woman's scream, etc. Then they can assign the spots to the various editors."

Sarig explains that ProSpotter is designed to work hand-in-hand with ServerSound. "The editor has two windows open in the browser," he says, "one for ProSpotter and one for ServerSound, and the two windows talk to each other. You search for a sound in ServerSound, you audition it, you choose the sound you want, then you click a button, and this sound is assigned to the currently selected spot in the ProSpotter window."

Because ServerSound is custom-configured for each user, there is no single price for the system. Systems start at $8,000, exclusive of all the hardware, but Perkins says the average system, set up for ten users and 300 hours of audio capacity, sells in the $30,000 to $40,000 range.

mSoft Inc., 6355 Topanga Canyon Blvd., Suite 507, Woodland Hills, CA 91367; 818/716-7081; fax 818/716-0547; e-mail: msoft@msoftinc.com; Web site: www.msoftinc.com. ■

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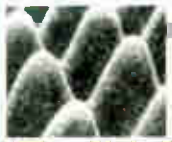

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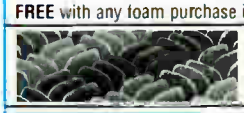

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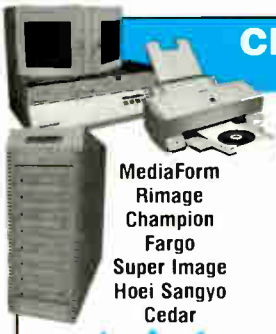

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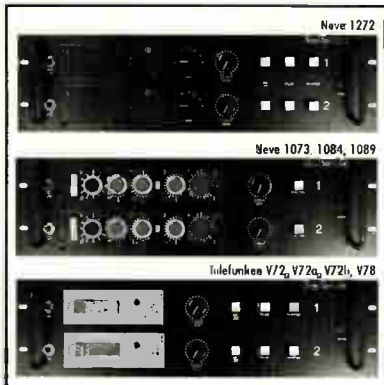

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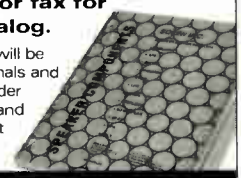

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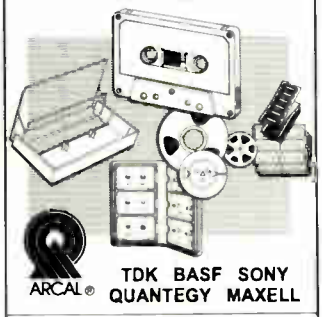

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Industry buzz — **Why is everyone is talking about the 2408?**
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Price, price and price — **Did we say price?**
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BIAS PEAK 2.0

DIGITAL 2-TRACK AUDIO EDITING SOFTWARE

Over the past two years BIAS Peak from Berkeley Integrated Audio Software (www.bias-inc.com) has emerged as a popular 2-track editor for the Macintosh. As with much of today's powerful software, Peak is so packed with features that it's hard even to know all of what is there to be used, not to mention some of the more tweaky attributes that make this program more customizable or faster to use. Here's a handful of hints on how to get the most out of Peak. Take some time to explore and you'll find much, much more.

A customizable tool bar and floating palette provide fast access to functions.

GETTING THERE IS HALF THE FUN

Use the left and right arrows to jump to the beginning or end of a selection. To get quickly to the end of a file, select All and hit the right arrow.

Markers can be dropped in a file with a Command-M keystroke. Double-click on the marker to open it and name it. Once named, you need only type the first few letters of the name and Peak will locate to it.

Another way to locate to a marker is via the pop-up menu that appears when you hold the Command key and click (and hold) the mouse on the file's name in the title bar.

MARK 'EM UP AND SHIP 'EM OUT

Say you've dropped markers throughout a file and now want to make separate files out of the areas between them. The Markers to Regions command in the Action menu creates regions out of sequential pairs of markers (i.e., the first and second markers in the selected area become the first region's start and end, third and fourth markers become the second region's start and end, etc.). Now use the File menu's Export Regions command, which puts each region into a new window or saves it as a file. You can cut a step out of that process by using the Export Audio Between Markers option of the Export Regions dialog.

The contents of the Name prefix field in the Output Directory section of the Export Regions dialog is appended to the beginning of the name of every file created by the dialog. The default prefix is the parent file's name, but if your markers are already fully named, be sure to delete the contents of the Name prefix. If your file name is long, you will probably need to delete twice to get the whole name.

If, on the other hand, you want to discard a marker, double-click the marker and click the Delete Marker button in the Marker dialog. To remove all the markers in a file (or just a selection within a file), the Delete Except Audio command in the Edit menu handles that chore quickly.

BLENDER DRINKS

Peak's Blending function is a powerful way of creating a transition in a file between a selection to which you are applying processing and the adjacent area. However, forgetting that Blending is turned on can sometimes produce undesired and baffling results. Fortunately, it is easy to switch and adjust Blending in Peak. The Caps Lock button toggles Blending on and off, giving you a visual indication on your keyboard when it's switched on. However, when you enter marker, region or file names, don't forget that the Caps Lock is on.

Clicking the leftmost button in the floating Cursor palette also toggles Blending, while option-clicking it brings up the Blending dialog, allowing you to set Blending parameters such as the Blending time and envelope shape. Note that Blending can also be applied to Premiere-format plug-ins you may be using in Peak.

I KNOW A SHORTCUT

Last but not least, the Shortcuts and Toolbar command in the Preference menu is possibly the most potent power user feature in the program. Every Peak command can be assigned a shortcut. Make this dialog your friend. I've even assigned a shortcut to the Shortcuts and Toolbar command itself! ■

BY LARRY THE O

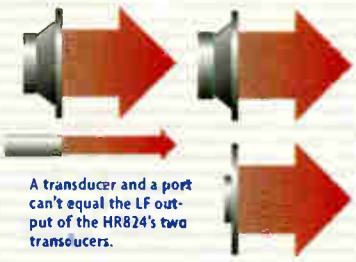
Larry the O has been a contributor to Mix *for 15 years. He's hoping to get some sleep soon.*

World Radio History

NO WONDER THE HR824 HAS THE BEST BASS RE OF ANY 8" MONITOR. IT'S REALLY A 12" MONITOR IN DISGUISE.

TIGHT, RESPONSIVE BASS FLAT DOWN TO 39HZ. Reviewers and owner's warranty card responses are unanimous: The HR824 has the most accurate bass they've ever heard from an 8-inch monitor. And bass **quality** is as astonishing as the quantity. Fast low frequency transients like kick drum slaps and electric bass notes have a crisp, articulation that makes other monitors sound like mush.

ANOTHER TRANSDUCER INSTEAD OF A PORT. The more LF transducer cone area a speaker has, the more bass it can produce. But a huge low frequency transducer isn't an option on a compact near field monitor.



A transducer and a port can't equal the LF output of the HR824's two transducers.

To augment primary bass output, other monitors resort to using ducted ports that can convert cone movement into extra low frequency air movement. But for optimal output, a ducted port needs to have the **same area** as the low frequency transducer — an 8-inch near field monitor would need an 8-inch vent. Needless to say, you haven't seen any vents this big on other near field monitors. When vent size is reduced, bass output is compromised. And, forcing a lot of energy out of small ports can create audible wheezing and whooshing.

Instead, the HR824 adds a large passive transducer with the cone area of another 8-inch woofer. This ultra-rigid, honeycomb laminate piston tightly couples with the HR824's active bass transducer. With a combined cone area greater than a single 12-inch woofer, you get exceptionally extended bass without port noise complaint.

MASSIVE POWER THAT WOULD PROBABLY POP A PASSIVE MONITOR. Punching out crisp bass requires a lotta watts. The FR Series™ high-current bass amplifier module inside the HR824 delivers a solid 150 watts of power with peak output in excess of 250 watts (plus another 100 watts for mid and treble). That's significantly more than any other 8-inch active monitor. Moreover, the HR824's servo coupling and ultra-short signal path put that power to work far more effectively than a passive monitor and a 250-watt stereo amp could.

PART OF A TIGHTLY-INTEGRATED SYSTEM. Our servo bass system is only one contributing factor to the HR824's amazing accuracy.

Internal power amplifiers are "fed" by phase-accurate, low distortion electronic circuitry instead of a crude coil-and-capacitor passive crossover. The HR824's proprietary logarithmic wave guide not only widens treble dispersion but also smooths the midrange transition between high and low-frequency transducers. Thanks to the wave guide's flaring design, the HF transducer's output is **acoustically the same diameter** as the LF transducer's at the critical 3500Hz crossover point.

Rear view: The HR824's electronics conceal an ultra-rigid, honeycomb composite passive transducer.

The HR824's LF transducer even contributes to midrange accuracy. In many monitors, woofer cone harmonic vibrations bounce around inside the enclosure and then exit through the thin woofer cone. The result: smeared imaging and muddled details. Instead of a chintzy chunk of fluff, the HR824's enclosure is utterly packed with high-density absorbent foam. Cone vibrations go in, but they don't come back out.

DON'T SKIMP. It's amazing how many studio owners will mortgage the farm for money-is-no-object, esoteric microphones... and then monitor on cheap, passive loudspeakers. If you aren't using *some* brand of ACTIVE near field monitors you're seriously compromising your creative product.

HEARING IS BELIEVING. We urge you to visit your nearest Mackie Designs Dealer and carefully audition **all** of their active monitors with some demanding, bass-rich program material. Judge our claims (and those of our competitors) for yourself. We think you'll agree that the HR824 is truly the best of the best.

Last fall we won the pro audio industry's coveted TEC Award for best near field monitor. Modesty prevents us from listing the impressive field of competitors but you'll probably encounter their ads in this very magazine.

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Performance-Tailored Components

Revolutionary transducer designs, optimized network topologies and innovative materials are some of the reasons why the LSR line is being hailed as 'the world's most advanced monitor'. JBL's all-new *Differential Drive*® woofer permanently dispels the notion that better linearity, higher power handling and greater dynamic accuracy are somehow an unobtainable, evil triangle. *Dynamic braking* produces truly accurate bass at higher SPL's with maximum reliability. Composite materials, including *Carbon Fiber* in the woofer as well as *Titanium* and *Kevlar*® in the high and mid frequency components, insures performance that is always optimally maintained.

Not Just A Better Spec... A Better Monitoring System

While all companies boast about their specifications, JBL went one step further. To guarantee that every component of the LSR family worked together for optimal performance, LSR development employed JBL's unique 'system-engineered' design philosophy. Simply put: the entire line was researched and refined as one, with an overall performance goal in sight. What this means to you is a monitor and subwoofer that work together as a system; delivering stunningly uniform and accurate performance in both stereo and multi-channel applications.

TEC 1999 Nominee

LSR 32
12" 3-way mid-field monitor with rotatable Mid/High Elements.

LSR 28P
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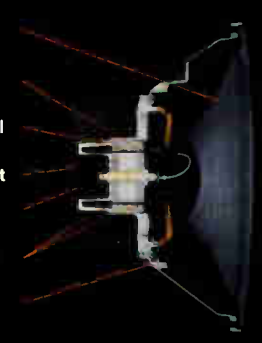
LSR 12P
12" Active Subwoofer with Bass Management System.



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