Panasonic DA7 · Lyle Lovett Interview . SSL Axiom-MT · Top Producers on Surround Mixing

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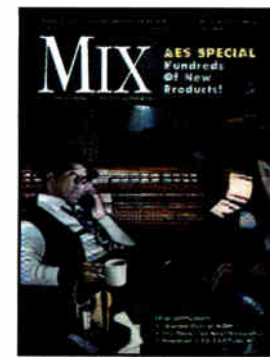
Cover: *"It was late and things were just settling down at Studio Noir. The last session had disappeared into the San Francisco fog, so I thought I would sneak a quick call in to John's Grill and make a deal to return the black bird... when she walked in the door. A vocalist with pipes that wouldn't quit. I thought to myself, 'This is the stuff that dreams are made of.'"*

Taking a page out of San Francisco's rich film noir and detective fiction legacies, illustrator Gary Kelley has created a mix of the contemporary and the mythic, then placed it in the context of an environment familiar to *Mix* readers: the recording studio. Welcome to San Francisco and the 105th AES convention.



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Pretty tough jury . . .

1 CLAPTON

Eric Clapton Front Of House Engineers
Rob Collins and "Pab" Boothroyd

Dire Straits
Paul McCartney
AC/DC

6 x 160SL
1 x 786
12 x 160A

"We're using a lot of these new dbx 160SL compressors, which are excellent. I'm also running the new dbx 786 preamp. We put Eric's voice into the preamp, out of the preamp and into one side of the comp."

2 HUMBERTO

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Humberto Gatica

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The verdict?

dbx Blue

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George Jones
Kris Kristoferson
Tammy Wynette
Charlie Daniels
Willie Nelson
Billy Joe Shaver
Ricky Skaggs
Terry Radigan

Nashville Producer / Engineer Brian Ahern

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Coolio Producer / Engineer Gilbert Valdez

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Single: ***Fantastic Voyage*** *Platinum*

2nd Album: ***Gangsta's Paradise*** *Quad-Platinum*
Grammy nominee—Single Of The Year
Billboard's #1 single of the year

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The real question, however, is "what does it sound like?" Safe to say, it's travelling around the most exclusive circles of the pro audio industry. Rob Collins, Pab Boothroyd, Humberto Gatica, Brian Ahern, Gilbert Valdez—they all have chosen the dbx Blue Series 160SL as their compressor of choice. A quick look at their credit lists tells you that every one of these guys knows what good compression is supposed to sound like (in any application), and where to find it.

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If you're like everybody else on Earth, you already own a pile of our stuff. So why not snap a picture of you and your dbx rig, and send it to us? We'll send you a cool dbx T-shirt for your trouble and, who knows, you might see yourself in a future dbx ad. Added bonus: we'll put your name in a drawing for some dbx gear: win a dbx DDP, or the Grand Prize of a dbx 160SL! Sound easy? It is, all you need is a camera, and a 1-hour photo lab. Oh, you'll need some dbx stuff, too. Send your pretty mug to: dbx photo contest, 8760 S. Sandy Pkwy, Sandy Utah, USA, 84070.

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FROM THE EDITOR

IT'S SHOWTIME!

Welcome to the Audio Engineering Society's 105th convention, where the excitement in the air is as thick as the fog that hugs the San Francisco coastline. Last held in "Baghdad by the Bay" in 1994, AES (hopefully) is here to stay on its biannual West Coast leg. The area's near-perfect September weather, ample hotel rooms within walking distance of the Moscone Center, superb dining and the lure of one of the world's most cosmopolitan cities make San Francisco an ideal site for AES.

And this promises to be one of those pivotal AES shows. Convention committee co-chairs David Robinson and Valerie Tyler and their fellow team members have assembled a splendid program of events, tours, papers and two exhibition halls packed with the latest in audio technologies, including new digital consoles. Harrison's "digital.engine" offers simultaneous control of analog and/or digital pathways from a single console. SSL's Axiom-MT brings an analog-style interface to digital music mixing. AMS/Neve's Libra digital console now offers a sub-layer for controlling up to 144 full-feature inputs from a compact 48-fader frame. Tascam's $4,000 TM-D4000 medium-format digital mixer is designed for the serious project studio engineer.

On the disk-based recorder front, attendees will be buzzing about the Euphonix R-1 24-bit multitrack, Yamaha's $2,999 8-track optical 24/96 MDM, Digidesign's next-generation of Pro Tools and the first under-$1,000 desktop 8-track, the Fostex FD-8. And analog is alive and well, based on debuts such as ATR Service Company's 1-inch, 2-track mastering deck and two new high-performance analog tapes from Quantegy and Zonal. New microphones at AES include a dozen large-diaphragm condensers, ten new tube mics, two digital wireless mic systems and—40 years after it ceased production—AEA's reissue of the classic RCA 44BX. Sweet!

Our AES coverage includes *Mix*'s annual New Products Guide, a 60-page section with descriptions of more than 400 products. Start your show there. Also, Mel Lambert interviews AES president-elect Marina Bosi, Maureen Droney chats with TEC Awards Hall of Fame engineer Al Schmitt, Greg DeTogne visits with Lyle Lovett, and Dan Daley speaks to Focusrite chief Phil Dudderidge. Also in this issue, Skip Pizzi explains audio for DTV, and Phil De Lancie talks to top engineers and producers about surround mixing. On the local scene, Adam Beyda talks to Bay Area studio owners and engineers; Anne Eickelberg visits Tiny Telephone; the project room of MK Ultra; Blair Jackson drops in on the set of TV's "Nash Bridges," and Barbara Schultz takes us inside John Lee Hooker's hot blues club, the Boom Boom Room.

As AES enters its next 50 years, our industry is at a crossroads of new formats, new ideas and new methodologies. Audio may have changed dramatically in that half-century, yet a zeal for excellence remains constant.

See you at the show!

George Petersen

P.S. Drop by at AES and say hello. We'll either be at *Mix* booth #167, at Red's Java House on the wharf or three blocks away snapping up $5.00 import CDs at the Tower Records *outlet store* on 3rd Street!

BPA INTERNATIONAL SPARS ABP American Business Press

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FEEDBACK

CLASSIC 8-TRACK

I am a longtime reader, and one of my favorite sections is "Classic Tracks" [in Recording Notes]. While reading your May issue, I was excited to see your article on Iron Butterfly's "In-A-Gadda-Da-Vida."

I own and operate a project studio in Sea Cliff on Long Island and actually own that Scully 1-inch 8-track—"the ultimate analog machine" mentioned in your article. And I am pleased to inform you that the Scully is still operating and sounding as big as ever!

The Scully has been quite useful for its mic pre's. You can plug directly into the electronics of each channel and patch any digital device that is in need of some heat. Actually, all the recording I've done on it sounds great.

Eddie Camiolo
Boulevard Studio
Long Island, N.Y.

MORE ON MANUALS

Paul Lehrman's article in the August *Mix* ("Insider Audio": Future Docs, Part 1—How Many Trees Must a Manual Cut Down?) was most interesting. I have for years squirmed each time I have to pick up an owner's manual for any piece of equipment, whether for a currency conversion calculator, video recorder, DAT recorder or a new mic. The manuals are consistent, though: impossible to comprehend. It's as though there is, somewhere out there, an advanced copywriting school for befuddling manual writing! It has gone past the language thing, too; the inability to write an easy-to-follow manual now seems to be universal (see latest software manuals). Can we do without dog-earing pages, without scribbling in margins? Impossible!

Unless a new computer-based means is established for replacing same, such as a FAQ index with a NSFAQ sub-directory (not-so FAQ, that is), or a comprehensive listing of possible page and/or margin references, or a great CD-ROM supplied with each item of equipment that has been fully researched, it can't be done (maybe new equipment could have an internal GPS built-in?). I would imagine, though, that all these ideas would rankle those who resist the techno-advances (like me). Anyway, congrats to *Mix* on retaining Paul Lehrman, whose articles almost never fail to tickle my limited techno-bilities.

Name withheld on request

KORG CORRECTIONS

I really enjoyed the May 1998 article "Multichannel I/O Cards: Workstation Alternatives." There were a few things missing from the description of the Korg 1212 I/O, however, which I'd like to add.

In addition to the ADAT, S/PDIF and analog audio I/O mentioned in the article, the 1212 I/O has a number of other important features. For instance, the word clock I/O enables integration into complex digital studios; ADAT timecode input provides sample-accurate synchronization to ADATs; and onboard DSP provides zero-latency record monitoring.

MacOS drivers have been shipping for more than a year, and the 1212 I/O now enjoys full multichannel support from Steinberg Cubase VST, Macromedia Deck II, Mark of the Unicorn's Digital Performer, Emagic Logic Audio, Cycling '74 MSP and Metric Halo SpectraFoo, along with 2-channel support from Opcode Studio Vision, Cakewalk Metro 4, Arboretum HyperEngine, BIAS Peak, Adaptec Jam and more.

Naturally, the 1212 I/O is also compatible with all Windows 95 .WAV device-compatible audio programs, including Cubase VST, Cakewalk Pro Audio, IQS SAW, Samplitude Studio and more. Last, the retail price of the 1212 I/O itself is $999; the figure in the article, $1,250, is the price when bundled with Deck II.

Dan Phillips
Korg Research & Development
Melville, N.Y.

MUSIC MATTERS

I read with great interest George Petersen's editorial ("From the Editor": Audio Education—Beyond Button Pushing) in the August issue. Then I re-read it since it seemed to me that some important areas were not mentioned.

Missing, I thought, were the magical words "musical training." Since much of an engineer's life will be involved with music, shouldn't a musical background be a prerequisite for training? A serious musical education would include aesthetics, acoustics, orchestration (if you don't know where the sound comes out, how can you tell where to put the mic?), phrasing and all of those other nice things that you learn to become a musician.

Another discipline that wouldn't hurt would be basic physics. It's nice to know how the electricity goes through the wires.

Too often, when I interview a job applicant, he/she will admit to not knowing anything about music. When asked what he/she knows about signal flow, the response is too often, "I'm not very technical." Perhaps too many of these people have found employment (elsewhere, not here), and that might help to explain why so much inferior sound product is unleashed on the music-buying public. Do you become an audio engineer because you're not too good at anything else? Hopefully, better training will help.

Walter Sear
Sear Sound
New York City

CLARITY IN THE LIBRARY

It was nice to see a profile of the Alan Ett Creative Group in your September 1998 issue, but some glaring inaccuracies regarding one of its companies dampened the group's excitement.

First, the division referred to is Opus 1 Production Music Library, not Opus 1 Productions. And while we have 350 CDs in our catalog (significantly more than the 72 mentioned in the article), we would never claim to be "one of the largest music libraries in the world." Also, the library includes selections from composers around the world, in a vast array of music styles, not just those employed by the Alan Ett Music Group. Finally, the libraries represented by Opus 1 include JW Media Music, Sound Stage, Kosinus, No Boyfriend Music and Opus 1. Thank you for setting the record straight.

Alan Ett, Rhona Nici Parry
Opus 1 Production Music Library

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

World Radio History

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World Radio History

CIRCLE #097 ON PRODUCT INFO CARD

CURRENT

ALESIS FORMS GT ELECTRONICS

Alesis Corporation announced the formation of a new division, GT Electronics, to focus on vintage vacuum tube technology. Alesis recently acquired the microphone, amplifier and signal processing technologies of Groove Tubes, a company founded by Aspen Pittman in 1978. The first new products of the GT Electronics division are four new large-diaphragm condenser studio mics based on Groove Tube models. "By combining Groove Tubes' extensive experience in microphone and tube circuitry design with Alesis' expertise in manufacturing and marketing, GT Electronics will emerge full-blown onto the recording scene with a mature line of products that will rival the quality of vintage European manufacturers," said Jim Mack, vice president of marketing for Alesis. "In the same spirit on which Alesis was founded, GT Electronics will also achieve cost savings for the customer without compromising the classic sonic quality."

E-MU AND ENSONIQ JOIN FORCES

E-mu of Scotts Valley, Calif., and Ensoniq Corporation of Malvern, Pa., are now doing business as Emu-Ensoniq. The new company plans to build upon the strong relationships that both E-mu and Ensoniq have established with their customers. Additionally, Emu-Ensoniq's engineering, production, and sales and marketing teams have begun sharing technologies—the results of which will begin to appear early next year.

E-mu was founded in 1972 and is a developer of innovative digital audio products based on sampling technology for the music and multimedia markets. Ensoniq was founded in 1982 and is a producer of audio and sound technology products.

E-mu and Ensoniq are wholly owned subsidiaries of Creative Technology Ltd.

NEW COMPANY CRACKS DOWN ON SOFTWARE PIRATES

A new pro audio company, Copyright Control Services (CCS), has been formed by three industry veterans to tackle the growing problem of audio software piracy. Dave Powell, former sales director of Harrison and Euphonix; Jeff Bloom, director of Synchro Arts and former marketing director of Digital Audio Research (DAR); and Julian Searle, most recently Motorola's intranet systems developer, will be campaigning for aggressive legal action against those who are breaking copyright laws by distributing unlicensed (i.e., "kracked" or "warez") software via the Internet and CD-ROM. The group will also go after audio professionals who knowingly use pirated software.

"CCS is probably the first company in the world to target piracy in this way on such an industry-focused basis," said managing director Powell. "We are also developing a sophisticated set of tracking, tracing and auditing tools that will speed up the task of shutting down these pirate sites. Our aim is to find and prosecute pirates swiftly and significantly reduce the use of our members' pirated audio software worldwide."

CCS also will provide legal guidance to its developer members and will provide a secure forum for discussion on how to improve copy protection systems for the pro audio software industry. For further information contact Powell at 101550.577@compuserve.com or 44/7775/597-677.

SPARS BIZTECH '98

On July 9, more than 250 industry members attended the SPARS (Society of Professional Audio Recording Services) Biz/Tech '98 Conference, held at Loew's Convention Center in Nashville. Phil Ramone led a producers' panel featuring Tony Brown, Narada Michael Walden, Garth Fundis and George Massenburg. The discussion ranged from Internet music delivery to archiving masters to the demands of radio programmers on artists and producers to follow formulas.

J.J. Rosen, CEO of N2K Music, and Gerry Kearby, CEO of Liquid Audio, outlined opportunities for studios and artists to use the Internet as a source of new business. There was also a discussion led by Murray Allen, director of audio/video at Electronic Arts and past SPARS president, on what it takes to survive and thrive in today's studio business.

SPARS president Paul Christensen said, "The content and enthusiasm of the attendees and panelists was superb. We're already discussing plans for next year's BizTech events."

APRS SHOW RETURNS TO SUMMER FOR 1999

Following extensive industry canvassing, the UK's Professional Recording Association Board decided to reassess its Audio 98 show scheduled for November. The November event will now have a seminar and workshop-style format, followed by the annual APRS Awards Dinner at London's Cumberland Hotel. The main APRS exhibition will be held in June 1999. APRS chief executive Mark Broad said, "The consensus at present is that a mainstream exhibition this November comes in the middle of a busy international show schedule and could be diluted as a result. We have therefore decided to concentrate our efforts on providing a recording industry forum with a strong technology bias, complemented by a very popular social occasion in the form of the awards dinner. We have received many comments

—CONTINUED ON PAGE 16

TEC AWARDS PRESENTERS ANNOUNCED

The Mix Foundation for Excellence in Audio announced the presenters for the 14th Annual Technical Excellence & Creativity Awards, to be held Sunday, September 27, at the Fairmont Hotel in San Francisco.

Confirmed presenters as of press time include Asleep at the Wheel's Ray Benson; Skywalker audio post engineer Gary Rydstrom; producers Frank Filipetti, George Massenburg and Narada Michael Walden; Music Annex owner David Porter, musicians George Duke, Craig Chaquico and Pete Escovedo; and Barbara Orbison. For further information, call Karen Dunn at 925/939-6149. ■

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World Radio History

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INDUSTRY NOTES

Euphonix UK Ltd. (London) appointed **Luca La Rosa** to field service manager. La Rosa started his career as a maintenance engineer at Alta Tensione s.r.l. Recording Studios in Rome and most recently worked at H20 Enterprises as a training and service engineer...**Matt Charles** joined **Strategic Marketing Partners** (Walnut Creek, CA) as senior account executive. He is based out of an office in New York...**Marco Alpert** was named vice president of marketing at **Antares Audio Technology** (formerly Antares Systems), based in Auburn, CA...Palo Alto, CA-based **Digidesign** recently joined forces with **Digital River**, an online distributor, to make Digidesign software available for purchase via the Internet...**Craig Devin** was promoted to vice president of business development for **Alesis Corp.** (Santa Monica, CA). Devin began his ten-year Alesis career in the engineering department, developing and researching products...**Hafler** (Tempe, AZ) announced the promotion of **Jerry Cave** to managing director. Cave has worked with Hafler's parent company, Rockford Corp., since 1994...**Shawn Stahmer** was named director of new business ventures at **Shure Brothers Inc.** (Evanston, IL), and **Rob Cappucci** was promoted to director of wireless products...Promotions at **Audio-Technica U.S.** (Stow, OH): **Marc Lee Shannon** to director of sales, North America; **Michael Edwards** to marketing manager; **Joel Singer** to live sound marketing manager/artist relations; **Jeff Simcox** to marketing communications manager; and **Sue Wehrmann** to credit and customer support manager...**Phil Garfinkel** joined the sales staff at Wilsonville, OR-based **Audix Corp**...**Karl Moet** was promoted to product training manager at **Tascam** (Montebello, CA)...**QSC Audio** (Costa Mesa, CA) completed the creation of its Systems Integration Group (SIG) with the appointment of **Scott Kalarchik** to the position of audio design liaison... **Genelec OY** recently held a 20th anniversary celebration in its hometown of Iisalmi, Finland; and at **Genelec U.S.**, **Frank Sarcia** was appointed to sales and marketing, North and South America...At **Crest Audio Inc.** (Paramus, NJ) **David McNutt** was appointed North American sales manager, **Neil Conley** was named manager, Central Region, and **Steve Payne** was named manager, Eastern Region. **Kristina Phillips** joined Crest as trade show and event coordinator...**Stephen Siegel** was named VP of engineering at Whitinsville, MA-based **Eastern Acoustic Works** (EAW)...Happenings at **Sonic Foundry** (Madison, WI): **Lisa Fichter** was brought onboard as channel development manager, **Jim Latimer** was promoted to musical instrument channel manager, and **Johanna Bierwirth** was tapped to head the new European office as senior director of international business. The new office is located in Delft, The Netherlands. Phone 31/15/214-2287...**The Harman Music Group** (Sandy, UT), announced the re-centralizing of DOD and **DigiTech's** sales, customer assistance, marketing and manufacturing efforts. The engineering staffs will continue to remain separate to preserve each brand's identity...**CreamWare** has moved to 6915 Russell Avenue, Burnaby, BC, V5J 4R8; phone: 800/899-1939. The move did not affect the distribution center in Sumas, WA...**Federico Serrano** was appointed to the sales staff at **Apogee Sound** (Petaluma, CA) and will focus on the Latin American and European markets...**JBL Professional** (Northridge, CA) announced the promotion of **Simon Jones** to senior product manager...**Howard Zimmerman** was named vice president of sales and marketing at **Sound Bridge Acoustic Labs** (Waxahachie, TX)...**Bay Roads Marketing Group Inc.** was appointed as the national distributor for Philips consumer products. ■

—FROM PAGE 12, CURRENT

about the lack of an APRS Show this June, which has been sorely missed, and by moving our exhibition focus forward to June 1999, we are actively responding to the market's wishes." For further information visit the APRS Web site: www.aprs.co.uk.

NEW WEB SITES

Amazon.com Inc. recently launched its music store, comprising nearly 300 musical genres, expert and customer reviews, music news and search functions. Visit www.amazon.com.

On-Line Entertainment Network Inc. announced the official launch of its CD-quality, Internet-based, real-time audio-on-demand entertainment network. Listeners can access music from a constantly expanding list of record labels and view live concert performances and other events. Check out www.oen.com.

Trew Audio's new site, www.trew-audio.com, features a complete catalog of rental equipment, up-to-date consignment listings, custom product profiles and articles of interest to film sound professionals.

Precision Analog Systems has a new Web site. Visit www.pacificnet.net/~pas3.

Svetlana Electron Devices Inc.'s site at www.svetlana.com includes a "Tube Search" section, offering general characteristics on virtually every popular tube type made and allowing the user to find out which types are still in production and which can be substituted for others. Also available are data sheets and online technical support on Svetlana products.

CORRECTIONS

The Web site listed in the author's bio in "DVD-Audio: Closing in on a Final Spec" (July '98) was incorrect. It should have read: www.The-Message.com/seneschal.

In our Aug. '98 directory of audio education programs, we inadvertently left out Music Tech. Address: 304 Washington Ave. N., Minneapolis, MN 55401. Phone 612/338-0175 or 800/594-9500. We also listed an incorrect phone number for the California Recording Institute. The right number is 650/324-0464 or 800/9000-MIX; fax 650/321-4772. ■

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An interactive front panel gives you instant access to each effect and its essential parameters, as well as push-button control over tempo, morphing, and mix and level settings of any or all effects. Whether you're looking for a rotary cabinet, a 4-Band Parameteric EQ, Ducking Delay, Pitch Shifting, or virtual rooms of any size and description, the MPX 1 is the right tool for the job.

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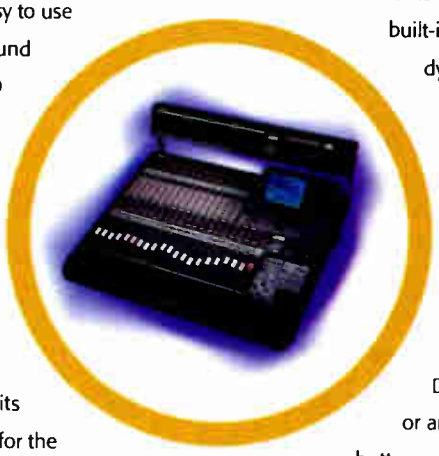
Advanced Digital Mixer

Panasonic is taking digital further today with the DA7 digital mixer, an entirely new standard in quality, flexibility, affordability, ease-of use and value. 24-bit converters, 32 inputs, 8 buses, 32-bit processing, moving faders, instantaneous recall of all settings, surround sound mixing...nothing this fully featured has been this easy to use or affordable... and it's available NOW! Incredible sound quality, Internal 32-bit processing and 24-bit A/D and D/A converters give this mixer sound worthy of consoles costing several times its price.



Easy-to-use. The DA7 is one powerful mixer. If you know how to run a traditional mixer, you already know how to run a DA7, since it has a smart, user-friendly design. To access any of the 32 channels, just press its select button and all parameters for the channel-EQ settings, bus and aux assignments, and dynamics and delay settings come up on the large backlit LCD screen. To access individual parameters, just touch the appropriate knob in the console's master section. This automatically calls up the sub-menu on the LCD screen and zooms in on the appropriate function. No more digging through menus or getting lost in functions; just adjust EQ, Pan/Assign, Dynamics/Delay, or Aux... and you're there.

The power to control. The EQ section offers 4 true overlapping parametric bands active on every channel (with the top and bottom bands switchable to low or high peak/shelving, or low pass, or high pass filters). Each Aux return also provides two bands of fully parametric EQ. The dynamics section offers variable attack/release times and levels for threshold and ratio on each channel, and delay is adjustable up to a maximum of 300ms. 50 Memories each are provided for EQ, Dynamics and individual channel settings. In addition to full dynamic moving fader automation of 32,000 events, there are 50 "snapshot" or "scene" memories. Plus, a Macintosh and windows software package (that greatly expands the capabilities of the DA7), will soon be available.

Surround sound at your command. You'll be mixing surround soon. The DA7 is equipped to mix 5.1 channel today. The DA7 has 3 built-in panning modes, and all modes provide full dynamic control of panning, and can be copied, stored, and transferred to any other channel. An optional MIDI joystick gives you yet a fourth method of surround control.

MIDI and more. The DA7 features 4 up/down/left/right cursor keys that can be switched to output MIDI Machine Control commands to MDMs, sequencers, or workstations. Data entry is done through the large parameter dial or an alphanumeric keypad. There's also an undo/redo button, a solo-mode set, and a built-in Talkback mic.

Take on the world. The rear panel sports 16 analog mic/line inputs (8 XLR with individual software-switched phantom power, and 8 with TRS); 16 channel inserts (pre-A/D); and 6 auxiliary send/return jacks (1,2 use S/PDIF; the rest use +4dB 1/4inch connectors). Along with the 2 digital and 4 analog Aux returns, the DA7 has 38 total inputs. Digital I/O, provided via XLR connectors switchable between AES/EBU and S/PDIF, offer the master out signals and they can be assigned to inputs 15 and 16.

The DA7 rear panel also offers MIDI In and Out, word clock I/Os, both a 9-pin RS-422/485 serial port and PC port for Mac or Windows with software support for both, a 1/4 inch footswitch jack for controlling Talkback on/off or automatic punch in/out, and a D-15 subconnector for the optional meter bridge. So, take your digital mixing further today by going to the nearest Panasonic dealer and auditioning the DA7 for yourself!

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For more information call:
1-800-777-1146 or visit our website at
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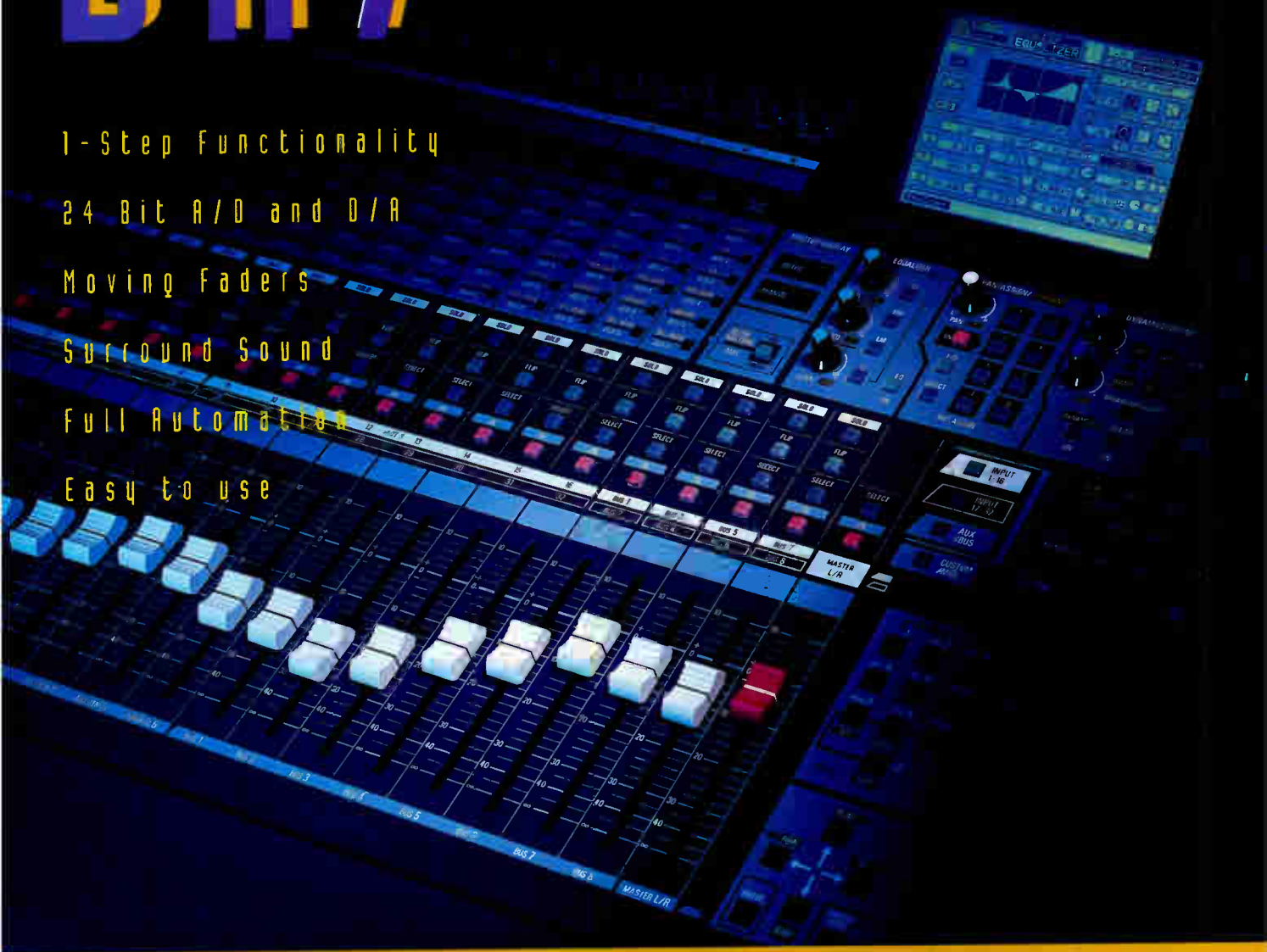
DA7 Digital Mixer



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Easy to use

Taking Digital Further

Panasonic

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TRIDENT

THREE NANO-STORIES FROM THE BOOK OF LIFE

STORY ONE

My daughter...Yes, I know, I know. You are all saying to yourselves, "Stephen St.Croix is *far* too young to have a daughter." Well, you're right, I am far, far too young. Roger Nichols is certainly old enough, but not me. But I have one nevertheless. She came as part of a special promotional deal with her mother. Sort of one of those Two-for-the-Price-of-Ten deals.

Anyway, one day Daughter (whom we'll call Lauren) came running up to me in typical manic abandon, crashed into me, climbed up my chest and yelled in my ear, "Do you know Steven Tyler?"

I was stunned, impressed and validated. My little Lauren, with wisdom beyond her 11 years, was aware of Aerosmith! This almost restored the faith in mankind that I lost a decade ago (see next story).

So anyway, Lauren asks, "Well, do ya?" I say I am impressed that she even knows who the band is, much less Steven. I start to ask her how she...But I am intercepted with a second excited, "Well, do ya?"

I ask why, and get, "I just read that Steven Tyler knows Zak Hanson!" I hold my breath in disbelief. "Do you think he could ask Zak for his autograph for me?" comes out next, the one-two punch bringing me to my knees.

She has her room plastered with pictures of Zak Hanson. I found a 2,000-year-old Farrah Fawcett poster in my basement last month. Now *come on*—you know the poster, don't you? You can see it. Admit it, so we can move on.

BY STEPHEN ST.CROIX

NEXT STORY

I once found myself lying on an isolated tropical white sand beach next to a young woman whose beauty even the mosquitoes respected enough to leave unpunctured. In a charming effort to strike up a conversation, she looked over and sweetly said that she had recently heard that Paul McCartney was once in a band before Wings, and had I (being in the music business) ever heard that rumor.

LAST STORY

Some time ago, I found myself on the north shore of Kauai, in a place called Princeville. As I sat in the outrageous condo on the cliffs, drinking wine while dinner was being prepared, I watched—through a glass floor—the sun set in the surf under us. A gecko scurried across

ILLUSTRATION: WILL TERRY

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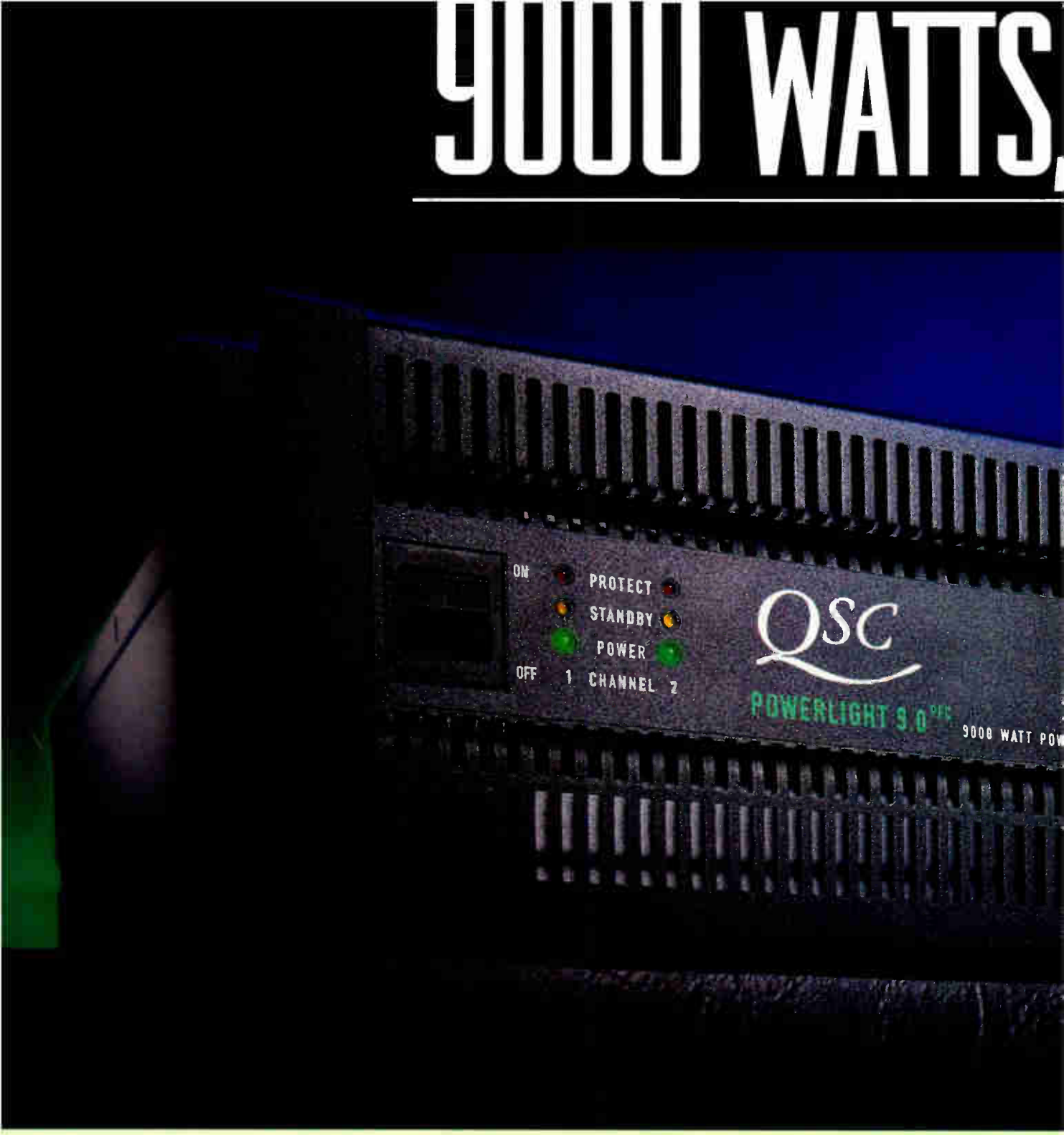

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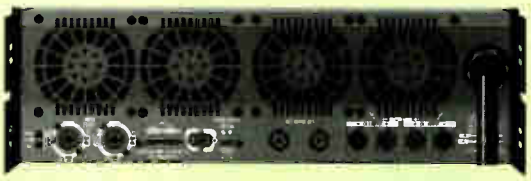

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World Radio History

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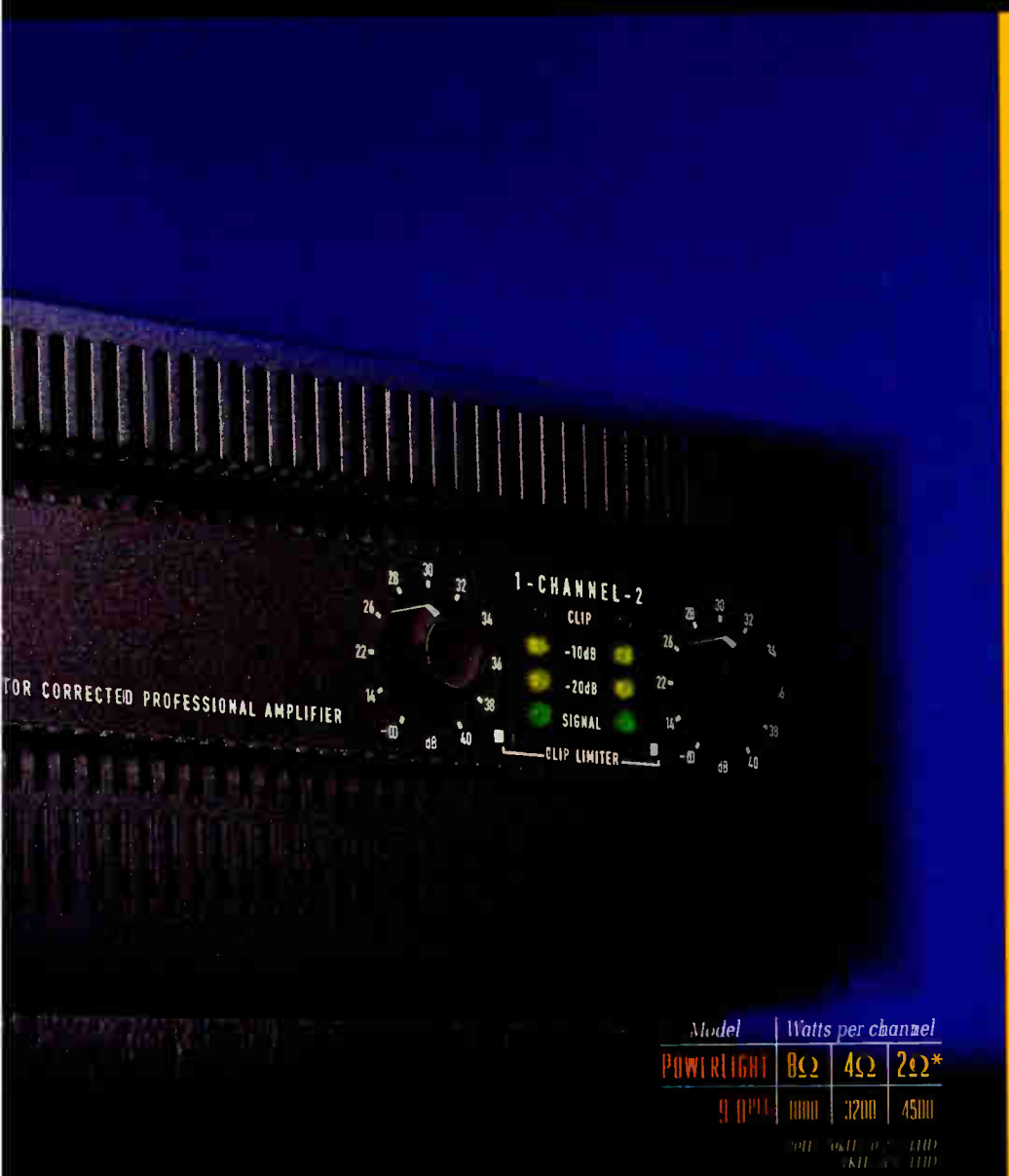

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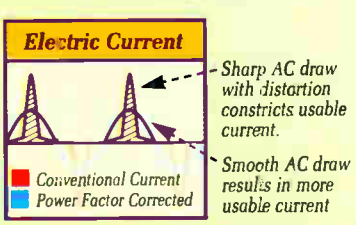

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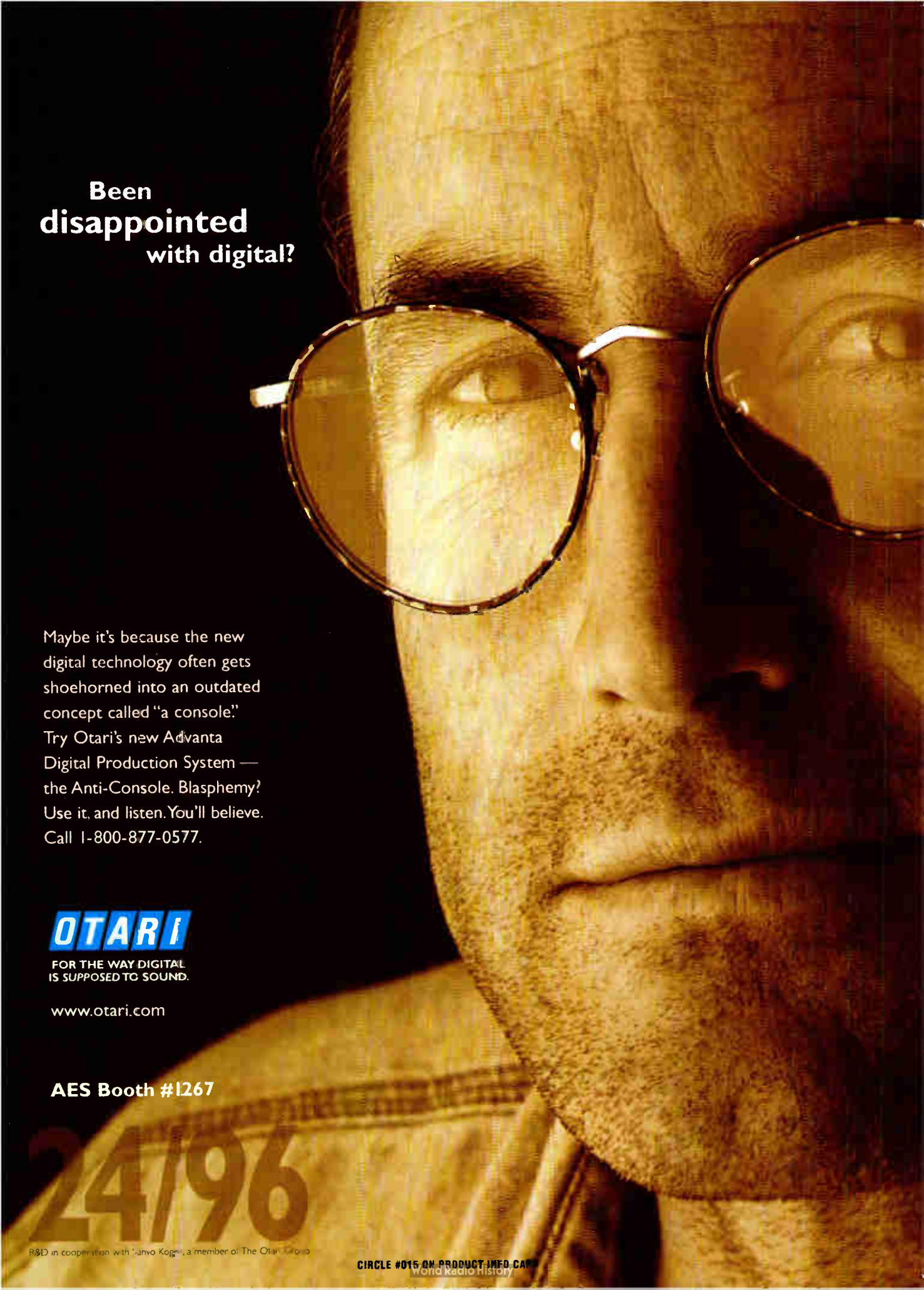
the glass and stopped directly in front of the half-set sun, creating the perfect organic Hawaiian graphic. I had a Steinberger hooked up to a little Zoom, and from my earphones flowed what I felt was the perfect mellow, bluesy tribute. As the sun dove ever deeper into the crashing surf below me, I played myself to sleep—that special secure, warm, peaceful sleep you can only get when you pay too many thousands to vacation in a place that makes you forget what your life is *really* like back home. I remember my last thought before fading out was maybe I should just pack it up and stay there for a few years. Having had that thought before, on the isle of St. Croix and a few other places, and having actually done it, every time I think it again, there is the added rush of knowing I might actually do it—yet again.

The next morning I awoke preoccupied with the view through the glass floor and decided that I should see the entire island through a glass floor, since I was considering making it my home. So I dropped by the local tourist helicopter joint to check out the options. Pretty dismal—big old loud Rangers packed with big old loud hung-over tourists, giggling and shouting in fear and loathing—not part of the Magic Dragon I was here for!

But as I started to leave the tarmac, I saw a nice, tiny, new A-Star fly in, doing 50 knots at about 15 feet. Now *this* was more like it—small, powerful, very quiet, and both the pilot and copilot sit in a transparent bubble that extends all the way under their feet. My glass floor to the world. It took some time to convince the desk that I really wanted this bird, early in the morning, with a real pilot—maybe the one that had just brought her in. They warned me that though the A-Star was the newest, most maneuverable, and by far quietest bird they had, the only guy who flew it was, um...well, he was, um...perhaps not the best choice for tourists. I took it. How could I not?

Days later (he only flew on certain days at certain hours that *he* picked), I got a sunrise call saying it was time. As I drove past endless surf crashing on endless lush beaches, I realized that perhaps I should have at least asked to meet this pilot at some point before now, and that maybe my best move was to stop and catch a wave, and simply blow off the flight. But as soon as I thought it, I was there.

—CONTINUED ON PAGE 351



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Greg Mackie, Founder

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FUTURE DOCS, PART II

PUTTING IT ON THE LINE

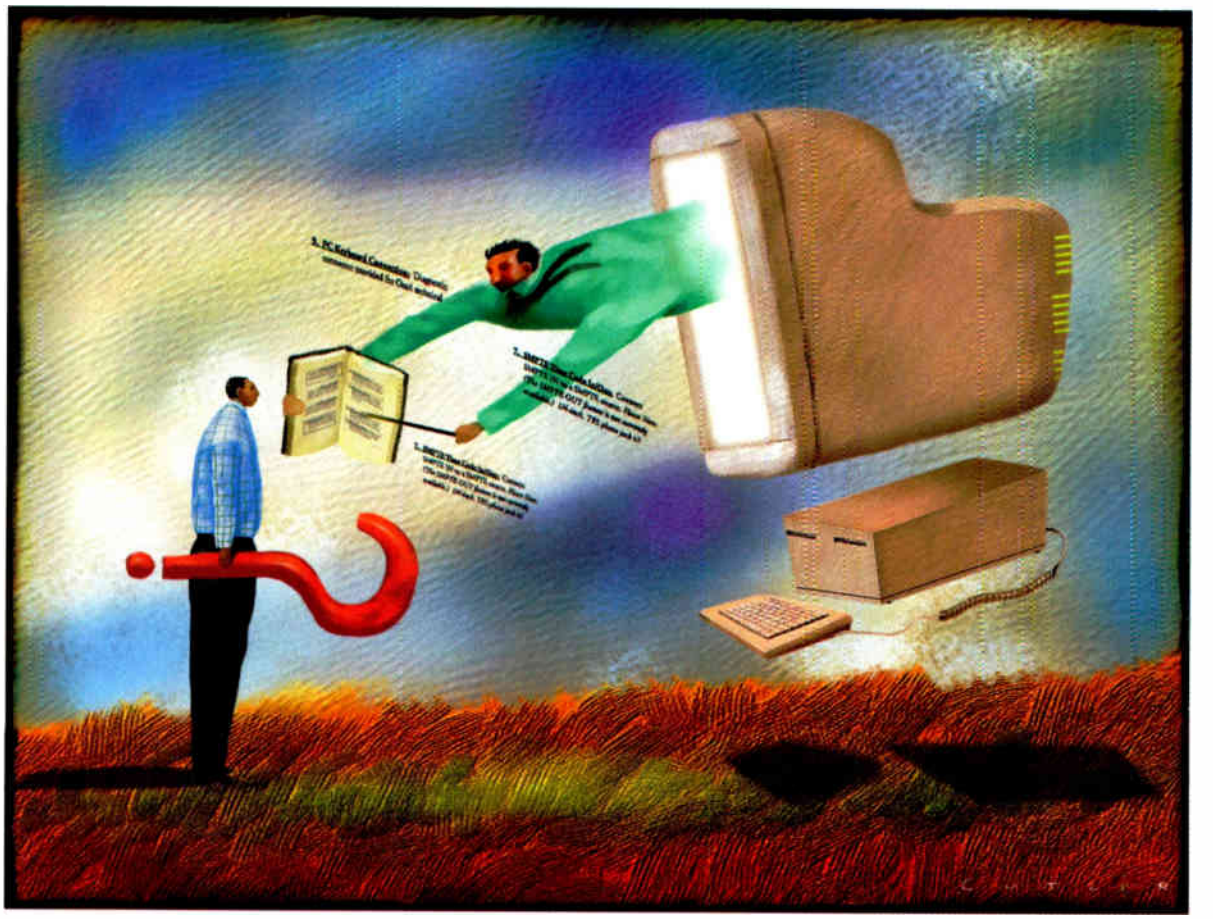

ILLUSTRATION: DAVE CUTLER

Two months ago, I started a discussion here on the future of documentation, and how the folks who write user and technical manuals for audio tools may—or may not—be able to take advantage of the various "new media" bandwagons that everyone else is riding. This month, that discussion continues, and I hope it gets you readers—engineers, musicians, studio owners and manufacturers—thinking about this issue and starting your own discussions.

For those of us who live comfortably in the digital world, at this particular moment in the evolution of media, there are three principal ways to deliver content: paper, CD-ROM and the Internet. Paper has the advantage of being a completely portable medium, and it requires no special equipment to decode. Plus, we all have spent years developing the skills necessary to extract the information it carries. Paper's disadvantages are that it is expensive to make, it's expensive to ship and to store, and it's expensive to the environment, in terms of the number of trees that must be killed and the quantity of by-products that are spewed out during the manufacturing process (ever been downwind of a paper mill? I rest my case).

CD-ROMs are small and, from a cost-per-unit standpoint, inexpensive. Also, if they are designed properly, documents on CD-ROM offer indexing and hyperlinking that are way faster than even the best Evelyn Wood-graduate reader can get out of a book. The disadvantage is that a CD-ROM requires a dedicated machine to read, and for now, until we arrive at a palmtop standard, that machine has to be a full-fledged computer.

The advantage of putting documentation on the Internet is that once the editorial process is finished, it costs absolutely nothing to duplicate and ship, and it takes up no physical space. So it's a no-brainer, right? Not right.

It would seem to be a documentation or technical support manager's dream come true, to have documents available online, accessible to all, any time of the

BY PAUL D. LEHRMAN

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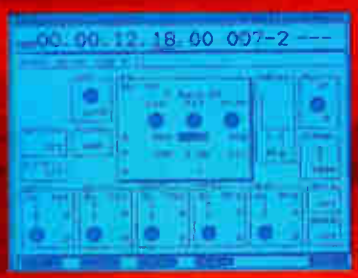

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day or night. The same advantages that CD-ROMs have—instant access to any part of the document through hyperlinks and "hot" indexes and tables of contents—can apply to the Web. In addition, the information can be modified at any time with no need to alter any physical object, so that updates, corrections or other changes can be made without the need for another physical production run, either in pulp or polycarbonate.

But the catch, of course, is not only must you have your computer *on* while accessing these documents, you have to have it *online*. Some day we may get really practical, small, dedicated "network computers" (and a lot of folks are saying this genre was doomed before it was even born), but for the foreseeable future we've got to use a regular old computer for this. For many people, that means the same computer they've got running their studio.

Unfortunately for these people, a lot of current platforms have trouble accessing a modem and a MIDI cable at the same time, to say nothing of dealing with audio. I don't know if you've ever tried to pull down a large file from the Web at the same time you're recording a new track on your hard disk, but the experience isn't pretty. Even with a cable modem or T1 line, the World Wide Wait is not a pleasant way to get information quickly. The idea that you have to shut everything else down and twiddle your thumbs while you wait for a download that, when it's all over, might not even contain the information you're seeking, is horrifying, especially to those of us who work against tight deadlines—which means all of us. Waiting for a download to finish before you can go on with a session is about as productive (and as impressive to the client) as calling a break while you run to the other side of town because you forgot to buy enough tape.

If user manuals are going to be on the Web, and if we are to have any hope of accessing them efficiently, they are going to have to be organized very differently. Creators of the documentation are going to have to recognize that the Web is not just a giant amorphous repository of information. It has a dynamic and a set of priorities all its own. While CD-ROM drives have gotten fast enough that loading large graphic files doesn't cause everything else to come to a screeching halt, most people, especially those with ordinary dial-up connections, are a long way from being able to do that with the Web.

Moving user manuals onto the Web isn't just a question of converting Pagemaker or Word files to HTML. It requires rethinking the balance between text, graphics and other media, and organizing the information so that the most important stuff gets to the viewer as quickly as possible. It means breaking up the different bits of information into smaller bits, so that time isn't wasted accessing irrelevant or unnecessary data—you don't want to have to wait for a 250K graphic of the back panel to download before you can figure out the rating of the fuse that just blew.

The most versatile storage medium in the universe, and the fastest connection to it, are no damn good if you can't find the one piece of information you want.

Some companies are dealing with this problem by uploading their documents as PDF files. The PDF format, otherwise known as Acrobat, was created by Adobe and allows documents to be read with a piece of cross-platform freeware called Acrobat Reader. PDF documents can contain graphics and hyperlinks, as well as "hot" indexes and tables of contents, in which clicking on a topic takes you to the page cited, and they are even searchable. But PDF files can't be browsed online like HTML pages; you can't type in a word and have Excite or Lycos find it within a PDF document and then point you to the page. Instead, you have to download the whole PDF file *first* and then search it. Which means you have to be thinking ahead of time, so that the file is already on your hard disk (or a removable) before you need it. In an emergency, with the clock ticking, PDF documents that haven't been downloaded yet aren't much use. (Of course, you can always download it ahead of time and burn it onto a CD-ROM...Wait, isn't this where we came in?)

Since users expect it will take some time to download PDF files, they don't have to be as slim as HTML pages, but those designed for downloading need to be quite a bit leaner than those designated for fixed media. It's not uncommon for a PDF file on a CD-ROM, rich with high-resolution graphics, to take up 100 megabytes or more. Downloading this with a 33.6k modem would take a couple of days or more. It might make sense in some cases to break up a PDF file into smaller chunks, or even individual pages, to make each download faster, but that takes away some of PDF's advantage: If you don't know which page the information you're looking for is on, you don't know which section to download. If the index is a separate file, at least you can start there, and then, hopefully, save time by downloading only the sections that the index indicates you really need.

Potential pitfalls aside, there are some great benefits to having user manuals available online, beyond cost and efficiency. One of the strongest advantages is that you can include with the manual a sitewide search engine—in fact, this should be considered obligatory. You know that TV commercial for the removable-storage maker in which these two guys are desperately trying to find this tiny church in the middle of nowhere in Scotland so one of them can get married, and when they ask directions they get the whole history of the parish but no one will tell them where the church is? It's a wonderful ad (especially if you've ever had a conversation with a Scotsman), but it neglects an important point: It's not the *medium* that prevents us from finding the information we need, it's the way the medium is *organized*. The most versatile storage medium in the universe, and the fastest connection to it, are no damn good if you can't find the one piece of information you want.

There are a lot of commercial search engines now available that can be used by just about anybody with a Web site, for a reasonable fee and sometimes even for free, so there's no excuse for a manufacturer to have online documentation and no search engine. Setting up the front end of the engine so that it's easy to understand is crucial; arcane rules about quotations and commas

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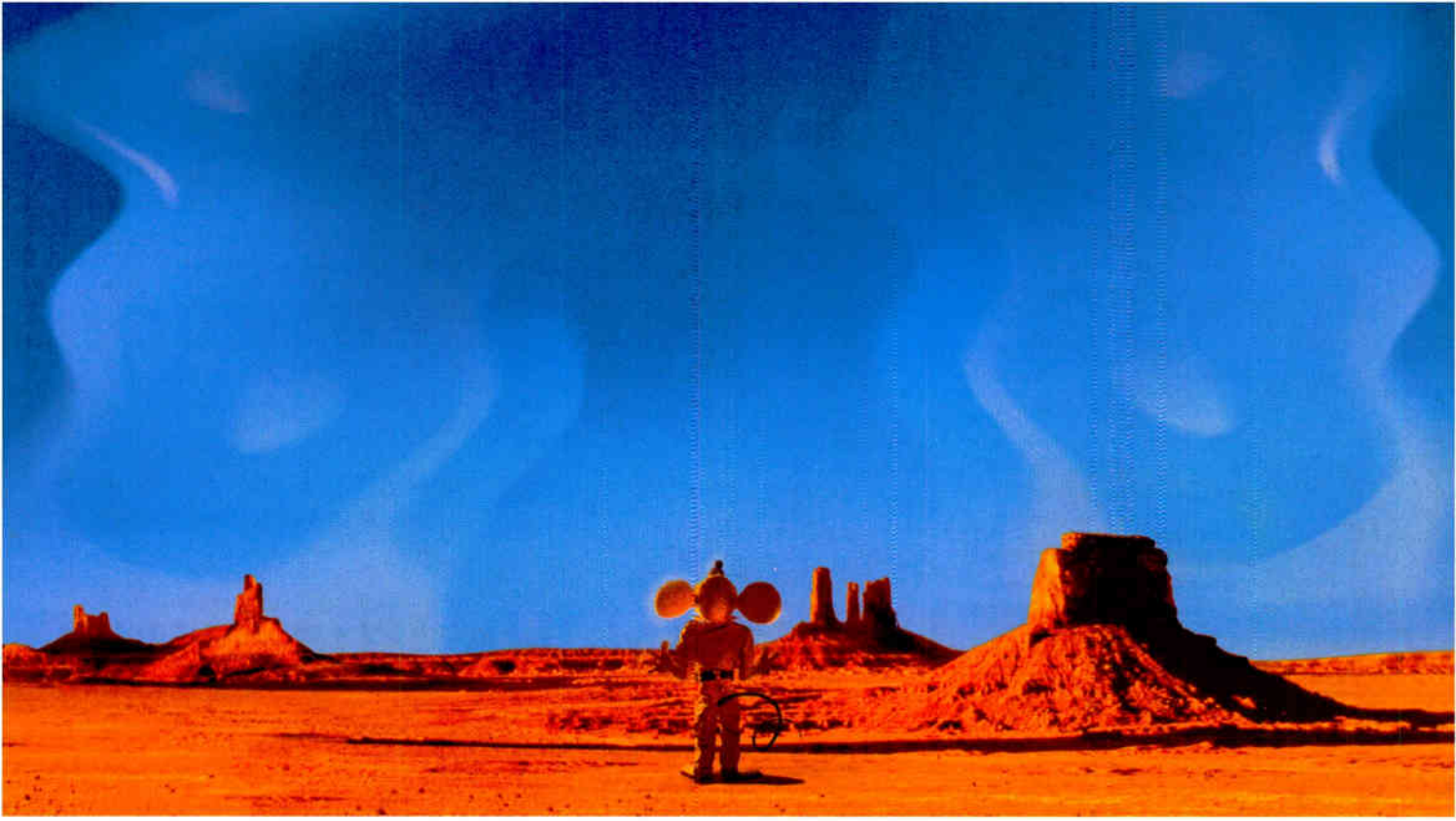

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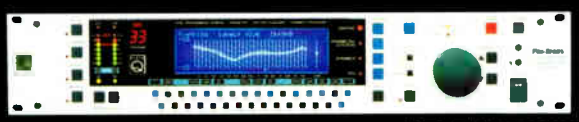
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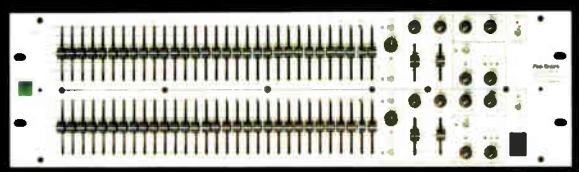
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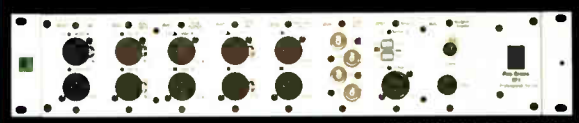
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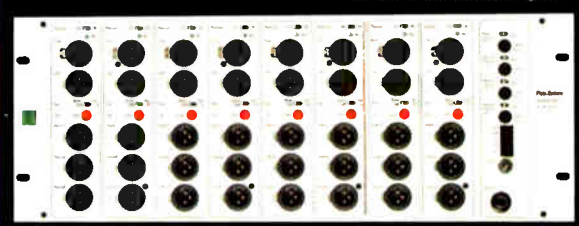
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and Boolean functions are not a good idea if manufacturers want to stay friendly with their customers. Smart parsing of phrases like "slaving sample rate" or "stereo links" or "@#$%&* error message" that display to users all of the instances of the words, in order of how closely they match the phrase, will save lots of time and aggravation, and it's a function that is easy to implement.

A bonus feature of online documentation for manufacturers is that they can gather the names of the folks visiting, by asking users to register or fill out a survey. The point of this is not so they can then sell mailing lists to porn providers or get-rich-quick schemes (and please don't get any ideas...), or even to bombard innocent visitors with daily marketing messages—that's a great way to get people pissed off. The point is to create an accurate database of people who need to be informed of changes in the products they use. If there's a software update, a newly discovered bug that needs to be avoided or a feature that wasn't explained well the first time around, users deserve to be told, and sending out e-mail messages informing recipients of the changes—with appropriate URL addresses and links so they can get more information from the Web site—is a fast and inexpensive way to get the word out. How about using the database for the occasional sales pitch or new product announcement? Sure, that's fine—if it's done with respect for the users' time and mailbox space. After all, somebody has to pay for all this.

Putting manuals online also gives manufacturers a golden opportunity to build a sense of community among their customers. I'm not necessarily talking about full-fledged conferencing and chat rooms; those can be nice, but they do take a lot of time and energy. (Ask the man who runs one!) But there are simpler ways to make users feel that they are in this together. One of the best is to set up Q&A or FAQ ("frequently asked questions") areas in which people write in their problems and questions, and someone knowledgeable within the company responds and posts the response for all to see.

What's great about doing this online (as opposed to doing it in a magazine column) is that the FAQ list can be expanded infinitely, so that all questions,

—CONTINUED ON PAGE 330

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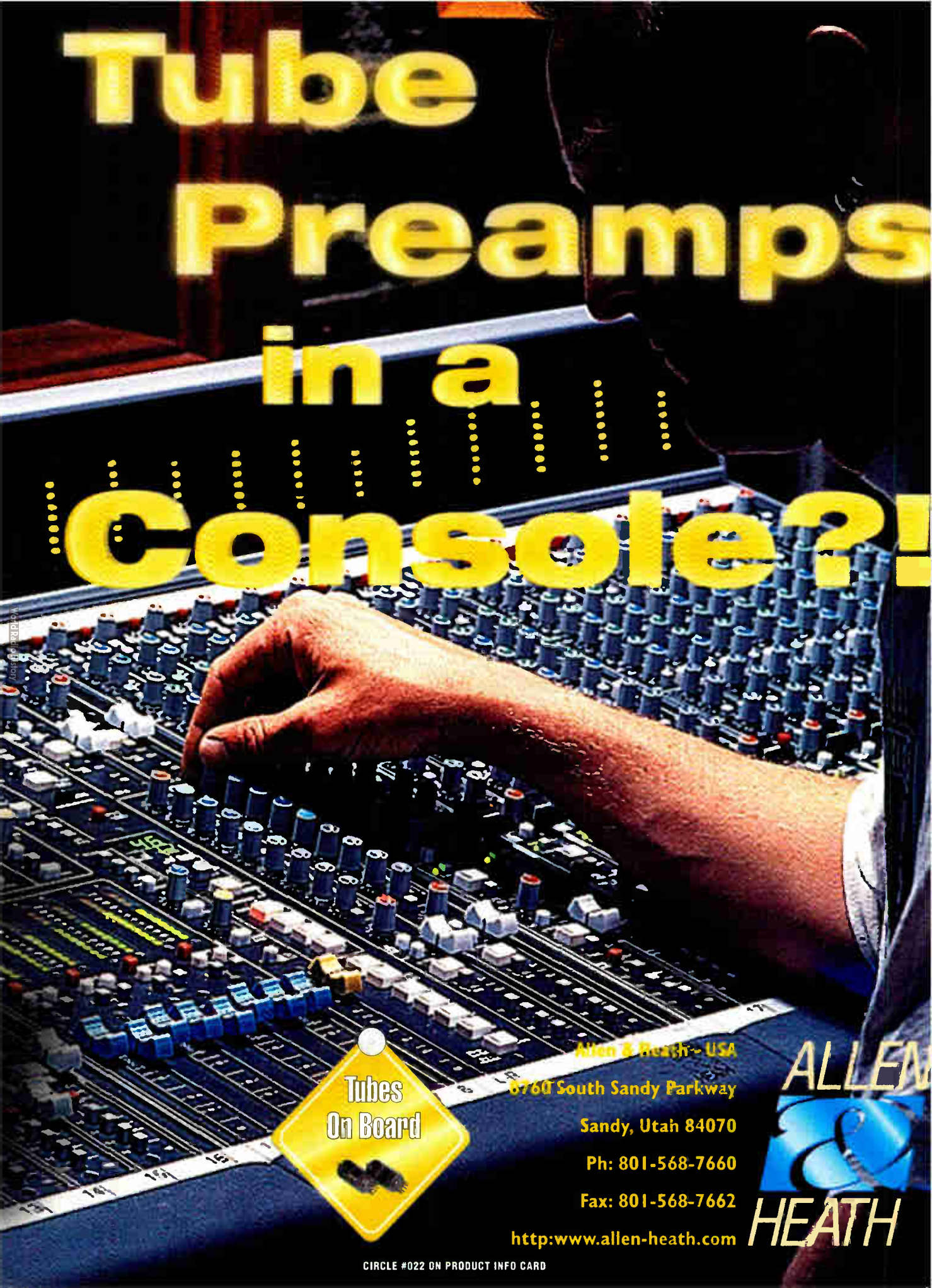

CIRCLE #022 ON PRODUCT INFO CARD

Studio Equipment Modifications

Secrets From The Pros

BY DAVID OGILVY

Audio engineers are a lot like race car drivers. Everybody wants to get the most out of the gear they have, whether it's higher speed, more power or pushing the noise floor barrier toward theoretical limits. And sometimes a simple modification can provide an extra edge at a relatively low cost.

We asked a number of tech experts from across the country to unveil some secrets (as well as a little plain common sense advice) concerning their favorite mods. George Athanasiou (Athan Corp., South San Francisco, Calif.), focuses on multitracks, 2-tracks, DATs and motor rebuilding; Fred Cameron (Cameron Labs, Nashville) is an installation/maintenance engineer who recently unveiled a new line of condenser microphones; Fred Hill (of F.C. Hill & Associates, Pleasant View, Tenn.) has refurbished more than 30 consoles in the past nine years and specializes in old Neves; John Klett (Singularity Enterprises, Carmel, N.Y.) has done tech work in New York since 1979 and shares a vast shop in midtown Manhattan with Purple Audio, TechMecca and Manhattan Audio; and Mike Spitz (ATR Service Company, San Mateo, Calif.), specializes in Ampex tape machines, offering a tube playback amp and Class A, transformerless I/O module replacements for the ATRs. Also offering advice is Jim Williams (Audio Upgrades, Van Nuys, Calif.), who markets standardized modifications for everything from outboard gear to tape machines; he also manufactures high-performance outboard and console retrofit preamps.

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Whether modifying transaxles, transmitters or transducers, keep in mind that most equipment modifications will void factory warranties. Also, be aware that the insides of electronic devices carry potentially lethal voltages and should only be serviced by knowledgeable personnel.

What are some popular mods for digital gear?

Williams: We modify all the Lexicon products, the LXP-1, 5 and 15, Alex, Reflex, PCM41, 42, 60, 70, 224XL, 200. I approach each piece on an individual basis because of design differentiation. The LXP Series use the same digital engine or are based around the same components so the LXP-1 and the LXP-5 get new converters, sample-and-hold amplifiers, sample-and-hold timing capacitors, de-multiplexer chip (which separates left and right data on the output of the DAC) and a comparator (which switches the function of the converter between D-to-A and A-to-D). I also lower the input gain by about 15 dB, because I don't think anybody really wants to plug a Stratocaster into a reverb. All of this improves the noise floor and eliminates timing errors so the reverb tails are more much more musical and smooth—they don't have that metallic ring to them.

I've done most of the Akai samplers. They get new, higher-grade converters, using "K grade" parts, the highest of three ratings for converters. The analog op-amps are all replaced with high-speed RF parts. Capacitors are replaced with the high-speed electrolytics that are bypassed with the polypropylenes.

Klett: We modify a lot of synths. For example, the Roland keyboards have something like dual 5532 output amplifiers, which run through an inductor, a cap to ground a FET (to mute the output when you turn the device off/on) and something like a 1,000-ohm resistor. Each component is there for a reason: One keeps RF out so the units will pass FCC requirements. Many keyboards have components to prevent damage that would occur if the output were to be plugged into an AC wall socket. But in a studio application, the biggest problem is that all that junk on the output raises the source impedance of the keyboard up to near 1,000 ohms. If somebody wants to record the best possible sound out of their keyboard you can take out all that junk and just put a nice little 47-ohm resistor between the output of the op-amp and the jack on the back of the unit—you can even get rid of all the FETs—and have a much better sound. Then you could put in a better op-amp, and better sample-and-hold amplifiers with some of the digital stuff.

The Ampex 100 Series—particularly the ATR-102 and ATR-104—are capable of incredible performance. Is it possible to improve such fine recorders?

Klett: One really good mod for ATR-100s is on the reel control board. They have two voltage regulator circuits. It's a good, solid, traditional voltage regulator circuit, but if you replace those two voltage regulator circuits with a monolithic voltage regulator chip (such as the TO220-7812 and 7912), the circuits those voltage regulators feed send a much more consistent voltage, and that board feeds over to the reel control board. It makes the whole machine more stable, and it actually tends to run a little cooler, because there's some timing that's dependent on the voltage in the reel control circuit side. In terms of lowering the wow and flutter and overall servo noise in that machine, it's a really nice little mod.

The best way to tell a bad capacitor is hearing a piece of equipment getting thin in the low end.

—Jim Williams

Spitz: Every six months, Ampex decks need maintenance on the scrape flutter idler. This little roller right in between the play and record heads tends to make a lot of noise. Also, tape tension is the machine's Achilles' heel and should be set every couple months. When machines come in here, their tension arms are always a little bit off. I don't recommend that anybody modify the ATR boards from what they are. Usually I spend a lot of my time un-modifying. A lot of people will change the tantalum capacitors to electrolytic capacitors, feeling that the electrolytics will sound better, but they don't in this particular circuit. The whole circuit is a tuned-resonance circuit, and fooling around with it is not recommended.

What are some modifications for the Otari machines?

Athanasiou: What we do is update the idler and the capstan motor of the MTR-90. It gives you low flutter, great handling and the frequency bounce is nonexistent. We also have replacements for the lifter sleeves. If your lifter sleeves go bad, you'll have to replace the lifter sleeve assembly—the aluminum block and everything. So we made a lifter sleeve that slides right over the top of the shaft, so you don't have to replace the whole arm assembly. We're going to continue supporting the Otari MTR-90, carrying components for that into the future.

Klett: On the MTR-90s, we have a whole raft of modifications, primarily mechanical, and I get my motors from MDI Precision Motorworks [Hudson, Mass.]. We've also developed a swing arm/roller assembly that is self-centered. So even if the swing arm bends, or even if the reel is sitting at a slightly different height, the swing arm roller will adjust to maintain the tape tension evenly across the tape, which evens out your head wear.

How would you update a Studer?

Athanasiou: We make long-lasting polyurethane capstan roller pucks for all the Studers: the A820, A827, A800 and the A80. They're easier to clean, and they prevent tape skewage. We also make a urethane timing idler and will be offering that at AES for all the Studers. We get a lot of requests for that, as the timing of those machines is so critical: The autolocator needs to see accurate timing so it can tell you exactly what second the tape is at [in the absence of SMPTE timecode]. This is especially important when you're rolling back to a specific spot on the tape. What happens is those machines move so fast, they shuttle so quickly, there's a little bit of a slippage there, and it could be just a couple of seconds, but it builds up each time you rewind. The main purpose of making it out of urethane material is to prevent that.

What are some popular mods for tube gear?

Cameron: We see a good number of LA-2As. The original version came out with a different style transformer than

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the newer version. The newer transformer is an A10; it's about 2 inches square, and about 2½ inches tall. The older HA100X transformer is almost 3 inches square.We actually ended up with stock of those original transformers from years past, and we've changed those out. We also re-cap where necessary and stabilize the meter circuitry.

Williams: On the Teletronix LA-2As, we normally do a capacitor job, and some resistors. On the solid-state LA3, I put in all new transistors. All the capacitors are changed to polypropylene film, all the electrolytic caps are replaced with high-speed electrolytics. And then those are bypassed with polypropylene film, so that when they run out of steam in the high end, the film caps take over and let all the air through. That's very important. Every mod done here with an electrolytic capacitor adds a parallel film cap around the electrolytic.

What is the strangest request you've had from a customer?

Spitz: We made an ¼-inch ATR for someone who wanted a cassette quality-control checker. It was an oddball thing. But more interesting, at AES we're introducing a 1-inch, 2-track headstack, designed for the person who wants a sparkly, clean, non-compressed analog signal. It's not for engineers who like slamming the tape: this is for someone who wants to record at 185 nW and wants a full 11 to 12 dB of headroom before tape compression starts, such as classical recording. You'll be able to put either 1-inch or ½-inch heads on the machine.

What are the most popular console modifications?

Klett: The biggest thing I run into on older consoles is putting an insert before the master fader. That's a big deal: Everybody wants to run through a compressor, and they want to fade out without the compression changing. With the older consoles you had to fade the compressor output because otherwise, when the master fader is halfway down, you're out of the compressor and it opens up, and it changes the whole dynamic of the mix as it's fading.

Hill: On older Neve consoles, we do a lot of package modifications to the routing module, which allows use of monitor pots for sends and returns, makes aux sends much more flexible than they were originally, provides separate mutes and solos for the monitor path that weren't there originally, and provides effects return, which allows solo-in-place for a given module and switching that allows setting up individual channels in remix mode when the rest of the desk is in record mode.

We build complete new center sections for easy retrofit into these old consoles. These are primarily for customers who want to make an extended desk by putting two frames together. The biggest problems people encounter when they try to stick two frames together—tie bus bars across and things like that—are the horrendous ground loops involved. It's really two separate consoles in terms of power distribution and grounding. You have to maintain some isolation there.

What's the easiest way to improve performance?

Cameron: Arranging gear in the rack. This takes some thinking, because some manufacturers put the power supply on the right side of their units, and others put it on the left. If you stack these one on top of the other and one has a sensitive input, the transformer right above or below it could induce a hum.

What are some tips for general studio maintenance?

Hill: If you have a bit of money to spend on preventative maintenance, the best place to do it is in the air handling system. Electrostatic air cleaners in the return line are a very good investment in a room filled with several million dollars' worth of electronics. Other than running equipment in over-temperature conditions, dirt and fine particles in smoke are certainly the biggest factor in decreasing longevity.

Williams: Everybody knows about the dreaded electrolytic capacitor failure problem: They age with time and dry out. The best way to tell a bad capacitor is hearing a piece of equipment getting thin in the low end. Also, increased hum from your power supply is a good indicator that your electrolytic capacitors are dried out in your power supply. You have to stay aware of any sonic changes in your equipment over time. ■

David Ogilvy is a freelance producer/engineer based in San Francisco, who recently completed mixing the Broun Fellinis' latest album.

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AL SCHMITT

A LEGEND'S TIPS AND TOOLS

Al Schmitt's had quite a career so far: He's been awarded seven Grammys for Best Engineered Album—the first, for Henry Mancini's *Hatari* in 1962 and the most recent in 1996 for Quincy Jones' *Q's Jook Joint*. He's also collected that coveted award for George Benson's *Breezin'*, *Toto IV*, Steely Dan's *Aja* and *FM*, and for Natalie Cole's *Unforgettable*. In addition to accumulating all those statues, he's been nominated for the award 11 more times, and he's recorded and/or mixed more than 150 Gold and Platinum Albums.

Those achievements are mirrored in the respect Schmitt is accorded by his peers. Descriptions of him by people he's worked with tend to go like this: "Naturally musical with amazing ears"; "Intuitive, and he gets the big picture"; "Always goes the extra mile"; "The consummate live engineer, nobody can touch him"; and finally, "Al is a class act—just simply the best."

The owner of those amazing ears got his first job at age 19 at Apex Studios in New York City, where he worked with his mentor, Tom Dowd. He went on do to work for Atlantic and Prestige Records, then moved to California to work at Radio Recorders. When RCA opened its own studio at Sunset and Vine, Schmitt was the first engineer hired; he worked for that label as both a staff engineer and producer with artists including Jefferson Airplane, Sam Cooke, and Eddie Fisher and the Limelighters, before going independent in 1966.

These days you'll find Schmitt working on projects as diverse as ever—when I spoke with him, he was mixing at The Village with country artist Michael W. Smith, and he'd just finished mixing a Lou Rawls album, recording Paul Anka dueting with some original Sinatra tracks, and recording orchestras for Bette Midler and new artist Niles Rivers. His upcoming sessions include the stereo and 5.1 surround mixes at Capitol for Vince Gill's Christmas album, an orchestra date with producer David Foster for a Van Cliburn theme for Las Vegas' Bellagio Hotel, album mixing for Monica Mancini, and recording and mixing for the Benny Carter Big Band. You'd think at this stage in his career Schmitt could take weekends off! Instead, on the Saturday we met he took a long lunch break and settled in for some questions.

Can you describe your style of engineering?

I think a big part of it is the way I started and learned; I've been in the recording studio since I was seven—that's the truth. My uncle had a studio, so as a kid on weekends I'd go over and hang out. Seven years old on the subway by myself, from Brooklyn to Manhattan, and I'd spend the weekend watching them recording; they did everything with one microphone.

Then, when I finally started to work in the business, the studio I started at had a 6-input console—we could put up six microphones. I worked with Tommy Dowd and I learned how to mike—how to get the most out of an instrument and how to place people in the room to capture the best sound with as few microphones as possible. So basically, what I do is acoustic; it's microphone technique. I rarely, rarely use EQ—if you go in and look at the board, you'll see. I may use EQ if I'm mixing something someone else recorded, but, if it's something I've done, I hardly use it at all. And I don't use much limiting or compression. If I do use a compressor or limiter, I'll use a tube one and I'll pull maybe a dB—I'll use it mostly to get the sound of the tube.

Also, I learned to do everything at one time. When I was doing all those Mancini dates and those Ray Charles dates, it was all done in mono and 2-track, so what you got on tape was it. You had to make sure you got a good balance, and the right perspective in bass, drums, guitar, strings, vocal, echo...it all had to be done at the same time. Fix it in the mix was unheard of—there was no mix.

Explain a bit more about how you place a mic.

After years and years of experience, I know most microphones, and if something doesn't sound right to me, I'll move the mic a bit and see what that does, or I'll change the microphone. I'll change a Neumann 67 for another Neumann 67—because they don't all sound the same.

Certainly, if you've got a mic on the kick drum just moving the mic an inch can make a difference. The same with acoustic guitar or pianos. I used to watch guys have a mic up and they'd want something to be brighter and so they'd add 8 dB of EQ to it. That would be so strange to me. Instead, I'll change the microphone to enhance the sound. To me, unless you're trying

BY MAUREEN DRONEY

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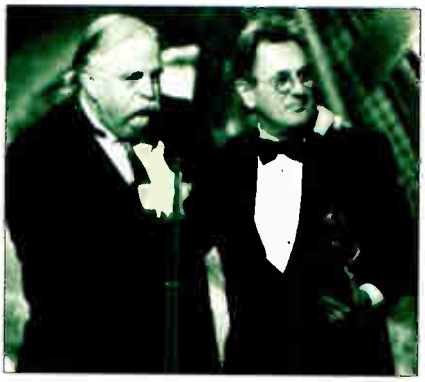
for an effect, adding 8 dB of anything is really radical.

I hear you kept a notebook when you were starting out.

I had one of those notebooks like kids take to grade school, and when I watched dates I'd draw a sketch—a diagram of where they had the microphones—note what microphones, and so forth. That really helped me early in my career. When I would have to do something, I'd get my notebook out. When I first had to do a large orchestra with woodwinds and strings, I was nervous and I went to a guy named Bob Dougherty, who helped me out—I watched a bunch of his dates and drew sketches. I was worried about recording French horns and so forth, but he told me not to worry, that it was easy. And it was easy. I finally learned, after many times of doing it, that the more people you have in the studio the easier it is to record. Recording 65 pieces is a snap—it's much more difficult to record an eight-piece! I did something recently with David Foster for *Quest for Camelot* where we had a 95-piece orchestra. There's nothing that sounds like 95 pieces going off—you open up those microphones with eight basses and 12 celli, and 32 violins...It's just magnificent, and really, it's basically all captured with the overhead microphones. You know, I don't have any secrets. Anyone who wants to know what I do—I'm glad to tell them exactly how I do it, then they go on and perfect it to their own taste.



Schmitt (R) with Bruce Swedien at the Grammys

Is it true that your first real session was with Duke Ellington and that you didn't know about it in advance?

I had no idea, and I probably would've stayed home if I'd known. I was three months at Apex Studios and I had graduated to the point where I could do what they called demo records, little voice and piano things where somebody had written a song, and they'd come in and play it on piano and sing, and we'd give them a disc and they left.

It was a Saturday, and I had three things to do. The first one, as I recall, was a cantor—the guy came in and just canted, and I got it on record and gave it to him. The next one was voice and piano—happy birthday to Joe or Sam or whatever. And my last thing, called Mercer, was scheduled for 2 o'clock in the afternoon and looked like it was booked for half an hour. So I'm waiting for Mr. or Mrs. Mercer, and the next thing I know, the elevators open up and these guys are getting out with trumpets and trombones and saxophones saying, "We're here for the record date." So I said, "Wait a minute, there's a mistake! There's no record date here," and they're saying "Oh yeah, Mercer Records, 2 o'clock."

I tried to call my boss, I tried to call Tom Dowd, and couldn't reach anybody. We didn't have a maintenance guy; it was just me by myself, and I had to do it. So I got my notebook out and saw what the big band setup was, and

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we set up everything—Duke Ellington couldn't play piano, because it was actually for Mercer Records, his son's label, but they were using the Ellington band, and he sat right next to me. I kept saying "I've never done this before, this is a mistake and I'm not qualified!" And he kept patting me and saying, "We'll get through this."

So you, all alone, set up microphones, used the console, ran the lathe...

Made sure the exhaust was going on and cut the shellac, as they used to call it.

And wore a tie and a jacket.

Definitely. It was great when it was over. I felt really good that I did it, but if I'd known the night before, I honestly don't know if I would've come to work. I felt so frightened.

It's what you dream about, and it's what you're in the business for, but the fear...I remember the first big orchestra date I did—about 60 pieces—I was so nervous that when I walked up to the console I kept my hands in my pockets because they were shaking so much. And when I sat down I took my hands out of my pockets and grabbed onto the big rotary faders, just so people wouldn't see my hands shake.

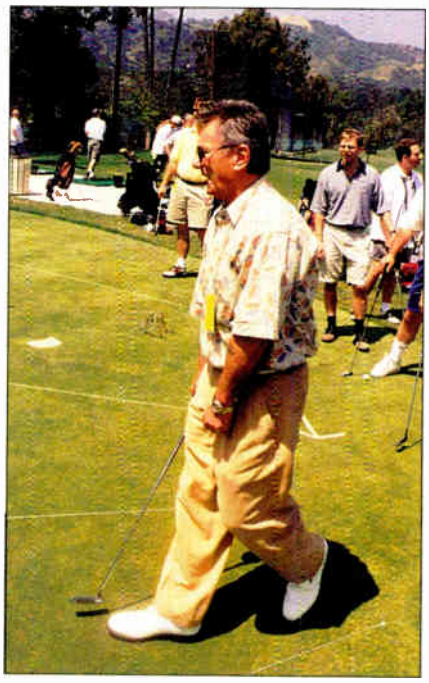

PHOTO: MAUREEN DROHEY

At the Mix L.A. Open

Isn't it true that the way you work you're really mixing right from the beginning—changing levels while you're recording if need be?

When I start a date, I'm planning ahead, and as I'm doing the date I'm not only recording and getting it on tape, I'm also getting it ready to mix to 2-track, so I have an idea of how I'm going to place things. I also try to use similar echoes to what I'll use in mixdown. I think that's something young engineers should get into—to think ahead, not just to think, "Let me get this right now and I'll worry about that later."

What are those echoes and reverbs you like to use?

Well, of course I learned on live chambers, and I still like live chambers. That's one of the reasons I love Capitol Studios; they also have one at Village that's great.

When I was a staff engineer at RCA, I used to use five large chambers, one each for center, left and right, one for left-center and one for right-center. That's how the returns came back—so if I was putting something in the chamber on the left, it came back on the left also. That's where the echo stayed. It wasn't like using it in stereo; it gave you a lot more transparency. And I always made sure the chambers were working well. I used quality microphones in them—tube 47s—and the walls were shellacked to have a glassy surface. So I

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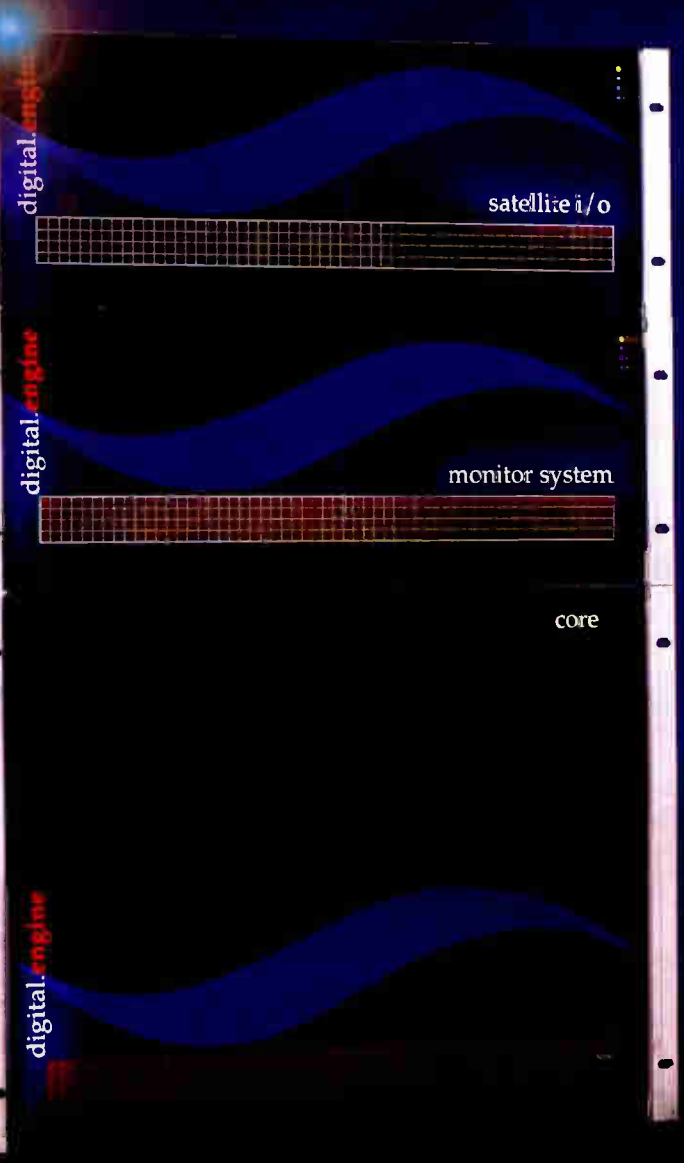

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have a 57 that's out of phase so if I need more crispness, more of the snare sound, I can bring the bottom up and get it that way. I use a 451 on the hi-hat, 414s on the toms, and I use bright mics on the overheads—149s or C12s—something that gets a nice cymbal sound. I may add a little air around 20,000. If it's in a big enough studio, I'll use M50s in the room, and that's usually the drum sound. It's really where you put things, how you mix them and how you use the echoes that makes them sound right.

What mic might you use on bass drum?
An AKG D-112 mostly. Sometimes I'll use two, a D-112 up close and tight and maybe a FET 47 farther away.

The other thing that's very important to the sound is where you place the musicians in the room. The more comfortable they are, the closer together they are, the tighter they are, the better things sound and the better they play. If you can work it out so that the musicians can play without 'phones, that's ideal. If they can run something down and not have to worry about having the 'phones on, they hear better and the level they play at is comfortable.

Years ago when we were worried about leakage, guys would try spreading the musicians out, moving them farther and farther away from each other. Well, the drummer would then play louder and louder! So I learned that moving people closer together made them play at a more comfortable level. It worked better for me and for them.

People are concerned that placing the musicians close together causes problems with leakage, but I learned that leakage is your friend back when we'd record everything at once direct to 2-track. A lot of times what you picked up from the drums was the leakage going into the bass microphone, acoustic pianos and so forth. On big band dates, you'd have a mic on the drums but a lot of the sound was from the drums leaking into other instruments' mics—and it's that leakage that actually will make things sound big. Which is why you should always use really good mics, because you are getting leakage into a really good microphone so the leakage sounds good, and that makes a big difference.

Some more mic questions, please. What do you usually use on a horn section?
Neumann 67s on trumpets, saxes and trombones, and for the trumpets I'll put them in omnidirectional. You don't have to worry about much leaking into them, because trumpets are the loudest thing in the room.

I do that a lot with strings, too: I use 67s and put them in omnidirectional; the mic sounds better, and you get the room also—that sound coming back off the ceiling or whatever.

People sometimes ask me, "If you only had one mic, what would it be?" And it would probably be a Neumann 67, or maybe lately the M149—I really love that mic. It's gorgeous, with a lot of power and a lot of gain. But before that it was a 67. You can use it on vocals, strings, brass, piano; it works well on anything.

You'd use the 67 on baritone sax as well?
Yes. Again, where you place the mic is so important. The sound doesn't come just from the bell. A lot of people make that mistake. The same with a clarinet—a lot of the sound is coming from around the keys. I always tell guys to go out in the room and listen. Listen to what the instrument sounds like, then go inside and try to duplicate it. That's what your job is. You're trying to capture that sound out there. I always try, if it's an orchestra date, to be out in the room on the first rundown so I can hear what the arrangement's about and what

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it sounds like, and then the next time they're running it down I'm inside getting myself together.

How do you mic French horns?

I use M49s lately—they sound really good. Where you place the mic depends on the sound and the arrangement. In some cases I'll put the mics behind the French horns, so I'm capturing sound right off the bell, and other times I'll put the mics in front, with a reflector behind the horns so the sound will come off of it. Most studios have gobos that have a hard side, or I put them in a spot in the room where they're going to reflect off a wall. So, it just depends.

But you have to decide before you start.

Not necessarily. I try to figure it out ahead of time, but sometimes I listen to the arrangement during the rundown and say, "Oops, lets get them out front."

Okay, what's that famous basic Al Schmitt string setup? Two mics in the front up high...

M149s or M50s when you can find them. I keep trying to talk Neumann into making the M50s again—no luck yet. But I just saw a new mic that they came up with, they only had one and it's handmade, an M147 that will be out some time this year. It's patterned after the old 47, and it's going to be a really nice microphone.

67s on the strings...

Usually two mics on the string section, maybe one or two on the violas, and another couple on the celli, depending on the size of the orchestra.

For the basses I try to use tube 47s. There's a lot of warmth to them, nice fat bottom. They always sound good, and the bass players appreciate it also; they like those mics.

Well, here's the closer. What advice would you give young engineers who want to know how to have a career as long and successful as yours?

Enjoy every day—enjoy what you're doing. And also, try to learn something new every day.

When I go home at night, I'll think about that: "What did I learn today that I didn't know?" I consciously do that, and usually there's something, some little thing that I learned. You have to keep learning. There's a lot of things that young engineers do that I hear and I'll ask, "How did you do that, how did you get that sound?"

My son gets in the car with me with his tapes and plays rap music all the time, and once in a while I'll hear something and think, "How the hell did they do this?" And I'll get the tape from him and bring it into the studio with some assistants and try to figure out how they did it. And I may wind up using it myself or using something similar to it.

I also think it's important to work on different kinds of music—I was really fortunate in my years at RCA that I got to do classical music, country, jazz and pop, and I still work on all different kinds of music.

So you're still glad to be going to work in the morning?

Absolutely. Setting up an orchestra, putting up mics and seeing the same woodwind players and string players you see all the time, you get to know everybody, and they help you and you help them. It's always nice when I see somebody who says to me, "I'm glad to see it's you working—I know we'll have a good day." Things like that make me feel good.

Really, we are all blessed in this business. Because, in this business if you don't like what you do, you don't become good at it; most of the people you're working with love what they do. Every day isn't perfect, but overall, what's not to love? It's fun to hang around in the studio with musicians, we always make sure we eat well, [laughs] and we make good music. ■

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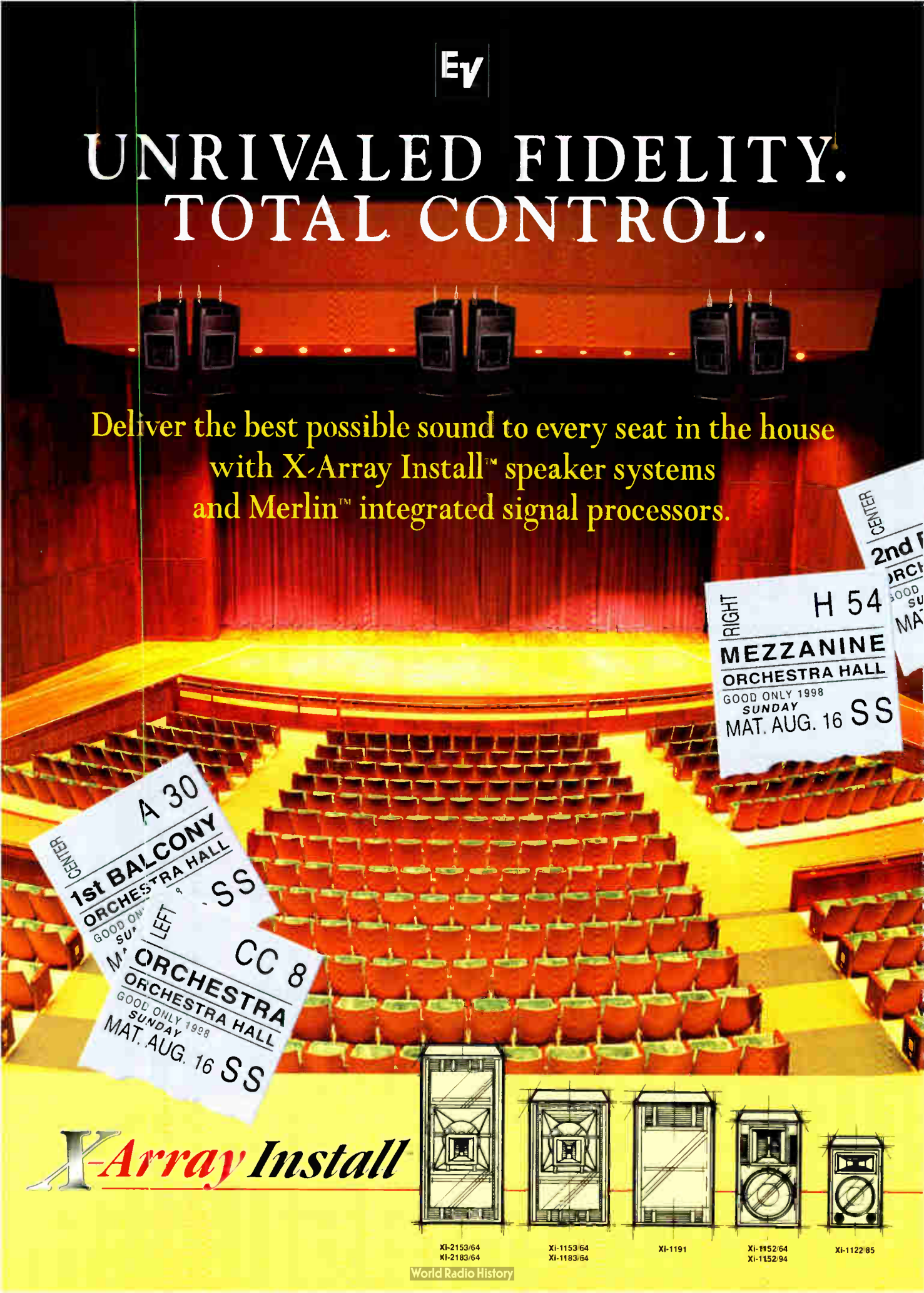

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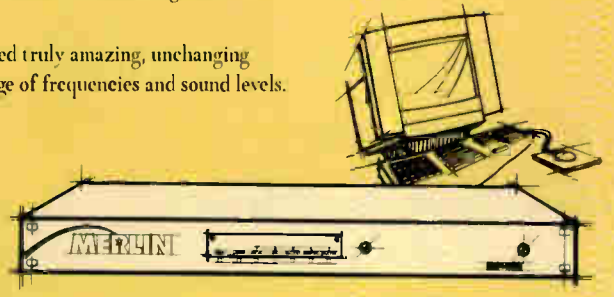

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QuickMAPs designed by Brian Elwell, Acoustic Dimensions, Dallas, Texas

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The Fun Factor

BY
PHILIP DE LANCIE

It's been a year since the RIAA and related record industry trade groups proudly announced that they were going to make a concerted effort to develop a specification for a DVD-Audio disc, with the target for a final definition set for the end of '97. As stated at the time, the point was not simply to deliver stereo in higher than CD fidelity, but also to open up music product to the joys of surround sound such as that enjoyed by home theater consumers.

Bob Margouleff

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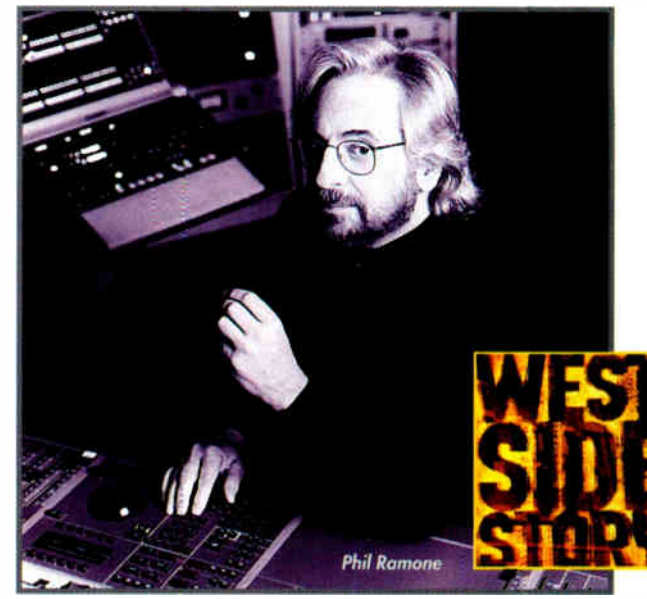
Producers And Engineers Talk About Mixing for Surround



We hear things in a 360-degree field naturally. To now be able to make the music and the listener occupy the same space is magic. It is the next paradigm step.
—Bob Margouleff

As of this writing, a lack of consensus at the top levels of the record and consumer electronics industries continues to make final agreement on DVD-Audio elusive. The specification announcement could be delayed until late this year or early next. But many in the recording community continue to move ahead with their own explorations of surround's possibilities, using such "5.1-channel" formats as DTS and Dolby's AC3. To find out what has been learned so far about the opportunities and potential pitfalls of an expanded sound field, I spoke with five producers and engineers who have experience mixing for surround formats. Their perspectives on some issues differ, but all agree that mixing for surround has brought a major infusion of fun into their professional lives.

Co-owners David Cline (L) and Jake Nicely at Seventeen Grand Studios

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THE FUN FACTOR

What kinds of surround projects have you been involved in, and in what capacity? What was it about those projects that made them good candidates for surround?

Bob Margouleff: Over the past three years, I have been involved with over 40 surround titles in the capacity of producer, engineer and/or mastering engineer. The first multichannel work was *Boyz II Men II* and the restoration of Marvin Gaye's greatest hits. All of my work has been for DTS, who are the ones bringing music-only 5.1 to the marketplace. All the multichannel mixing I have done so far has been in conjunction with engineer Brant Biles on a Capricorn console at the Enterprise Studios. In the mastering domain, I am the proprietor of Mi Casa Studio, which I think is the first mastering room dedicated solely to 5.1. I'm currently finishing a year-long project for DTS—slated for release starting in August—of classical music originally recorded in Quad for EMI Classics in the '70s. I developed a method of rechanneling these into phase-coherent 5.1. I have also been remastering Quad "pop" material for the HDS label, including such artists as the Ohio Players, Eric Clapton and Poco.

For years we've been trying to create space and dimension with two speakers, and mixing in 5.1 is the closest thing to reality I've heard.

—Jake Nicely

Jake Nicely: The first project I mixed for 5.1 was a concert for the band Orleans. Because it was live I could take advantage of stage leakage and audience mics to help recreate the experience the audience might have had while watching the concert. And the band should appeal to consumers in their 30s and 40s, who probably make up the majority of home theater/surround system owners. It was a great experience; I really learned a lot about creating a sound field. Another project has been a studio album of guitarist Bill Mize for the DTS format.

Phil Ramone: *Pavarotti and Friends* was my first surround project. We recorded that concert on double 48-tracks and mixed to 5.1 for DTS. The other one that I did was for [my label] N2K, which was Dave Grusin's *West Side Story*. It is currently a DVD-Video with Dolby 5.1, with a DTS pure audio disc to come. The same surround mix will be used on both releases.

Nile Rodgers: I've only been involved in one surround project, which was my own record, *Chic Live in Japan*. It was shot for a 90-minute television special in Japan in the summer of 1996, and it was mixed by me and my engineer Gary Toll for a DVD-Video disc that was bundled with Panasonic DVD players in some countries. The soundtrack was in Dolby AC3.

Elliot Scheiner: I've done about half-a-dozen surround projects. In DTS, I've done The Eagles' *Hell Freezes Over*, Steely Dan's *Gaucho*, a record for Toy Matinee and Roy Orbison's last

Nile Rodgers

When we make records we are still making them for the masses, and we want them to be consumer-friendly. So until the consumer can listen to the surround format properly, surround is fun to play with, but it is not the focus for me.

—Nile Rodgers

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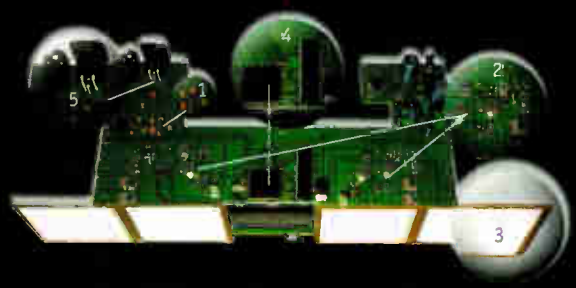

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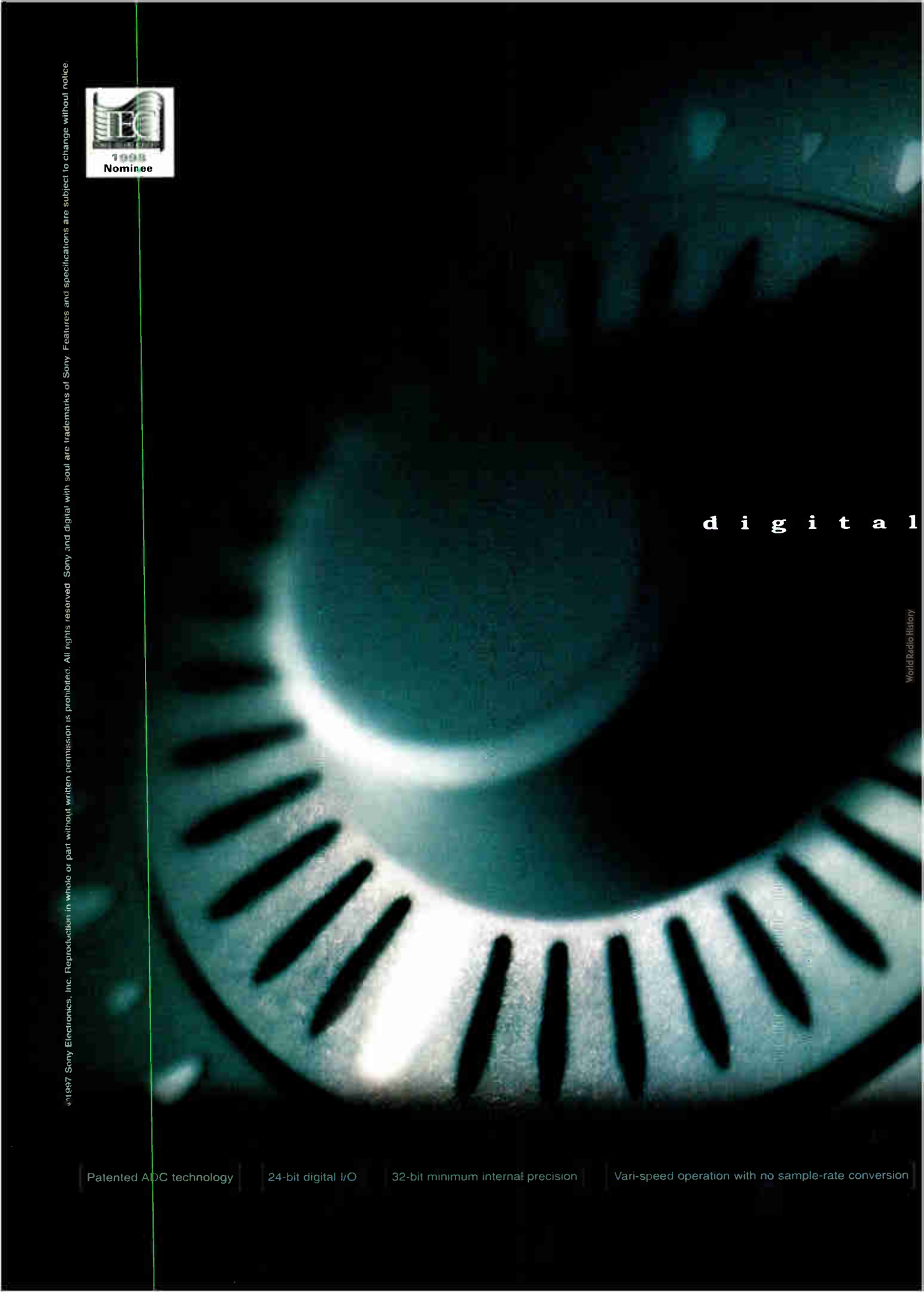

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record, *Black and White Night*, which was a live album released on video and CD that they now want to put out on DVD. I've also done a couple other DVD-Video projects: Fleetwood Mac's "The Dance" and John Fogerty's "Premonition." Four of the six projects were live shows, which obviously made them incredible candidates for surround.

Describe the benefits of mixing in surround compared to stereo. For a studio album (where you are not trying to re-create an actual performance space such as a concert hall), how does surround improve the listening experience? Do you think it matters to the average fan?

Margouleff: Surround is actually the more natural way of listening. We hear things in a 360-degree field naturally, but when recording was invented we had to throw away where a sound was coming from, as we had no way of storing it. To now be able to make the music and the listener occupy the same space is magic. It is the next paradigm step.

Nicely: Nothing will ever replace the live experience. That's how music is meant to be heard. But for years we've been trying to create space and dimension with two speakers, and mixing in 5.1 is the closest thing to reality I've heard. As for the "average fan," there's really no such thing. No one can accurately predict what people will like or dislike. We should just try to present what the artist and producer have in mind as accurately as possible, give the fans the option of listening in 5.1, and let the market tell us if it matters.

Ramone: With studio recordings, where you have a lot of control over separate instruments, 5.1 gives you a better palette. You can make an interesting placement: over you, to the left and right of you, and behind you. You are not limited to just one perspective. Also, you don't load up the two channels until you run out of room and lose definition, which is typically what hap-

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—Phil Ramone

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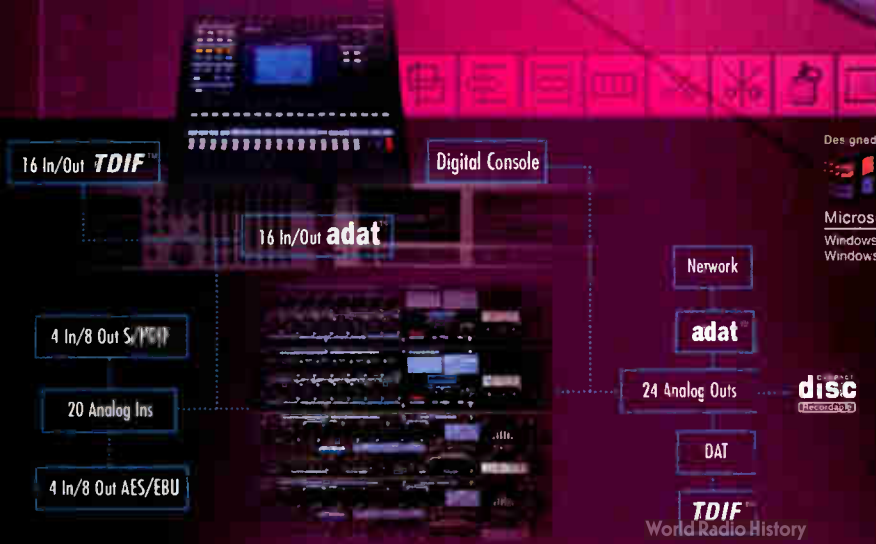

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pens with stereo.

Rodgers: The 5.1 format allows us make the listener feel encompassed in the music and to do different things with the environment that they normally would not experience in the stereo format, little events that can make the experience more exciting. But "benefit" is a tricky word, because when it comes to an artistic experience, what may be beneficial to one person could be a drag or a distraction to another.

Scheiner: I feel it's a benefit to listen in surround whether it is a live or studio project. A record takes on an entirely new life when you are sitting in the middle of five speakers and a sub. When the artists come in and listen, their whole face lights up, and I have to believe that once it gets out there, the listener is really going to fall in love with it.

How are you generally using the surround channels? Where are you trying to place the listener?

Margouleff: I consider all the surround channels equal. It largely depends on the type of presentation you choose to make. Some, especially in live concert or classical, you want to make an objective or frontal presentation; in others it's better to have a subjective, with the music all around. Sometimes it is a combination of both objective and subjective. It's an artistic decision.

Nicely: I let the music tell me where to put the listener. I push up the faders and listen to each cut several times before I do anything. Sometimes it's real apparent, as with a live concert, and other times I have to just use my own judgment and try to be creative. The cool thing is there are no rules. You can pretty much do whatever you think you can get away with.

Ramone: On *West Side Story*, our perspective is for you to be in the middle of the room where Dave Grusin stood playing piano. So the band is surrounding him for 360 degrees. That's how he rehearsed, so I thought I would bring the audience what he was hearing as a balance. You hear the saxophones behind you, with the brass and horns in front of you. For the Pavarotti, we are ten or 15 rows out in the audience, and you get the ambience in the surrounds.

Rodgers: Basically our approach was to get a really great stereo mix, and then we put the room sound gently in the surround speakers. So there weren't a lot of bells and whistles going on there. There is not really that much difference between the 5.1-channel mixes on the DVD and the stereo versions we are putting out on our CD of the concert.

Scheiner: I still put most of the focus up front. In most of the live situations, I've had a featured act plus side musicians. So I've been keeping the featured artists in the front area, and putting the side musicians in the rear. With The Eagles, for instance, the band was always dedicated to the front, while the strings and percussion and extra keyboards were always dedicated to the rear. So it wasn't like an audience perspective, but like you were actually standing onstage. On the studio projects, there is no formula to it. You have to listen song by song and figure out what's going to work best in back.

The 5.1-channel format was developed for movie theaters. How well does it translate into the average living room? Is there any benefit of 5.1 over quad for home listening? How are you generally using the center channel and the subwoofer?

Margouleff: It brings more depth, emotion and power to the music. You can create a much larger canvas to "paint on." The subwoofer channel sounds the lowest fundamental, and it's most critical not to have too much or too little. DTS and Dolby have adopted the IN Band alignment—which is also used for motion pictures, Laserdisc and DVD—as a standard for setting up the control room monitor system. As far as the center channel, it depends on the material. There are no "rules" about it.

Nicely: The challenge and the benefit of 5.1 over quad for home listening is to use the center and the sub channels to create a mix that is interesting, no matter where the listener

THE FUN FACTOR

A record takes on an entirely new life when you are sitting in the middle of five speakers and a sub. When the artists come in and listen, their whole face lights up, and I have to believe that once it gets out there, the listener is really going to fall in love with it.

—Elliot Scheiner

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may be. In a movie, the audio is directional and the audience position is very predictable. But for music, people will not always be sitting in the center; they need to be able to enjoy it while doing other things. For example, you might think the center speaker would be the perfect place for the vocal in a music mix, but if that's the only place you put the vocal, you run the risk of the mix being played out of balance if someone at home doesn't have their system set up properly. And because the consumer is actually getting a stem mix, they can solo the center speaker and listen to the singer in what could be a less than flattering scenario. So I use the center channel to add presence and dimension to whatever the focus of the mix may be at any given time, usually the lead vocal. I also use it to focus on things that I might want to anchor the mix, like the kick drum, snare or bass guitar. But I never put anything *only* in the center channel.

Ramone: We are all still asking ourselves whether the listeners are actually going to buy a high-quality speaker for the center when they upgrade from stereo. Good left and right they probably have, and the rears don't have to be expensive. But if the center is designed more as a dialog speaker for home theater, you risk whatever you put there. So I just bleed things into the center for clarity. What's important is to make sure that what you do put in the center sounds good on any speaker.

There is also a controversy about where and how the rear speakers should be placed. What happens if your living room is different from mine? So you kind of have to think of a recommendation as far as how many feet the speakers should be placed from one another. Most people probably will not follow the rules, but it's very critical to how you listen to a 5.1 mix.

For the subwoofer, I choose a certain percent of the low, low end: the double basses, the French horns, the kick drum. If you have a piece of information that crosses into the lower realm, where you've never been able to hear it before, it's wonderful to be able to take things down there. But it could be quite annoying, so you need to be careful. I hope that homeowners will have subwoofer control, so they can decide how much of that they want to hear.

Rodgers: There can be a lot of benefit to 5.1, but there is still a lot to be learned. If we spent a lot more time in that environment, we would learn ways to use it better. On the live album, I didn't really have anything going on in the center except for effects. I was talking between songs, and then it was fun to use the center. But when the music is playing, I found the center channel unbalanced and distracting, so we left it pretty much silent except for special events. As for the sub, the thing that's great about it is that it sonically fills out the whole picture. When it comes to Chic, the low end is incredibly important, because we are primarily a dance band.

Scheiner: I do like having the subwoofer; I think it adds, but I am pretty discrete with it. I'll put a little of the kick, the bass, some of the toms and any other low-frequency instrument. As far as the center speaker, I'm not putting very much in there. I only use it to emphasize certain things like a lead vocal, or a snare or something. But I don't want too much to be missing if there are people who don't have that speaker. We probably could do without the center channel, and mixing wouldn't be any different at all.

When mixing for surround, how conscious are you of how

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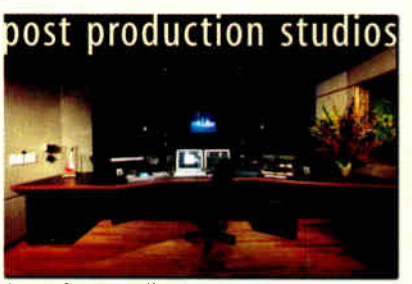

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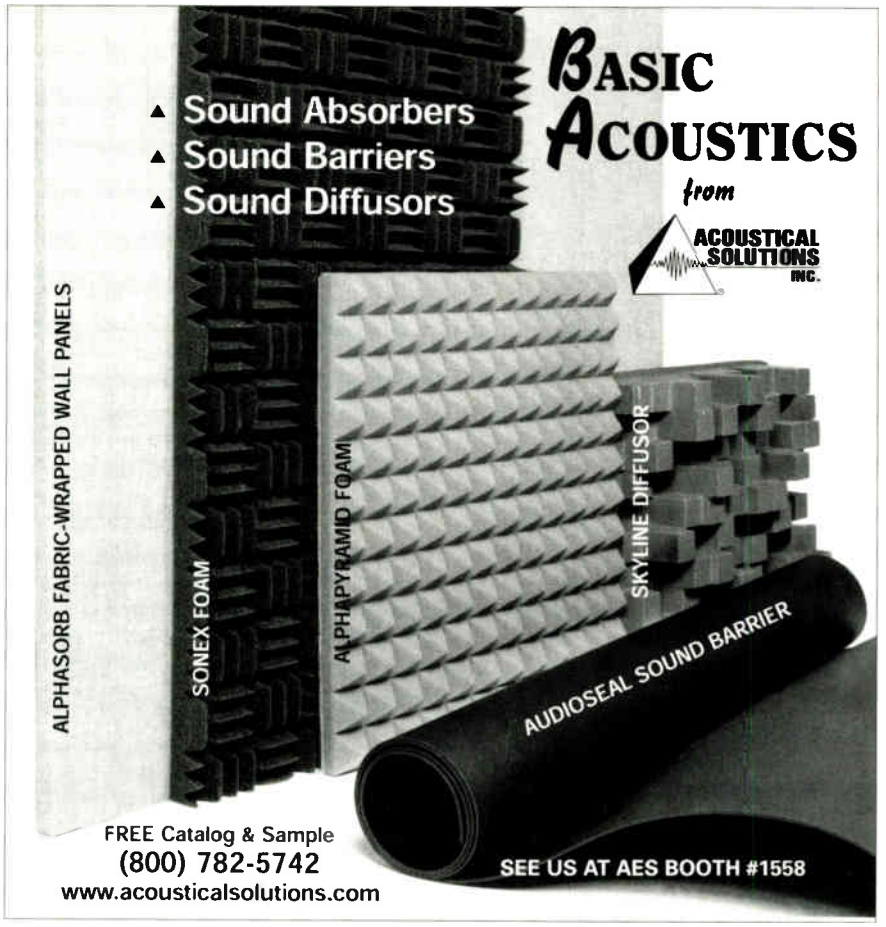

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THE FUN FACTOR

the program will sound down-mixed to stereo (or even mono)? Are there other compatibility issues to consider?

Margouleff: Down-mixing from 5.1 to stereo has become a non-issue. We have never had a problem doing this. It usually takes only a few minutes to set it up and do it when we still have the full surround mix up. We sometimes make some small changes for the stereo, adding or subtracting from the individual track levels that we set for the surround mix. On most occasions, we find that our down-mix ends up sounding better than a regular stereo mix.

Nicely: I always generate a down-mixed stereo, and periodically I listen to the down-mix in mono. I'm not really doing it to be downwardly compatible; I use it more as a tool to check the overall blend of the mix. One of the benefits of this is that I can print the down-mix and it can be used as a stereo mix that is perfectly compatible with the 5.1 mix.

Ramone: I don't allow the stereo to be simply a folded-down version of the surround mix. On the *West Side Story* menu you choose between 5.1 and stereo. The stereo mix which is in sync on the DVD is not the standard fold-down created by the player from the 5.1; it is a separate stereo track that I created as a stereo mix. You can't make one mix that works for both.

Rodgers: We were definitely concerned about this thing collapsing down to stereo; we wanted it to sound good for everybody. Our rule of thumb was to spend all day doing our mix in stereo, and then we would switch to surround and finish up in a couple hours. For practical purposes, it was a stereo mix with some extra stuff in there.

Scheiner: I don't think about how the surround mix combines to stereo at all, because either I or somebody else has already done a stereo mix, and if you want to hear it in stereo, that's what you listen to.

How does the overall experience of mixing for surround differ from your typical mixing projects?

Margouleff: It's much more fun.

Nicely: It's a lot more fun. I've rediscovered some of the enthusiasm and curiosity that I remember having when I first started working in a recording studio. Most all of the same aspects of mixing still apply; you just have to figure out how to connect everything together in a much more enveloping space. It's not just about having things all around you, 360 degrees in a horizontal plane.

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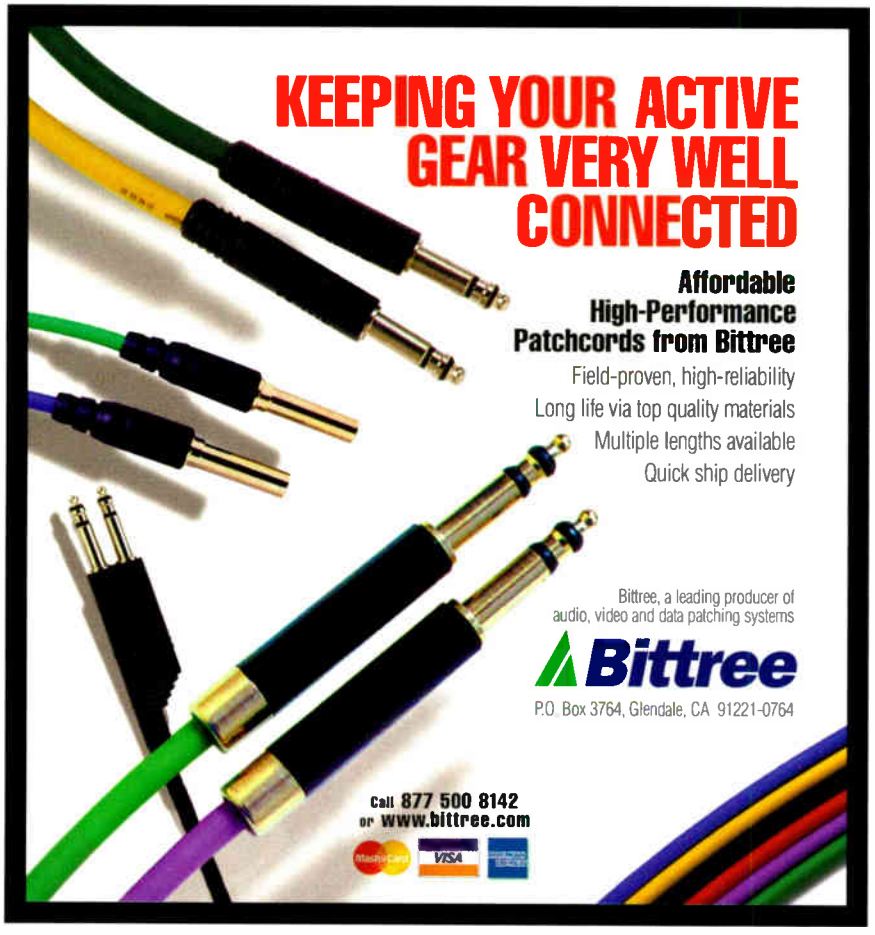

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THE FUN FACTOR

There's also a top and a bottom. You've got to think about moving things vertically and inside the circle. It's like painting a 3-D mural on a domed ceiling.

Ramone: There is no question that a 5.1 mix is more exciting. It gives you tons of freedom. You're not watching VU meters to fit everything into the same two channels. It's like coming out of a two-lane road into a six-lane highway. And there is the speed with which things sound good, because of the clarity, which is the key to 90 percent of what you want.

Rodgers: Right now it's fun and interesting, and we have a good time fooling around with it. I would love to work in that environment a lot more, enough to really feel comfortable with it. If I were listening in that environment all the time and I thought that was how people were going to listen to my records, then I would get very into it. But when we make records we are still making them for the masses, and we want them to be consumer-friendly. So until the consumer can listen to the surround format properly, surround is fun to play with, but it is not the focus for me.

Scheiner: As a mixer, surround is one of the most enjoyable things to do. It is so pleasant to come into work and experiment and see what's going to work where. It's so much fun! It is a little more difficult to mix a studio record in surround than a live one, though. With live you can cover any ambience changes with audience. But if you've been punching in on studio tracks for a year or more, you are going to hear changes in ambience on overdubs, which in a stereo mix you can't hear because things are blended together on the two channels. For instance, on *Gaucho*, I had horns and background vocals in the surrounds, but I had to put other stuff back there so you didn't notice the change in ambience with the horns coming in and out.

Are you concerned at all about fidelity being compromised by the bit rate reduction techniques used in current surround implementations? What would be your idea of the ideal vehicle (format) for delivering surround to the consumer?

Margouleff: There is very little bit rate reduction with DTS, 3:1 or less. And decoded DTS delivers a 20-bit signal, while a regular CD is 16-bit! We have reached a place where the medium no longer limits the content.

—CONTINUED ON PAGE 331

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World Radio History

MARINA BOSI

PRESIDENT-ELECT OF THE AUDIO ENGINEERING SOCIETY

In many ways, Marina Bosi defies simple definition. At heart an avowed academic, with a list of research credentials a mile long—as well as a confirmed supporter of the Audio Engineering Society—Bosi has an enviable capacity for turning scientific theory into technical reality. Currently VP of Technology, Standards and Strategies at Digital Theater Systems, she is actively involved with developing business strategies and playing a critical role in the selection of the technology to be incorporated in the DVD-Audio standard. She is also a member of ANSI, ISO/MPEG, DAVIC and ITU-R committees setting up international standards for low-bit-rate audio coding.

Now president-elect of the AES, Bosi also serves as a consulting professor at Stanford University's Center for Computer Research in Music and Acoustics (CCRMA), and was the editor of the new MPEG-2 Advanced Audio Coding standard (as well as author of several publications on source coding for transmission and storage). It will come as no surprise that Bosi's current area of interest is low-bit-rate coding with applications in music.

Having graduated from the National Conservatory of Music in Florence, she received her doctorate in physics from the University of Florence, following her dissertation in Paris at IRCAM (Institut de Recherche et Coordination Acoustique/Musique). She has worked for Digidesign and for Dolby Laboratories' R&D and Business Development Department, where she developed and commercialized new low-bit-rate audio coders. In addition, she has served the AES San Francisco Section as committee person, vice-chair and chair, and is also co-chair of the AES Conference Policy Committee.

We caught up with Bosi between her business trips to Europe and Japan on behalf of DTS, and just as she was finalizing plans for the upcoming AES Convention in San Francisco.

What first attracted you to audio?

I have always had very strong musical interests. I thought at some point in my teens that, when I was grown up, music was the only thing I would be doing in my career. However, I always had a strong interest in mathematics. To me, the best way to combine the two [themes] was to first get involved in the representation of music, which lead to an involvement with the representation of audio signals.

You were raised in Italy?

Yes, I was born near Milan, and then raised in Florence—that's where I did all my of studies, with the exception of completing my thesis at IRCAM, in Paris. Obviously, I went there because of the name; to me, [IRCAM] seemed to be the best place where one puts together music and mathematics. At that time I was actually studying physics, so that's where I did my physics thesis. And as it happens, my adviser, Peppino Di Giugno, was a physicist [who was] somewhat involved in music. That's how it all came together and made it possible for me to complete a thesis in physics, but actually dealing with computer music.

Your primary interest was in music, which moved through mathematics into audio technology. Do you still find time to play?

I play the flute with a Russian friend who's a wonderful pianist. I still play, because if I don't do it for a long time I miss it—it's almost like a physical need for me to get in touch with myself.

Do you think a musical background is useful in your current focus?

In a way, my career nowadays is geared more toward the technical aspects of sound, some management, and business relationship in the audio world. So, if you look at my day-to-day work, a [musical background] is perhaps not useful. But if you look at the inspiration, certainly, it's very much so. When I hear a piece of music and it moves me—and I'm aware that I was part

BY MEL LAMBERT

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of the group that enabled the technology for people to enjoy this type of experience—I'm very, very thrilled. That's what it's all about.

And you could bring a musical sensitivity to the critical process during listening tests...

Very true. A musical background allows you to be very sensitive to differences. In audio recording, you sometimes put yourself through a session of listening for very small differences, and having a musical background certainly helps.

What was your dissertation topic at IRCAM?

I went there to originally work with Pierre Boulez on a piece for flute and interaction with a machine called 4X, around 1985-86. I went more and more into the computer-type of design and, together with my adviser, started thinking about the next generation. My thesis was on the design and simulation of a computer dedicated to music.

Did that become a commercial project?

When we started, DSP chips were not yet on the market, so we started designing everything [using] discrete multipliers and accumulators. By the time we were half through, the announcement came that a powerful DSP IC capable of combining all those functions on one single chip, the Motorola 56000, had become available. So, in a way, our project was somewhat obsolete. The project was completed, but I'm not sure if it was ever used. That goes into the category of "academic experience."

In 1988, few people were dealing with 16-bit audio on computer platforms. My first hard drive was 40 MB, and it was considered huge. Obviously, there was a need for data compression.

After completing my thesis, I returned to Italy. I went on working shortly for Luciano Berio, an Italian composer, who at the time was very interested in multichannel reproduction of sound. From that, I went to Stanford University's Center for Computer Research in Music and Acoustics because it was the place where a lot of research was being done, both in psychoacoustics for multichannel perception, emulation of moving sources, and so on, and started working with John Chowning. From there, studying for multichannel was very much related to music and computer music. I got help with it from companies in Silicon Valley, including Digidesign. That's where I started being interested in audio coding.

Due to the recording or transmission bandwidth required by 16-bit signals, is audio coding now the key to the success of digital audio?

Yes. At the time, in 1988, few people were dealing with 16-bit audio on computer platforms. Digidesign was one of the first; that's what attracted me to them. My first hard drive was 40 MB,

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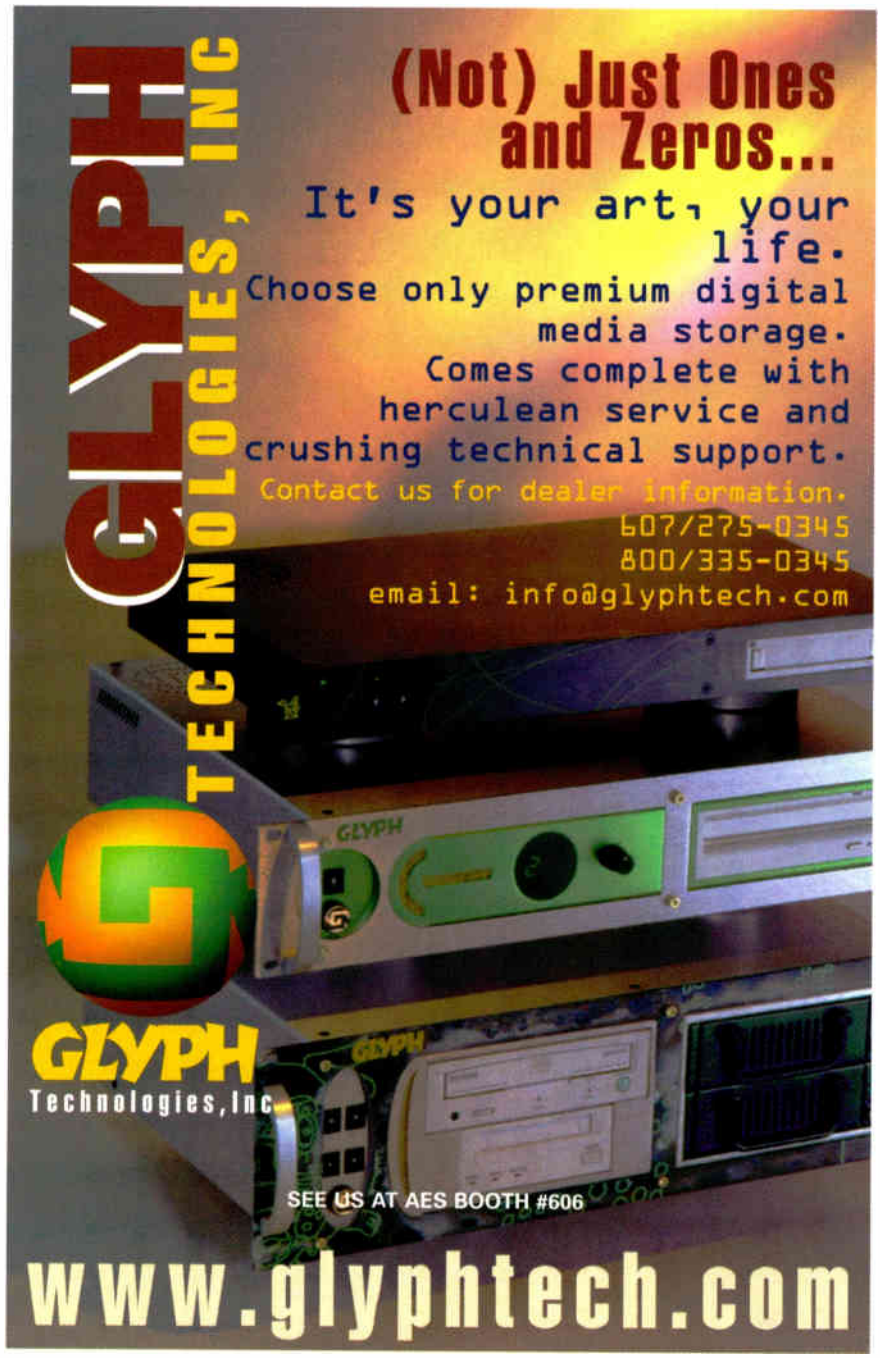
and it was considered huge. Obviously, there was a need for data compression. What we started looking into was ADPCM [Adaptive Differential Pulse Code Modulation], which was originally developed by Sony/Philips for the CD-J System; that's what we implemented. I wanted to apply a more sophisticated concept, for lack of a better word, to decoding of music.

Then you moved to Dolby Laboratories, where you worked on the AC-3 data compression program?

Yes. Dolby served as a place to grow from an engineering point of view. I started working on perceptual coding, and it was very exciting. How we perceive sound in this context was something that was kind of new; for an engineer you tend to put bits together, but not seeing that the ultimate stage in your work is actually the human ear. That was very much a concern then. I started learning more and more about how we perceive sound. From there I got involved in the latest development of high-quality audio coding. After Dolby I moved to DTS, where I remain focused on high-quality, multichannel audio.



CIRCLE #053 ON PRODUCT INFO CARD

Historically, for a number of political reasons, the European standards committees have excluded Dolby and APT coding schemes from their considerations...

You're right. Unfortunately, that happens quite a lot for political reasons. Between MPEG-1, and MPEG-2 Layers 1, 2 and 3, we saw a lot of political bullying. Things changed quite a bit in the development of MPEG-2 Advanced Audio Coding. We were able to harmonize the best efforts from many companies from around the world; as a result, probably the best perceptual audio coder was produced.

AC-3 seems to dominate the consumer and professional marketplace. MPEG-2 is optional on DVD and is not being utilized for Digital TV and ATV transmission techniques within North America. Do you think this can be summarized as a "Betamax vs. VHS" battle?

Correct. However, there are different flavors of MPEG-2. Most of what people refer to as MPEG-2 is actually MPEG-2, Layer 2; MPEG-2 Advanced Audio Coding is a different technology. MPEG-2's Layer 1, 2 and 3 placed the design of this codec under a very heavy restriction: a backward-compatible requirement. Any MPEG-1 decoder has to be able to decode any MPEG-2 bitstream. That, basically, completely limits the design of any multichannel coder because you cannot base the design of a multichannel coder on the capability of a 2-channel decoder. It implies that you need to use a much higher data rate in order to get the same quality. And that's why AC-3 was successful in outperforming MPEG-2 Layer 2. However, for AAC, that restriction was lifted; [the result] was an exceptionally good coder.

Yet there are few consumer or professional applications of MPEG-2 in North America, either the Advanced Audio version or Layer 1, 2 and 3?

I'm not aware of any. But Layer 3, for example, is very much used [for digital audio data reduction] on the Internet. MPEG-2 AAC is being considered for Japanese broadcasting applications.

Isn't Liquid Audio based on a hybrid AC-3 coder, and Progressive Network's RealAudio on MPEG?

I believe that RealAudio might still be based on AC-3, but I'm pretty sure that Liquid Audio is switching toward Advanced Audio Coding.

Why the move to DTS in June 1997?

I finished my project at Dolby with MPEG-2 Advanced Audio Coding—by the way, some of the Dolby technology

World Radio History

was included in this standard—and was looking for the next challenge. DTS has a lot of potential in slightly different markets.

Your title is unusual: VP of technology, standards and strategy. What does that imply? Are you looking to increase people's awareness of DTS as a potential for music applications? I would think that DVD-Audio was a great application for DTS coding.

I totally agree with you; that's what we're looking into. DTS was and is extremely successful in cinema products, and now the recent expansion is toward consumer [markets]. The DTS approach was always one of increasing the bandwidth, and limiting data compression to a bare minimum, so that you can use the available medium and not kill the purity of music.

DTS has applications with CD—in the same storage area where you store two channels of audio, using DTS technology you're able to store 5.1 high-quality channels, a multichannel format that has been standardized by a number of organizations.

And still using the apt X-100 4:1 data-compression scheme used in DTS's cinema products?

No, actually it's a new, more powerful scheme developed in 1996. Instead of splitting the signal into four bands, we use 32 bands, with prediction applied to the data, yet with a very mild compression ratio. For example, to fit six channels into the space where you would fit two channels with the same resolution requires a 3:1 compression ratio. That's typically the compression ratio used by DTS for CD applications at 44.1kHz sample rates. The audio sample's resolution may vary, depending on the application.

There was talk of having a 96kHz/24-bit DVD-Audio format. Obviously, now we need to get into at least twice the compression ratio.

Yes and no. We're talking about much higher resolution, which is 96kHz, 24-bit. Compared to 44.1kHz/16-bit, it's a huge increase in data requirements. However, the capacity of a DVD-Audio disc is 4.7 GB—much, much higher than the storage we have available nowadays [on CD]. Depending on how much data you want to store—let's say, for the sake of simplicity, that you want 74 minutes, which is the same duration as a CD—then you need a compression ratio that is actually less than 2:1.

DVD's offload or data-transfer speed is a further limitation.

That's correct. Right now, it's limited to 9.6 Mbits per second, according to the DVD Forum WG-4 specifications. If you have six channels at uncompressed 96/24, you end up with 13.98 Mbits per second per channel. So, yes, the throughput is very demanding.

Changing gears slightly, let's talk about your current role with the AES. How did you first become involved with the Society?

When I came to the United States, I first thought I would stay in academia for the rest of my life. Or work with composers that have a somewhat specialized audience. I came to Stanford, which happens to be in the core of Silicon Valley, and my views changed dramatically. When I started working at Digidesign, the idea that my ideas could be used by other people was completely thrilling. I started being involved more and more with the industry, including the AES. The AES is a catalyst; it puts together different people and allows them to meet and discuss new issues—that's certainly what it did for me.

I became a member as soon as I came here—that was about ten years ago—working in the local committee.

—CONTINUED ON PAGE 332

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CIRCLE #054 ON PRODUCT INFO CARD

World Radio History

DAVID KAHNE

THE PRODUCER AS A&R MAN

Twenty years ago, David Kahne worked in San Francisco, producing 415 Records artists such as Romeo Void, Translator and the Red Rockers, not to mention the Jefferson Airplane's Jorma Kaukonen. Since then he has made a name for himself as a producer of Platinum acts including The Bangles, Sublime and Sugar Ray, as well as producing an eclectic range of artists such as James Brown, Tony Bennett, Fishbone, Greg Garing, Human Radio, Shawn Colvin and many others. As an arranger Kahne has worked on everything from film scoring to creating string charts for Bruce Springsteen. Kahne's A&R skills have put him with artists like Jeff Buckley, Chris Isaak, Billy Joel, early Fugees and Dionne Farris. Kahne recently took his considerable skills over to Reprise Records, where he is now VP of A&R.

Is there an overriding production philosophy that you draw on when you are working with artists?

No. I take everybody individually, but I think my one sort of guiding principle is that I don't like to make an album without at least one single on it. By "single," I mean not necessarily something for the radio, but I have to have a place to start from, and it's usually based around a song where I can get the essence of everything about that artist.

I've noticed that whenever I finish an album, and I have a track like that on the record, the record tends to do well and take the artist to another level. With The Bangles' album *All Over the Place*, "Going Down to Liverpool" and "Hero Takes a Fall" were the last two songs that we recorded, and I waited to record until we had those two songs, one of which is a cover.

When you listen to something like Cream or R.E.M. or anyone that has ever had a career, you always hear a song on their first album that has a special thing about it, like "Radio Free Europe" on the first R.E.M. record. It wasn't a "hit," but it was definitely a single. It got airplay on certain formats, and it coalesced the energy around the band. It also had that great melody and release on it.

That has really been the thing that I have followed in my whole career. I'll do whatever it takes to get a song to be the point at the end of the spear.

PHOTO: MIKE HASHIMOTO

How do you see the creative balance between the role of a producer and the role of an A&R person?

I think it varies completely, especially from doing A&R and production at the same time. After I got fired from Columbia, I was just doing production and going around meeting a lot of A&R people. Because of the variety of tastes and level of knowledge that different A&R people have, I always figured that if I was the producer, I had to figure out a way to work with the A&R person. Some of them would come in and say the stupidest things, and I would occasionally feel that if I made the record that was in their heads, it would end up being this thalidomide monster. [Laughs] On the other hand, I want to stress that I have worked with and am working with a number of very talented A&R people.

I've heard producers say, "With my producer ears, I would produce these guys, but if I had to use A&R ears, I wouldn't sign them."

Yeah. Well, I heard a lot of stuff that I wouldn't have signed when I was doing independent production after Columbia. I didn't really produce anything that I wouldn't have signed. But I noticed that there were a lot of tapes I was getting that made me wonder why anyone would've signed it. I would go to meetings and think, "What is going on here?"

While it's important, A&R is not just a matter of signing an artist who can make a great record. There are a lot of other elements besides the record. I've made records that I thought were really great, but I found out that the artist couldn't really follow through on being a recording star. I don't mean just looking good for the video, but having the energy and the kind of thing to go out and be an image for a lot of people.

What do you find is the biggest fallacy of aspiring artists who are approaching a label for a deal?

In the last four or five years, I think it has become very easy for some-

BY RICK CLARK

World Radio History

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one to make a record. As a result, a lot of people come out with something way before they should. They will have a good song, and sometimes they get deals, but you can feel the boundary very quickly on what is going on.

In the '60s, the best bands had the best drummers and there weren't that many good drummers around. If you had a good drummer in your band, but your band sucked, eventually the drummer would be quitting and joining a better band. It's easier to bypass that gauntlet now. You can just get loops or machines; I love using loops, but being able to make a pretty good-sounding record with less rehearsal and less performing and weight and depth in your experience is a strange thing. It not only affects the bands, it affects the A&R people.

There are a lot of A&R people who don't know how vast the whole thing is. If they did, they would run screaming from music, because often you sign somebody with a good-sounding demo and go in and make the record and try to blow that demo sound up into the space of a real record, and find there isn't enough weight there to make a real record, a full album. I think a lot of people are often disappointed in buying albums and not finding whole albums there. There still are a lot of records being made that are really good, but just the volume of records is incredible. Bigger haystack, same number of needles. What does it cost to press 500 CDs now—$300?

They might pay you to do it.

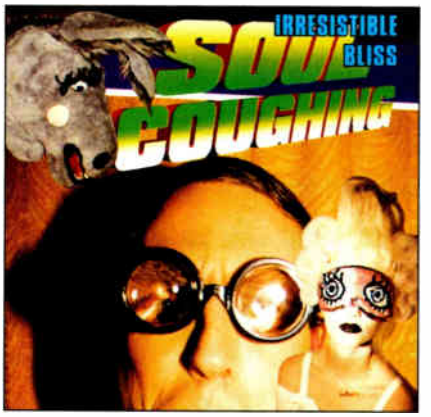
Right [Laughs]. A coupon in a Cracker Jacks box.

Unlike many pop and rock A&R people, your skill as a producer is an important element in your job description. What have you been recently working on, since you arrived at Reprise?

I've produced and mixed a record with a group named Lisa Hall. It is more of an English production-style computer record. There are lots of disparate elements, but the songs are really good. It is pop, but there's a dark quality to it. She has this great mood in her voice, and I really enjoyed working on the record. I mixed the record at [L.A.-area studio] Scream.

I cut a song with No Doubt for a Clash compilation, and I mixed the new Orgy single "Stitches" with David Ogilvy, and the new Chris Isaak single "Please." Right now I'm doing some tracks with Sugar Ray. When that's done I'll be working with a band from New York City called Sway. Another thing I got to do was orchestrate a Nerfherder track for the movie *Baseketball.* They wanted a big Queen production. I love working on orchestra stuff.

Just before I came to Reprise, I produced this 19-year-old artist for Almo named Imogen Heap. She's from England, and she's amazing. I just had so much fun working with her. She plays piano like a concert pianist, and she has a three-octave range. Her songwriting is incredible. The recording was all done in the computer. Most of the vocals were done on an SM58 right into the computer. She has incredible technique, and she would sit there in a chair, sing these vocals in one pass, and we'd be done.



So you're a fan of hard disk recording.

I'm totally sold on it. I think my favorite thing about it is the second you start to record, you can start to mix. I can put down a drum track and loop some of it, or leave some of it not looped. I can also isolate things out so perfectly and do it right at the beginning, so that I'm building a track up, instead of waiting to mix everything at the end.

On the Sugar Ray track "Fly," we recorded most of that song when we were rehearsing. I had my computer in this little rehearsal room. I recorded the drums on one mic, a Shure 58, and the bass was recorded direct in through a SansAmp. The guitar was recorded with one mic, and it was all kind of put together that way. I recorded the drums, and because I had the computer, I was able to loop it out and EQ it and get it to sound like a kit. I just moved a mic around until I got the sound I wanted. It is something that you can never do on analog. You couldn't put all of those disparate elements together as quickly.

A lot of people say that digital sucks and all that, but I can hear the sounds of the different compressors more clearly in digital than I can on analog. Say, if I use a Fairchild on one track and a Distressor on another track, analog tape will tend to make them sound a little more like each other, whereas with the digital, I feel that I can compress more and get more different, distinctive sounds out of the compressors and have them be more audible. I really like that, because I love compression.

The 1176 is probably my favorite overall compressor. I also like the Distressor. I have two of them, but I should have six of them. I'm going to get some more. If you set your mics up just so, if you know that you are going to be using it, and you've got all of your ambiences pulled in enough, the Distressor is so flexible and so clean. It is great for digital recording.

I've also got my Fairchild, and I like the L-1 compressor in Pro Tools. Waves is the manufacturer. It's the Ultra Maximizer. There's a Focusrite compressor for Pro Tools that I've been working with that I think is really good.

What software do you use for your computer setup?

I use Logic Audio. It's so multidimensional, and I find out new things I don't have to program all the time. I've tried them all, and this is my favorite program. It pretty much has all the audio elements that Pro Tools has, and some things that Pro Tools doesn't. It is also an amazing MIDI sequencer, and I like to use a combination of both. Pro Tools has a MIDI part to their program, but it's really very rudimentary, and almost unusable, if you're into using MIDI at all.

Do you have any favorite studios that you like to work in?

I love Quad in New York, and I love Scream in Los Angeles. I love the SSL 9000, which they have. It's my favorite console, ever. The EQ sounds great. The bottom is great. The preamps are great. It has that SSL tightness, but it has depth in it like a Neve. The computer is wonderful. It's so subtle. All the effects sends are automated, and the EQs are automated.

***One artist you recently produced who really impressed me was Greg Garing. The album is an amazingly eclectic synthesis of smart pop-rock and country. The song "Safe Within Your Arms" is a timeless-sounding country song, but the trippy ambient orchestral touches, and the dichotomy of very wet and very dry soundstages take the song and performance to a very magical level. It would have been quite comfortable in the movie soundtrack for* Blue Velvet.**

That is the one song that he didn't even want to record for the album. [Laughs] I

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love that song. I just play it over and over again.

The implied lower register string treatments are magic.

The cellos and stuff. I've got this huge orchestral library that is loaded up in real time. I've got six SampleCell cards and all sorts of outboard samplers. I've got all the orchestral libraries, and I've taken the best sounds off of all of them, so I can have this virtual orchestra sitting there. Up until now, I've had two computers—one of them was orchestral and one of them was audio. I've recently been able to combine them into 24-bit. Now I've got 64 tracks of audio running along with it, so I feel that I have a pretty great computer setup.

It seems like you've synthesized technology in a way that allows you to tap into the truth of the creative moment fairly unencumbered. So many people get so caught up in the gear that they forget to listen for the magic out on the floor.

I think music is so private and so perverse; when you're in recording, you might've been working for three weeks, and in a split-second there is something there that has meaning, that has tone, and all of a sudden there is shape to the music and a center to the song.

My feeling is that the artist let a "secret" out, and that secret and that moment always show up on tape. I always think it's kind of a miracle, like it defies gravity. It's like, "Why does this sound mean something, and all of these other sounds don't mean very much?"

That moment the secret is revealed is utterly ephemeral. Often, the pressure to create a viable commercial recording can kill the sparks.

Yeah. After I got fired [from Columbia], I was in my apartment in New York City listening to tapes that people had sent me. I was into about my tenth tape and every one was, "This is really not good, not good, not good, not good." Then I started playing this song that had this cool thing going on in the chorus, and I was thinking, "God, this is really great!" I turned around and looked out the window. I looked up at these buildings, and I saw this inverted pyramid of these giant corporations, and there was this little teeny song with these big corporations on its back! [Laughs]

A hundred years ago, a guy would've been sitting in a village with his guitar playing at a local wedding, and it was pop music. Now it's been amplified with the whole distribution of it. So here I was thinking, "These songs are struggling to save these giant companies. That is really what it is about." It has gotten more and more that way, I think. When you are trying to make music, you might wonder, "Was music really made to support this whole thing?" Well in a certain way, I don't think it was.

I think that trying to save these huge worldwide companies with these little songs is sometimes humorous and sometimes I really despair over it, because it affects the people playing the music, and it just changes the values of it. I'm not a purist by any means, and I'm not saying that music shouldn't sell. But I think that it is harder to operate in that environment, and I don't think that it used to be so much that way.

I think there was a lot of pressure for Jeff [Buckley] to have a hit. When we signed him [at Columbia], I said, "It might take three or four albums. I have no idea what he is going to do." That was sort of the rule of thumb for me. I didn't even involve myself in the making of his record as much as I did in just talking to him about music in general. We had great times talking about Esquivel and Bartók and it was great. He was a real musician. He gave you a kind of confidence that you were in the right place doing the right thing.

There is no doubt in my mind that after a period of time, Jeff Buckley was going to be a very important musical artist for a long, long time. It could've taken years for the guy to become a huge artist, because two-thirds of his effort was spent moving away from the market. He was elusive, and I find that a lot of great music is that way.

How can you describe that certain feeling you get when you're considering signing or producing an artist—what tips you off that you're encountering the real goods?

When I'm kind of scared of the person. When people are really good, you've got to be on your shit—you've got to know what you're doing and what you're talking about. You've got to be able to really listen, because you're going to be challenged. If you don't, you are just going to be ignored. I'm always looking for that little fear in myself when I try to decide whether or not I should sign somebody or work with them as a producer. I think that's where the greatness is going to come from. ■

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

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MIKE HEDGES

RECORDING POST-PUNK WITH VINTAGE GEAR

The man is as striking as his mansion. British producer Mike Hedges is well over six feet tall, sturdily built, and has flaming red hair and beard. It's been said he looks like a Celtic nobleman, and it's easy to imagine him holding court at the chateau in which he lives, deep in the heart of the French countryside—in Normandy, to be exact. The foundations of the chateau date from an inconceivable 1042 A.D., whereas the house itself was built some time in the last century. It is royally placed, on the edge of a small town, on the side of a hill, with a spectacular 180-degree view of mile after mile of rolling countryside. The contents of this ancient chateau are equally striking, featuring one of the most unusual project studios in the world. The heart of the studio is formed by historic equipment from Abbey Road Studios, designed in the '60s and dating from the early '70s. *Dark Side of the Moon* was recorded on it. John Lennon's *Imagine* was recorded on it, Kate Bush's first two albums were recorded on it. You get the picture: priceless, classic stuff that would make any lover of vintage gear salivate.

PHOTOS: PAUL TINGEN

Producer/engineer Mike Hedges is at home in his well-appointed chateau/studio in Normandy.

Hedges, who must be considered one of the most influential left-field producers to roam the planet, started his career as a tape op in a London studio in the late '70s, graduated to freelance engineer in 1981, and went on to make his mark as producer and engineer. Hedges midwifed many of the alternative sounds of classic British indie bands of the '80s, such as The Cure (three albums), Marc Almond, Bauhaus, The Shaman and Siouxsie & The Banshees (six albums). And at the ripe age of 44, he still hasn't lost his radical streak; during the past few years, he's been responsible for hit records by UK bands such as Geneva, Texas, McAlmont & Butler and Manic Street Preachers. The Preachers' album, *Everything Must Go*, was voted best album of '96 by four prominent UK music mags, and won the Brit Award for Album of the Year. Much of Hedges' '90s work has been recorded at his Chateau De La Rouge Motte, where

—CONTINUED ON PAGE 90

BY PAUL TINGEN

World Radio History

MUSHROOM STUDIOS

Vancouver, B.C.

The sound and the flexibility of its large main studio have kept Mushroom Studios busy for decades. Though Mushroom is not what anyone would call a cutting-edge studio, big, acoustically sound tracking rooms never go out of style, which makes the facility as popular a haunt today for artists such as Sarah McLachlan and Skinny Puppy, as it was in the '70s for BTO and Heart.

"It's the age of specialization," says Mushroom's owner, Charlie Richmond, "and that makes us all better at what we do because each studio has found its niche. Every studio focuses on the particular direction that they want to go and that they do best. The major asset we have is the quality of the sound of our main tracking room, and the amount of space we can provide to groups who come in to get that original acoustical room sound."

PHOTOS: GARTH BOWMAN

Mushroom Studios features a vintage custom console and a large tracking room.

Mushroom's "major asset" measures 30x50 feet, plus there's an adjacent iso room and live room, a dead room off the 18x20-foot control room and two small echo chambers. The acoustics in these different spaces are variable enough to allow engineers to use the rooms themselves to get a lot of different sounds. "I guess some people characterize it as old-fashioned," Richmond says, "but it sounds great."

Richmond is an old-school equipment designer, builder and maintenance tech who began working at Mushroom as a consultant in 1970. He was hired to install a "new" console. "There was a new owner, and he brought up a console that he used to work on in Hollywood quite a bit from United Western Studios," Richmond recalls. "It was their old Studio A console, which had been in place since the '50s and was a vacuum tube console. It was just 4-track, but we upgraded it to 16 outputs." That refurbished console was used in the recording of some of Mushroom's most famous sessions, including Heart's first album, *Dreamboat Annie*, and Ringo Starr's *Bad Boy*. The board was still in place when Richmond bought the owner out in 1980.

"When I bought the place, of course, we wanted to go to a multitrack format," Richmond continues, "so, we took the old vacuum console guts out of it and rebuilt it entirely. We kept all the vacuum tube preamps—there are 30 of those—but we rebuilt the console ourselves to the requirements of the engineers who worked here." The board, as it is today, is a split console with a 40-channel monitoring panel and separate feeds for eight musicians' headphone mixes—a novel concept at the time Richmond and his staff did the refurbishment. Asked if visiting engineers can easily walk in and use the custom console, Richmond laughs and replies, "No. I'll put it this way: It's easy for a visiting engineer to come in and get good sounds, but it's not a familiar console, obviously. So we always put an assistant on the session to help any visiting engineer get up and going on whatever they need to do."

Richmond has also kept the studio's original Altec 604E main monitors with Mastering Lab crossovers (to which subwoofers and supertweeters were added with the advent of CDs) and a number of vintage tube mics. "I won't hesitate to tell you, some of the vacuum tube preamps we have have their original vacuum tubes," he says, "and some of the tube micro-

BY BARBARA SCHULTZ

—CONTINUED ON PAGE 254

World Radio History

—FROM PAGE 88, MIKE HEDGES

he moved from London in 1990; early this year he was busy recording the Manic Street Preachers' long-awaited follow-up album.

The list of bands you've worked with is unusual in that it mostly features British alternative bands. Can you tell a little bit about how you got involved with all this indie music?

During the late '70s, I went to a lot of gigs, and I was really into the punk and post-punk thing. I saw The Banshees and The Cure live before they even recorded. I loved that music, whereas most engineers at the time were looking down their noses at it. They thought it was rubbish. I think they preferred bands like ELO or Yes or Genesis. So, when there was a chance that The Cure would record in the studio I was working in, I told them that I'd work with them for free. When they moved studios, I moved with them and recorded their first single, "Killing An Arab" [1978].

Many of the bands you worked with in the '80s, and your productions of them—especially The Cure and Siouxsie—became known for a very effect- and reverb-laden, Gothic sound. How was that developed?

We were kind of inspired by '60s druggy, psychedelic music. We didn't refer back to it; we just did a rough interpretation of it. It kind of developed between us. On the second Cure album, *Seventeen Seconds* [1980], I had the idea to put seven flangers on the single "A Forest." I put them on everything: the drums, bass, even the tape repeats we were using.

I worked with The Cure from 1978 till 1982, and then started work with Siouxsie & The Banshees on their album *Kiss in a Dreamhouse* (1982). We were also after a very psychedelic sound. We experimented a lot with loads of extreme effects, like playing the tape backward, or at half or double speed, tape repeats, loads of phasers, gating the overheads on the drums and triggering the gate from the vocals. We

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were very keen on "keying" things, i.e. triggering effects, like ducking compression, on one instrument from another instrument. With the Banshees we also used many vocoders, to drive guitars or drums. We often put overheads through vocoders.

Do you feel that you were instrumental in developing a particular style of rock music production?

That sounds much too pretentious! [Laughs] We just experimented a lot, purely for the enjoyment of it.

Many of your colleagues tend to become more conservative in their musical tastes as they get older. But you're still working with alternative bands today. How come?

I just like to do whatever excites me. If a band has a set formula for making an album, there is really not much point in me producing them. Although I have been approached by some very well-known mainstream acts, I normally only get approached by bands who want to try something new. You have to enjoy what you're doing. This is not the sort of job that you do just for the money.

Is there anything that's notably different in the working methods of bands of the '80s and '90s?

No, not a lot. But there is a difference in that there's a lot of A&R involvement during the '90s. In the early and mid-'80s, we had no A&R involvement at all. None whatsoever. The record companies just let the bands get on with it. So we did exactly what we liked. There was definitely something in our attitude of us against the establishment, a kind of post-punk thing. But when the slump came in record sales in the late '80s, record companies tried to have a lot more control over the money they were spending. We started getting pressure from the money-men to experiment less and make it sound more like everything else, which is ridiculous, because you have a far greater chance of something becoming a hit if it sounds different from everything else.

But since the late '80s, I cannot be seen anymore to be actively opposing the record company's wishes. I have to take into account what they want, and so in some terrible way I have to strike a compromise and convince the A&R man or record company that this record is fantastic. Otherwise it's not going to sell. Having said that, the last few years the pressure has eased off. They tend to leave me more alone again.

Let's talk about your chateau and your studio. Can you describe the layout?

The chateau originally had 12 bedrooms and one bathroom. They have been renovated and rebuilt to ten bedrooms and four bathrooms. I live with my family on the second floor, which is the top floor. The first floor is the residence for bands and musicians, and the ground floor and basement hold the control room and recording areas. There are two huge rooms on the ground floor with oak floors. One of them, the former salon-cum-ballroom, we have set up as the control room. The other, the former study, which is separated from the salon by sliding doors, is a recording area for acoustic instruments. Next to that is a very large conservatory, which has a very live sound.

In the basement, there are four recording rooms: one small and very dead room; one very live-sounding mid-sized room that we use for recording drums; one medium-dead, mid-sized room where we record guitars and basses and where there are several cupboards that can house amplifiers and speaker cabinets; and then there's a hallway that is also pretty live. All the rooms in the basement are connected

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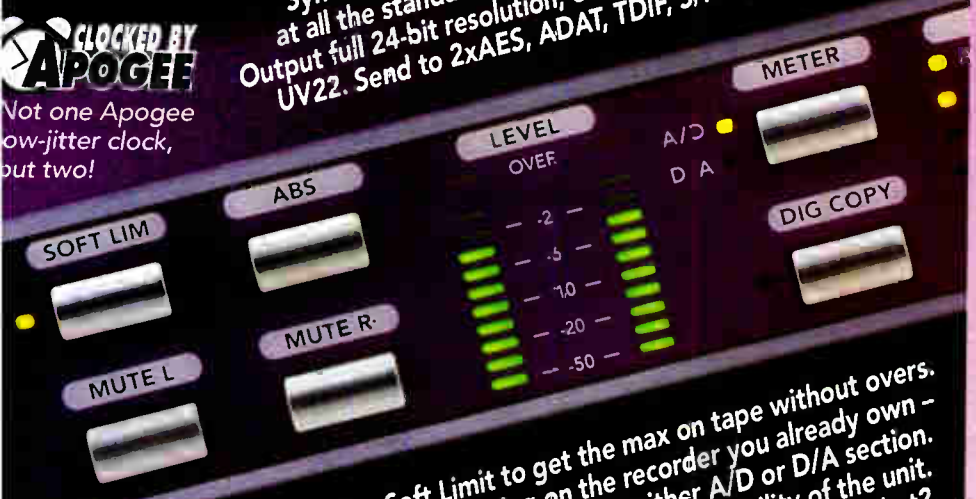

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to the control room with closed circuit TV. The cupboards are quite sizable in some cases: There's one made out of stone that sounds quite live, one is medium live and one is dead-sounding. I had them purpose-built as part of the renovation process, so that I could record bands together in one room, and still have separation.

What about the huge EMI TG12345 console and the ancient 16-track Studer A80 Mark I tape recorder, and all sorts of other assorted late '60s/early '70s gear from Abbey Road Studio 2?

I rescued all that gear from the studio's vaults, where it was rotting away. The desk is the ultimate EMI desk, the best and biggest they ever made. It's the Mark IV, and it has 60 inputs—40 channels, four echo returns and 16 monitoring channels. It was installed in the legendary Studio 2, where The Beatles used to work, in 1970, and removed in 1981. They dismantled it and stored it in a rather humid place, so it required quite a bit of renovation work after I bought it in 1989. The TG12345 Mark II is a 28-input mobile desk, which I also own and which I use when I mix in Abbey Road. Mark III was used by the Rolling Stones at the legendary Pathe Marconi studios in Paris, and the original Mark I was used by The Beatles. EMI made no more of these desks after the Mark IV, so it's unique. I also have an old Siemens patchbay that comes from Studio 3, and that contains self-cleaning plugs, so it doesn't crackle. The Studer 2-inch 16-track is from 1969 and is really an updated 1-inch 8-track machine with new 2-inch heads. I use it at 15 ips with Dolby A, because the low end sounds better at lower tape speeds.

I'm sure you didn't acquire all this gear for its novelty or show-off value. But do you really think it sounds better than today's gear?

Yes. There is a very short signal path in the EMI desk. It's a 100th, or maybe 1,000th, of that of an SSL. So that means that it sounds very natural. I had Optifile automation retrofitted on it, but it's separate from the desk, so we can switch the VCAs off when we're recording and not lose any sound quality. The EMI may not be as easy to use as an SSL, and it needs more maintenance, but it sounds better than any other desk I have ever worked with. The EQ is limited but very musical (2-band with bass cut on all echo sends and returns), and the desk has amazing compressors on each channel, as vicious as Pultecs. There's also an oscillator to check internal connections. As far as the tape recorder is concerned, 2-inch 16-track simply sounds better than 2-inch 24-track, and certainly better than digital.

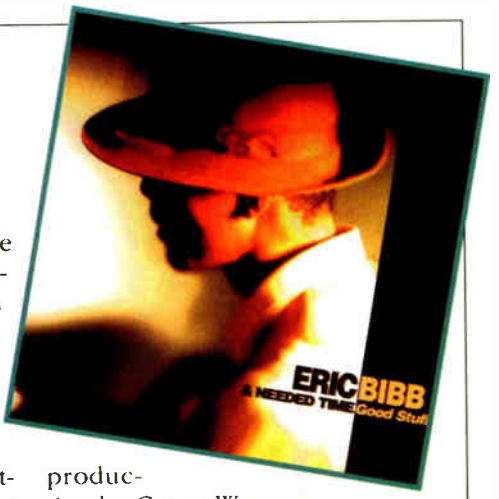
Apart from the huge collection of vintage gear that you have, you also appear to be a fan of Sennheiser microphones.

The Sennheiser MKH Series are my favorite microphones at the moment, and they played an important part in the making of the new Manic Street Preachers album. There's the MKH20, which is an omni, the MKH30 is a figure of 8, MKH40 is a cardioid, the MKH50 is a hypercardioid and the MKH80 is a multipattern mic. These are our workhorses really. I started using Sennheisers when

—CONTINUED ON PAGE 254

ERIC BIBB & NEEDED TIME

RECORDING "GOOD STUFF"



by Barbara Schultz

Many American roots musicians have found greater popularity and community abroad than at home—in the jazz scene in Paris, for example. This phenomenon has been due, in part, to a desire to escape racism in the U.S. Another factor is the ironic fact that other countries' folk music is exotic and exciting to us, and vice versa, which may have something to do with the reason blues singer/songwriter/musician Eric Bibb lives in Sweden.

"Back in the early '70s," Bibb explains, "after living in Paris for a year, I traveled to Stockholm, Sweden, to visit friends—and decided to stay. At that time, there was a feeling amongst creative people that reminded me of the Greenwich Village of the '60s. I quickly discovered that Stockholm had a fertile musical life and began meeting and playing with local musicians as well as newcomers from all over the world."

Bibb fell in with the people at Opus 3, an independent Swedish label that releases mainly acoustic jazz, folk and classical music. He recorded his latest CD, *Good Stuff*, for them (on the Music for Little People label in the U.S.), accompanied by a group of soulful Swedish musicians. The CD is a fine collection of sultry, rootsy acoustic blues—very reminiscent of Taj Mahal's recordings (and, in fact, Bibb thanks Taj Mahal in his liner notes for the inspiration).

Opus 3 is apparently dedicated not only to authentic acoustic sounds, but to old-style acoustic recording methods. All of the tunes on Bibb's release were captured live, in a school auditorium by engineer/executive producer Jan-Eric Persson, with production by Goran Wennerbrandt. The musicians were positioned on the stage, around one AKG C-24 tube mic, placed about chest-high to the standing players. Persson also miked the bass with a Neumann U89, "to get a distinct sound in the bottom," Bibb says

Persson records to a modified Telefunken M-28C Magnetophon machine, through a custom tube amp of his own design; he set up a little control room in a side room, off the auditorium stage. The album was completed sporadically over a period of six months and has met with great enthusiasm on both sides of the Atlantic. "This way of recording obviously places limitations on what kind of record you can successfully make," Bibb says. "Personally, I find it more liberating than limiting. It seems to me that the true power of music is released when there's room for spontaneous invention and interplay."

Bibb and band have been touring almost constantly since *Good Stuff* was released, but they plan to record another CD soon—this time in a studio. "The next record will consequently feature the band recorded live in the studio," Bibb says, "basically reproducing our live onstage sound. I'm looking forward to fiddling about in the studio on top of that real foundation." ■

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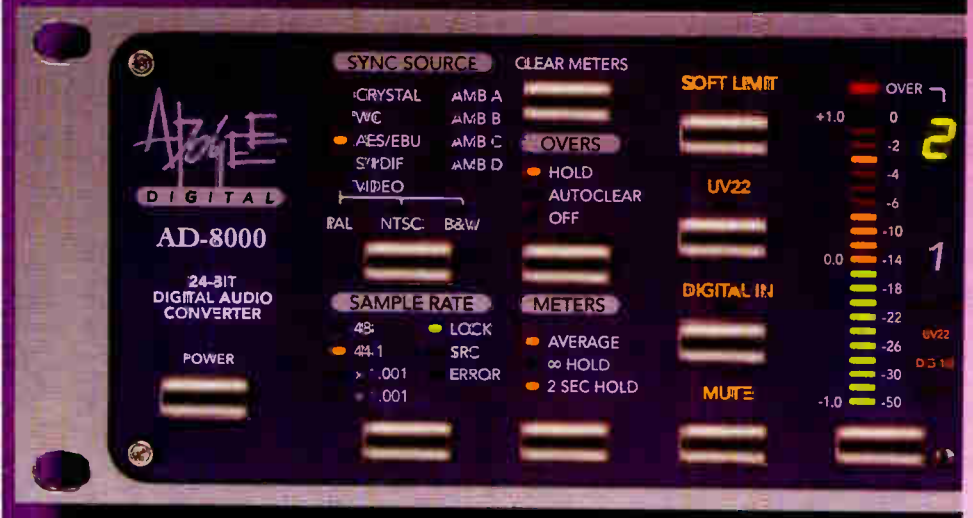

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CIRCLE #063 ON PRODUCT INFO CARD

TINY TELEPHONE

AN ECLECTIC ANALOG HAVEN IN SAN FRANCISCO

John Vanderslice's band, MK Ultra, recorded barebones in their rehearsal space, and made their next record at a mid-level studio. Then, while still working toward turning their practice space into a studio, they decided to test the high-end waters. What happened at a fancy, expensive studio convinced them that bigger isn't always better. "The recording we did at this 24-track studio in Marin [County, near San Francisco] was the most awful, horrible experience. The studio owners weren't nice to bands coming in, and they were paranoid about getting paid. I could deal with bad vibes, but they had this really bad console. Our engineer brought along a lot of great gear and mixed back through their console, which totally ruined the sound. I thought, 'I can do better than this.'"

Tiny Telephone is hidden away in a long-established fortress-like compound full of industrial performance artists, punk rock record distributors and musicians. For years, mostly over weekends, a loose co-op labored to transform the space into a correctly built recording studio. "One of the members was a contractor—he and some of the other people did most of the work of building just the frame of the studio, the double, non-parallel walls, the control room and double windows," says Vanderslice. Everyone else slowly dropped out of the venture, leaving Vanderslice at the helm. "The truth is, you can't really make any money doing it," he says, "but I never started with the idea of making money. The reason the studio is open is because my band needed a place to record. Also, I came to realize that if you own a studio and it's cheap enough that all your friends can come and record there, it's a fun place to hang out."

The 1,700-square-foot facility is industrial-looking yet very comfortable. Vanderslice culled the relaxed aesthetic from his experiences at other studios. "I have this weird theory that if the architecture and decorations are conservative, it seeps into the music. I pay attention to color and like to use cool lamps, colored lights." A pink lounge allows entry to either the tracking or control room. The tracking room has 21-foot ceilings and is roomy enough for full-band live recording or for capturing big drum sounds. A floor-to-ceiling theater curtain can be pulled across to break up the room. An assortment of funky keyboards is set up on a raised, stage-like platform that leads to the control room.

PHOTO: PETER ELLENBY

Overlooking the area where the drums are usually set up, the control room (with "the most comfortable couch in San Francisco") is full of vintage gear. The console is a 1976 Quantum Audio Labs QA 2000, a handmade, discrete board from Studio 55, recently re-capped and serviced. The monitors are Dynaudio BM15 and Yamaha NS-10Ms. The Ampex MM 1000 2-inch 16-track came from San Francisco's Hyde Street Studios and was originally owned by Brian Wilson. Mixdown is to either an Ampex 440 ¼-inch 2-track or to Tascam DA30.

BY ANNE EICKELBERG

Vanderslice has made a home for displaced engineers and their gear. Dancing Dog's [the now-defunct studio owned by Counting Crows member David Bryson] engineers Damien Rasmussen and Rick Stone and house tech Lawrence Mannion frequently work at Tiny Telephone. "Because the studio has a co-op kind of feel, it kind of attracts equipment," Vanderslice says. "A lot of the barebones stuff of the studio is from Dancing Dog. We bought all of their Mogami TT cables, even all their mic stands." Mannion did all the wiring, all the snakes, cabling, TT bays and a lot of work on the board. "He's central to the studio," says Vanderslice. "He taught us a lot about wiring and how to do stuff on our own." Vanderslice also welcomed the equipment and services of engineer Greg Freeman, whose Lowdown studio was demolished last year to make room for the S.F. Giants' new ballpark.

Vanderslice is persistent when it comes to getting the kind of mics and outboard gear he wants to have in the studio and made plenty of "cold calls" to producers and engineers whose work and sound he admired to find out what they used. He collects a piece or two at a time, always keeping an ear open for deals. "A dbx 160 was a good find," he says, "for money and studio time, from a friend; a Beyer M88 for cheap." Other favorite items are a Coles 4038 ribbon mic, four Neve 1272 mic pre's, UREI compressors and limiters, and a pair of Neumann M582s. "I'm a total fanatic. I'm definitely getting a 67 or a CMV563 before the end of the year. Eventually this place will be mad with gear; it's gonna be insane!"

For a complete list of gear, clients and photos of the facility, visit www.mkultra.com/tinytelephone. ■

Anne Eickelberg is Mix*'s editorial assistant.*

World Radio History

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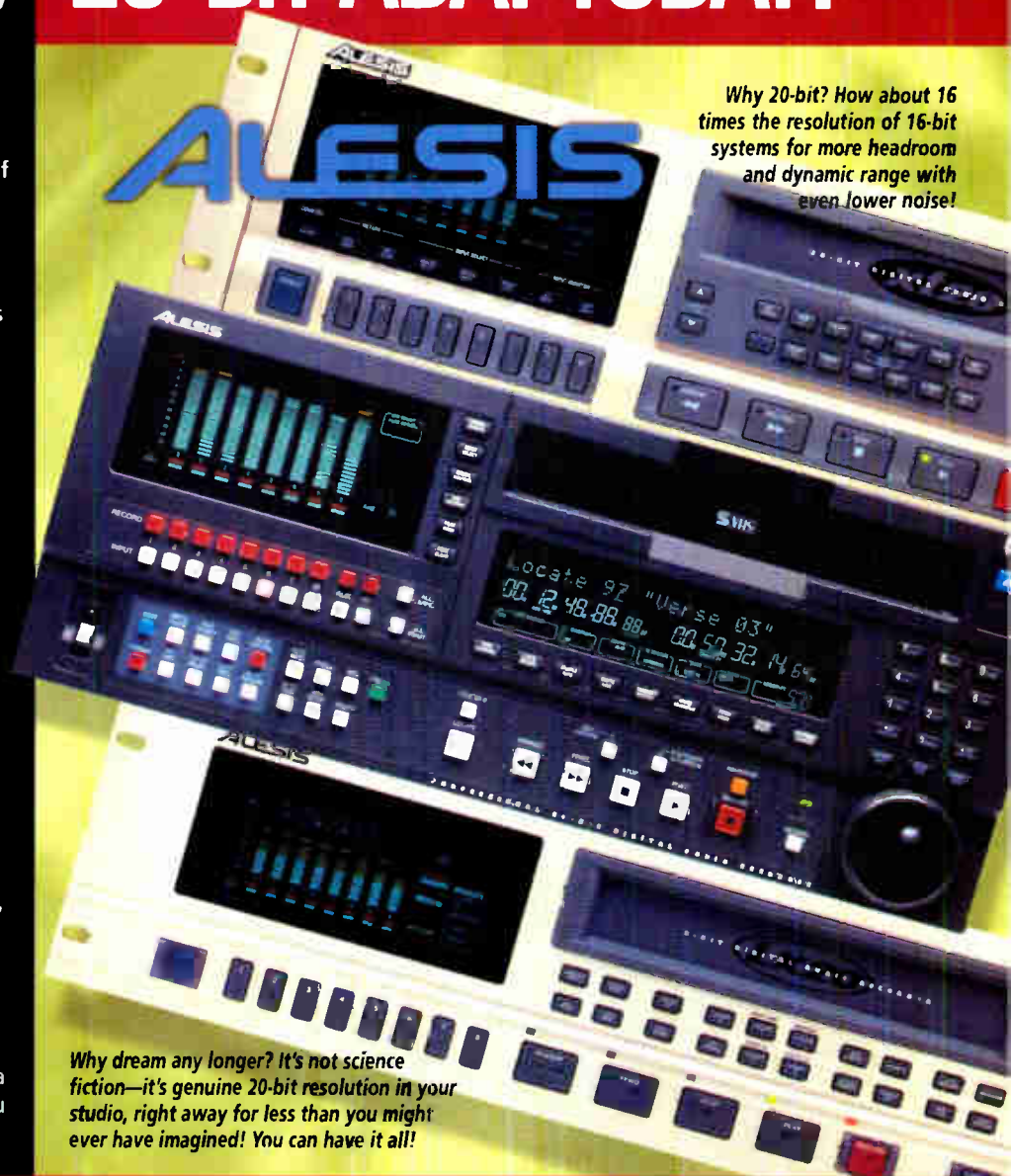

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World Radio History

CIRCLE #064 ON PRODUCT INFO CARD

San Francisco Area Music Studios

BY ADAM BEYDA

KEEPING PACE WITH CHANGING TIMES

It's 1977. The band boards the record company jet in L.A. for the short flight up to San Francisco. They've locked out a leading studio for three months to record their next opus, and no expense has been spared. Staying up in the hills in a lavishly appointed house owned by the studio (with expansive views), they might roll out of bed around three in the afternoon and head out for a cruise on the bay in the studio's twin-inboard ski boat. Following a late dinner and some vigorous partying, they finally hit the tracking room around 2 a.m. Perhaps a dip in the Jacuzzi, maybe another round of fortification, and they're ready to cut Platinum...

Pure fantasy? By no means. But, these days, no one could blame you for thinking so. As the big record industry has increasingly followed the corporate trend toward profit maximization, budgets that would allow for such scenarios have become almost nonexistent. Forget about the ski boat—under the pressure of shrinking budgets and rising competition, today rates have declined to the point where many music recording studios are charging essentially the same as they did 15 years ago. And the cost of doing business has only gone up.

World Radio History

PHOTO: BEATRIZ COLL

In the control room on the scoring stage at Skywalker Sound (from rear): technical engineer Aaron Reiff, assistant engineer Bob Levy and scoring manager/mixer Leslie Ann Jones at the 72-input Neve VXS.

PHOTO: JAY BLAKESBERG

Jack Dangers of Meat Beat Manifesto at Toast, San Francisco

Studio A at The Plant, Sausalito

Of course, it's not just bottom line-oriented labels that are putting the squeeze on commercial studios. The advent and proliferation of newer "home" recording and computer technologies have also taken their toll. It's a different era for the studio business, and many facilities both in and out of the major centers have had to adapt.

Unlike other secondary markets, though, the San Francisco area continues to have the advantage of being a tremendously desirable recording destination. And though short on music business infrastructure, the region is home to a huge and thriving music community, with more than its share of acts that regularly break out nationally and internationally. As proof of the area's vitality, a host of wonderful, "vibeful" studios continue to do business here. *Mix* checked in with several leading area studios to see how they're operating in the present climate.

San Francisco's **Different Fur Recording** is now in its 27th year; longevity is a key to its continuing success, as many of the studio's clients are long-term ones who return frequently. Studio VP/general manager Susan Skaggs says that some years back, when they installed an SSL 4056 E/G (with Total Recall), she and co-owner Howard Johnston decided to focus on attracting more mix work. These days, that decision is serving them well. "A lot of people track at home and come to Different Fur to do overdubs and mixing," Skaggs says. "Most of our business is mixing." Consequently, she says, the growth of home studios hasn't affected Different Fur too adversely.

When it comes to getting a decent rate, Skaggs finds she has to be as flexible as she can. "Everyone calls the studio shopping for rates, but I just talk to the person and see how low they need to go; occasionally there's no way I can ac-

World Radio History

BAY AREA SESSIONS & STUDIO NEWS

Music Annex, one of the region's anchor facilities, is celebrating 25 years in business this year. David Porter started the studio in his San Jose garage, ending up five years later in the Menlo Park building the company still occupies. Today, the facility comprises two tracking rooms, a media production room, a mixing room, mastering suite, and an array of editing and sound design suites. (In 1987 Porter started a post house in San Francisco, Music Annex Post, site of a newly opened 5.1 mixing suite.) The Menlo Park facility handles all kinds of audio sessions, including work for new media and the Internet, in addition to music recording. Music sessions the studio has handled over the past few months include Mad Caddies mixing on the Neve 8128 (with Flying Faders) in Studio C for Fat Wreck Chords with engineer Ryan Greene and assistant Mark Bruhn; the Harmonics Steel Drum Band tracking on the Neve 8036 in Studio A with producer Peter Best; as well as sessions for Marie Osmond, the Unknown Jeromes, Mark Russo and the San Francisco Gay Men's Chorus...In the big scoring stage at the lavish **Skywalker Sound** near San Rafael, scoring manager/mixer Leslie Ann Jones mixed projects on the Neve VXS console for the Concord label, including a Rosemary Clooney and Count Basie Orchestra record, as well as a couple of songs on Michael Feinstein's new release. She also recorded an album for Angel with classical pianist John Bayless. Pianist Jon Nakamatsu (the Bay Area-based winner of the Van Cliburn competition) was in the studio working on a Harmonia Mundi project, produced by Brad Michel and engineered by Bob Levy. Levy also engineered for San Francisco's celebrated Kronos Quartet, who've been recording music composed by Philip Glass for a re-release of the movie *Frankenstein*, as well as working on a new project. Judy Sherman is producing...Tom Waits has been recording his next Epitaph release at **Prairie Sun Recording** in Cotati with engineers Oz Fritz and Jaquire King, assisted by Jeff Sloan. Primus recorded at the studio for their latest Interscope release, *Rhinoplasty*, with producer/engineer Toby Wright and assistant Gene Cornelius. Recent additions at the studio include a custom 80 Series Neve 32-input console (originally built for Pete Townshend) in Studio B, as well as Pro Tools 24 and a Neumann SM69 tube mic...Sessions on the vintage Neve 8048 in Studio A at

Chief engineer Matt Kelley (rear) with Shock G of Digital Underground at the Neve 8048 in Studio A at Hyde Street in San Francisco

Hyde Street Studios in San Francisco: Cake. Imperial Teen, Hieroglyphics, The Coup, Eric McFadden, Broun Fellinis and Napsak. Hyde Street renovated Studio D recently, installing a 64-channel Amek APC 1000 with GML automation and an external bank of 24 Hardy mic pre's and adding two Pultec EQP1A3s. 48 tracks of Studer A800 are now available to both rooms. The studio occupies the site of the historic Wally Heider Recording (see sidebar p. 104)...**Russian Hill Recording** (San Francisco) handles an array of post, advertising and new media work in addition to music recording. Music sessions in the past while have included John Lee Hooker and Ben Harper recording a song for Virgin/Pointblank with engineer Sam Lehmer and assistant Dug Nichols. Guitar virtuoso Jim Campilongo tracked and mixed his third release with engineer Daryn Roven. Roven also recorded Charles Brown and Hatta Brooks for Virgin/Pointblank, assisted by Michael Boguslawski...**Live Oak Recording** installed a new 64-input Otari Elite a year ago, and studio owner Priscilla Gardiner reports that bookings have been up ever since. "We've been doing tons of mixing," she says. "People are raving about the sound, and they love the

—CONTINUED ON PAGE 102

At the SSL 4056 E/G in Different Fur (L to R): Guitarist Bill Frisell, producer Lee Townsend and engineer Joe Ferla, mixing a new album of Elvis Costello/Burt Bacharach tunes for PolyGram/Verve. Not pictured is assistant engineer Adam Muñoz.

commodate it, so I refer them. But there's a lot of different ways you can work it when you're booking a session. I can book it as a lock-out, or as a day session that stops at six and is followed by another evening session...By having various people paying low rates, I can get enough hours out of it to satisfy what I need."

Skaggs says that many of Different Fur's repeat clients will come in at different times with disparate budgets. "Some of them just tell me, 'I've got this much per day,' and I say 'fine,'" she explains, "because they're good clients and they come back. It's nice to work with a producer or artist and really find out what they want to do and figure out a way they can do it at Different Fur. If I can get them to come in, pay me a rate that I can live with and have them have a good experience, it's the best advertisement in the world."

The studio is getting a lot of calls lately from people who have tracked to Pro Tools and want to come to the studio to mix, Skaggs adds, so Different Fur is contemplating the purchase of a Pro Tools 24 system, as well as an Apogee 8000 A/D converter. Recently in the studio was guitarist Bill Frisell, mixing an album of Elvis Costello/Burt Bacharach songs that he recorded for PolyGram/Verve, with producer Lee Townsend and engineer Joe Ferla. Also in have been long-term clients the Modern Mandolin Quartet as well as George Winston, recording slack key guitarist Keola Beamer for his Dancing Cat label.

Recent work over at **Fantasy Studios** in Berkeley has included Jeffrey Wood producing Penelope Houston (for Warner Bros. Germany) and local comers Low Hum Satellite. Darlene Love was in working on a project for Harmony Records with producer Edwin Hawkins. The studio has also been handling live broadcasts for KYCY and recorded B.B. King's daughter Claudette King for European TV, as well as jazz

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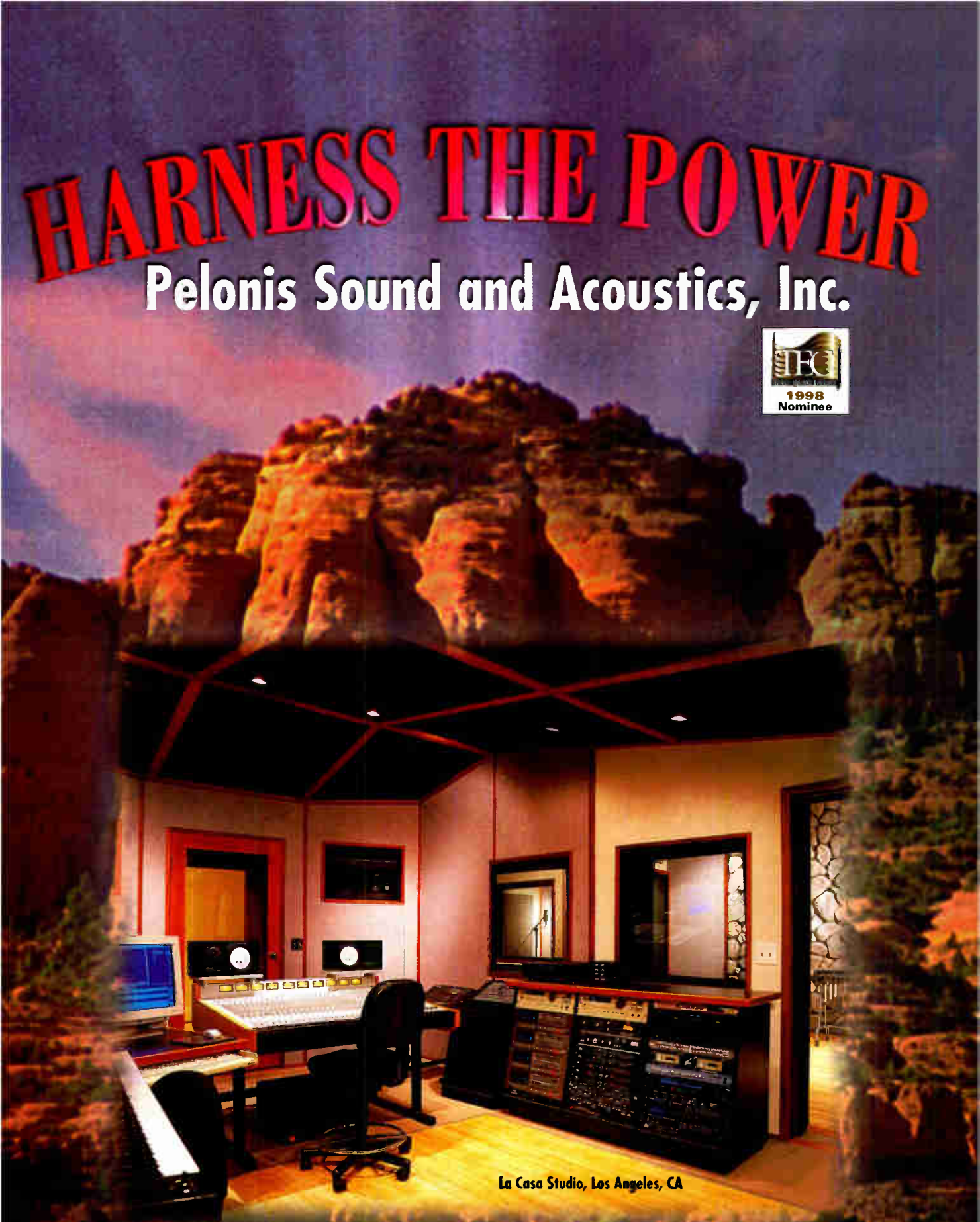

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artists Dave Ellis (for the Monarch label) and Frank Bignola (Concord).

The studio offers four rooms, two equipped with automated vintage Neves, one with an SSL 4056 E/G (with Total Recall) and the fourth with a Trident Series 80. Though studio manager Nina Bombardier admits that it can be tough to keep all four rooms booked, the studio is also kept busy by owner Fantasy Records and its associated labels. "Everybody in one way or another still needs [big studios], but not to the extent that they did," Bombardier says. "A lot of our clients who have been our clients for years now have their own home studios; they're still our clients, but someone who used to spend six to eight weeks with us a year now spends maybe two or three days. They're recording in their living room and coming here to do drum tracking on eight tunes in a day-and-a-half. We do what we can to work with people so that

—*FROM PAGE 100, SESSIONS & STUDIO NEWS*

automation." Recent mix sessions have included three albums for AWOL records and a song for E-40. In tracking was blues and jazz singer Frankye Kelly, with legendary drummer Bernard Purdie. A one-room facility located in a house in a residential neighborhood in the Berkeley Hills, Live Oak has been in business for 15 years...The large tracking room (with a 20-foot ceiling and three iso booths) at **Studio D Recording** in Sausalito was jamming with Sammy Hagar, produced by Jesse Harms. Kent Mackie engineered, assisted by Mike Cresswell. In business for 15 years, the studio also offers lock-to-picture capabilities...Producer Lee Townsend tracked several projects at **Mobius Music** in San Francisco, including the Will Bernard 4 Tet's *Medicine Hat* (Antilles), Charlie Hunter's *Return of the Candy Man* (Blue Note) and Noe Venable's *No Curses Here* (Intuition). Time Bomb Records artists Indigo Swing tracked a new release, and the Beth Lisick Ordeal tracked and mixed their next one for DuNord. All sessions were engineered by Christian Jones. The studio added a Pro Tools system and now offers digital editing and mastering...Owned by producer/writers Denzil Foster and Thomas McElroy, Oakland's **FM Studios** opened for commercial bookings last year. Located in Emeryville, the studio is equipped with a Euphonix CS2000M and has been the site of sessions for Premiere, ID, Big Lunch and Deep Julia...**OTR Studios** in Belmont upgraded to a customized Soundworkshop Series 34 console with 48 channels of moving fader automation. The studio also added a second Pro Tools system and a pair of Studer preamps. Over the past months, OTR has had sessions for jazz drummer Max Roach, pianist Jon Jang, Chen Jie Bing, Glen Moore and Paul McCandless (for Windham Hill). The band Oregon mixed an album at the studio with producer/engineer Cookie Marenco...David Gans and the Broken Angels recorded their single "Monica Lewinsky" at **Bay Records Recording** in Berkeley, with engineer Jeremy Goody. Henry Kaiser and Chris Muir produced a project of Miles Davis music titled *Yo! Miles* for Shanachie Records. In business for 26 years, Bay opened Studio B this past summer, a production/pre-production room featuring a large selection of new and classic keyboards, a Trident 65 Series console and a Pro Tools system. Studio A is a 1,200-square-foot space with an automated Otari Series 54...Sessions over the past few months at San Francisco's **Brilliant Studios** have included Joe's Friend, Spike 1000, Dredg, Valve, Penny Ellis, Virgin Whore Complex, Vegas Demilo, Ashia and Coal...**Laughing Tiger Studios** (San Rafael) is a two-room facility that opened two years ago, offering mastering and complete lock-to-picture capabilities in addition to music recording and an in-house production company. Recent music projects include Elvin Bishop mixing an upcoming release, Kingfish overdubbing and mixing, and sessions for Tommy Castro, Vinyl, Shana Morrison and Sister Soul. The studio just added a second Pro Tools rig...Since opening for business in 1993, **Pajama Recording** (Oakland) has hosted sessions on its Otari Series 54 for Jody Watley, Tyler Collins, the Braxton Brothers and Mordred, among others. Of late, rockers Absolute Black cut an album produced by Jim Gardiner for Pajama's associated production company, Touch-Tone...Two blocks from *Mix* offices at **The Emeryville Recording Co.**, owner Randy Rood engineered sessions for Dale Zola and Bruce Berger. The studio recently added 20-bit ADATs, 24-bit Cubase, an HHB CDR-800 CD-recorder, a Lexicon PCM 90, Meyer HD-2 monitors, an EL8 Distressor, Joemeek compressors, a Mac G3 and a digeridoo made by Djalu Gurriwiwi... Also in the Emeryville neighborhood is **Spark Studios**, which features a tracking room with a 40-foot ceiling and offers post, mastering and music composition work in addition to recording. Michael Manring was at Spark in July doing some live tracking as well as completing mastering work on his latest CD. Also in have been pianist Phil Aaberg and Mark Levine...Composer/producer Keith Terry & Crosspulse's latest world music release, *Serpentine*, was tracked and mixed at **Outpost Studios** (San Francisco) by chief engineer Dave Nelson. Nelson also engineered and mixed *Wrockers* (on Don't Quit Your Day Job Records), a CD featuring authors including Stephen King, Amy Tan, Norman Mailer and Dave Barry taking a stab at their favorite tunes. Kathi Kamen Goldmark produced. The studio also does voice-over and handles a lot of post work...At **Bay View Studios** in Richmond, co-owner Steve Suda reports lots of blues sessions: Alvin Youngblood Hart recorded his new Rykodisc release (see

—*CONTINUED ON PAGE 104*

Studia owner Priscilla Gardiner at the Otari Elite in Live Oak Recording, Berkeley

At Bay Records in Berkeley, renowned Cuban pianist Omar Sosa (middle) worked on new material with bassist Rahsaan Fredericks (L) and engineer Oscar Autié.

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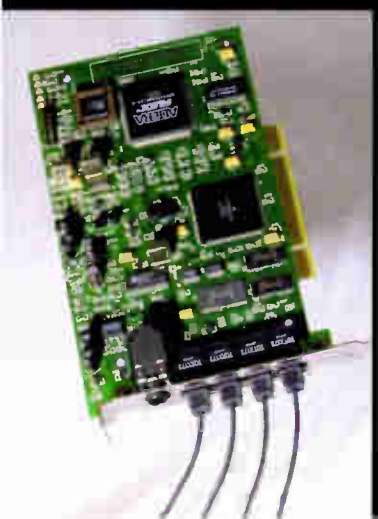

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they can make quality records and use our services for the what they really need, such as the large tracking room or the good mix situation with a lot of gear."

Bombardier and others also pointed to the effects of the disappearance of a lot of the infrastructure at major record labels. "There's no quality control or artistic development anymore," she says. "There's tons of product on the market, but no support. Bands have to shop to all these subsidiaries, trying to get them interested in the record they had to make on the cheap by themselves. In the past a record company would call, give you a P.O. number, the band would come in, and that would be it. Now it's a free for all, and nobody's comparing oranges to oranges: They ask you what your rate is, they don't ask what kind of piano you have, how big the rooms are, if you have full-time technical maintenance, when the last time the heads on your machines were re-lapped...They just shop rates.

—FROM PAGE 102, SESSIONS

"Cool Spins" p. 296); Little Charlie and the Night Cats recorded for their next Alligator release; and James Armstrong recorded his new HighTone release, *Dark Night*, with producer Bruce Bromberg and engineer Billy Dashiell... **Guerrilla Recording** is a 1-inch, 16-track facility in Oakland with a large collection of vintage gear. The studio offers post, digital editing and CD mastering, recording workshops and location recording. Sessions in the past six months have included John Schott, bluesman Paris Slim, Deborah Iyall, the Rova Saxophone Quartet and the Myles Boisen Guitar Trio...In San Francisco, **Mr. Toad's Recording** has been cranking since acquiring an Otari MTR-100 with Dolby SR with sessions for the bands Liar and Beulah. Steve Albini has been in recording the new Neurosis album...Starting with three tracks in 1967, **Tiki Studios** in San Jose now offers 24 tracks of both analog and digital, as well as in-house cassette and CD duplication and CD mastering. Guitarist Jerry Snyder recently completed his new CD at the studio, as did Jeannine O'Neal.

—Adam Beyda

SAN FRANCISCO RECORDING, 1970-1984

WALLY HEIDER RECORDING & THE AUTOMATT

Short lives, long influences: That's what these two seminal San Francisco studios had in common. From 1968 to 1980, Wally Heider Recording rocked with the likes of the Grateful Dead, the Jefferson Airplane, Sly & the Family Stone, the Pointer Sisters and Crosby, Stills & Nash—a veritable who's who of the bands that came to fame in the Summer of Love, at Woodstock and beyond. In 1978, The Automatt picked up the torch, and, until it closed at the end of 1984, hosted a glorious amalgam of funk and rock from Santana, Journey, Jefferson Starship and Huey Lewis & The News to Con Funk Shun, The Whispers, Herbie Hancock and Frankie Beverly & Maze. At both of these studios, it was truly the best of times. Following are a few reminiscences from those who were there.

PHOTO: KAZ TSURUTA PHOTOGRAPHY

In session at The Automatt with Sister Sledge, 1980: engineer Ken Kessie (L) and producer Narada Michael Walden

DAVID FRASER

Platinum engineer (Whitney Houston, Mariah Carey, Aretha Franklin); night desk, maintenance and assistant engineer, Wally Heider Recording

When I began working the night desk at Wally Heider's, they handed me a sawed-off pool cue and showed me the location of the dope bust alarm. Heider's was a musical oasis in the Tenderloin, located on a popular hooker corner and next to a methadone clinic. But inside, on the second floor, the live echo chambers resonated with the sounds of legendary artists cutting some classic tracks. Sixteen-track 2-inch was the media of choice, fed by a Quad 8 or an MCI and later, a Trident or Neve battleship. The atmosphere was festive, warm and wonderful, and there was always a sense that there was real musical adventure happening. In short, Captain Beefheart was comfortable at Heider's.

SUSAN SKAGGS

Owner of Different Fur Recording; traffic manager, Wally Heider Recording

I was hired at Wally Heider's because I wore a black velvet blazer to the interview! With that in mind, how do I describe "The Heider Experience"? The first thought that comes to mind is *fun*...but it was so much more than that. It was a group of crazy professionals who knew they made a difference in the creative process of recording music. The technical maintenance staff had each room ready long before the session's downbeat; the engineers came to life the minute they walked through the front door. Tom Gilder, our supervisor, had it made because no one needed supervising! I had the best job of all—booking four great rooms in a studio whose founder set the technical standard for future major recording studios.

GINGER MEWS

Manager (Wally Heider Recording)

It's funny how it happened in San Francisco. It really was pure chance—right time and right place—and most of us didn't know anything about the recording business when we got into it. But the studios somehow turned into something very special because they took on the personality of the artists and the people who worked there—starting with Wally, of course. Music was Wally's passion. He'd

—CONTINUED ON PAGE 106

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and it's a shame because it's affecting a lot of the quality in what's going on in this business."

"Labels are definitely not spending any money anymore," says producer/remixer Philip Steir, owner of San Francisco studio Toast. "When I first opened three years ago, Thirdeyeblind was the first major-label project we did; we got a deposit, and they did their time. Now, forget it, you cannot get a deposit. I book time, hold time, but when someone cancels, I have no recourse. People want deals all the time, so now I give them incredible deals, but only if I have a deposit—I have to protect my-

—FROM PAGE 104, HEIDER'S & AUTOMATT

played saxophone in a big band, but, in his own words, he was such a bad player that they kept making him turn away from the mic, so he got into recording instead. The staff both loved him and feared him because he was a perfectionist and he also had a temper. It wasn't uncommon for him to fire people and then rehire them in the same day. Wally had a special talent for really listening to what the recording artists wanted, and he was willing to do whatever it took to comply with their wishes.

KEN KESSIE

Platinum engineer (En Vogue, Tony Toni Toné, Celine Dion); staff engineer, The Automatt

The Automatt was originally a one-room operation run by busy producer David Rubinson (Herbie Hancock, Santana, the Pointer Sisters). This guy, for months, was doing two sessions a day—one in Los Angeles, one in San Francisco! He needed his own studio badly and ended up taking over one room of three in the CBS Studios on Folsom at 4th in San Fran.

The talent list generated by The Automatt, and still influencing the business today, is simply amazing. Current hit producers/label execs David Kahne, Mitchell Froom, Randy Jackson and Howie Klein prowled the halls. Drummer/producer Narada Michael Walden cut smokin' live R&B tracks for Sister Sledge, Whitney Houston and Aretha Franklin. My fellow staff engineers David Fraser, Leslie Ann Jones, Maureen Droney, Michael Rosen and John Nowland have gone on to Gold and Platinum. Jeffrey Cohen is one of the most successful jingle producers in the country, and legendary engineering guru Fred Catero still shows the rest of us how it's done. Studio owners and management types Susan Skaggs, Janice Lee (Tarpan), Michelle Zarin (Record Plant, Record One) run their various commands with grace and style. Vince Casper is the Saul Zaentz Film Center's resident technical heavyweight.

I'll never forget Leslie Ann Jones giving me a tongue lashing for opening my mouth improperly at a session (I was the greenest of seconds at the time), or watching Rubinson hold the phone three feet away from his ears as a drug-crazed artist screamed at him about some useless detail. Or, how the whole crew pitched in and drained the double-paned studio window when it filled one day with water from a leaking roof—finishing before the producer ended his phone call. Or Fred Catero getting a 30-piece session rolling in 45 minutes, live-to-2-track, with mixes better than many get today after 12 hours of "getting sounds."

When The Automatt closed, everybody was devastated. We'd always joked that the property would make more money as a parking lot, and a parking lot it is today.

LESLIE ANN JONES

Scoring manager/mixer (Skywalker Sound); staff engineer, The Automatt

I'm still affected by my years at the Automatt—what I learned there, not only as an engineer but about life in general. I gained a lot of my knowledge about being a producer from David, a lot of my love for R&B and for jazz, and in a lot of ways the integrity that I've tried to maintain in my work comes from that experience of working with David and Fred...and, of course, my knowledge of wine came from David!

There's a lot that's stuck with me. Where else could you have gone where there were six engineers working and three of them were women? It's still unheard of, and the funny thing is, I don't think that David even really thought about that. You see, the integrity and vibe came from the top down.

—Maureen Droney

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World Radio History

self. And it's working. If someone wants these prices, they bring me a deposit."

The studio got a big shot in the arm last year when R.E.M. spent three months there, tracking with producer/engineer Patrick McCarthy. More recently, Toast has hosted sessions for Geffen artists Black Lab, who tracked and mixed the song "Horses" for the soundtrack to the Ben Stiller film *Permanent Midnight*. The Red House Painters mixed ten songs for their latest Island records release, produced by bandleader Mark Kozelek and engineered by Billy Anderson. Lookout recording artists Hi-Fives tracked a new album, produced by studio co-owner Craig Silvey and engineered by Robert Shimp. Toast added GML automation last year to the Neve 8026 in Studio A. "It's amazing, great," Steir says, "so we're also a mixing facility now. We still do more tracking, but I'm trying to get the word out there." Studio B features a Trident TSM 32x24 with Uptown automation.

Before his incarnation as a studio owner, Steir played drums for the band Consolidated and was a project recordist. "I had a home studio; I knew home recording was gonna cut into the studio business, but I also knew there were always going to be people who wanted to do live music and work in a studio on vintage gear. There's still going to be that demand. R.E.M. can't do a record in a bedroom. We have wonderful gear, with wonderful, vintage rooms, and we also have all the cool digital stuff."

The Neve 5035 at Coast Recorders, San Francisco

For many years, Coast Recorders occupied the building that now houses Toast. Three years ago, when the San Francisco site of historic area studio Golden State Recorders became available, Coast made the move, adding four iso booths to the facility's 40x45-foot tracking room (with 20-foot ceilings). The control room was completely renovated and now houses two interconnected Neve 5035s, making for 72 inputs with 3-band Neve EQ and GML automation.

Asked what strategies he employs for booking Coast, studio manager John Cuniberti replies, "I find it's absolutely essential to get people to come and look at the studio. Studios are all different; even though they're filled with a lot of the same equipment, the vibe of the place is important to a lot of people, and it's absolutely impossible to predict what they're looking for in that regard. I think once people come in and see the room and know and feel that they want to work there, something like negotiating the price becomes a lot easier.

"One of our best sources for new clients is interns," he continues. "We have seven interns at our studio—young people, out every night, roaming around the streets and nightclubs, some of whom are in bands." Like many studios, though, Coast relies a lot on repeat clients: Chris Isaak is a regular, as is Joe Satriani. Most recently, Kevin Gilbert completed a new project at Coast this past summer; the Red House Painters tracked for their new one, and Big Blue Hearts were in working on a new project, as were Train, M.I.R.V. and Cake. When he's not on the set of *Nash Bridges* (see story, p. 269), Don Johnson has been sighted working at Coast.

"You can't bring in enough people from out of town in any given month to support any studio," Cuniberti says, "but what's tough now is that a lot of our good clients are starting to build their own studios. It's a dangerous trend, because it's repeat clients that make or break it."

To this last problem, Arne Frager, owner of The Plant, has a potential answer: "Our reaction is if the artists are going to build their own studios, then we think the studios need to build their artists." Two years ago, Frager and partners launched their own label, Pop-Mafia, and more recently they started a management company, A&R Management, headed up by Leslie Gerard. "In the case of both the label and the management company," Frager says, "what we're doing is developing new artists, and both companies use the studios to that end."

Another Bay Area studio with a long, incredible history, The Plant (Sausalito) continues to be very active: Big hits this year that were recorded at the studio last year include Dave Matthews' *Before These Crowded Streets* and Kenny Wayne Shepard's *Blue On Black*. In the past few months, Sammy Hagar was in mixing his next record for MCA with Toby Wright; Too Short mixed for Jive with producer Ant Banks; Vallejo recorded and mixed for TVT with producer/engineer Neil King; and Bijou Phillips (daughter of John Phillips) was in working on an Almo Sounds project with producer Jerry Harrison. At present, Plant regulars Metallica are in the studio, recording an album of covers for a Christmas release.

Studios A (64-input SSL 4064 G) and B (Neve 8068 with GML automation) were renovated within the past few years, and now Frager is about to begin renovations on the Mix 1 room: "We're going to rebuild it to make it 5.1-capable," he says. "Andy Munroe is doing the design."

Laughing Tiger Studios, San Rafael

Of course the technology and facilities at any studio play a central role in its work, but studios have always been people-based businesses, attracting clients on the strength of relationships. This continues to be true, even though budgets and rates are far more of an issue now than they were 15 years ago. Artists are drawn to a particular studio because they find it conducive to creativity, and even though it's now a buyer's market, a studio is about much more than a room and a collection of gear. When it comes to places with personality and the all-important vibe, the San Francisco area has more than its share.

The handful of top-end studios in the region are complemented by a wide variety of mid-level rooms. And despite the rise of MDM-based home studios, there's also been a proliferation of lower-rate analog rooms, such as Division Hi-Fi and Tiny Telephone (see story on page 96). Although it's more of a scramble now for studios doing business here, the market remains deep and diverse. If you're in town for AES, check it out for yourself. ■

Associate editor Adam Beyda edits Mix's Coast to Coast section.

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MIX BUSINESS

M E M O R A N D U M

Cash Speaks Louder Than Credit

IT'S NO LONGER HIP TO BE IN DEBT

BY DAN DALEY

Most weekdays at noon, I flip the car radio over to Dave Ramsey's "The Money Game Show." It's a combination of hard-headed financial advice, folksy and humorous diatribes directed against the credit industry, some Southern-pious Biblical references to money, and a slew of hard-luck stories from callers who have found themselves in debt up to their ears and haven't a clue how they got there.

Ramsey's raconteuring is not solely targeted at the credit industry—"credit sharks," as he calls them, accompanied by a snippet of the *Jaws* theme—but also at a larger cultural phenomenon in America in which indebtedness is regarded by many as some sort of virtue. Ramsey can tell you whether to roll your 401(k) plan over, pay off the mortgage or how to deal with zealous creditors, and he does it in plain talk of the sort that callers in the direst straits can and do find comforting. (Picture Garrison Keillor with a green eyeshade and a calculator.) But his main contribution to society is his constant reminder that most debt is just plain dumb.

I haven't run a credit card balance in more than a decade, so I suppose I find some validation of my own fiscally conservative tendencies. But this is more than simply preaching to the converted. Consider this: Personal bankruptcies in the United States hit an all-time record 1.3 million-plus in 1997 and are expected to exceed that this year. The country's individual savings rate has dwindled to just above 3%. The stock market continues to ride on the back of mergers and acquisitions whose 11-digit values hit new highs every day, which is great for pumping up a company's stock but inevitably means layoffs down the road. This explains why polls show that job security is such a high source of concern for Americans, even at a time when unemployment is at record lows.

This data has relevance to our industry because the studio business is increasingly affected by the economic throes of the world at large. As personal and project studios continue to proliferate and move further and further up the technological food chain, those conventional studios near the top of the heap have had to scramble to stay there, generally by acquiring cutting-edge equipment that their competitors can't. Trouble is, many of those upscale studios can't afford it either. Some recent reorganization filings in Nashville and elsewhere underscore the reality of the situation. And even the most expensive items will eventually saturate a market, a surfeit that eventually drives rates down. Some, then, choose

—CONTINUED ON PAGE 120

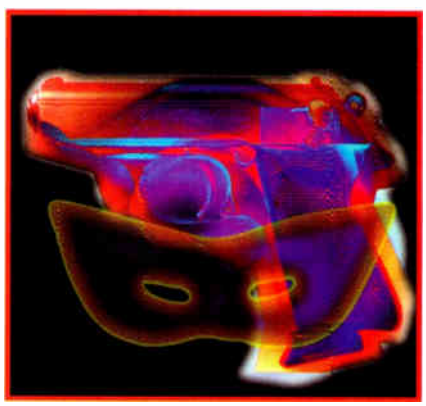
Theft-Proof Your Studio

MAKING COMMON SENSE AND COMMON CARRIERS PART OF THE MIX

BY DAN DALEY

[Editor's Note: In the February issue, Dan Daley wrote about the "Mean Streets of Pro Audio," reporting on how a rash of recent burglaries woke up some studio owners to the fact that they are not immune to larger social forces. It generated quite a response from Mix readers. Here, Dan reiterates many of those tips on how to protect your facility and adds a section on insurance. We encourage studio owners to clip this article, circulate it among staff and post it on the bulletin board. You can never be too safe.]

All types of recording studios, from public to private, have become targets of thieves recently. "Shrinkage," as retailers euphemistically refer to theft, can



take many forms: clients nicking a microphone beneath a coat, late-night burglaries and some some seemingly bold scams that have been surprisingly effective.

Last year, several New York area recording studios were the targets of a group of thieves who robbed at least three facilities of expensive microphones, with estimated losses between

—CONTINUED ON PAGE 122

World Radio History

Pro Audio's New Center of Competition

Back To School Becomes Big Business

BY DAN DALEY

"We're not going to fail. We can't fail." Tom Misner is sitting in the cluttered front office of the London branch of what he has, since 1976, built into a global network of professional audio engineering schools with 24 locations. At the time of this interview, the School of Audio Engineering (SAE) Technical College had already established secure beachheads in London, Paris, Glasgow, Vienna, Stockholm, Milan, six cities in Germany, two each in the Netherlands and Switzerland, seven in Australia/New Zealand, and one each in Singapore and Malaysia.

Misner looks at the education business much the way a general might look at a campaign, liberally using strategic and military metaphors such as "battleship mentality" and "checkmate the opponent" as he describes his plans to expand his empire. Even as he speaks, he is absentmindedly moving a stiletto-shaped letter opener in and out of its case, much as a general might worry his cutlass in and out of its scabbard.

He may need a sword. Competition in the pro audio education market in the U.S. is about to heat up significantly. In addition to a full frontal assault by SAE, the world's largest such institution, others are gearing up: Gary Platt, who worked at Full Sail for a decade in that school's upper management, has announced plans to open Ex'pression Center for New Media, a multimedia educational facility backed by a reported $15 million from a Dutch investor and situated in Emeryville, Calif. (the same San Francisco Bay Area city that *Mix* calls home). And during the Summer NAMM Show in Nashville, it was announced that Full Sail would partner with massive MI and pro audio retail outlet chain MARS to host a version of the Full Sail curriculum at the store's locations; 13 of a planned 22 sites are already open. It appears that 1998 will be the most active year so far in the brief history of formal pro audio education, with fundamental changes in this increasingly complex but increasingly lucrative market sector.

While SAE will open schools in Athens, Greece, and Seoul, Republic of Korea, this fall, what seems to animate Misner most these days is the impending debut of SAE's first two U.S. locations—in New York City and Nashville—within the next six months. Like a field marshal who enjoys everyday skirmishes mainly as foreplay for the battle royale, Misner eagerly anticipates moving into the world's largest audio production, post-production and consumption market, one with an estimated 600-plus professional audio educational programs nationally. He is ready to bring a finely honed strategy, one that compares with the island-hopping campaigns of the Pacific, to bear on a populace that Misner is the first to acknowledge has mostly never heard of SAE. "Our competition knows who we are," he says matter-of-factly. "It won't be long before everyone else will, too."

But the U.S. market is vast and complex, and not everyone is as sanguine about SAE's ability to penetrate it. "He's going to have to carve out a market niche, just as everyone else has done," observes Clyde Rolston, an assistant professor at Belmont University's music industry program (Nashville), which charges approximately $4,000 per semester. (SAE's worldwide enrollment of 5,000 students pay an average of $12,500 per semester for a growing array of full- and part-time programs that take from nine to 18 months to complete.) "For instance, what sets us apart is that [audio] engineering is one of four tracks students can choose. Our emphasis is on business and entrepreneurship. If you train an engineer, he's ready to go out and work for someone else; we train them to go into business for themselves, and 90 percent of this business [in the U.S.] is self-employed."

The reactions of existing schools to these developments seem to run along certain lines. For instance, private pro audio schools—those solely dependent on tuition for revenues—in major U.S. markets, including those in cities that SAE has targeted thus far, are in a decidedly "no-comment"

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mood. None would speak on the record for this article. On the other hand, audio programs at state-sponsored schools were more amenable. "What all of this is going to do is force people who are seeking an education in this field to first become more educated about what it is they want to accomplish," observes Doug Mitchell, associate professor at MTSU's Recording Industry program in Murfreesboro, Tenn., where 1,200 students pay between $2,600 and $5,000 per semester (depending on their state of residence). "Do they want a short, focused education in certain products or aspect of the business, or do they want a complete overview combined with a traditional liberal arts degree program? Or something in between? All of that's going to be available now, which it wasn't be-

Biograph: Phil Dudderidge, Chairman of Focusrite Ltd.

Phil Dudderidge started his family in 1973, the same year he started his first pro audio ventures. Sipping wine in an Italian restaurant near Marble Arch in west London, on the day after his eldest son graduated from medical college, he ruminates that had things gone a little differently, most of his children—four of whom are musicians—might have turned into his customers. "Not that I'd have wanted it that way," he adds quickly.

While many of his cohorts went on to university after finishing secondary school in Watford (whose football team is owned by Sir Reginald Dwight, otherwise known as Elton John), Dudderidge went on the road. After working live sound with regional bands, he got an endorsement from UK live sound pioneer Charlie Watkins (founder of P.A. manufacturer WEM), which resulted in his mixing both FOH and monitors for Led Zeppelin's 1970 U.S. tour—28 cities in 30 days. After two literal brushes with death (rental truck brake and steering failures in the Rockies), he opted to get off the road and back to the UK. But a month in the U.S. had acquainted him with a new generation of P.A. systems that better matched the raw power that live rock shows were demanding; British guitar amp maker HiWatt wanted a piece of that action and hired Dudderidge to guide its entrance into the sound reinforcement market. His marketing plan was to use HiWatt's nascent (and ultimately inappropriate) technology as the P.A. at the legendary Implosion shows, which he mixed at London's Round House.

HiWatt's achievements never went far beyond string slingers, but Dudderidge's did. "The market was starting to get the sound systems it needed," he says. "Iron Butterfly played the Albert Hall with an American system, and Yes bought it, and then everyone wanted more power and better speakers. But all that was available then were either very expensive, custom-built consoles or cheap little mixers. Nothing in between."

So, Dudderidge and colleague Graham Blyth founded Soundcraft in 1973, pooling their technical and entrepreneurial talents to create the Series 1 console, which brought more sophisticated equalization and dynamics to live sound boards. (The console, introduced at the 1974 NAMM Show in Houston, originally had the more prosaic moniker "16 into 8." "It wasn't actually called the Series 1 until we came out with the Series 2," Dudderidge says.)

Soundcraft shared the market with just a few competitors, such as Allen & Heath, for much of the 1970s, though by the end of the decade competition was proliferating. But another advance in pro audio technology—the introduction of affordable 4-track recorders from Tascam and other manufacturers—diverted Soundcraft into the burgeoning business of mid-sized music recording consoles. The company did so well in this market that Blyth and Dudderidge (the latter somewhat reluctantly, he says) sold out to Harman International for a more-than-tidy sum in 1988. The deal included a non-compete clause, but when Rupert Neve called a month later to discuss Dudderidge coming aboard his foundering start-up, Focusrite, Harman considered the new but teetering Rupert Neve board so esoteric and expensive that it waived the restrictions on Dudderidge in that instance. "It was way overdesigned to ever be cost-effective," observes Dudderidge of the Focusrite console.

Because of Rupert Neve's willingness to customize each order with very specific options, as well as the onset of a brief but intense recession in the early 1990s that hobbled large capital investments, only two of the first console designs ever made it to their destinations: New York's Electric Lady and London's Master Rock studios. Both are still there. Another ten modified consoles were produced after Dudderidge joined the company, and the dozen desks came to comprise an Edsel-like fraternity whose owners remain as avid as the console is unique.

The Focusrite episode could have ended as a footnote in the annals of the industry except that Dudderidge realized that the basic circuit designs were exceptionally robust. What had been envisioned originally as a side business of signal processors and mic-pre's (the ISA Series) was renamed the Red Line, repackaged and repositioned as the company's main product line. That worked, and Focusrite subsequently produced the Blue Line of mastering products, the mid-market-oriented Green Line and, most recently, the Platinum Line, which, at under $1,000, is aimed at the personal studio market.

The moral of this two-decade narrative is, in Dudderidge's words, "If you really love what it is you're doing, then you don't always do it for the right business reasons. Even with the best ideas, there are no sure things. Never underestimate the importance of luck." ■

BY DAN DALEY

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fore on this scale."

Mitchell says that SAE's arrival and the Full Sail/MARS joint venture are not causing his school to reconsider any of its approaches to education. "That's something we've been doing on a regular basis because the industry and technology change so often that it forces us to do that anyway," he explains.

Don Puluse, dean of the Music Technology Division at Berklee College

Odds & Ends

Take-Home Tax Tips

You have 90 days till the end of 1998. That's 90 days to review your financial status in light of changes in the U.S. tax code that apply to this year. A few key ones to remember.

•Self-Employed Health Insurance: Congress increased the deduction for this category, enabling the self-employed (which is most of us) to deduct 45% of individual health insurance premiums without having to meet the itemized medical deduction of bills and charges in excess of 7.5% of adjusted gross income (AGI). Also, you still have time to open an eligible Medical Savings Account (MSA), which shelters money used for non-reimbursed expenses from taxes.

• Car Deductions: The IRS standard mileage rate for business use of a vehicle has been increased to $0.315 cents per mile.

• Business Equipment: Self-employed individuals and small businesses can immediately write off up to $18,500 of the previous year's equipment purchases rather than having to depreciate their costs over a period of years.

• Simple Retirement Plans: Small businesses with up to 100 employees can establish a relatively new simplified type of retirement plan, called the Savings Incentive Match Plan for Employees (SIMPLE). The plan allows employees to earmark up to $6,000 of their salary each year to an IRA or 401(k). Employers are also obligated to make contributions.

• Since many studios operate on a 30- to 90-day basis, this is a good time of year to review revenues and capital expenses and compare them. If it's been a good year so far, you might consider delaying some income past next January 1 to lessen this year's tax liability and/or accelerating capital purchases to offset income. Anything above the $18,500 limit mentioned above has to be depreciated on a pro rata basis, usually over the course of five years. Check with your accountant for specifics. ■

BY DAN DALEY

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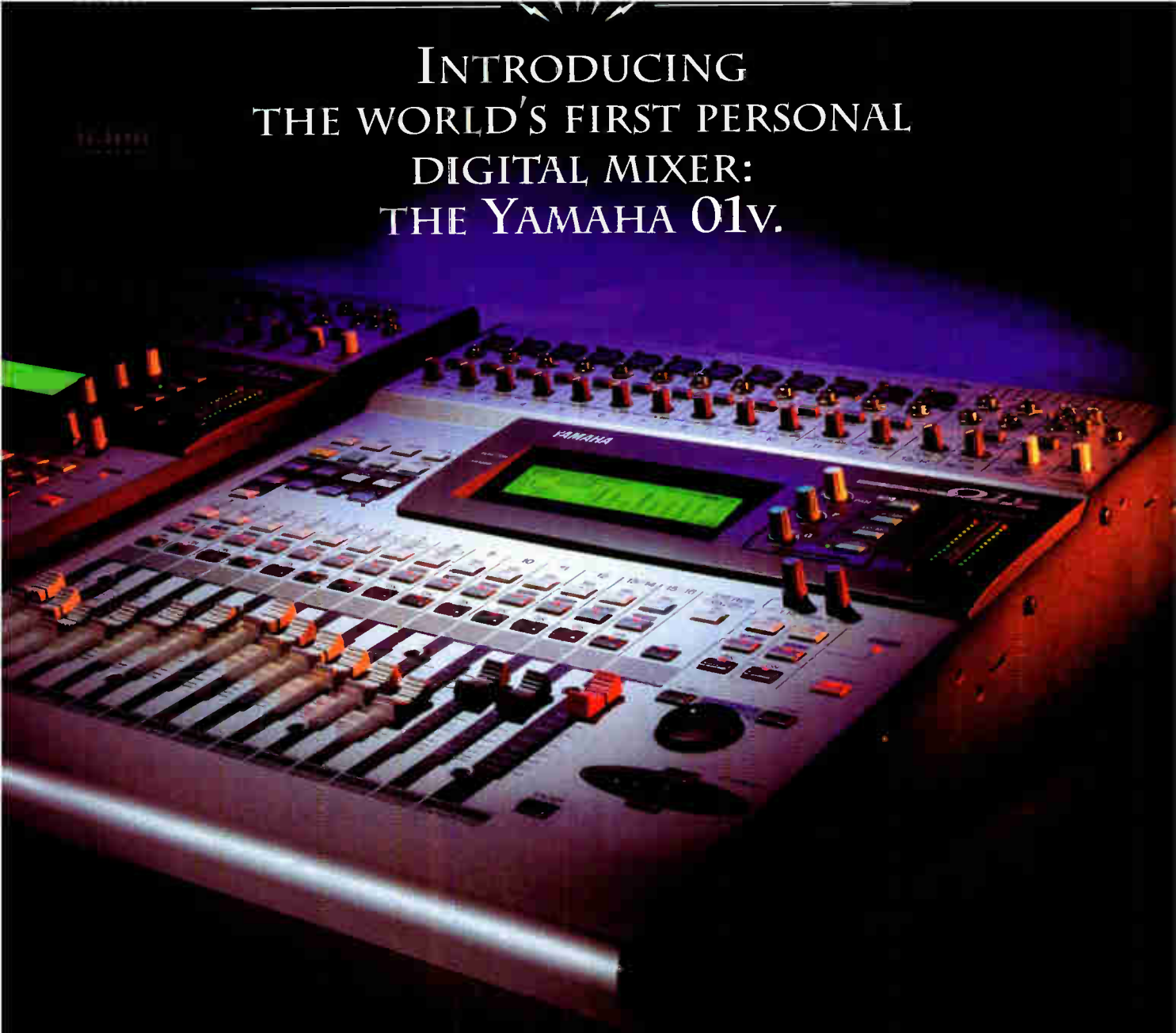

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of Music in Boston, where 400 students pay $7,495 per semester for a four-year degree program, believes that such extended programs result in better learning foundations than shorter, focused courses. Berklee maintains a rep in Los Angeles and, over the years, has toyed with the idea of a second campus, on the West Coast, even to the point of conducting a feasibility study. However, Puluse concludes, "One of the attractions we have is that the Berklee campus experience is unique. [But] we can't ignore what's going on in the [audio education] industry at the moment, and we don't intend to."

Paul D. Lehrman, who has taught in the industry for more than a decade—most recently at the University of Massachusetts Lowell, where 150 students attend a four-year bachelor's degree program—also believes that the broader grounding that university settings offer are a key to future success for prospective engineers. "As someone once said about [university] programs, 'We don't teach hammer; we teach carpentry,'" he says. "Colleges and universities teach a larger range of fundamentals, including physics, math, acoustics, music theory and history, and electronics, as well as the recording stuff. The fact that [private schools] are turning out product doesn't necessarily mean that the product is any good. I taught at a commercial program for two years, and of all the students who entered, maybe 20 percent had a possible career ahead of them. The entrance requirement was a valid check and that they be breathing on their own. What we're seeing happen here is the 'commodification' of education in our profession."

Tom Misner would readily agree with that statement, though not with the sentiment behind it. He unapologetically embraces the McDonald's analogy of "a consistent quality product available on a worldwide basis," with slight but significant accommodations to local tastes. Like former Office Depot founder and MARS president Mark Begelman, Misner sees no implicit problems with a chain approach to education. He is, in fact, somewhat mystified that U.S. schools have rarely gone beyond a single location and have never ventured outside the U.S. "I was convinced years ago that they would move into the European market, so that's where I concentrated, to close that market off to them," he says. "But as it turns out, I never really needed to checkmate them. The U.S. concept seems to be to build a school in one city and keep making it bigger, with the students adapting themselves to the school. Our concept is to go where the students are and adapt to them. Entertainment is a global business now, and I'm brand-building, which is a very American way of doing business."

SAE had thus far held off entering the U.S. market (Misner acknowledges that a site did exist in Los Angeles in the mid-1980s, but he says it was unauthorized and was shut down by SAE attorneys before it could open) mainly to build credibility, refine its curricula and teaching philosophies, and gather what Misner considers a critical strength in an increasingly globalized entertainment industry: the ability to adapt technology and techniques to local and regional requirements, something he maintains that U.S. schools were never compelled to do. This philosophy has, he says, contributed to a growth rate in staff and physical space of 100% in 1997 and an expected 40% more this year, plus ancillary revenues from textbooks (several of which Misner has written himself) and marketing items such as T-shirts and caps, all of which are prominently displayed in cases in the reception areas of the schools.

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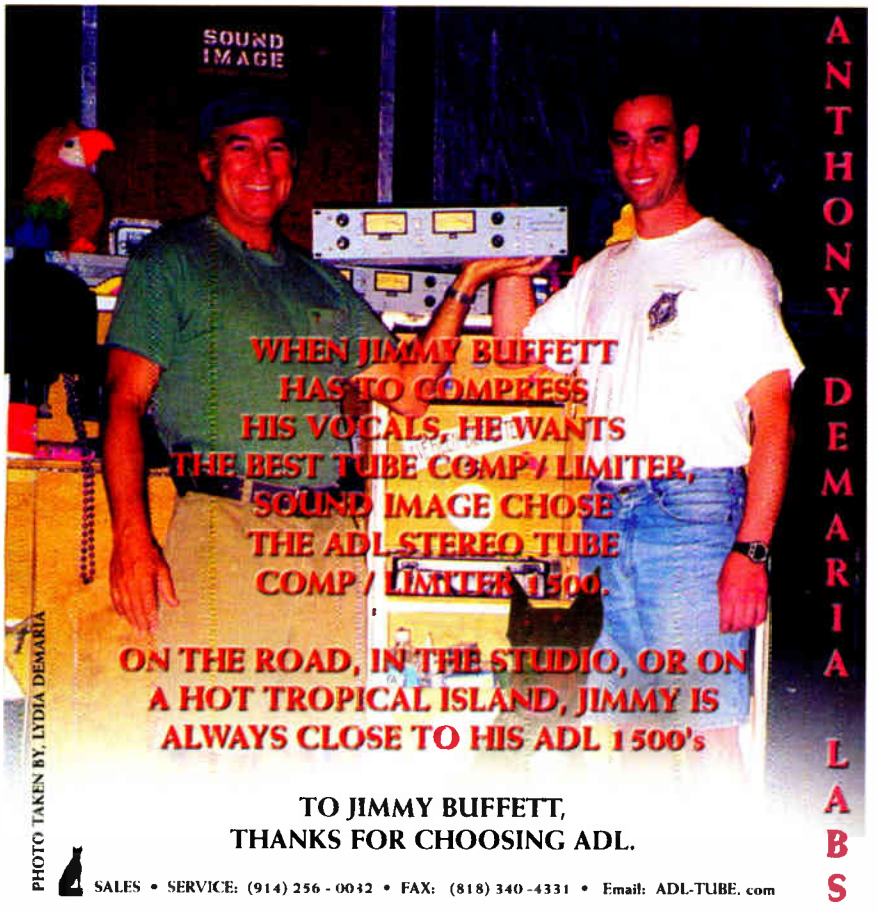

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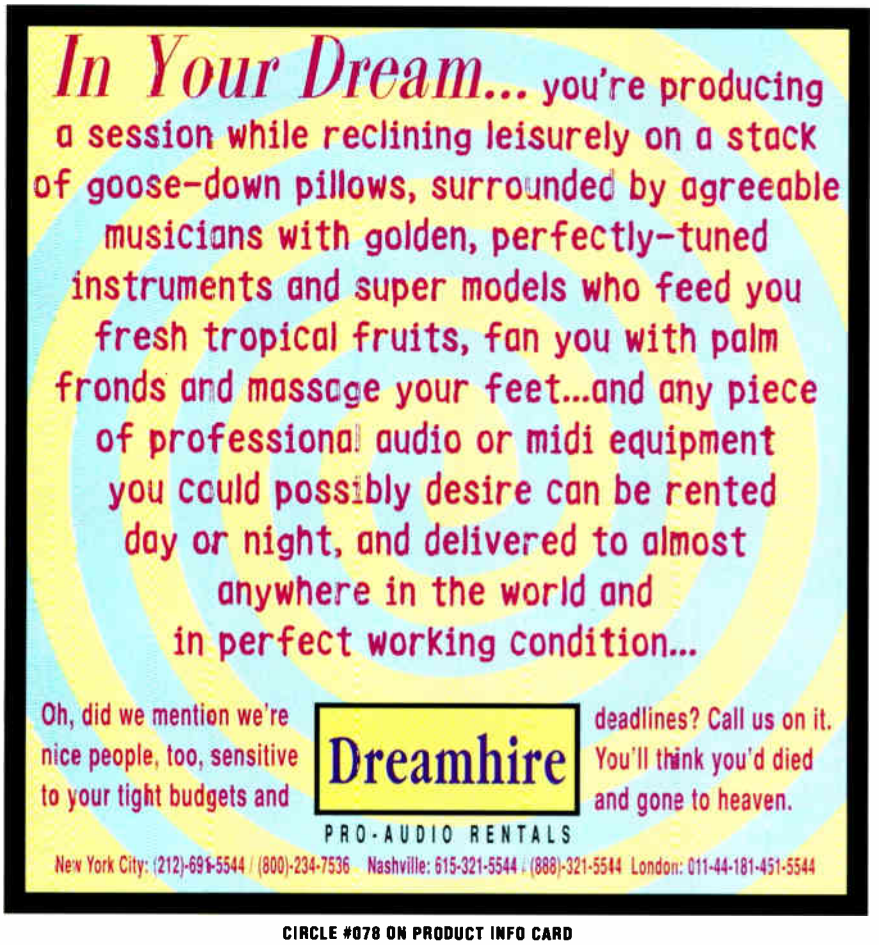

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"Every action we take is planned several moves ahead, like in chess," he says.

SAE's global position provides what Misner calls tremendous credibility in a world where content creation crosses national boundaries. All of his campuses have accreditation from national collegiate bodies, Misner says, as well as a policy that stipulates learning in English, the lingua franca of the global entertainment industry. Accreditation from vocational school oversight boards in New York and Nashville is pending. (New York State changed its regulations regarding certification at the beginning of the year, which has delayed what would have been the first SAE site in the U.S. till 1999. In Nashville, SAE has made arrangements to take over the building now occupied by BMG labels RCA and Arista when they move to new offices later in 1998.)

However, SAE also has created accreditation alliances with institutions such as the UK's Middlesex University, which accepts credits earned by SAE graduates toward SAE's B.A. program for continuing education into its own technical programs. In addition, Ramapo College in New Jersey will accredit up to 66 of the necessary 128 courses for a full degree to SAE enrollees. Students, once enrolled in any SAE facility, can also attend any other campus anywhere in the world, allowing the equivalent of overseas study.

Perhaps the biggest coup SAE has scored in recent months—and one that puts it in the direct line of fire with some other U.S. schools—is an arrangement with Disney Entertainment's Arts Academy in Orlando (Full Sail's back yard) to be one of six approved training centers for Disney's world entertainment operations and the sole approved vendor for technical training. Berklee College of Music has been named as the music training program supplier. SAE will incorporate all technology platforms used by Disney worldwide at theme parks and special events. "If Disney is doing a stage show in China and needs 15 technical people, we'll be ready with people trained on exactly that equipment from our school in Singapore, all of whom can work in Chinese and English," says Misner.

MARS AND EX'PRESSION

Announced at the NAMM Show the week of July 6, superstore retail chain MARS, founded by Office Depot whiz Mark Begelman (himself a rock guitarist), is joint venturing with Full Sail, the largest single private pro audio and

World Radio History

media school in the U.S. Both companies are based in Florida, and MARS's planned 22 national locations will offer Full Sail courses as part of their service package, along with rehearsal space, music lessons and equipment repair. The first location to offer classes taught by Full Sail staffers (a fee structure had not yet been established at press time; the 1,500 or so attendees at Full Sail's Orlando campus pay approximately $23,000 annually for an accredited A.S. degree) is the recently opened MARS Nashville store, where a John Storyk-designed studio will also serve as a classroom. MARS has also enlisted engineer Eddie Kramer to serve on its advisory board. According to MARS's Nashville Learning Center director, Lee Garner, initial courses will be geared to basic recording techniques and simple technology. "This is a songwriting market down here, and you've got people who are intimidated by 4-track decks," he says. "So we're gearing the educational program to the market. We're not pushing anyone off the deep end. This is also going to promote people going on to Full Sail for more extensive degree courses."

Gary Platt left Full Sail at the end of 1996 in what he characterizes as an acrimonious parting—which includes a lawsuit—after a decade with the school as its senior vice president and director of education. Platt says he was instrumental in creating the educational model there, one that he also says his new venture, Ex'pression Center for New Media, will improve upon. "The big difference is more hands-on time on equipment and a limited class size," he explains, noting that the school will have a maximum enrollment of slightly over 700 and a maximum class size of 30. Students will pay $25,700 for the 14-month audio engineering course and $27,700 for a "digital visual media" course. Platt says his is the only one of the new facilities opening in California, and he cites the state's recently enacted Maxine Waters Act, which mandates that vocational and training facilities prove a minimum 85% paid placement of graduates in their fields. "These are the toughest requirements of any state," he says. "And there's only one way to comply with that law: smaller classes with more focused training to produce a better graduate."

Ex'pression, scheduled to open January 4, 1999, and backed by $15 million from Dutch investor Eckart Wintzen, also stresses both a total-immersion approach to learning—not un-

CIRCLE #079 ON PRODUCT INFO CARD

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like that of language school Berlitz—and its high-technology platforms, including a new Studer D950 digital console and Storyk's daisy-petal studio design, which places six independent control rooms around a single recording space. What Platt doesn't see, though, is any particular synchronicity between all of the current activity in the educational market. "I simply saw a need for a model like this one on the West Coast," he says.

Expect an interesting time the next few years as one of the last remnants of professional audio's cottage-industry roots is transformed by well-capitalized giants into a commodity. Just as recording studios could not resist the juggernaut of personal recording technology, it's reasonable to expect that the educational market will be similarly affected. And just as smaller studios had to learn new tricks, discover unserved markets and put service on a par with technology, the educational establishment will likely have to follow suit. The arrival of large overseas companies and joint ventures does not necessarily sound a death knell for small schools—more like an alarm clock.

And these broad-based changes signal a heads-up for prospective students, too. As they shop around an emporium filled with ever more dazzling choices, they would do well to first learn a little Latin: caveat emptor. ■

—FROM PAGE 110, CASH LOUDER THAN CREDIT

to move on to the next glamorous item. But the balancing act of leases and loans is generating a palpable stress out on the street. I'm running into studio owners who dread the AES show because there'll be yet another six-figure must-have on the floor that they're going to have to buy to stay competitive.

But I'm also running into a lot more people—many more each year—who have made the decision to put off those purchases until they can pay for most or all of them in cash. They are tired of leveraging themselves to the brink of a career. They cold-turkey the addiction to tech and instead concentrate on emphasizing other aspects of business, like advertising or client service. They save up, just like we did as kids, for the next toy they want to buy. And they sleep a lot better at night, too. Just like kids.

Credit has its place in business, and no business should be without emergency reserves in the form of pre-approved lines of credit. But thought should also be given to building up cash reserves, for both contingencies and major capital purchases. Even though we know in our hearts that studios should not be defined merely by their equipment, still, within our own little culture, we unthinkingly denote studios as "a Neve room" or "an SSL room." It's second nature to us. But let the phrase "paid-off room" roll around on your tongue for a while. Think about it. I'd rather get a letter from you than hear you talking to Dave Ramsey. ■

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Down by the Bitstream

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—FROM PAGE 110, THEFT-PROOFING

$40,000 and $60,000. (See Mix, February 1998.) In each case, the m.o. appeared to be similar—a studio would get an inquiry about the facility and a visit was arranged. The studio owner or manager would, naturally, show off all of the studio's wares, including its microphone collection. A second visit was then arranged in which two or three people came in. While the studio manager was in some way distracted by one of the prospective "clients," another grabbed valuable microphones, the type of equipment that can most easily be snatched, hidden and spirited out under a coat or in a bag. One studio owner recalls how new "clients" showed up to see the studio and told him they would return with a deposit. When they said they forgot their cash, he directed them to a nearby ATM and went into his office to write a receipt. "I was waiting and waiting and thinking to myself it can't take anyone this long to get

The Key to a Heart Might Cost a Little More

BY DAN DALEY

A call came in from a studio owner in Chicago. He had purchased a fairly pricey piece of gear and had been trying to access all of its features when he found one that wouldn't budge. He called the authorized dealer from whom he had made the purchase, who was just as mystified. The dealer, in turn, contacted the manufacturer. When he called the studio owner back with the resolution, it didn't make either of them happy: Accessing this particular bit of software—features that were resident in the equipment's programming—would cost hundreds more, in essence an access fee in addition to the cost of the original system. "It was like buying a car and finding out you had to purchase another key to get into the trunk," he says.

The problem in this instance was not sneaky fine print. It was simply a communications glitch, one that is happening more and more frequently between manufacturer and dealer, dealer and sales staff, sales staff and customer as the industry gets bigger. As the professional audio industry becomes increasingly linked to the developments of the computer industry, this business will begin seeing a lot of product manufacturing strategies common in the computer industry when it comes to software-based products.

"Intellectual property simply isn't free, but a lot of people have gotten used to the idea that it is," says Ed Simeone, managing director of TC Electronic, whose TC M5000 was the center of this particular mini-maelstrom, one he says is rare because of TC's dealer education efforts. In this instance, the software in question was the MD2 multiband digital mastering dynamics package. While the software is resident on the M5000's processor, accessing it requires a license of $818 above the unit's basic cost for the first of up to four "engines" that each M5000 can be configured to hold; additional licenses to access the MD2 software cost half that amount each. The fact that the MD2 is optional is plainly spelled out in the M5000's marketing brochure, and license fees are also readily available to both customers and dealers. At the same time, adds Simeone, TC Electronic has made all of its other software upgrades free via its Internet site (www.tc-electronic.com) and has "since day one," he emphasizes.

IN THE AGE OF CONTENT, SOFTWARE ISN'T ALWAYS FREE

A number of factors determine which software and upgrades companies will make available free and which they will charge for.

In this case, according to Simeone, TC Electronic had itself bought a license for the concept of the MD2 from a German software developer and bore the cost to write the interface algorithm. "We have 37 research and development engineers on staff, and it took six months to write the code on this," he says. "On one hand, you want to provide as much functionality as you can to users at the best price possible. But on the other hand, you also have to understand that software costs money, even if it's just the concept you're dealing with. We're living in a time when things like shareware and free basic system upgrades are so common and people have gotten used to the idea that software is always free. It's something companies have to be careful about in deciding which software to put into a system and how to provide access to it."

It's a perceptual problem for both customers and manufacturers. Historically, manufacturing decisions have been made not to load software other than basic programs, allowing modifications via plug-in cards or other platforms, notes Bob Reardon, director of product management for desktop systems at Lexicon. "In some instances, it definitely makes economic sense to load algorithms for future use into a product, then sell the software off the Internet instead of having the expense of a card," he says. "But it creates a perceptual problem for the end user. They could easily feel as though they're paying for something they're not getting, or paying extra for it. And as software becomes more of the basis of this business, companies can become especially vulnerable to this problem."

We tend to live in an either-or world—you're either renting/leasing a product or buying it outright, whether it's a signal processor, a video or a car. But the notion of a hybrid concept will become more common in years to come. Divx was unveiled this summer, allowing consumers to buy DVD discs, but most viewings will be on a pay-per-view basis monitored via a modem in a specially configured DVD player. End-users purchase the platform but not the content. (And don't think that record labels and song publishers aren't salivating over the prospect of applying that concept to music CDs.) So read product brochures carefully before buying. With the amount of technology on the shelf today, it's going to be less and less reasonable to expect every sales person to know every nuance of a box or a system, especially at the lower price points. There are enough surprises in this business already. ■

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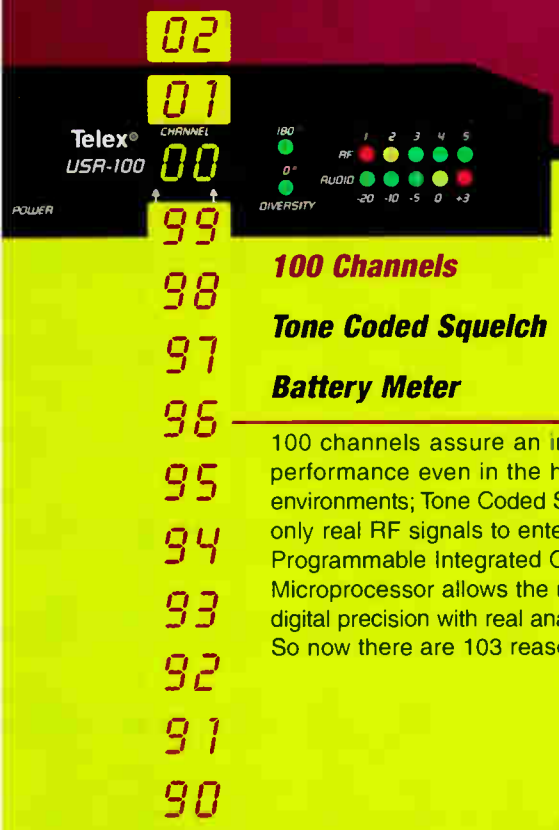

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cash from a machine," he recalls. "I walked through the studio, and that's when I noticed that some mics"—an AKG 414 TL-2, a Sennheiser 421 and an EV RE20—"that were set up on stands were missing." And never seen again.

There are no foolproof ways to protect a facility. Police will tell you that a determined thief will get lucky sooner or later. But they'll also tell you that many burglaries are crimes of opportunity and that thieves, like water, will look for the paths of least resistance in choosing victims. Any preventive steps that a facility takes render it that much less vulnerable.

WALK ON THE WILD SIDE

The first step is a walk-through of the studio and its grounds in search of weak points. Security specialists suggest two perspectives: from the inside out and from the outside in. Walk the interior perimeter of the facility, checking window and door locks and any possible entrance points. (You'd be surprised by what could be an entrance: This writer remembers his Manhattan facility had absorptive panels and diffusors covering the front windows of a Manhattan loft—windows that were often forgotten.) Older buildings may have transoms over entry doors that get overlooked, as well as fire escapes. Large-paned glass windows are easily removed with cutters and suction cups and are more vulnerable than multiple-paned windows with checkerboard frames. The larger the points of entry, the larger the pieces of gear that can be removed.

Next, check the facility from the outside, looking at the same points of entry. And check the facility from a perp's perspective: Does shrubbery afford cover to a thief or mugger? Are common entryways well-lit? Does the intercom work properly? Is there a way to see who's at the door before you open it?

If there are weak spots, plug 'em. And strongly consider an alarm system. It's worth the money and can result in lower insurance premiums (see below). Longer-range, more comprehensive approaches to security include:

- Staff Awareness and Training. Regard studio security as one more everyday part of staff operations, just like session setups and keeping the coffee fresh. Small signs around the facility reading "Security Is Everyone's Job" seem trite but really do help keep awareness levels up. There should be set guidelines established on showing studio rooms and equipment closets to strangers; for instance, no one should do

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so alone, and using equipment lists to convey the information necessary without showing the exact location of microphones and other gear is recommended. Also, count your mics and other small components after all sessions—even on dates for regular clients—so that it becomes a routine part of operations. All too often thefts are not noticed till several days later, making recovery (and insurance claims) harder.

• The Public Interface. Recording studios are public places, and balancing the need to display the facility and still maintain security is difficult. But it's not unreasonable to ask for references as part of routine credit checks and for home and work phone numbers from clients. It makes sense to minimize the number of people who pass through the studio for other reasons, so create a list of approved vendors who cater to the studio and limit the studio's collection of takeout menus to restaurants that will call before the delivery person arrives, possibly using a code word. Do the same with rental companies, piano tuners and itinerant techs. Inform clients—in writing, preferably—that any visitors or deliveries they expect have to be cleared with the studio first.

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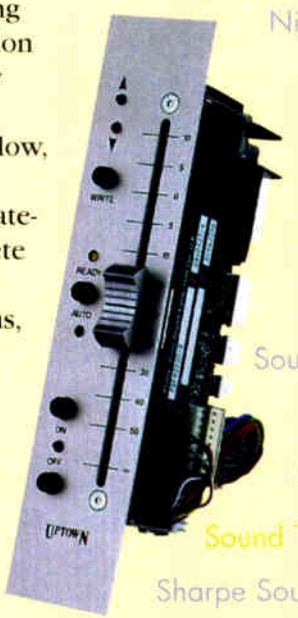

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• Inventory Records and Equipment Labeling. Keep a list of every piece of equipment in the studio. A computer is invaluable for this, and there are several off-the-shelf database software programs that can make this job much easier. Lists should contain the gear's make and model, serial numbers, where and when purchased, and price. Keep the lists updated as inventory changes. Mark every piece with some sort of indelible identifier, such as with an engraving tool, and mark it both inside and out. Take advantage of other technological help. For instance, Tascam's DA-88 allows you to insert your name into the system memory; that's how a major L.A. rental company got its DA-88s back after they were stolen.

• Communication. If your studio is hit, make sure that other studios in your community know about it. Keep fax numbers and e-mail addresses of other local studios on hand and notify them immediately. If there is a strong professional organization in your city, such as SPARS or a regional association of studios, you should not only notify them of any crimes but also try to get them involved in raising awareness and implementing preventive measures.

• Know Thy Neighbor. All of the above also apply to personal, private and project studios. If located in a multiple-dwelling building, know your neighbors. This isn't a bad idea for a number of reasons, including heading off noise problems before they start. But in cities like New York and Los Angeles, apartments change hands often, so be aware of who's next door, above and below. Also, downplay the presence of a studio on your residential premises. It might seem more business-like to hang a sign out, but that calls a lot of needless attention to your activities.

INSURANCE

One of the least understood aspects of studio ownership is insurance. There are many components to a good business insurance policy, including liability coverage, but for this article, the focus is how best to protect a studio against a loss if a theft should occur. According to Joe Montarello, a principal in Capital Region Insurance Co. in Albany, N.Y., which has specialized in insuring recording studios for nearly two years, many if not most studios are significantly underinsured, particularly in terms of replacement value of equipment. "I hate to say it, but many studios I encounter are insured like a hardware store," says

—CONTINUED ON PAGE 130

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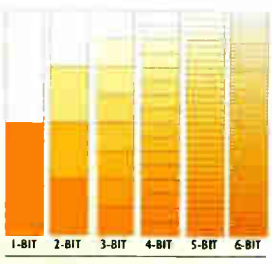

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The Rock Ritzes

Hotels That Know What You Need

BY DAN DALEY

As the recording industry becomes more global and mobile, engineers and producers often find themselves on the road as much as musicians. But nothing interrupts a vibe worse than a cinderblock hotel/motel room overlooking a weed-strewn lot near the interstate. To avoid this problem, choose your location as carefully as you pick your outboard gear.

Hotels that cater to the music industry preceded theme clubs like The Hard Rock Cafe and House of Blues. And fortunately, the tourist class still hasn't caught on to most of them. There were a few back in the 1970s and '80s—when the Hyatt House was routinely referred to as the Riot House (soaring 40-story atriums perfect for science experiments)—that learned to handle the obstreperous tumult of rock 'n' roll.

But contemporary rock hostels have changed with the times, and very little of their eclectic decor is bolted to the floor anymore.

Here are a few that have learned what those in this business want in a hotel.

Characteristics: tendency toward medium-cool decor, center-of-town location near studios, access to all-night food and drink, minibars and knowledgeable concierges.

In Los Angeles, Le Montrose (800/776-0666) is close to the Disneyfied Sunset Strip. Most rooms are suites, many with gas fireplaces and balconies (though no great views). A favorite of urban and rap artists, as well as rockers, it's also a refuge for recovering rhinoplasty patients. Very discreet. No bar.

The Sofitel Ma Maison (800/221-4542, www.hotelweb.com) on La Cienega across from the Beverly Center Mall offers small but beautifully appointed rooms. Rear-facing upper floors have the best view of the Hollywood Hills. Great bar. Great mall. Has special rates for certain record labels.

The Mondrian (800/525-8029) in Los Angeles is one of former Studio 54 impresario Ian Schrager's properties—along with the Paramount (800/225-7474) in New York and The Delano (800/555-5001) in Miami's South Beach—which tells you most of what you need to know right there. The Mondrian is *très cool* to the point of ice. The Sky Bar is the big attraction for profiling. Get there before 6 p.m. and don't leave: If you're not staying at the hotel, snarling Armani guard dogs make sure entry is almost impossible after that unless you're famous, in which case they lick your hand.

New York's Paramount is a lean, mid-budget hip hotel, black-on-black, close to Times Square and major label offices and studios. But the rooms are small. More upscale and still Midtown is the Rihga Royale (212/307-5000), an all-suite five-star property. The SoHo Grand is up there in class, too, but it's downtown, which has better shopping.

Miami's South Beach is hotel heaven, assuming you like pastels and noise. The Marlin (800/688-7678) is Island Records' founder Chris Blackwell's place, and it also houses South Beach Studios. The aforementioned The Delano also works. The Clevelander is MTV central—avoid.

In Nashville, most opt for either the Loews Vanderbilt Plaza (800/235-6397, www.loews.com) or the Holiday Inn (615/327-4707), both on West End Avenue. Both have seen plenty of music business-types and have learned to anticipate their particular needs to some degree, though expect to dodge parents with cameras at homecomings. A better bet is Spence Manor (615/259-4400, spencemanor@juno.com), which back in the '70s was the rock 'n' roll hotel of the town, along with Close Quarters. The latter is now a trendy restaurant, but the Spence, which went co-op in the '80s, has about 40 units that songwriter-turned-concierge Bobby John Henry uses as hotel rooms. All suites, right on Music Row, keypad entry, themed rooms (ask for the Elvis Suite).

Rates vary and most have specials, as well as inside deals with labels and travel agents who specialize in the industry. Check with the label's travel department or ask around for a plugged-in travel agent. E-mail me (danwriter@aol.com) with your favorites. ■

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[Project studios] are the ones most often not insured at all, and the ones that drew me into this market in the first place. —Joe Montarello

—FROM PAGE 126, THEFT PROOFING

Montarello, a musician who changed careers after he saw the number of project studios in his area increase. He has since spoken at SPARS meetings in Manhattan, raising awareness of the issue as he pursues new business. "Recording studios are specialized businesses, and they need specialized insurance policies," he says.

Montarello has put together a package called the Recording Studio Insurance Program, which he says addresses specific needs for all studios—such as replacement cost for equipment that differentiates between gear that depreciates and gear that appreciates over time. His suggestions are to tally the inventory value of a studio as accurately as possible, at the same time estimating what replacing that equipment might cost a year or so later, and review it annually. "Most [insurance] packages have a co-insurance component, which means the insured might only get 80 or 90 percent of replacement value," he cautions. In addition, those whose business space is leased or rented should take stock of any leaseholder improvements they have made to the interior of the building, for replacement coverage of what the insurance industry refers to as "improvements and betterments." "If you think your landlord's coverage on the building covers improvements you've made to the interior, you're working off a false premise," Montarello says.

Project studio owners often rely on their homeowner's or renter's insurance for coverage of their recording equipment—another myth, observes Montarello. "They are the ones most often not insured at all, and the ones that drew me into this market in the first place," he says. If the equipment in a personal studio generates a commercial, revenue-producing end product, an insurance carrier might regard it as commercial equipment and disallow a claim on a renter's or homeowner's policy. (Addenda to such personal policies—called "floaters"—can be added to cover musical instruments. But insurance companies generally make a distinction between instruments and professional recording equipment.)

One related type of insurance covers business interruption, and it's a useful coverage to have if the stolen equipment puts a studio out of action. (I've never heard of a large console being stolen, but small ones get nicked all the time, as have 24-track tape machines and hard disk recorders. When you think about it, there are numerous pieces of gear that can delay or cause extended cancellation of sessions.)

Annual premiums for theft range from $2,000 to $4,000 for studios valued in the $500,000 to $1 million range, depending more upon the value of the equipment than location or other factors—the higher the value, the lower the cost per $1,000 of coverage. Business interruption insurance can add as much as $3,000 to that figure.

With crime rising in many parts of the country, security has never been more of an issue than it has become in recent years. And the pool of studios is much larger now than ever before, with more people aware of the value of equipment. Make these insights part of your regular operations, and hang on to that equipment a little bit longer. ■

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StudioPro98

StudioPro98, *Mix* magazine's first foray into the world of professional conferences, rolled into New York City on Thursday, June 25. For two days, more than 250 attendees shared the wit and wisdom of nearly 80 panelists and moderators, including some of the foremost figures in the world of pro audio.

Billed as a conference on "The Technology and Business of Audio Production," StudioPro98 dealt amply with both aspects of the industry. The eight seminars (four each day) covered topics ranging from "Making the All-Digital Transition" and "Modular Digital Multitracks" to "The Creative Interface: Project Studios and Commercial Facilities" and "Sound for Picture: Specialization or Diversification?" The panels, moderated mainly by *Mix* editors and contributors, included some of the audio industry's best-known and brightest talents, and they gave attendees plenty to chew on.

Among the many highlights of StudioPro98 were two forums on "The Art and Business of Producing," sponsored by the Music Producers Guild of the Americas and moderated by *Mix* founder David Schwartz. With recording legends like George Massenburg, Ed Cherney, Nile Rodgers, Frank Filipetti and Elliott Scheiner on hand to share their experiences, the forums provided a golden opportunity for producers and engineers to gain valuable insight into their craft—as well as explore important issues such as contracts, royalties and the producer/artist relationship.

StudioPro98 was sponsored by Alesis, Audio-Technica, Lexicon, Mackie Designs and Quantegy, all of whom had table displays and used the opportunity to have one-on-one discussions with customers. Trade organizations, including AES, SPARS and the National Academy of Recording Arts & Sciences, were also present and helped to make the event a success through their outreach to members.

Plans for StudioPro99 are already on the drawing board for June of next year, at a location to be determined. ■

PHOTOS: GEORGE KANATOUS

Grammy-winning engineer Frank Filipetti (L) catches up with veteran producer Jimmy Douglass. Both participated in the "Music Producers" forum.

A diverse group discussed the perils of "That Dangerous Upgrade Path." (L-R) Bob Reardon of Lexicon, moderator and Mix columnist Paul Lehrman, Dan Caccavo of Sync Sound, Zoe Thrall of Avatar Recording, Blue Wilding of Dale Pro Audio, Laura Tyson of Roland Corp., Tim Leitner of McHale Barone and Robert Miller of Digidesign. Conference director Hillel Resner is at right.

The first day's forum on "The Art and Business of Producing" featured (L-R) MPGA president Ed Cherney, George Massenburg, moderator David Schwartz, Nile Rodgers, Tommy LiPuma and Barry Beckett.

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Ken Hahn, co-owner of New York's Sync Sound, moderated "Making the All-Digital Transition."

Program coordinator Mel Lambert (L) introduces the panel for "Small Format Digital Consoles," including (L-R) Mackie's Bob Haskitt, Tascam's Roger Maycock, Yamaha's Peter Chaikin, moderator George Petersen of Mix, Panasonic's Fred Jones and Spirit by Soundcraft's John Oakley.

"Sound for Picture: Specialization or Diversification?" brought together seven heavy hitters from the world of audio post-production. Pictured with Mix publisher Jeff Turner (L) are (L-R) Steve Davis of Atlanta's Crawford Audio Services, moderator Dean Winkler of New York Media Group, Peter Fish of National Sound, Bob Pomann of Pomann Sound, Ralph Kelsey of Broadway Sound, John Keal of Soundtrack, and Howard Schwartz of Howard Schwartz Recording.

The panelists for "New Technologies—New Oppartunities". (L-R) David Anthony of Zuma Digital, Alan Foust of The Codeworks, Bob Ludwig of Gateway Mastering, Bill Allen of BMG Entertainment, moderator and Mix media & mastering editor Phil De Lancie, Mark Waldrep of AIX Entertainment.

(L-R) John King of New York's Chung King Studios and SSL's Phil Wagner take a break with studio designer Russ Berger.

One of the most popular seminars at StudioPro98 was "Modular Digital Multitracks: the Revolution Continues." Panelists (L-R) included Manny Marks of 626 Audio Services, Kooster McAllister of Record Plant Remote, moderator George Petersen of Mix, Roger Maycock of Tascam, Jimmy Church of Alesis and Steve Smith of Quantegy. On far right are Tascam's Roscoe Anthony and Mix publisher Jeff Turner. (Not pictured: panelist Michael Ryan of Emtec/BASF.)

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"The Creative Interface: Project Studios and Commercial Facilities" featured representatives of both worlds: (L-R) Bill Philbrick of PM Productions, Lou Gonzalez of Quad Recording, Dave Amlen of Sound on Sound, moderator and Mix East Coast editor Dan Daley, producer/engineer Patrick Dillett, David Beal of Noise Production and producer/engineer Jay Healy.

The special forum on "Large-Format Digital Consoles" presented attendees with the specifics on the new breed of digital boards. (L-R) Amek's John Oakley, Otari's Jeff Kracke, moderator Ken Hahn of Sync Sound, Soundtracs' David Gibbons, AMS-Neve's Doug Ford, Sony's Geoff Calver and Studer's Michael Tapes.

Industry associations were well-represented at StudioPro. In the center is Dave Teig of SPARS. At right are Daryl Freidman and Jan Marcus of the Recording Academy. A representative from the New York Section of the AES also attended.

The second day's panel on "The Art and Business of Producing" included (L-R) Josh Leo, Elliott Scheiner, moderator David Schwartz, Ethel Gabriel, Frank Filipetti, Jimmy Douglass and Tony Visconti.

Conference director Hillel Resner (L) with the panelists of the seminar on "File Format Interchange: A Progress Report" (L-R): Brooks Harris of EDL Max, Ron Franklin of Timeline, Mark Yonge of Solid State Logic, Scott Dailey of Digidesign, Jonathan Parath of Sound One and moderator Mel Lambert.

The seminar on "Studio Remodeling and Design" featured some of the leading lights in the field (L-R): Russ Berger of Russ Berger Design, Peter D'Antonia of RPG Diffusor Systems, John Storyk of Walters/Storyk Design Group, moderator and acoustic consultant Bob Hodas, Randy Ezratty of Effanel Music and John King of Chung King Studios.

(L-R) David Smith of Sony Music Studios, Neil Karsh of East Side Audio and Simon Andrews of Right Track Recording were three of the New York studio veterans who addressed "Making the All-Digital Transition." Other panelists included Mike Levesque of Nutmeg Recording, Jonathan Parath of Sound One and Hans Ten Broeke of Invisible Dog.

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IRELAND'S BEST COMES TO THE U.S.

By Barbara Schultz
Photos by Steve Jennings

The list of necessaries at this summer's Guinness Fleadh (pronounced Flah, means Festival) reads like the lyrics of "The Irish Rover": We had 42 bands, 104 loudspeakers, 61 monitors, 7 million barrels of porter...It was 11 hours of nonstop, mostly Irish music and all Irish beer for 22,000 fans when the Fleadh made the last of its three U.S. appearances at San Jose, Calif.'s Spartan Stadium Fields.

The Guinness Fleadh has been an annual event in Ireland and the UK for years. Last year the promoters, Guinness and Mean Fiddler Productions, brought the entire show over to New York. This year's Fleadh was expanded to include dates in Chicago and the San Francisco Bay Area. The festival included four stages, with performances taking place on all of them simultaneously, throughout the day. Set changes took only 15 minutes, and the performance times for the different stages were slightly staggered—there was always music on somewhere. Schedules were posted around the festival grounds so that fans would know when and where to catch their favorite acts.

The P.A. for this awesome undertaking was handled by RSA for the New York date, DB Sound in Chicago, and by Delicate Productions at the date *Mix* attended in San Jose. The Delicate

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Billy Bragg, who proclaimed the festival open at noon, was later joined onstage by members of Wilco. Together, they performed music from *Mermaid Avenue*, the album they made setting lost Woody Guthrie lyrics to music. Wilco played their own set as well, later in the day.

Billy Bragg's front of house engineer, Great Showbiz, is also the artist's record producer. They've been working together for 15 years. "In the studio, I think that I can spend as long on one vocal and one guitar as someone can spend on a 15-piece band," he says. "but in a live situation, you're going for big brush strokes: guitar, vocal, drums." On the other two U.S. Fleadhs Bragg performed later in the day, and Showbiz says that one of the hardest things about this festival tour was "tired crews. They work all day, whereas they should have two crews each day, and split it halfway; that would be a much more sensible idea at day-long festivals."

The crowd began swelling, and dancing, during a stirring traditional set by The Chieftains. During their performance, some bass rumble could be heard from John Martyn's band on the neighboring Bay Guardian Stage, but The Chieftains' production, which included Ceili dancers and a choir from Stanford University, was so riveting that no one was distracted.

Dan Cleland, The Chieftains' tour manager, usually mixes monitors rather than front of house, but he filled in for engineer Mark Horton who had gone over to another tour. To help The Chieftains stand up to the louder rock 'n' roll bands on the tour, Cleland uses "a lot of specialty mics that help us get gain—a lot of little clip-ons. We use the AKG 419, 409s, 408s, and we really close-mike to get as much gain out of the system as we can. For example, it's very hard to get a lot of gain out of an Irish harp, because the instrument itself doesn't have a lot of volume to it, so we stick on AKG 419 inside the soundboard. It's not the most natural sound sometimes, but we get the vibe, which is what we need for these outdoor gigs."

crew arrived the day before the festival and spent an entire day installing all the gear. Here's a partial list of their load:

Guinness Fleadh Stage P.A.: 40 each Martin F2 bass and mid-high cabinets; 16 Martin BSX sub-bass cabinets; four F1 mid-high cabinets for infill and outfill; eight racks of seven each Crest 7001 amps and two sub-bass amp racks of four Crest 8001 amps each; two Yamaha PM4000 60-channel consoles, each with two power supplies; "A" and "B" racks of effects/inserts, each including one dbx 120X, two Lexicon PCM 70s, one Yamaha SPX990, one Yamaha SPX900, one Lexicon 480L, one TC Electronic 2290, one Eventide H3000SE, four BSS DPR502 noise gates, two BSS DPR402 compressor/limiters, two BSS DPR404 compressor/limiters.

Fleadh Stage Monitors: two Midas XL3 40-channel consoles; ten Martin LE700 floor monitors and six LE600s, all powered by 12 Crest 6001 amps; sidefill monitors including four Martin F2 bass and four F2 mid-high cabinets, powered by five more Crest amps; two sets of drum monitors comprising two Martin F1 bass and two F1 mid-high cabinets, powered by Crest amps; Martin MX4 crossovers and effects/inserts from Klark-Teknik, Yamaha and dbx.

Bay Guardian Stage P.A.: 12 each Martin F2 bass and mid-high cabinets, six Martin BSX sub-bass cabinets; two racks of seven Crest 7001 amps each and two sub-bass amp racks of two 8001s each, one Yamaha PM3500 48-channel console, a drive rack containing one BSS FCS960 EQ, two BSS Omni-

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The Corrs are mixed by Max Bisgrove, an Englishman whose credits include Iggy and Bowie. He gets a charge out of festival pressure: "I wouldn't want to do festivals all the time," he says, "but every summer you go out, and it's a bit like a sprint as opposed to a long distance run. You've got no chance to hear it beforehand, so it's sort of like a game. How quickly can you get it together? How good can you get it within the parameters you have to work? That's the challenge, more than working on a pristine mix—you get off on the heat of the moment." To help keep things consistent, Bisgrove brings along all the band's DIs and mainly Shure mics.

The attractive young Corrs are brother and sisters. Their set has sort of a split personality—half power pop/half Celtic...so they fit right in.

Local blues legend John Lee Hooker rocked the crowd sitting down. His all-electric set included the hit his San Francisco club, The Boom Boom Room, is named for. Hooker surprised the crew by coming to the date *sans* engineer, so the Delicate techs filled in.

Between songs of his passionate solo set, Richard Thompson could hear strains of Wilco coming from the Fleadh Stage. "Would someone do me a favor," he quipped, "and quick run over to the main stage and tell them it's in G."

drives, one Goldline RTA, one Chaos Audio 3-Station intercom; and audio effects/inserts from Yamaha, Roland, Drawmer, dbx, BSS, Technics and Panasonic.

Bay Guardian Stage Monitors: Ramsa 840 console; Klark-Teknik and Yamaha monitor effects; 12 Martin LE600 floor monitors, powered by two racks containing three Carver PM350PMX amplifier/crossovers and three AB Systems AB1200 amps each; sidefill monitors including two Martin F2 bass and two F1 mid-high cabinets, and two Martin MX4 crossovers; two Crest 7001 and one Crest 8001 amp; drum monitors: one Martin F1 bass and one F1 mid-high cabinet, one MX4 crossover, two Crest 7001 amps.

Stage Three, the Naya Stage's equipment list reads like the Bay Guardian Stage lite. Plus there were hundreds of various specified and spare microphones. It was a daunting task that only went smoothly because of the Delicate crew's preparedness, calm and experience with festival situations (they worked last year's Lollapalooza, among others).

A sunny, 80° day, decent barbecue, and Guinness and Harp by the gallon also helped make the San Jose Fleadh a mighty pleasant occasion. The only real disappointments came for fans who arrived bright and early to learn that Tracy Chapman wouldn't go on until after 10pm, or for those (like me) who couldn't believe X and Sinead O'Connor were on at the same time! ■

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SAY WHAT?

NOW YOU HEAR IT, NOW YOU DON'T

PHOTO: PHOTODISC

Hearing loss afflicts one of every nine people in the United States. One in five American teenagers has already lost some hearing. The alarming increase in hearing loss in today's youth is often blamed on loud live and recorded music and on the widespread use of "personal stereo" headphones. But these hazards, of course, do not contribute to hearing loss nearly as much as being in a band or working for one. Our industry has created a monster that feeds on the quest for more powerful sound. We like to make it go bang, to possess every molecule of air in the venue. So it is up to us to know when enough is too much.

As a general rule, if you need to shout to be heard, the ambient noise level may be loud enough to damage hearing. Sound begins to damage hearing long before it's painful. Loud, intense noises produce a temporary hearing loss; with repeated exposure, the hearing loss becomes permanent. Hearing loss accumulates, so additional unprotected exposure to loud sounds leads to more hearing loss. With excessive exposure to 85 or 90 dB SPL or louder noise levels, the nerves and sensory cells in the inner ear become damaged, causing a hearing loss in the higher tones.

Like a summer sunburn, hearing loss can occur gradually and painlessly, so the extent of the damage is often not fully appreciated until it is too late. Up to half of the hair cells in the higher-frequency region of the cochlea can be killed without detectable loss of hearing. This protective redundancy produces a false sense of security, which leads to further exposure until the hearing mechanism is irreversibly damaged. The first evidence of noise-induced hearing loss usually appears in the mid-high-frequency range, at around 3 to 6 kHz. The ability to hear in this range is important for understanding speech, because most of the information necessary to understand language is contained in the consonants, which are largely composed of high-frequency sounds.

Tinnitus is the name given to the ringing or roaring head-noise that is a common by-product of noise exposure. Tinnitus may come and go, or you may hear a continuous sound. It can vary in pitch from a low roar to a high whine, and you may hear it in one or both ears. When the ringing is constant, it can be annoying and distracting. Nearly 36 million Americans suffer from tinnitus, and more than 7 million of them are afflicted so severe-

—CONTINUED ON PAGE 146

BY MARK FRINK

World Radio History

WIDESPREAD PANIC AND GALACTIC

PHOTOS: MICHAEL WHEELER

Widespread Panic

Galactic

Danny Friedman (L) and Jereb Carter at FOH mix

Formed four years ago in New Orleans as a horn-fueled funk ensemble, Galactic (www.fogworld.com) counts The Meters and James Brown among their influences. The band's critically acclaimed 1996 release, *Coolin' Off*, was produced and engineered by San Francisco-based independent Dan Prothero at SeaSaint Studios in New Orleans, the legendary site of recordings by The Meters and Dr. John, among others. Since then, Galactic has signed to Capricorn Records and recently released their latest record, *Crazyhorse Mongoose*. Galactic rode the last leg of the H.O.R.D.E. tour in the Northwest; *Mix* caught them earlier this past summer as the first of three bands opening for Widespread Panic at Portland's River Queen venue.

P.A. services for Widespread Panic are supplied by Eastern Stage Production (ESP), which was the sound vendor for H.O.R.D.E. outings in 1992, '93 and '96. Veterans of several H.O.R.D.E. tours, ESP's sound crew makes easy work of the four-band lineup. ESP's Crown-powered EAW 850 speakers are supplemented by heavy-duty flying versions of EAW's double-18 subs; they have the same 30-inch-deep footprint and are loaded with higher-power drivers. Separate amps control each row of the 3x3 main array, allowing the system's gain to be tapered from top to bottom. The FOH drive rack is loaded with BSS products. Two FDS-355 Compact OmniDrives are used to process the 850s and subs, and another OmniDrive is used for the half-dozen EAW SM-222 floor monitors used for front fills. Additional gear includes a BSS VariCurve and an FCS-930 graphic. Because the tour was scheduled to wind up with shows at The Gorge and Red Rocks, ESP carried a total of 30 subs and 50 tops in the sound truck.

Galactic are mixed by Jereb Carter, who met the band while working at the Great American Music Hall in San Francisco and the Sheridan Opera House in Telluride. Rather than consign all four bands to the same FOH console, ESP provided a second Gamble EX, which Carter shared with additional support acts Government Mule and G. Love and Special Sauce. Galactic shared the first 14 inputs (drums and bass) with the other two support bands, but Carter had his own separate channels for instruments and vocals.

ACOUSTIC EFFECTS

Though his effects rack includes a TC Electronic M5000 and several other popular units, Carter mixes Galactic dry, with no reverb or delay. "The band has traditional funk-based roots, and I try to mix them as cleanly as possible," he explains. "I prefer to use acoustic effects." For example, on one song drummer Stanton Moore blows air into his floor tom through a hose and then releases it while playing; Carter opens up the low end on that channel to catch the pitch change.

Mics for Moore's five-piece custom kit (he made it himself!) included an AKG D-112 on kick, AKG condensers on hi-hat and overhead, 57s on snare drums and 421s on toms. Carter used Drawmer gates and compressors in combination on the kick and snare and inserted a BSS 901 on Robert Mercurio's bass DI input. Rich Vogel's funky keyboards include a Realistic Moog, a Wurlitzer 460C electric piano and a Korg C-3 organ. Carter miked the Leslie cabinet with a pair of AKG 330 BT mics on the high rotor and a 421 on the low. "They're older mics, but they sound pretty good," he says. Jeff Raines' Twin was miked with a 57. "I'd prefer a 409, but I grew up with Shure mics, so I'm pretty comfortable with them." Carter inserted an Aphex Expressor on the distinctive voice of Government Mule vocalist and ex-Allman Brother Warren Haynes, who sat in for veteran New Orleans singer Theryl deClouet. Galactic's set is definitely a "sit-in" kind of thing, and for The Meters' "Africa" they were joined by Wide-

BY MARK FRINK

—CONTINUED ON PAGE 152

World Radio History

ALL ACCESS

THIRDEYEBLIND

Vocalist/Guitarist Stephan Jenkins uses Ultimate Ears in-ear monitors with the Shure RF system. "Jenkins was at first the only one wearing them, but now the whole band has them," says monitor engineer Mike Adams.

Steve Cohen, backline tech, holding Stephan Jenkins' green McCarty guitar.

Guitar tech Tony DeLeonardo, shown here with an array of Kevin Cadogan's guitars. During the acoustic set Cadogan uses a Washburn D-46 and an Ovation custom Legend guitar.

During an acoustic set, the whole band is center-stage, and a different ear monitor mix places instruments relative to their position onstage. "In the normal ear mix throughout the rest of the show there's a left and right stereo mix happening," explains Adams. "But it's not necessarily relative to where they are onstage; it's fixed, like the hi-hat will stay in the left ear." Adams says that stage volume levels are "pretty quiet." The wedge monitor system is primarily used as a back-up for the ear monitors.

World Radio History

TEXT AND PHOTOS BY STEVE JENNINGS

FOH engineer Joel Lonky at the Midas XL-4, which features automation and 48 channels, including eight stereo inputs. "I have the whole show programmed into the desk," says Lonky. "Each song has a scene number, and everything automatically configures for that song. So even when the band changes songs around from night to night, I can quickly get to it."

Lonky has been mixing for 15 years with bands such as Rage Against the Machine, Cypress Hill and Korn. According to Lonky, Thirdeyeblind chose the Showco Prism rig for its sound quality and ease of setup. "It's one of the quickest flying rigs in the business," he says. "Showco's M. L. Procise is great to work with."

Lonky's FOH rack includes a TC Electronic 2292, a Roland SDE 3000, an Eventide H3000 Harmonizer, a Yamaha REV5 and three SPX 1000s. Effects units are controlled from the XL-4 via MIDI; when the scene changes on the desk all the effects change. Lonky uses a dbx 120 on bass and floor toms, returning the sub-bass effect through a volume pedal. He uses two Summit DCL-200 tube compressors, one on lead vocal, the other on acoustic guitar and bass mic.

In addition to four columns of Showco Prism P.A. per side, system engineer/crew chief Gregory Hancock is using the new Showco gray underfill cabinets and front-fill wedges to fill in the center front two rows in the audience. "They might not get full coverage from the P.A., depending on where it's positioned and how it's flown," he explains. "We travel with eight columns of P.A., plus 12 subs, so one of the daily things we do is determine how much of that we will use depending on the venue size and what will sound best. On this tour we're playing theaters, arenas and outdoor sheds."

Monitor engineer Mike Adams (L) and system engineer/crew chief Gregory Hancock in front of the Ramsa 840 monitor console. Adams has been with Showco for three "harmonious" years. "I'm happy to say they've kept me busy the whole time," he says. "I was an independent mixer for 15 years." The Ramsa is fully loaded—Adams is using all 40 inputs and creating 18 mixes. The rack includes dbx gates and compressors and Lexicon reverbs.

World Radio History

JOHN LEE HOOKER'S BOOM BOOM ROOM

The little red-brick club was packed, Chicago blues guitarist extraordinaire Son Seals and his band were howling, and the room was *electrified*. If it had been ten degrees hotter, or 10% more humid, we might really have been in Chicago, but *Mix* was checking out the second show of Seals' two-night run at John Lee Hooker's San Francisco club, The Boom Boom Room.

The Boom Boom Room opened in the former Jack's Bar a few years ago. It's a small place, right across the street from The Fillmore, with its own great atmosphere: a couple rows of little cocktail tables, a small stage that barely fits a band as large as Son Seals', a few striking black & white photos of revered blues artists and fine blues music nearly every night.

PHOTO: STEVE JENNINGS

Most nights, the sound is mixed by Keith Karloff, a singer/songwriter who fronts a band called Gone Jackals. He releases his band's music on his own indie label, Blue-black Records, and some of his music has been used on soundtracks to video games such as Lucasfilm's "Full Throttle," and on the locally filmed television show *Nash Bridges*. He mixes at the club mainly to supplement an irregular artist's income and because, he says, "We have the highest level of play I've ever seen in a bar, except maybe for some of the jazz clubs. The median age of the performers here is like mid-50s; it's sort of like the last frontier of anyone you can really learn something from. The artists on this circuit are the type of performers who, with a different contract or a different song, could have been a Wilson Pickett or a Lou Rawls; there's that level of playing. I would pay money to hear them, so working here is a natural."

PHOTO: DAVID COGSWELL

Son Seals

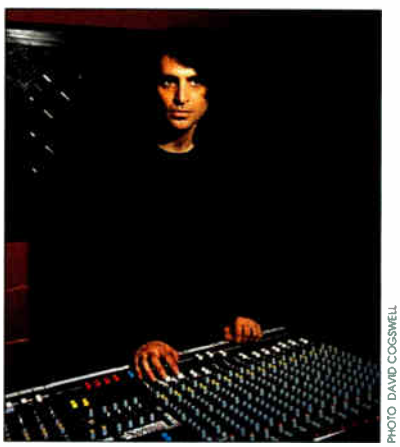


PHOTO: DAVID COGSWELL

Engineer Keith Karloff

Karloff mixes on a 24-input Allen & Heath board; when he started working at The Boom Boom Room six months ago, the mix position was in a back room, but he convinced the club managers to move it out into the club. ("It was like driving a Lamborghini with the windshield painted black," he says.) There's still a Mackie console and a pair of ADATs in back that are sometimes used to record dates. The P.A. consists of a couple of Electro-Voice T-351 mains hung left and right of the stage, and a row of smaller boxes hung along one wall, across from the bar. The sound on the night we were there was darn loud, but still warm and detailed. "Son Seals plays extremely loud," Karloff says, "but we don't want to give our customers punishing volume. So I discussed it with him, and we agreed I would give him what he wanted in the monitors—keep his stage volume down, but blast it back at him to give him what he needed."

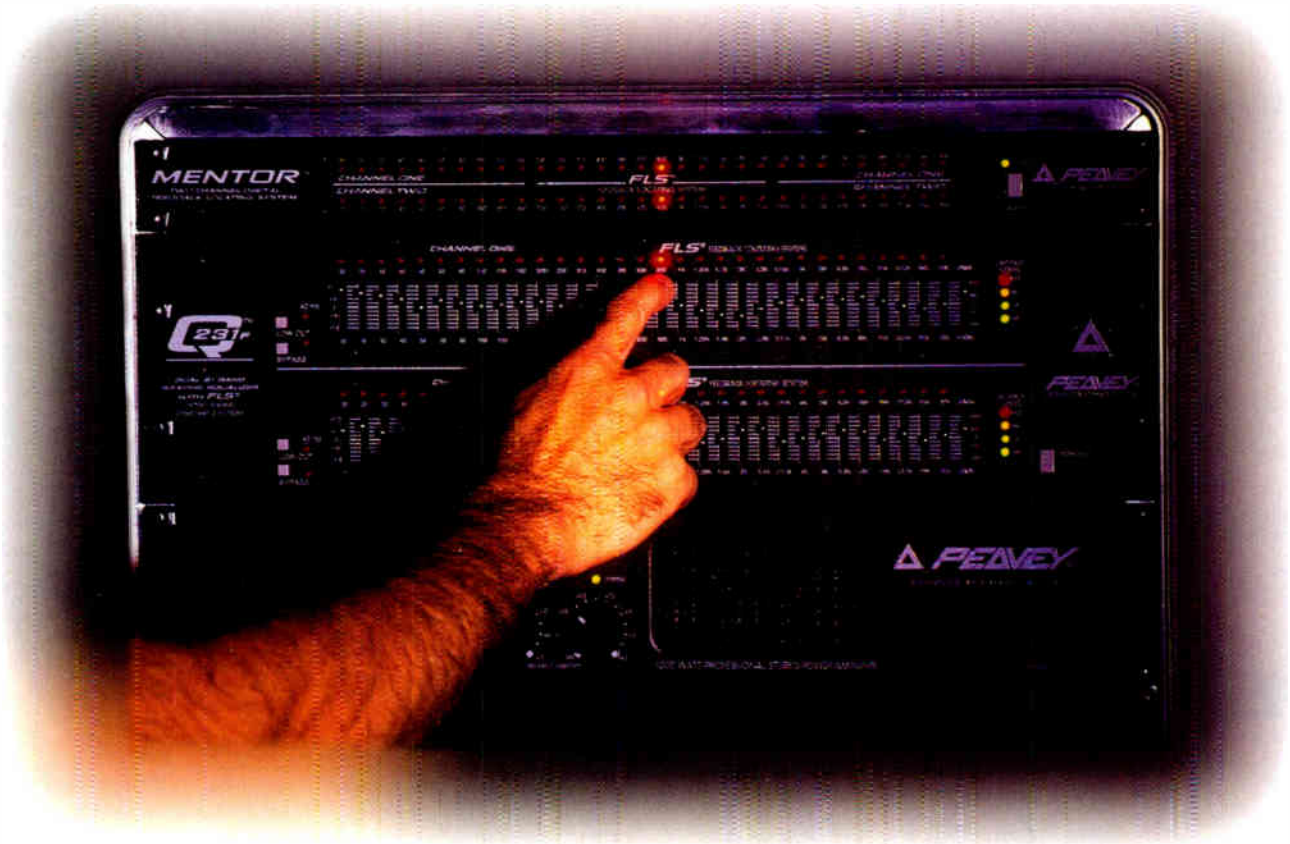
Karloff was manager of another local venue, The Up and Down Club, for a while, where volume was also an issue; both clubs are in improving residential neighborhoods. "What I do is this," he explains. "It's like, on cheap stereos, there's a Loudness button that pumps up certain low frequencies to make something appear fuller. I try to hit those frequencies in nightclubs so it's not super loud but it seems very full."

At The Boom Boom Room, Karloff also uses an Alesis Quadraverb, not so much as an effect, but to create more of a hall sound in a room packed with blues fans. He swears by the Electro-Voice 757 mics he uses for vocals: "They have good feedback rejection, and they sound great. They're

BY BARBARA SCHULTZ

World Radio History

See the light.



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also loud, and for live, the most basic thing is getting vocals over the band."

All of the bands that perform at The Boom Boom Room are approved by John Lee Hooker before they're booked, and Karloff says that the blues club circuit is so overcrowded with talent that every artist they get is top-level. "When you come out here," he says, "you might not have heard these bands before, but there's almost no chance of being let down. There are so many great performers out there who have had marginal successes or weren't big crossover successes, because the music industry has been so segregated. It's like the Negro Leagues in baseball: There are so many great players, and for that to be missing means it's not a level playing field. We offer audiences a chance to see what they've been missing." ■

Barbara Schultz is a Mix *associate editor.*

—FROM PAGE 140, SAY WHAT?

ly that they cannot lead normal lives.

It's often said that aging causes gradual hearing loss. It is true that an inability to hear high-frequency sounds is the main symptom of presbycusis, or "age-related" hearing loss. However, in studies performed on inhabitants of Easter Island in the South Pacific, older subjects demonstrated no evidence of age-related hearing loss—while they lived in their native environment. But when they moved to an industrialized society, they developed presbycusis. The severity of their hearing loss was proportional to the number of years they lived in the foreign environment. This suggests that so-called "age-related" hearing loss is actually caused by long-term exposure to noise levels common in our modern society.

TIPS FOR SAVING YOUR EARS ON THE ROAD

Managing your exposure can help mitigate the damage that can result from a

OSHA STANDARDS FOR HEARING PROTECTION

OSHA requires employers to establish a hearing conservation program that covers employees exposed to an eight-hour Time-Weighted Average (TWA) sound level of 85 dB or greater, measured on the A scale. It's hard to avoid those conditions in the sound business, but I'll bet you missed your company's last audio seminar. Organizations that implement conservation programs in addition to other ongoing safety practices both reduce their liability and tell customers and employees that they care. A good program includes exposure monitoring, annual hearing testing, employee training in hearing protection and the use of hearing protectors where necessary.

At levels of 85 dBA, OSHA requires that employers make hearing protectors available, though use is optional. When the levels exceed 90 dBA, hearing protectors must be worn by all employees. Because the exposure limit is a TWA for an eight-hour period, exposure to higher sound levels is permissible for shorter durations (see table). This means that if you do a one-hour set at 105 dB SPL, you'd better get some protection or some quiet for the rest of the day, because you're already at your limit.

Proper record-keeping helps venues meet the OSHA standards. Measurement and documentation of on-site SPLs allow venues to practice self-regulation and keep management on top of the situation. Traffic-light SPL enunciators combined with daily reports of event levels provide a means of managing and documenting concert levels. In this age of sound control regulations at music venues, it is not uncommon for the sound engineer to monitor the levels at the FOH mix position. Levels on-stage are also easily verified.

OSHA WORKPLACE STANDARDS

Permissible Exposure
(all figures are measured in dBA)

90 dB.....8 hours
95 dB.....4 hours
100 dB.....2 hours
105 dB.....1 hour
110 dB.....30 minutes
115 dB.....15 minutes

For every 5dB increase in volume, cut the maximum exposure time in half. Many hearing professionals think that OSHA's permissible levels are still too high for hearing safety. *—Mark Frink*

World Radio History

HEARD A GOOD MOVIE LATELY?

ith the advent of the digital era fully integrated into the entertainment industry, Post Production facilities are quickly evolving towards digital processing to provide state-of-the-art technologies and services necessary to support growing nand for DVD based products. In order to compete in this new digital world, the facilities' audio monitor sound systems critical to the success of their finished products.

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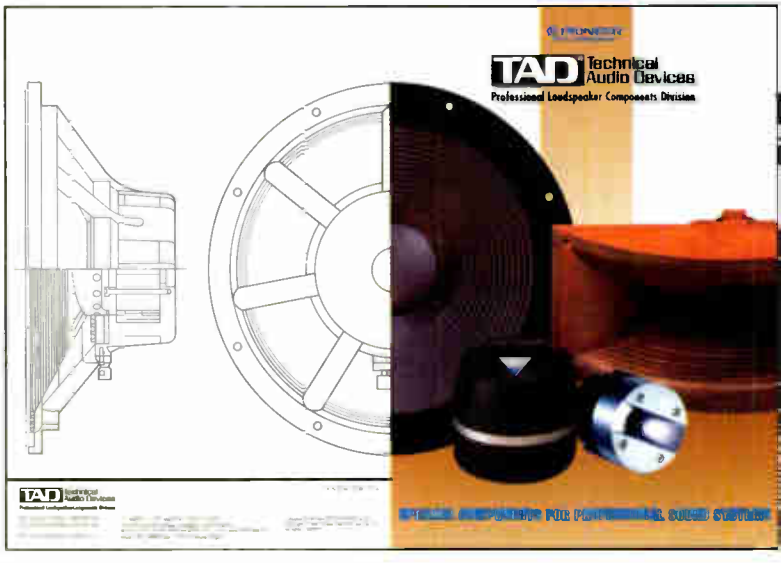

World Radio History

couple of hours of loud music each day. Here are some rules to hear by.

1. **Disposable foam ear plugs** can be bought in boxes of 100 pair at fire and safety supply houses for as little as $20. In addition, clever organizations often sell them along with other merchandise in the lobby. Keep a pair in your pocket at all times. Like condoms, they won't get used unless you have them with you.

2. **Remember, exposure to sound goes on 24 hours a day.** Whether riding to the gig in a bus, truck or van, the cumulative effect can be enough to exacerbate the exposure from a marginally damaging show. Exposure while sleeping also counts. Using ear plugs when you travel (on a bus, plane or in a noisy hotel room) will help you sleep better while reducing your overall daily exposure. Also be aware that hypertension can be related to noise exposure.

3. **Alternate ears.** If you can't put a plug in both ears, use one and switch ears every few hours.

4. **Take a break.** Remove yourself from the loud environment for 15 minutes to allow the threshold shift to recover fully.

BOB BUTLER REMEMBERED

When Bob Butler died of a heart attack on June 23 at the age of 44, the live sound community lost one of its most respected mixers. For the past five years, Bob had been mixing FOH for Brooks & Dunn. Prior to that, he had been working with Randy Travis and Waylon Jennings. Noted engineer Robert Scovill has contributed the following remembrance:

"I had my first opportunity to meet and work with Bob on a Laurie Anderson tour in the late '80s. I distinctly remember my first meeting with Bob and thinking, 'What is this guy doing on this gig?' It seemed like such an odd fit—a high-tech, eccentric, sophisticated Manhattan-based performance artist matched up with engineering's version of Jeff Foxworthy.

"Bob was a very funny and charming man with a pretty hefty Southern drawl. At first impression you might have gotten the idea that he was true blue 'Nashville' through and through, but his actions and his work clearly defied this stereotype. As I soon discovered, Bob was a man with a wonderfully diverse set of engineering skills coupled with a fantastic set of ears; he had a profound influence on my career path as well as my abilities. If we look closely, there might even be a sociological lesson to be learned here: No matter what our background, if we care to dig deep enough we can all find a common ground to communicate. Music can be the premier vehicle for this. Even though Laurie, Bob and I came from extremely diverse backgrounds and influences, both socially and musically, we found a common ground on which we could all meet and share our wisdom, influences and work ethic. That common ground was our love of music.

"I have rarely met anyone displaying a love of the craft of making music more than Bob Butler. He lived it, breathed it and infected us all with it. Since the day I met Bob, I have revered and respected him. I, as well as the sound reinforcement community, will miss his wonderful wit and professionalism dearly. His presence and influence, however, will be with us all for some time to come." ■

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5. Mix with an SPL meter. At $34.99, the Realistic sound level meter (Radio Shack cat. no. 42-3019) is one of the least expensive audio appliances. Set to the A scale and perched on the meter bridge, it provides a constant indication of the level at the mix position. Using a meter allows you to monitor your own exposure and communicates your awareness to others. Many venues have SPL restrictions, so incorporating an SPL meter into your mixing routine also helps you manage levels in restricted situations. After all, you don't drive a car without looking at your speedometer occasionally, even if you know you're speeding.

6. Help the band and monitor engineer manage the levels onstage. It takes teamwork to get it quieter up there. The louder the stage, the louder it'll be at the FOH position, even if you take the guitar out of the mix (radical thought!).

7. Put only what is needed into each musician's floor monitor. Many professional musicians already know this and only ask for their own instrument, a little hi-hat for time, and maybe the star's vocal. Giving everyone a full mix in their monitor often forces others onstage to increase their own levels to compete with the additional indirect sound.

8. Put a rug on the stage. The reduction of comb-filtering from reflections off the floor can increase intelligibility, allowing levels to be reduced. Even a piece of carpet in front of a wedge or sidefill can help.

9. Put Plexiglas between the drum kit and others. Plexiglas "doughnuts" mounted behind brass mics make it easier for trumpet and trombone players to hear themselves, because it reflects their horn back at their ears (and away from others downstage).

10. If someone has a chronic problem hearing the mix, get the floor monitor closer to his or her head, instead of just turning it up. Put it up on a chair or a road case. The inverse-square law dictates that if you halve the distance from the ear to the wedge, it'll be like making the mix four times as loud—without actually turning it up and making it harder for others onstage to hear.

11. Musicians with hearing problems are perfect candidates for in-ear monitors. Well-designed ear molds extend far enough into the ear canal to attenuate external sounds by 20 dB, allowing exposure levels to be lower than when using traditional monitors that must compete with stage volume and the mains to be heard.

12. Turn off your cue wedge. I began enjoying monitor engineering again after I was introduced to in-ear monitors. Even if the entire band is on wedges, you can still benefit from mixing monitors with "ears" instead of a cue wedge. I often spend a half-hour at the start of each day on a cue wedge to get things roughed in and then spend most of the day on my "ears," which are easier to hear over the roar off the backside of the main P.A. I can listen at a lower volume than with a cue wedge. I can easily hear feedback long before it takes off, and if the artist wants to whisper in my ear, they don't have to come to the side of the stage.

Hearing loss is often permanent and can grow progressively worse if mea-

FIVE WARNING SIGNS OF AT-RISK HEARING

After exposure to loud music or noise you may experience:

- Ringing or buzzing in the ears.
- Slight muffling of sounds.
- People asking you to turn down the TV.
- Difficulty in understanding speech—you can hear the sound, but you can't understand the words.
- Difficulty hearing conversation when there is background noise, or in rooms with poor acoustics.

If you've already experienced one or more of these warning signs, don't wait to seek help. Have your hearing checked by an audiologist. If you experience a sudden loss, see a specialist immediately. —*Mark Frink*

NEWSFLASHES

Sound company **Audio Analysts** was out this summer with **Shania Twain, Wynonna, Heart,** and the **H.O.R.D.E.** and **Old School Mega Jam** festivals...**Tampa Bay Stadium**, the Buccaneers' new home, has a P.A. comprising the first installation of Meyer Sound's SB-I (Sound Beam) speakers and PS-6 Cardioid Subwoofers. Gary Wright designed the sound system for Dallas' Wrightson, Johnson, Haddon & Williams Inc. consultants...The **Grand Palace** theater (Branson, MO) installed a 56-channel Amek Recall console. The 3,800-seater also contains an all-JBL P.A...**Queensryche** is on tour in South America with gear provided by **Electrotec Productions** (Westlake Village, CA). Soundcraft reports that the monitor board on the tour is a 40-channel SM24. A Soundcraft Series Five board is being used at **Chicago's Briar St. Theatre** for Blue Man Group's production of ***Tubes***...**Knuckleheads** is a new So Cal retail store dedicated to Three Stooges merchandise and memorabilia. Three Denon DN-M1050R MiniDisc recorders are being used to play back in-store music and effects. For example, when anyone enters the store, an infrared sensor cues samples of Stooges saying "Hey, wiseguy!" or "Nyuk, nyuk, nyuk." At **the Six Flags Over Georgia** theme park, 15 Denon DN-C680 CD players were installed...In Fort Lauderdale, FL, SR company **Jack Hammer Live Audio** took delivery of a Midas XL200 console...The annual **Pavarotti and Friends** concert, held in Modena, Italy, in June, included appearances by Celine Dion, Stevie Wonder, Jon Bon Jovi, Vanessa Williams and others. UK sound company **Sound Hire** provided two Cadac F-Type consoles for FOH and an M-Type monitor board. Firehouse Productions (Red Hook, NY) was named as the exclusive U.S. distributor for Cadac sound reinforcement consoles and products...**Billy Joel**'s current tour is using a Yamaha PM4000 console and a variety of Audio-Technica mics supplied by **Clair Bros.** Joel's FOH mixer is Brian Ruggles...In the racks on **Billy Ray Cyrus**' '98 tour: a Drawmer 404 gate, Roland 330 delay, TC Electronic M5000, and dbx 160 and 166 compressor/limiters. FOH engineer John Griffith mixes on a Yamaha PM4000 console...London's summertime **Party in the Park** event included performances by Boyzone, All Saints, Gary Barlow, Eternal and Simple Minds; the shows attracted more than 100,000 fans. Gear for the event featured the first fully fitted 56-channel Amek Recall RN desk, provided by **SSE Hire** (Birmingham). The sound company also upgraded another Amek Recall console with Rupert Neve modules for the event...**Effanel Music** installed Spendor SA5000 three-way powered reference monitors in the L7 remote facility (based in NYC)...**Cracker** is on tour using Sennheiser's Evolution Series mics. FOH engineer is Woody Nuss. ■

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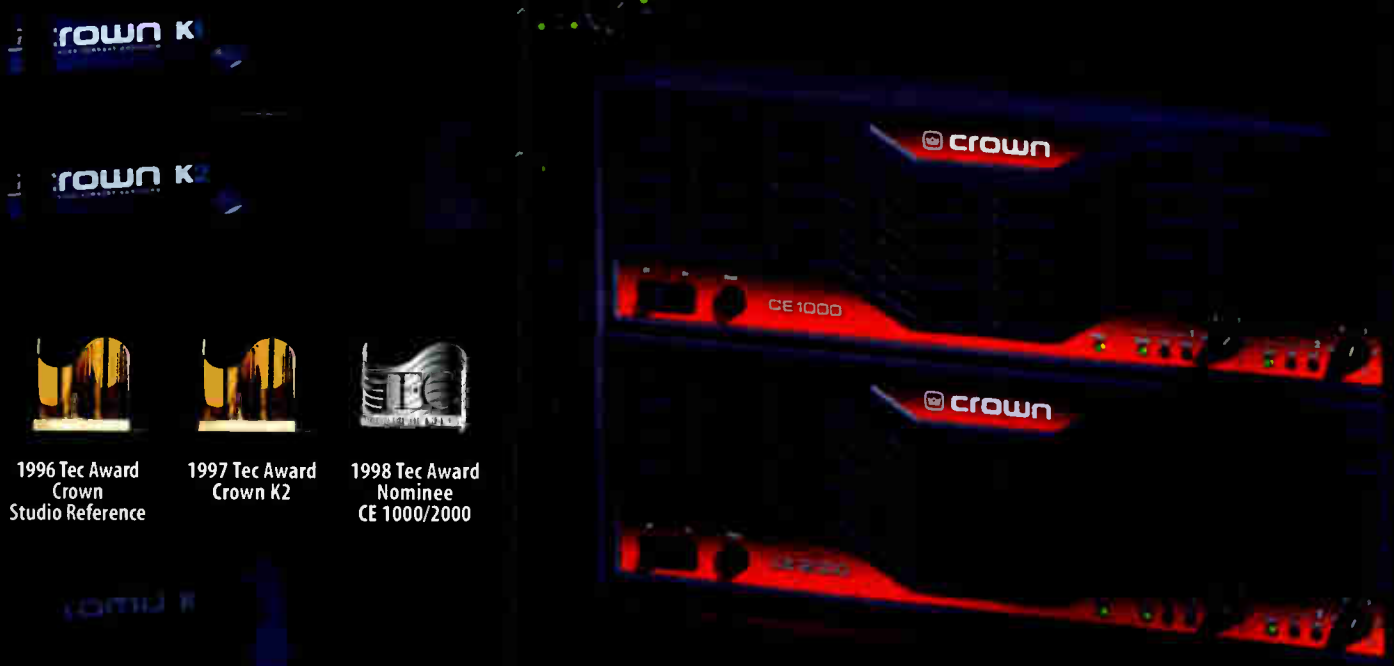
Does anyone else see a pattern here?

1985 Tec Award Nominee: Micro-Tech 1000
1985 Tec Award Winner: TEF 10
1990 Tec Award Nominee: SASS Microphone
1990 Tec Award Nominee: IQ System
1991 Tec Award Nominee: Macro-Reference
1992 Tec Award Nominee: Macro-Tech 3600VZ
1993 Tec Award Nominee: Macro-Tech 5000VZ
1993 Tec Award Nominee: CM-310 Microphone
1994 Tec Award Nominee: Macro-Tech 36x12
1996 Tec Award Winner: Studio Reference I/II
1997 Tec Award Winner: K2
1998 Tec Award Nominee: CE 1000/2000



1996 Tec Award
Crown
Studio Reference

1997 Tec Award
Crown K2

1998 Tec Award
Nominee
CE 1000/2000

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sures are not taken to prevent further damage. An ounce of prevention is almost priceless, since the consequences are so great for those using their ears for a living. Equip yourself with foam or custom plugs as a safeguard when working in high-SPL environments on the road and/or onstage. With today's custom-molded high-fidelity attenuators, you can comfortably wear ear plugs at a concert and safely enjoy the music. Use of well-designed custom molds or plugs onstage and in transit makes it easy and comfortable to manage exposure levels while still enjoying full-fidelity monitoring of live music and playback. The answer to "Say, what?" should be "Oh, sorry, I see you had your 'ears' on."

For more information, contact the H.E.A.R. (Hearing Education and Awareness for Rockers) hotline (415/773-9590) or its Web site at www.hearnet.com. Or contact Hearing Is Priceless (H.I.P.) at the House Ear Institute (213/483-4431); the Web site is at www.hei.org. ■

Mark Frink is Mix*'s sound reinforcement editor.*

—FROM PAGE 141, TOUR PROFILE

spread Panic's Dave Schools on bass and G. Love's drummer, Jeff Clemens.

Shure Beta 58s were used for Ben Ellman's tenor and baritone saxes and vocals, with another pair of Drawmer DL-241 comps inserted. "We'd like to carry our own mics," says Carter. "Several manufacturers have approached us, and it would be nice to have that consistency."

Former Israeli tank commander Danny Friedman has worked with Widespread Panic for five years; he now mixes FOH and also serves as ESP's crew chief and system engineer. Friedman mixes on Gamble EX serial #11, which he swears is the best-sounding one ever built. Friedman's outboard processing selections include Klark-Teknik DN-510 gates and dbx 160x compressors for inserts, a rack of vintage Lexicon and Yamaha effects and a Roland RE-301 Chorus Echo.

Assisted by Tim Wright, Brad Blutenburg acts as Widespread Panic's monitor engineer, mixing on a Crest Century LM. All members of Widespread Panic monitor via hard-wired Future Sonic in-ear monitors, which are fed from a Rane HC-6 via a half-dozen Aphex Dominators, all contained in a single rack. The drum throne is also driven with a pair of 50-watt Aura AS-2B shakers, powered by a Crown MA-1200. Tucked beneath the console is a rack containing seven Tascam DA-88 MDMs, whose inputs are fed from the Crest's line outs. The system was used to record Widespread Panic's recent live album, *Light Fuse, Get Away*.

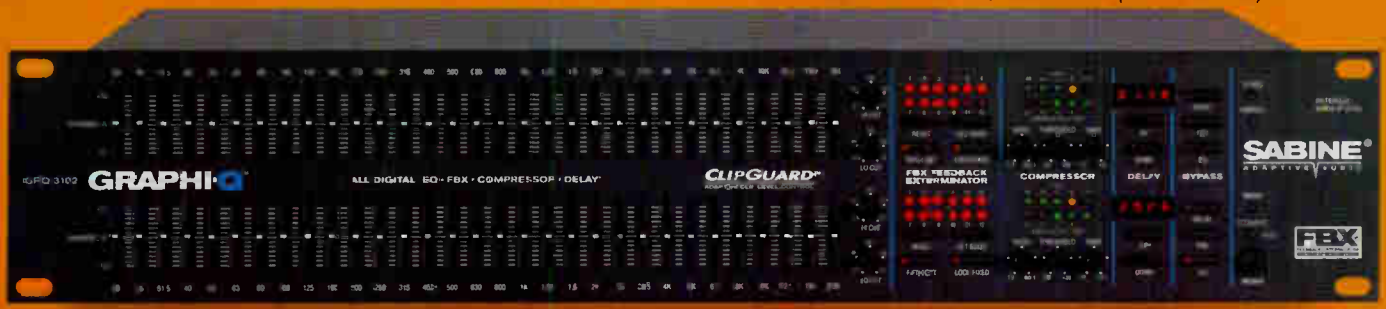
Behind Widespread Panic's monitor desk on stage-right, Mike "Cochise" Hernandez operates a Gamble EX48 monitor console that accommodates all three support acts. Monitors are EAW SM-500 and SM-222 floor monitors powered by Crown MA3612s, with an FR-253 cabinet for a drum box.

Galactic appeared at a number of club gigs between their festival dates this summer, and FOH mixer Carter is especially appreciative of the consistency that comes with a package tour. "When you go into clubs, sometimes they tell you it's going to be a Spirit, and then you get there and it's a Mackie—you never know," says Carter. "The load has been lifted, being on the same rig every day, having a great crew and mixing on a Jim Gamble console. Danny and the rest of the ESP crew have been very supportive. After all the clubs, it's like we've died and gone to heaven." ■

CIRCLE #099 ON PRODUCT INFO CARD

World Radio History

GRQ-3102: 2U, dual channel *(two in / two out)*



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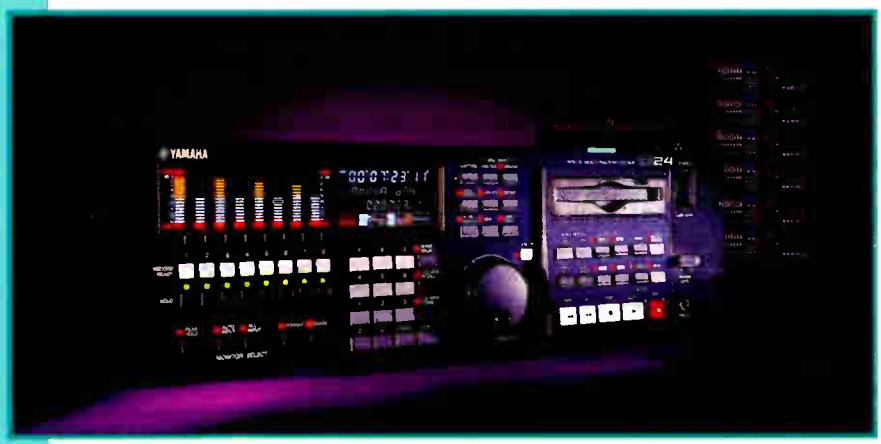
YAMAHA D24

DIGITAL 8-TRACK MO DISK RECORDER

Three years ago, Yamaha shook up the pro audio world with its 02R digital console. And at this month's AES, Yamaha is ready to catch the attention of the world audio community with its D24, a below-$3,000 modular digital recorder that stores eight channels of audio on rewriteable, removable magneto-optical disks. The D24 is slated to ship in January, 1999.

Operating just like any studio multitrack, the D24 is capable of recording, punching in or playing on any number of tracks with eight inputs and outputs active simultaneously. Multiple takes of each track can be stored on eight virtual tracks, and up to eight D24 recorders (for 64-track capability) can be interlocked in sample-accurate sync merely by connecting the units using a D15-sub cable.



Initially intended as a companion recorder for use with the 02R mixer, the D24 has four I/O card slots (using the same interchangeable I/O cards as Yamaha's 01V mixer), providing the flexibility to "customize" the deck for nearly any situation, project or pro, for post or music recording applications. Available I/O cards include ADAT, TDIF and AES/EBU digital—priced at $299 each. Among the analog I/O cards are a 4-channel, 20-bit D/A; an 8-channel, 20-bit A/D; and a 24-bit, 4-channel A/D with XLR input jacks (prices TBA).

Housed in a three-rackspace chassis, the D24 outwardly resembles an Alesis ADAT or Tascam DA-88 and is about as easy to use as any tape recorder. The front panel has the usual metering, status display, switchable timecode/absolute/relative time readout, jog/shuttle wheel, track arming and ffd/rew/stop/play/record transport controls we're all so familiar with. However, besides substituting a 3.5-inch MO drive for the video tape transports found on MDMs, the D24 adds a couple of switches that allow the deck to record/play at 16/20/24-bit resolution at a choice of 44.1/48/96kHz sampling frequencies.

The D24 has a 3.5-inch 650MB MO disk drive. Alternatively, the D24's rear panel has a SCSI port for connecting any media the user prefers, either for increased storage and/or backup purposes. But as it is, the 640MB drives (such as the Fujitsu and Sony media widely available with a $20 to $25 street price) have a capacity of one hour of 2-channel, 16-bit/44.1kHz audio, 15 minutes of (16/44.1) 8-track time, nine minutes of 8-track 24/48 recording or 4.5 minutes of 8-track 24/96 recording—long enough for most pop singles.

On the rear panel is the 4-card I/O bay, BNC connectors for video sync and word clock, XLR SMPTE timecode in/out, SCSI, 15-pin D-sub remote in/thru for interlocking multiple D24s or connecting a future hard-wired remote, and a 9-pin connector for control using Sony P2 protocol.

Features include chase sync to SMPTE timecode, forward and reverse play, headphone monitor jack with select of any track pair, cut/paste editing capability, 99 locator memories, and onboard DSP providing time compression/expansion or pitch shifting, both with a -50% to +200% range. The unit also comes with file conversion software for converting D24 tracks to AIFF, WAV, OMF and SD2 formats for transferring tracks into/out of your PC or Mac.

As shown at AES, the Yamaha D24 presents an affordable, powerful and expandable solution providing 24/96 performance at an unheard-of price, while offering numerous I/O packages for interfacing with MDMs, workstations, digital consoles and the analog gear that's still part of today's hybrid studio. And beyond its obvious use as a post-production tool or studio multitrack, the D24 could become that universal, multichannel, high-resolution mix format we've all been waiting for. Time will tell.

Yamaha Corp. of America, 6600 Orangethorpe Drive, Buena Park, CA 90622: 714/522-9011; fax 714/739-2680. Web site: www.yamaha.com. ■

BY GEORGE PETERSEN

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CIRCLE #105 ON PRODUCT INFO CARD

DIGI'S NEXT GENERATION

NEW HARDWARE, PC SOFTWARE FOR PRO TOOLS

It's finally here! Digidesign's next generation of Pro Tools smashes the barriers of Mac/PC interchangeability and addresses the three-PCI-slot limitation in Mac G3 computers. And, rather than unveiling a single package, Digi offers an integrated systems approach allowing current users to upgrade their workstations via new software and/or hardware cards, while using existing I/O interfaces. At the same time, the introduction of WinNT Pro Tools software permits Pro Tools|24 users to switch from Mac to PC without investing in new hardware.

The new Pro Tools|24 MIX system is based on high-performance, DSP-laden PCI cards, with a mix core engine and six Motorola 56301 "Onyx" chips providing up to 64 tracks of 24-bit record/playback and three times the signal processing power of Digidesign's DSP Farm card. Each MIX card in the system supports up to 16 I/O channels, expandable to a system total of 72 I/Os.

Priced at $7,995, this "single-card" system includes the Pro Tools|24 MIX "core" card and new Mac 4.3 and PC software, *sans* converters, although the card is compatible with all current Digidesign audio I/O interfaces, such as the 888|24, 882|20 or ADAT Bridge. (Note: Older 888s and 882s are also supported.) Optional cards can expand the system, but even the basic single-card system offers ample real-time automated mixing and DSP for most 24-bit/32-track projects. However, all DSP is allocatable, so when less DSP or mixing capability is required (as in post playback on a dubbing stage), a single card handles up to 64 tracks. Effects and plug-ins delivered with the system include five sends on every track, 1- and 4-band EQ with new algorithms, dither, advanced new dynamics, ten delay-based effects and—as a limited-time bonus—TC Works' MegaReverb.

The optional $3,995 MIX Farm card adds 16 more I/O channels and more than doubles the DSP power of a single-card system. Digidesign also offers a "Pro Tools|24 MIX-plus" package: a single-card system bundled with the MIX Farm card for $9,995. For users requiring more inputs, Digidesign's optional MIX I/O card adds 16 channels of I/O for under $795.

What does this mean for Pro Tools|24 owners? By upgrading to Pro Tools 4.3, Pro Tools|24 users can expand their systems by adding a MIX Farm DSP card or—for more tracks—a Pro Tools|24 MIX single-card system. In such cases, the current d24 audio card can be used as additional DSP resources, such as for handling the automated mixing duties, while the new card is allocated to track count, I/O, DSP and outboard effects. And according to Digidesign, all third-party plug-ins for Pro Tools|24 will be compatible with Pro Tools|24 MIX systems. The plug-ins need to be updated for MIX Core/MIX Farm compatibility, but Digi's Development Partners are working on this. Meanwhile, Digidesign is offering numerous hardware upgrade and exchange programs, so registered Pro Tools|24 and Pro Tools III owners (NuBus and PCI) can trade up and/or expand their systems.

Enhancements in the 4.3 software (which only supports PCI-based Power Macs) include ProControl and HUI support, a "4-in-1" SmartTool for context-sensitive editing, DigiRack Dynamics II and EQ II AudioSuite and TDM plug-ins, and 9-pin track-arming capability when used with Digi's MachineControl option. Registered Pro Tools 4.2 users will automatically receive Pro Tools 4.3.

PRO TOOLS WinNT...AND BEYOND

In other, perhaps even bigger news, Pro Tools PC software permits use of existing Pro Tools|24 hardware on an approved Windows NT-based computer (minimum Pentium II-class with 128 MB RAM). Beyond simply exposing Pro Tools to the vast PC market, the Pro Tools WinNT platform lets users seamlessly integrate session interchange between platforms, with the ability to mount Mac HFS drives. Sessions can be created on either the Mac or NT platform, then be opened/read/manipulated on other Pro Tools systems.

The interface is slick, appearing nearly identical on both platforms, so users could easily move between the two without a steep learning curve. And most keyboard shortcuts are simi-

BY GEORGE PETERSEN

—CONTINUED ON PAGE 331

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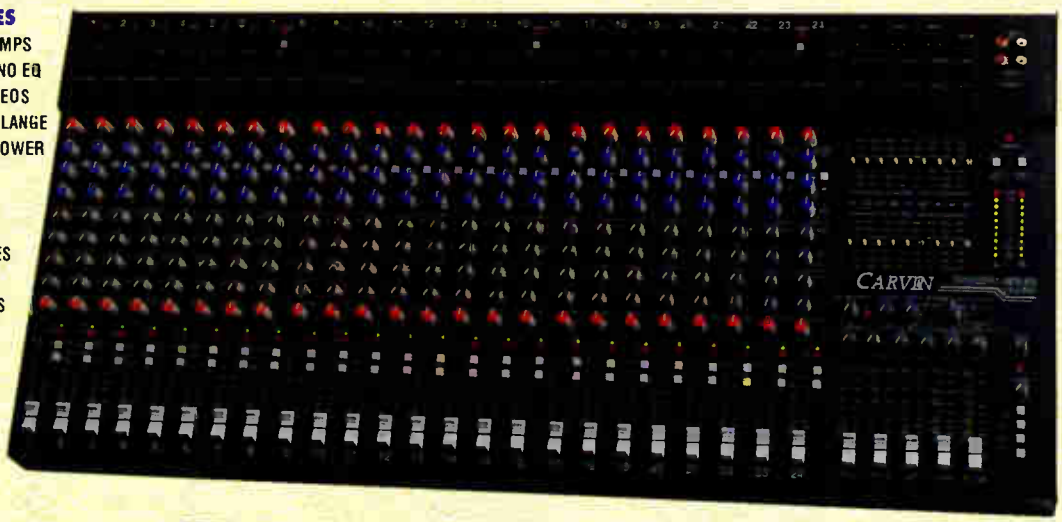

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World Radio History

LYDKRAFT TUBE-TECH MEC 1A

RECORDING CHANNEL PREAMP/DI/COMPRESSOR/EQUALIZER

Danish manufacturer Lydkraft has entered the "all in one" recording channel race, with its Tube-Tech MEC 1A ($3,495), combining the MP1A microphone preamp with the CL1B compressor and an equalizer similar to the EQ1A.

The back panel has a balanced XLR microphone connector; the front panel has an unbalanced ¼-inch input, which also acts as a DI. The mic input transformer is followed by a +10dB step-up and two dual-triode tube stages. Gain is adjusted via two detented pots: A Coarse control switches among 10dB steps (20 to 60 dB) and a separate

Fine gain adjustment knob in 1dB steps (1 to 10 dB). I like this feature, as it provides accurate resettability. Other controls include 48V phantom and phase reverse switches, a -20dB pad and a 20/40Hz switchable -12dB/octave highpass filter. The MEC 1A really warmed up the sound of a shrill female vocalist using only the preamp section, without the equalizer or the compressor sections switched in.

A single XLR input accepts line and mic levels. The manual says the preamp stage can accept up to +6 dBu at 40 Hz without engaging the -20dB pad. With the pad switched in, the number would go to +26dBu. Still, I'd prefer a separate XLR jack with a line-level input switch. If you install the unit in your outboard rack, there might be some confusion in the patchbay regarding the input patch point—is it a mic input or a line input? As a hot-level test, I plugged in a line-level signal from the 24-bit Pro Tools system. Even with the compressor switched in, I had to turn down the output level nearly to Off and I didn't care for the sound coming out of the unit. For these reasons, I am disinclined to use the MEC 1A for line-level processing. However, -10dBV semi-pro input line levels worked fine. And heated-up input levels can result in as much distortion as anyone could want—I liked the bottom end distortion I got by cranking up the low-frequency EQ along with the input gain.

The high-impedance input is perfect for direct injecting guitars, bass or synths because there is no loading effect on those instruments.

The DI input signal inserts right after the input transformer, before the first 12AX7 tube, and the gain range is +10 to +60 dB. Direct bass guitar is a natural here, but the tube sound was great on R&B guitars and synth bass tracks.

Designed around a dual tube op-amp, the EQ is a 3-band type with LF/HF shelving and a mid section with 12 switchable frequencies and sweepable Q. I found the EQ's ability to do intensive surgery necessary for reducing a nasty mid-range peak from a singer's voice. The high-frequency shelf (which goes out to a breezy 26 kHz) is very open, airy and high-fidelity sounding. I liked this for adding "tizz and fizz" to background vocal parts. All the unit's In/Out switches use a small toggle that you throw down for "in circuit"... Hey, Vikings, that's backwards here in America!

The compression section works like my old favorite, the Tube-Tech CL1B. A Fixed switch locks the attack time to 1 ms and the release time to 50 ms. In the Manual position, the attack time control adjusts from 1 to 100 ms and the release time control goes from .07 to 2.5 seconds. The Ratio knob sets compression ratios from 1.5:1 to 10:1 while Threshold ranges from Off to -20 dB. Make-up gain is adjustable to +10 dB, just like on the CL1B. Here, Tube-Tech should have also used detented pots so that exact threshold and output levels could be reset later.

A smart idea is the EQ-COMP switch that places the EQ either before or after the compressor. You'll get a different compression action when the compressor is first in the chain. The link 1/link 2 switch allows linking several compressors. Compressor action is monitored on a way-too-small, unlighted VU meter with a toggle switch to select output level or gain reduction display. However, if you like the CL1B, then you'll like this section a lot: I got smooth and reliable results in all situations where I used a compressor.

The unit includes a test report of each individual unit's performance. Frequency response for my review unit was -0.1 dB @ 10 Hz and only -3dB down at 100 kHz. THD at 40 Hz was 0.075% @ 0 dBm and 0.14% @ 10 dBm, with 1% THD at the maximum output of +27.5 dBm. Unweighted (20 to 22k Hz) noise was measured at both a gain of +20 dB (84.5 dBu) and +60dB (-64 dBu).

The MEC 1A is painted in Tube-Tech's signature royal blue enamel and has vintage-look knobs. Housed in a steel chassis, the internal construction leaves nothing to be desired. The seven tubes are in tight sockets mounted on a thick, double-sided PC board powered by a regulated solid-state power supply with toroidal power transformer. The build quality along with high-quality switches, pots, transformers and components add up to a worthwhile tool for studio or rugged road work.

Tube-Tech, distributed in the U.S. by TC Electronic: 790-H Hampshire Rd., Westlake Village, CA 91361; 805/373-1828; fax 805/379-2648; Web site: www.tcelectronic.com. ■

BY BARRY RUDOLPH

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CIRCLE #104 ON PRODUCT INFO CARD

NEUMANN M147

CARDIOID TRANSFORMERLESS TUBE MICROPHONE

1998 marks the 70th anniversary of Georg Neumann's founding of the company that bears his name, and it's no surprise that Neumann innovations continue to lead the industry. The Neumann name has always been synonymous with precision tube microphones, from the CMV3 "bottle" microphone in 1928 to the still-amazing U47 (1948), as well as other breakthroughs such as the spherical capsule used in the M50 (1950) and the first transformerless tube mic, the M149, in 1996.

Building on the worldwide success of its $995 single-pattern, solid-state TLM103, Neumann now unveils the M147, a single-pattern mic that brings the prestige of a Neumann tube mic down to an affordable $1,995.

Perhaps the most noticeable thing about the M147 is its distinct grille shape, which—although scaled down—has the look of the U47 grille, with three layers of wire mesh borrowed from the TLM50 design. The mic body is approximately the same size as the TLM103. Beneath the grille is the renowned K47/49 capsule (also used in the U47, M49 and M149), which is a hand-tensioned design, with 13 screws (!) retaining a clamping ring that holds the gold-plated mylar diaphragm in place over the highly polished backplate surface.

Both the M147's capsule and internal electronics are held in place by elastic mountings for shock resistance. The three-layer mesh grille further protects the capsule and adds effective pop attenuation.

Like the TEC Award-winning M149, the new M147 combines a transformerless output with vacuum tube electronics. But this is no hybrid topology: The all-tube front end provides smooth, warm response, while the lack of an output transformer essentially eliminates the problems of hysteresis, core saturation overload and HF phase shifts that can result from transformer-based designs. The transformerless output stage also offers a high degree of protection from RF interference. As with the M149, the M147 has a 9-pin output jack that connects to the power supply via a high-quality cable with Binder DIN connectors. And although the M147 and M149 have differently designed power supplies, the two power supplies are electrically interchangeable, so any studio with both mics could—for example—use the M147's power supply as a backup for the M149's, or vice versa.

Neumann refers to the M147 as a cardioid microphone, yet the K47/49 capsule actually has a slightly hypercardioid characteristic, corresponding to the M149's polar response when it is switched halfway between its cardioid and hypercardioid settings.

The low-noise triode tube used in the M147 is the same as that in the M149, adding about 10 dB of gain and lowering the capsule's high impedance. The mic's self-noise performance is in the 12 to 13 dBA range. The frequency response of the tube electronics (measured without capsule) is linear from 20 to 20k Hz and is only 1 dB down at 20 Hz. The M147's overall frequency response is fairly flat, with a gently rising presence boost, peaking about +4 dB at 4,500 Hz, with a slight second peak (+2 dB) around 10 kHz. Maximum SPL is in the 130dB range.

The M147's targeted price of around $2,000 includes power supply, cable, stand clip and wooden mic box. Options include the EA170 elastic suspension, PS 10 pop screen and WS 87 foam windscreen. Deliveries are scheduled to begin in January.

Neumann USA, One Enterprise Drive, Old Lyme, CT 06371; 860/434-5220; fax 860/434-3148; Web site: www.neumann-usa.com. ■

BY GEORGE PETERSEN

World Radio History

MILLENNIA MEDIA

TWIN TOPOLOGY ANALOG SIGNAL PROCESSORS

There are few people in pro audio who are unaware of the Millennia Media name. Renowned for its mic preamps based on cutting-edge, solid-state technology, John La Grou's Millennia Media is a small company that nonetheless has developed a surprisingly large and growing fan club of discriminating high-end users. Meanwhile, Fred Forssell has been developing designs for ruthlessly accurate tube gear, first for a number of high-end manufacturers, and then for his own company Forssell Technologies, which developed the acclaimed M2A stereo tube mic preamp and the NSEQ1 stereo tube equalizer.

A year ago, in an event rivaled only by the clash of the two distinct flavors that developed into the Reese's Peanut Butter Cup, Forssell merged with Millennia. The company will continue to offer the popular existing Millennia and Forssell products—after all, no one wants to kill the golden goose. But at this fall's AES show, Millennia will reveal its Twin Topology line, the result of two audio flavors (tube and solid-state) being combined into a single unit.

The first product in Millennia's Twin Topology line is the NSEQ-2, a 4-band stereo parametric equalizer with both switched and variable center frequencies, as well as variable bandwidth ("Q"). But the remarkable aspect of the NSEQ-2 is its use of a transformerless signal path with only one active amplifier (acting as input buffer, EQ amplifier and output driver) in the signal path. Of course, the "Twin Topology" part of the name comes in as a front panel switch that allows the user to select whether that differential input amp is either a Class A, high-voltage vacuum tube or a Class A, all-discrete J-FET stage.

The concept is not entirely new, although in the past, manufacturers have avoided using such a combination approach due to economic (the bottom line $$$—everybody's favorite) or ergonomic (heat, size, weight) considerations. However, the Twin Topology design succeeds in this area due to Forssell's use of tubes in a differential amplifier circuit. So rather than designing two entirely separate circuits (traditional transformer-coupled, single-ended vacuum tube and traditional solid-state), La Grou and Forssell created two differential amplifiers using the same input and output criteria. One touch of a switch and a relay kicks in, changing the topology to suit the user's needs. Only the amplifier stage changes. Meanwhile, all the other components, designed around the differential amp path, remain untouched, providing a palette of sounds—at a reasonable price ($3,000 retail).

The unit's sonic signature is kept minimal and simple, yet pure. Rather than use vacuum tubes in a traditional RC-cascaded approach, the tube stage becomes a differential amp, and the solid-state path, with its discrete FET differential amp, provides response extending beyond 500 kHz.

The faceplate is a ¾-inch, radiused, extruded aluminum slab, but the real magic is behind the front panel. While other companies seek low-cost avenues for components, Millennia went the other way, with world-class touches such as Mogami Neglex OFC internal wiring; silver-plated Teflon wiring on the 10-pound, fully shielded toroid power supply; gold-plated tube sockets, relays and Neutrik gold XLRs; Vishay pots; Wima and Electrocube caps; ITT switches; and Beyschlag and Roederstein resistors.

The Millennia NSEQ-2 is the first in the Twin Topology line, but word has it that the company is currently finishing up a fully balanced, opto compressor/limiter (with switchable tube/FET amps, of course) and perhaps a combo preamp/EQ/limiter sometime down the road.

Millennia Media Inc., 4200 Day Spring Ct., Placerville, CA 95667; 530/647-0750; fax 530/647-9921. Web site: http://www.mil-media.com. ■

BY GEORGE PETERSEN

World Radio History

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QUANTEGY GP9

GRAND MASTER PLATINUM ANALOG TAPE

In an era when digital technology seems to capture all the headlines, analog continues to thrive, as increasing numbers of engineers track onto 2-inch and mix to ½-inch analog media. So, on those rare occasions when new analog technology is announced, an entire industry takes notice. This fall, Quantegy unveils GP9 Grand Master Platinum, the first new analog mastering tape introduction by any manufacturer in four years.

Actually, the GP9 story started in 1996, when Quantegy acquired the professional media assets of 3M Corporation. At that time, customers who wanted 3M's popular 996 tape simply switched suppliers and ordered media through Quantegy. Once the stock of 3M 996 began selling out, Quantegy looked into manufacturing 996 at its plants. Unfortunately, this task turned out to be more complex than it first appeared, as Quantegy's usual method of blending uncatalyzed magnetic coating for its 499 and 456 formulations in 2,500-gallon tanks was incompatible with the small batch-to-batch approach required for making 996.

With growing requests from customers for an alternative to 996, Quantegy began an 18-month research project. The first results were interesting, yielding a tape that measured identically to 996 but sounded vastly different. Many more months of R&D led to the development of GP9. From even the most cursory glance at the product, you can tell there is something different about Quantegy GP9. And there's a lot going on behind those distinctive bright red anodized reel flanges and milled phenolic hub.

GP9 has a 3% higher pigment (oxide)-to-binder ratio than most tapes, which are typically in the 63% to 66% range. Yet, even with more magnetic material on the tape, GP9 also turned out to be almost entirely shed-free, while offering the hot +9dB levels that attract users to formulations such as 499 and 996.

However, the key to Quantegy GP9 is the sound, which isn't like 456, 499 or BASF 900. According to preliminary reports, GP9 provides a clearer sound with better transient response and more openness than 499. And perhaps the best way to describe the difference between 499 and GP9 in objective terms is that GP9 is closer in sound (though not identical) to 996, with a flatter, almost jazzy response, while 499 has a more aggressive, gutsy low end and punchy sound that's better suited for rock recording.

Unlike 499 (which comes in ¼, ½, 1 and 2-inch widths), GP9 will be offered in ½-inch and 2-inch widths, in 2,500-foot lengths on 10.5-inch reels. Users can also choose from either Quantegy's high-density polyethylene TapeCare box or the more conventional Tyvek® storage boxes. For live recording and broadcast applications, GP9 will also be offered in 2-inch-wide, 5,000-foot lengths on 14-inch reels in Remote Shipper cases.

Quantegy GP9 Grand Master Platinum is being unveiled on September 26, at the 105th AES convention in San Francisco. While final pricing was not established at press time, GP9 is expected to retail approximately 6% higher than 499.

Quantegy Corporation, 800 Commerce Dr., Peachtree City, GA 30269; 770/486-2800; fax 770/486-2808; Web site: www.quantegy.com. ■

BY GEORGE PETERSEN

World Radio History

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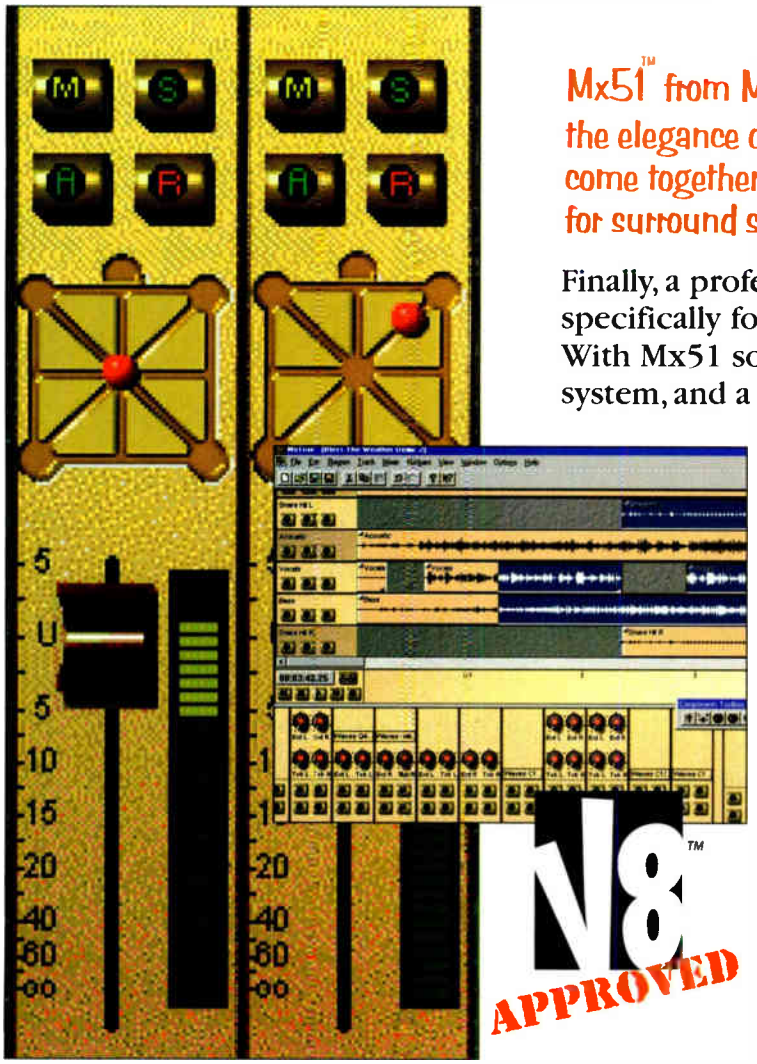

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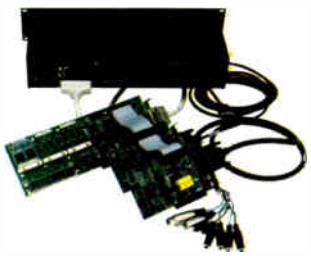

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*Some options require additional hardware.

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CIRCLE #126 ON PRODUCT INFO CARD

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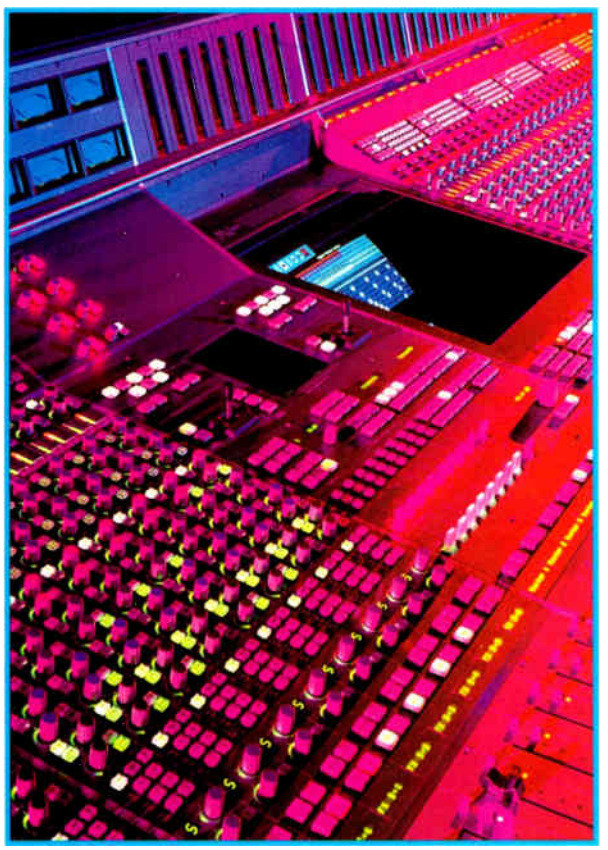
SOLID STATE LOGIC AXIOM-MT

DIGITAL MIXING CONSOLE

The Axiom-MT is the latest addition to SSL's top-shelf, A Series of digital mixing consoles. It is targeted specifically at music mixing, with catalog remixing for DVD and live music broadcasts being two of the primary markets cited by SSL as likely customers. However, Axiom-MT is also fully equipped for recording or overdubbing.

Aside from basics such as optimizing audio quality and providing tremendous flexibility in available configurations, SSL had two overarching criteria for the MT, both of them in response to the requirements of the numerous engineers with experience on SSL consoles (1,500 4000 Series systems have been shipped worldwide).



The first criterion was that an engineer familiar with the 4000 Series (often referred to as the "4K") should be able to sit down at the MT and immediately feel comfortable and able to start working. The second was that operation should be intuitive and primarily tactile, with only advanced features requiring the use of a screen and keyboard or the kind of conscious thought involved with assignable controls. This last was in consideration for those engineers who have tended to avoid digital consoles to this point in fear of the learning curve involved while trying to meet production demands. My time with the Axiom-MT clearly demonstrated the success with which both of these mandates were implemented.

In an unusual move, my review was conducted at SSL's Oxford, England headquarters several months before the actual ship date of the Axiom-MT. Although the console seemed about 90% functional, there were still several features, mostly minor, not yet implemented and/or finalized. The MT was scheduled to be shipping by last month's Audio Engineering Society convention.

The Axiom-MT, like other A Series boards, consists of three primary subsystems: input/output, CPU and control surface. Every MT is shipped with the same CPU, but the control surface and I/O are configurable to the customer's individual needs. The system operates internally at a 48kHz sampling rate with a 24-bit signal path; DSP is performed floating-point. A/D and D/A conversion use proprietary 20-bit converters.

BY LARRY THE O

Input and output are achieved with a group of rackmount modules known as Remote Input/Output units, or RIOs. There are four flavors of RIO: Micamp, Analog, Digital and SDIF2. Every channel of digital I/O on the MT has real-time sample rate conversion available, and outputs offer dithering down to 16 or 20 bits.

The Micamp is probably the most interesting RIO of the bunch. It is a 2U box containing 12 wide-range inputs, each of which has a mic preamp (with 1dB gain steps!), limiter (as if +32dBu max level wasn't enough headroom), and highpass filter placed before the A/D converter. All of the Micamp's parameters—gain, limiter, HPF, phantom power, impedance—can be controlled remotely from the control surface. Very slick.

Note that there are no RIOs that provide ADAT Lightpipe or TDIF connections. These are achieved by supplementing the RIOs with third-party devices that convert between these formats and multiple AES/EBU ports.

The RIOs allow any number and configuration of analog or digital inputs and outputs desired by the user. A remote broadcast truck, for example, can have 80 mic inputs and a multitrack digital, while a mixing room may have no mic inputs and 48 line level input/output pairs.

The RIOs are connected to the CPU by a proprietary multichannel digital audio networking scheme known as HiWay, with a maximum cable run of 100 meters (300 feet). The FreeWay option converts HiWay to a fiber-optic link that can run up to 2 km (over a mile). This enables RIOs to be placed where they are needed, rather than in a central location, so a multiroom studio might have Micamp RIOs placed in various recording rooms around their facility and an Analog or Digital RIO in the control room for carry-in equipment, while a re-

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mote truck could have Micamps as stage boxes fed directly to the processor in the truck, with all gain and analog processing adjustable by the engineer there. As HiWay is fully digital, there is no loss of fidelity as with long analog cable runs.

The Hub Router option allows connection of up to 24 HiWay ports, from which all RIOs (or other Hub Routers) are hung. Thus, one set of RIOs can serve several different rooms, allowing effortless sharing not only of I/O, but also expensive resources like DASH machines. Mixes and other audio sources also can be easily piped between rooms. With the ability to configure I/O to only the numbers and types needed and share RIOs between rooms, plus the option to expand I/O capability by simply adding more RIOs as needed, SSL has provided an extremely flexible and cost-effective solution to input and output.

The CPU supports 96 channel strips, 48 multitrack buses, 12 main mix buses, 12 aux buses and 12 aux returns. Since the channel strips are in-line and can accept two inputs when mixing, this comes to a total of 204 inputs available for mixdown.

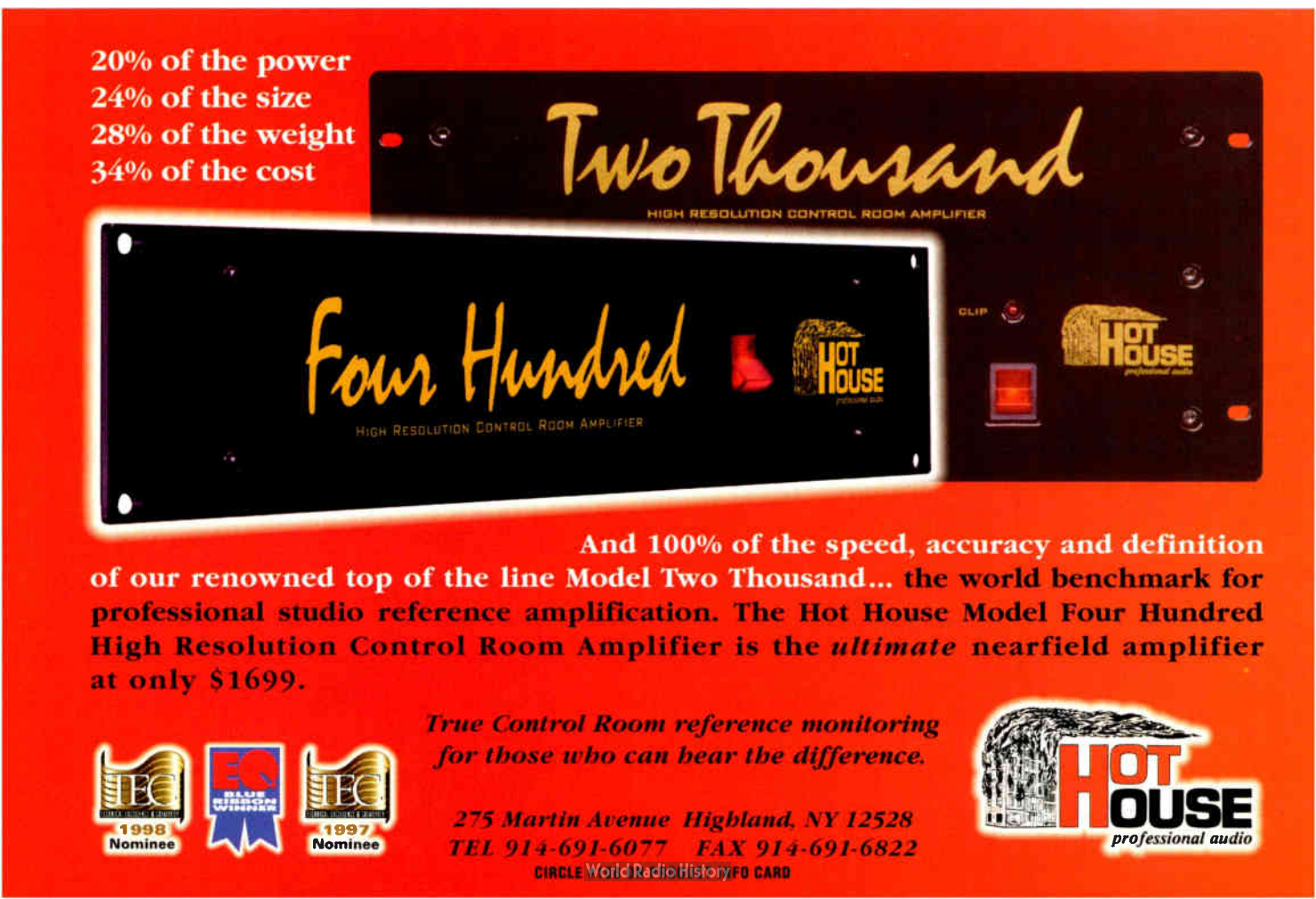
SSL has turned routing of RIOs to console I/O into a dream with one of the Axiom-MT's most powerful features: fully programmable routing. All input and output routing, including Micamp settings and effects patching can be stored with a Project (the highest level of automation structure). The MT software even allows RIO connections to be named, so an engineer can think of patching, say, the kick drum to a Lexicon PCM 80, rather than channel 24 to aux 8. As all routing can be programmed, there is no patchbay for the Axiom-MT. No more intermittent patch cables or jacks, no more running short of cables.

It is difficult to overstate the importance of the efficiency gained by this level of programmable routing. Instant repatching in the case of a remote truck, for example, allows fast changeovers between acts without a crew of scrambling techs. Admittedly, SSL is not the only company to incorporate fully programmable routing, but that does nothing to lessen my excitement at this realization of the computer's long-held out promise of pushbutton convenience on a large scale.

For clock synchronization, the CPU accepts video black burst, which SSL feels offers numerous advantages over word clock.

To the greatest extent possible, a "one knob, one function" approach has been taken in the control surface, with the layout of the channel strips designed to bear a strong visual resemblance to the 4K strips. The basic areas of the channel strip are (from top to bottom): gain, dynamics, EQ, aux sends, small fader, and panning and large fader and panning. At the top and bottom of each strip is a "scribble strip": a user-programmable display that can show up to eight characters of a channel name (which can actually be of any length).

Channel strips come in bays of eight, with a routing matrix at the top of each bay for mapping RIOs to the console facilities and channels to buses. To accommodate the space limitations found in remote trucks and the like, as well as budgets that can't quite stretch for a very large control surface, a layering scheme allows each channel strip to be toggled between controlling two different channels. In deference to



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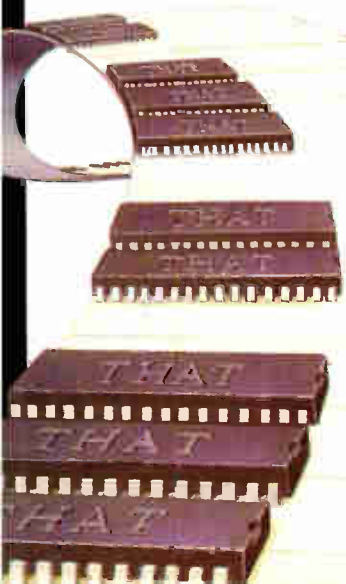

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the mandate to keep functionality simple, there are only two layers, which can be toggled globally or on a channel-by-channel basis. The channel number a strip is currently controlling is always shown on the meter bridge, and the scribble strip shows the channel's name.

The downside of having only two layers is that a control surface with fewer than 48 physical channel strips is incapable of accessing all 96 channels supported by the CPU.

The other disadvantage to the "one knob, one function" emphasis is that a large control surface often requires the engineer to make adjustments on channels far from the "sweet spot" for listening. To offset this problem, the Axiom-MT has a Bay Swapping feature, which moves a selected bay of channels to the bay immediately left of the center section.

Although this scheme certainly overcomes the reaching problem, it could have been taken one step further by allowing the user to arbitrarily select any eight channels and create a custom bay, making it easy to conveniently place critical tracks requiring adjustment independent of any group they were in. I could see making a custom bay with snare drum, male vocal, female vocal and lead guitar, so that those primary mix elements could be adjusted relative to each other without disturbing group levels for drums, vocals or guitars.

Routing is simple and intuitive, and all bays' routing matrixes provide identical patching. For example, to route a mic input to a channel requires only selecting the channel and fader, then choosing the Mic input group and number, a total of three to five button presses. It is also easy to assign a range of inputs to consecutive channels.

Output patching to the multitrack or main mix buses is similarly simple. Unlike the 4000 Series, here, both the small and large faders can be routed through the matrix simultaneously. At the top of each strip, an array of LEDs indicates the output routing of the channel. A duplicate of the array appears in the center section for convenience. In most cases, users will interpret the display simply by the positions within the array of the illuminated LEDs, but the legends on this display are tiny, making them difficult to read in full-lighting conditions, and essentially illegible in low-light conditions. Explicit examination, when necessary, will require selecting the channel to appear in the center section array (which is still pretty hard to read) or leaning far forward over the console.

Patching of aux sends and returns to outboard equipment is somewhat more involved, as it requires delving into the menu system and using the screen. For the most part, the menu system is also fairly straightforward, but it does force a greater level of "left brain" thought. Fortunately, repatching effects won't often be necessary and, once configured, the setup can be stored with the Project.

A clever aux send scheme allows any aux send not being used on a channel to be sent to the multitrack routing matrix. Further, both signal paths in a channel feed the aux buses independently and simultaneously.

Taking a closer look at the channel strip, each knob is an infinite turn pot with an LED ring around it showing the parameter's current value. The exact parameter value is displayed in the scribble strips at the top and bottom of the channel when any knob is adjusted. I was pleasantly surprised at how easy it was for me to see the LED rings, and found it quite natural to use them to

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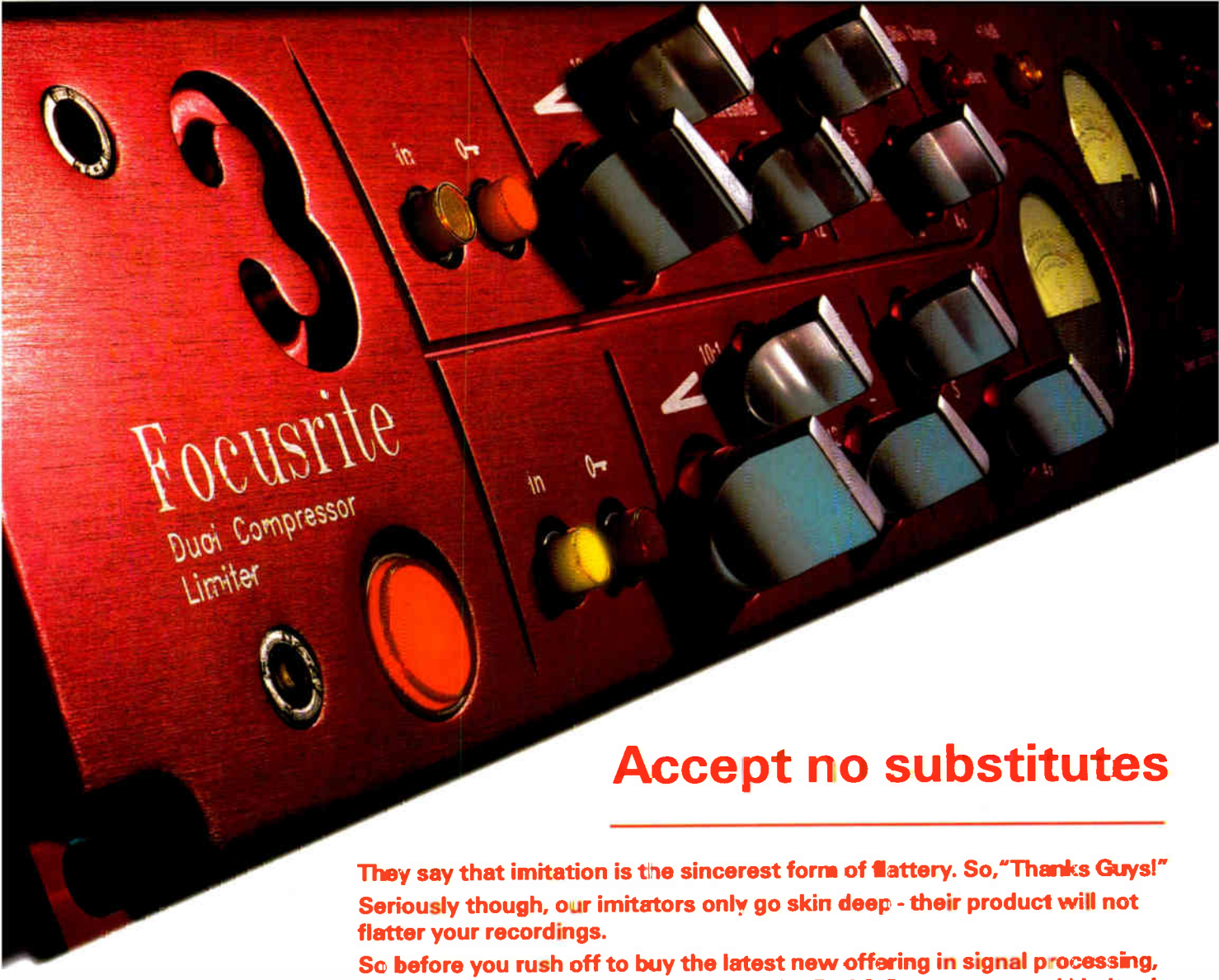

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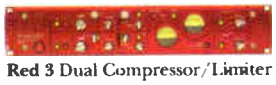
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rough in a setting, then glance at one of the scribble strips if I needed to note a value or make a finer adjustment. In a low-light environment, the LED rings and scribble strips would be considerably easier to read than screened panel markings.

As in the 4000 Series, the dynamics section contains a gate/expander and a compressor/limiter. The compressor and gate each have a dedicated LED meter to show their action, but they share one set of parameter controls; a Gate button in the section switches the controls to the gate.

The compressor section is one of the rare spots where emulation of the 4000 Series proves disadvantageous. The parameter controls are calibrated similarly to those on the 4K, with the attack range going from a few milliseconds up to 900 milliseconds over the course of the pot's travel. My experience with digital compressors has been that they usually don't operate with any transparency unless the attack time is set much longer than what one would normally use on an analog compressor, typical settings being between 75 and 250 ms. On the MT, this range occupies perhaps an eighth of the pot's active working range, making fast selection of attack time more difficult.

The EQ section is, again, configured like the 4K: four overlapping bands of EQ (with up to 20 dB of boost or cut and .1dB gain steps!) plus HP and LP filters that can be split from the four bands. I expected the bands to all be full-range or, at the least, two each wide-range LF and HF bands, since it's pretty much all the same in the digital domain. According to SSL, the EQ in the original Axiom was indeed configured as four full-range bands, but, after observing constant user confusion, it was decided to return to the familiar 4K configuration for the MT. C'mon folks! I know we work fastest in a familiar environment, but learning to deal with a change at this level is not that much of a stretch and can gain you a lot.

Below the filters, an LED bar display effectively shows the passband, making it easy to scan across the console if, for example, things were sounding muddy, and see which channels did not yet have the HPF engaged.

The EQ and dynamics sections' parameters are also displayed in the center section monitor screen, as text and graphically, as soon as any of the parameters are adjusted. Libraries of EQ or dynamics setups can be saved and recalled. Dynamics can be configured to be pre- or post-EQ.

Channels are easily grouped and any channel or group fader can act as group master.

The center section contains the recessed 14-inch monitor screen (a huge improvement over the 4K's dinky little monitor), and the wide assortment of status, monitoring, control and communications facilities. Unlike many earlier SSLs, there is a separate, full-size keyboard in a slide-out drawer under the center section. A pen-and-tablet interface is used for navigation through the computer's menu system. Positioning of the cursor within the pad area is absolute, instead of relative, as most mouse controllers are. I found this—along with the fact that the cursor is positioned by moving the pen just above the surface of the tablet—a bit awkward, but I'm sure I'd very quickly become accustomed to it if I worked on it regularly.

The other difficulty I ran into was that I am left-handed and the tablet is permanently mounted, not movable, which necessitated some very contort-

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ed reaching. SSL assured me the entire panel with the tablet could be installed to the left of the other center section panel, but a console used by some lefties and some righties could be a real nuisance. It would be nice to have the option of connecting your own free-standing controller, be it a tablet, mouse or trackball.

The mix status buttons are pretty much the same as the 4K (Record, Replay, Mix), with "Small Fader to Mon" replacing the famous "VCA to Mon" mode. (Hey, no VCAs!) Panning mode can be set on a global or per-channel basis. In the surround modes, panning to the surround speakers is accomplished using the small fader pan control. SSL is not planning to offer a joystick option, but the pen and tablet can be used to position a sound within the surround panorama, a method I find far preferable to using two panpots.

The main mix compressor is 6-channel, and a main mix insert allows substitution of other processing. Of particular note, the channel meters can show input or output levels in RMS or peak values.

The solo functions are flexible, with features like a global solo clear, large and small fader solo linking, Solo Isolate (isolated faders are not muted when a solo is engaged) and, my favorite, Solo in Front, which is more like a "highlight" function than a "solo" function; that is, rather than muting channels not solo'd, Solo in Front instead allows separate control of the level of the solo'd items relative to the rest of the mix.

The Effects Auditioning feature again takes advantage of programmable routing by letting the user take an aux send and flip through the available effects devices, so one could, for instance, quickly try different reverbs on a vocal to see which sounded best.

A major issue arising with the coming of 5.1 music mixing is the question of monitoring. The Axiom-MT addresses this thoroughly, with buttons to send the console output to either of two 5.1 monitoring systems, or two "Mini" (stereo) monitoring systems. Further, there are 24 external source monitor buttons, any of which can be used as 5.1 returns, facilitating quick source/tape comparisons.

The center section also has the machine controls. The Axiom-MT has one parallel and four serial ports for machine control. The parallel port is for multitrack tape machines and the like which use parallel ports and a standard protocol. The serial ports control machines using the popular Sony 9-pin protocol. The Axiom-MT has no MIDI capability, so DAWs, sequencers, ADATs and DA-88-family recorders require an interface with Sony 9-pin capability, rather than using MIDI Machine Control.

DAWs and sequencers that are acting as slaves will stop, start and locate automatically in response to timecode input, which is required for the MT's automation anyway. If, however, the DAW is the timecode master, it will be necessary to deal with its transport operation separately from the Axiom-MT.

Virtually everything on the Axiom-MT is automatable: small and large faders, panning (including surround panning on both faders), EQ, dynamics, aux send and return levels and mutes, all routing, gain settings...Uh, did I forget anything? Small and large faders are both motorized. SSL's established automation features: AutoTakeover, Match and Play, Autoglide and so forth, are all implemented.

All of this automation takes a little getting used to. Essentially, the assumption is that you want to automate everything unless you specify otherwise. An extensive and flexible Protect feature allows global protection of selected functions. If you wanted to fool around with EQ settings while running level and aux automation, you simply go into the Protect menu and set EQ to be protected.

When a channel is in automation record, a small red LED by the fader lights. The placement of this important indicator seems poor to me, as while seated at the center section, I was unable to see the indicator on the channel just to its right.

The automation functions largely grow out of (and, in many cases, are the same as) those on the 4000 Series. The MT is capable of offline editing of mutes and other individual events, but it feels to me more like near-line editing, as it is still done by locating to the desired time and performing the change, rather than through any kind of list editing. Event list editing per se is not available, and graphic editing very limited, as SSL feels the amount of data would be overwhelming.

Though I may be atypical of SSL users, I have found the list and graphic editing employed in numerous MIDI/digital audio sequencers workable—insofar as being capable of making accessible voluminous quantities of editing data across many tracks—and frequent-

World Radio History

ly the most efficient method of accomplishing microedits.

As with other SSL consoles, the MT saves a mix as soon as the transport is rolled back in time. This scheme has the advantage of not requiring the engineer to remember to save when trying to work quickly, but the down side is that you have to remember to run several keystrokes to delete a mix you DON'T want to keep, or risk building up a list of numbered mixes (which can easily exceed the five stored in RAM), with no recollection of the differences between them. In The O's world, there would be an alternate Save mode that did not store a mix unless you hit a Save button and, further, allowed the talkback mic to be used to attach voice annotation to each mix as it is saved.

At this price range (around a half a million bucks), audio fidelity should be beyond question, and, in my short experience, the Axiom-MT's was just that. I tried some basic "kick the tires" tricks, like giving a full 20 dB of boost with a high Q setting to one of the EQ bands, then spinning the frequency dial and listening for glitches. The MT passed all those tests with flying colors. I also listened for subjective tonal quality of the EQ and transparency of the dynamics (especially the compression) and found both to be entirely satisfying. The EQ is, in my opinion, much better sounding than the old 4000E Series EQ, and the compressor sounded the same amount better than its analog cousin in the 4K...once I set the attack time long enough.

Perhaps my deepest personal regret with the Axiom-MT is the omission of SSL's notorious "insults" feature, which supplied to the monitor screen very British insults when you made an incorrect key sequence. A casualty of progress, I suppose.

My other quibbles are few and mostly minor. Ten years ago, the question of whether an SSL console should have MIDI on it seemed silly; today, with the huge increase in hardware devices and software using MTC, MMC and controller messages, it is a reasonable query. Given how little it would cost to include, I think it would behoove SSL to reconsider this.

In terms of the board's layout, the problems I saw were almost entirely related to real estate. Trying to fit that many controls essentially within arm's reach is difficult to start with, but SSL has nearly hit the wall. In fact, the Axiom-MT seems to me a bit of an improvement in this respect over the 9000

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Series, which has numerous buttons on a channel strip so small it's difficult not to press two at once. In the greater scheme of things, tiny writing on the routing matrix or poor placement of the automation record LED is not such a big deal, though it may prove to be an annoyance on occasion.

In the case of the Axiom-MT, the greater scheme of things was the extremely tricky balancing act SSL took on. One thing that has become clear in the last ten or 15 years is that the advance of technology by far leads its acceptance in high-pressure production environments. When steep hourly rates are charged, time is a lot of money, making it untenable for a working professional to take weeks, or even months, to learn an entirely new paradigm. Although an increasing number of engineers are quite comfortable dealing with computers, the most effective solution that has emerged is for products to take small steps into the future; the operative word here is "transitional."

SSL's challenge in the Axiom-MT was to present a product that engineers could be productively working on within a few hours of first sitting down at it, yet provide some of the greater power that the latest digital technology has to offer. The Axiom-MT is a brilliant embodiment of this tightrope walk, with every critical feature and a great number of lesser ones immediately and intuitively accessible. Major advances like the flexible I/O system, programmable routing and dynamic automation of virtually every parameter on the console, bring engineers up to the cutting edge of technology, while very strong "4000-ness" and, uh, innovative (in a "forward to the past" kind of way) "one knob, one function" emphasis meant that I was able to start patching and mixing quite literally within ten minutes of getting a tour of the console.

If you need a large-format music mixing console with pizzazz, plenty of power and the best ease-of-use I've ever seen in a product of this class, you absolutely must take a long, hard look at the Axiom-MT.

Solid State Logic, USA; 212/315-1111; fax 212/315-0251. Web site: www.solid-state-logic.com. ■

Larry the O provides music and audio services as Toys in the Attic and is a sound designer at LucasArts Entertainment.

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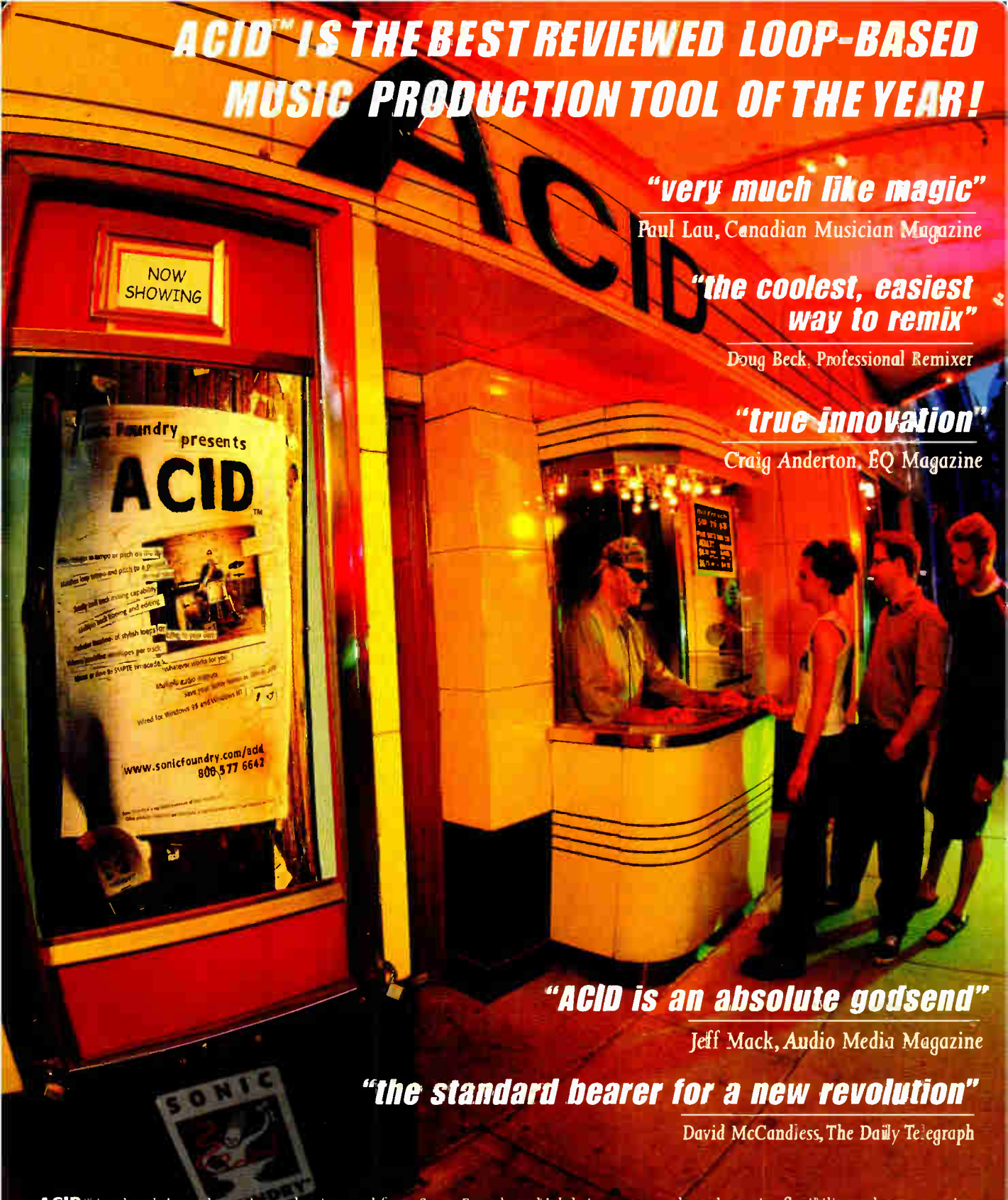

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dbx 160SL

STEREO COMPRESSOR/LIMITER

The word "glamorous" struck me as I pulled the new dbx Professional Products 160SL Stereo Compressor/Limiter from the shipping crate. Its gleaming ¼-inch-thick, metallic blue, anodized aluminum front panel, chrome-ringed LED indicators and the custom-machined control knobs on the heavily damped pots let you know that this is dbx's flagship product.

GETTING IN AND OUT

The two-rackspace 160SL has two mono compressor channels mounted side by side with stereo coupling and sidechain capability. In sidechain mode, the compressor responds to signals coming into the sidechain return connector rather than the normal input. A short signal path is used for sidechain de-essing or ducking functions. You can hear the confident "click" of a hard-wired bypass relay with a verifying red LED when you select sidechain mode. There is also a hard-wired bypass relay for bypassing the entire unit out of your signal chain. Sidechain connections, like all the audio connections on the 160SL, are by way of gold-plated Neutrik XLRs. Also on the back panel, dbx has provided three push-button switches for each compressor channel: Pin 1, Unbalanced and Ground. The Pin 1 Lift switch lifts pin 1 of the input XLR from all ground references. The Unbalanced switch changes the output of the 160SL from balanced to unbalanced and drops the level 6 dB. (You could also short pin 3 to ground if you want to unbalance but keep the level up.) The Ground switch, when pushed in, references the center tap of the Jensen output transformer to chassis ground. Finally, a stout grounding post is provided and a space for an optional 24-bit AES/EBU and S/PDIF analog-to-digital converter. With the converter added, there would be two simultaneous audio output streams: analog, AES/EBU or S/PDIF digital.

The input audio signal, after going through a RFI filter, is amplified and then presented to the new dbx V8™ VCA module, the "engine" behind the 160SL's dynamic range control. The V8's dynamic range is specified at greater than 127 dB with 0.007% total harmonic distortion at +4dBu output level. Audio then goes to the first stage of the new PeakStopPlus™ processor called the Instantaneous Transient Clamp™. ITC is a soft-clamp logarithmic function that ensures the level will not exceed 2 dB over the PeakStopPlus setting. It does this without introducing harsh-sounding artifacts.

To back up a moment, PeakStop® was first introduced with the dbx 165A compressor and allows setting up an absolute ceiling for all fast transients that outpace or slip by the compressor's gain reduction setting. This "brick wall" limiting is an important feature for successfully engineering maximum-level digital recordings, radio broadcasts or satellite transponder audio uplinks. The PeakStopPlus process was first introduced with the dbx 1066 unit and improves performance with the addition of a second stage called Intelligent Predictive Limiting.™ IPL monitors the input signal and "predicts" the amount of extra compression required to keep the output signal below the ceiling set by the ITC. The careful design, combined with proper use of this feature can offer tremendous dynamic range control without sounding too "squashed" and lifelessly overprocessed.

As PeakStopPlus is a fail-safe limiter, it comes last, after the Output Gain control's setting. PeakStopPlus is adjusted with the Stop Level control from 4 to 30 dB (off) and sets the maximum output level, regardless of any other control. There is a bicolored LED indicator that shows when PeakStopPlus is engaged (green) and when peaks are reached (red). The Output Gain control adjusts the output level with up to 25 dBu of makeup gain. The lighted VU meter has two scales: an upper VU scale that's switchable between input and output level, and the lower, fully expanded scale for precise gain reduction measurement—a good idea. There is also a Peak LED that lights when you venture within 3 dB (+27 dBu) of the maximum output level possible from the 160SL, +30 dBu—another good idea.

CONTROLS

The Threshold control adjusts the input level above which compression occurs. There is an LED "traffic light" that shows when the signal is below threshold (green), over threshold (red), and (yellow) when the OverEasy* mode is selected and the level is in the OverEasy thresh-

BY BARRY RUDOLPH

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old range. OverEasy mode is familiar to all dbx compressor users and offers a "softer" threshold knee than the hard knee threshold setting. If you have arrived at a threshold level setting with OverEasy switched out and then switch it in, you will notice more gain reduction movement on the meter. That's because your previous setting was within the +5dB or -5dB OverEasy window. In this situation, I will typically reset the threshold. I have always used and preferred the dbx compressor for the OverEasy mode for its musicality. The 160SL doesn't disappoint here, as I got tremendous control without excessive pumping, and now I have a new favorite.

The compression ratio control is smooth and continuous from 1:1 to infinity:1. In OverEasy mode, the dialed-in ratio setting is not fully reached until the signal has exceeded the OverEasy range and the red LED lights. The Auto button toggles between manual and automatic attack and release times. Auto mode selects the same attack and release times as dbx models 160, 161, 162, 163 and 164 compressor/limiters. The Auto mode uses dbx's patented RMS level detector circuit with program-dependent, attack/release characteristics to obtain natural-sounding compression or limiting. dbx recommends Auto mode for vocal recording; however, I prefer to tweak around in Manual if I have time. Auto mode is great for live situations where you don't have time.

Attack time is defined as the time the compressor takes to respond after program levels have exceeded the threshold setting. The range is from 400 dB/ms (fastest) to 1 dB/ms (slowest). dbx has always expressed the specification in this way. Though precise, the nomenclature can be confusing, especially since there is no established convention among compressor manufacturers as to whether fully clockwise is fastest or slowest. On the 160SL, very fast attack setting (control set to maximum counter-clockwise) will cause the compressor to act like a peak limiter even though RMS detection is used. Release time is defined as the time the compressor takes to return to original levels after the last excursion over threshold. dbx expresses this as 4.000 dB/second for the fastest and 10 dB/second for the slowest.

SPECS

With no gain reduction occurring, the 160SL at unity gain is flat from 20 to 20k Hz, +0 or -0.1 dB. If you can accept a deviation of +0 dB/-1 dB, the bandwidth extends from 4 Hz to over 40 kHz. For +0 dB/-3 dB, frequency response is from below 2 Hz to over 200 kHz. Noise is less than -92 dBu unweighted 20 to 20k Hz. Dynamic range is greater than 122 dB, and total harmonic distortion is .008% at +4 dBu using 1kHz tone.

I used the 160SL on a variety of instruments, as well as for overall program control. Because of the unit's transparency, I found it a favorite on vocals, backing vocals, bass synth, bass guitar, guitar and drums. The amount of control available for both specific effects, like spanky drum and guitar sounds, and more classic applications such as vocal recording, is unsurpassed by any other previous dbx compressor. The 160SL sells for $2,799, and the soon available analog-to-digital converter module will sell for about $349.

dbx Professional Products, 8760 South Sandy Parkway, Sandy, UT 84070; 801/568-7660; fax 801/568-7662. Web site: www.dbxpro.com. ■

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

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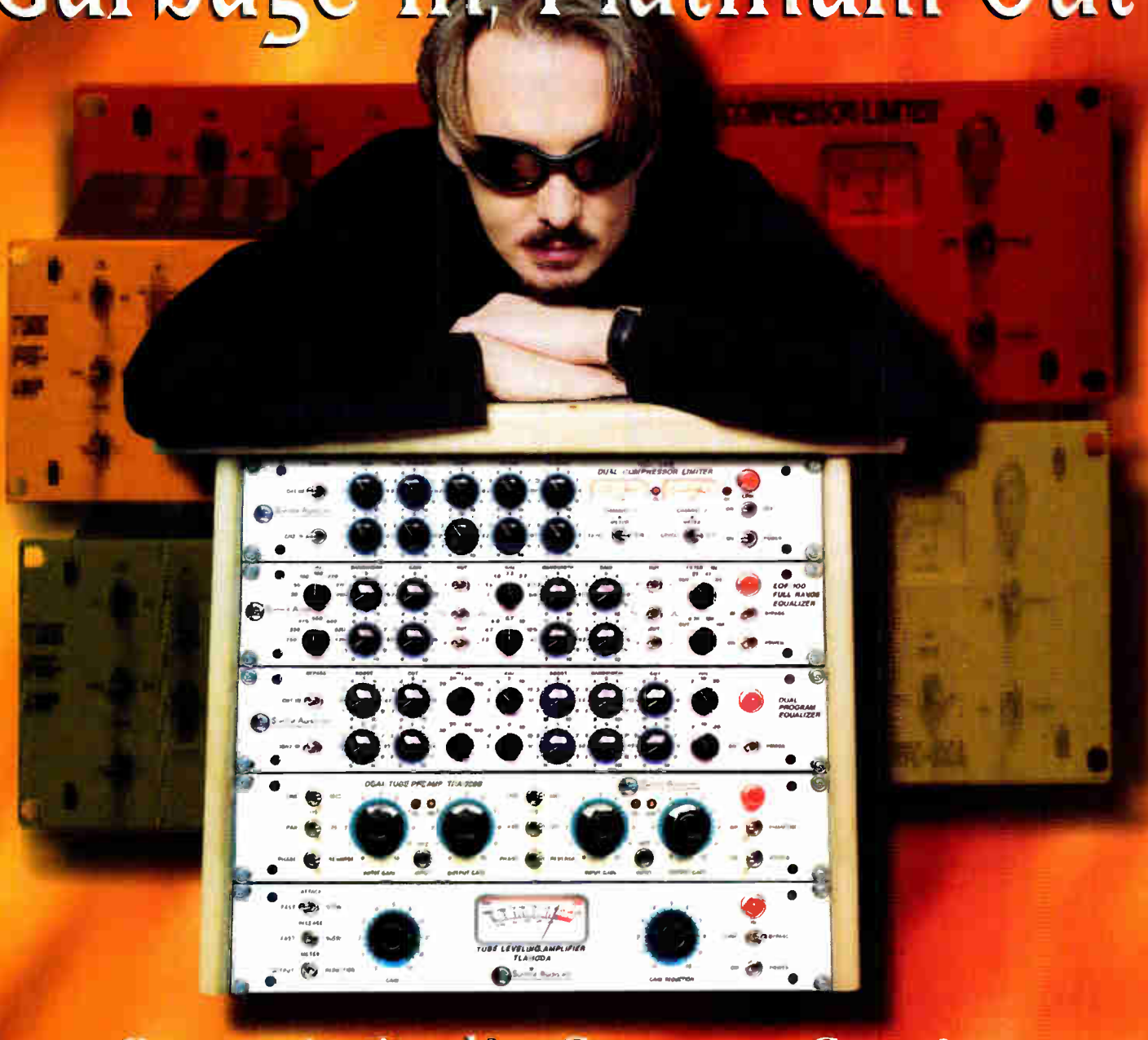
Garbage In, Platinum Out



Summit Audio Success Stories

Butch Vig, engineer, producer, co-owner of Smart Studios and the drummer for Garbage, relies on Summit gear for all his work. Vig engineered the group's latest platinum album, "Garbage," nominated for three Grammys this year, as well as producing albums for Smashing Pumpkins, Nirvana, Soul Asylum and Sonic Youth.

"Whether I'm working at Smart Studios or I'm on the road touring, I always use Summit tube gear. I particularly like using the DCL-200 Compressor Limiter for tracking vocals. It colors the sound very subtly, while retaining its warmth and transparency. Often I will compress a vocal performance quite a bit. This allows me to place it exactly in the mix while maintaining a lot of presence and natural dynamics without sounding too loud. This works especially well when the mix is very dense."

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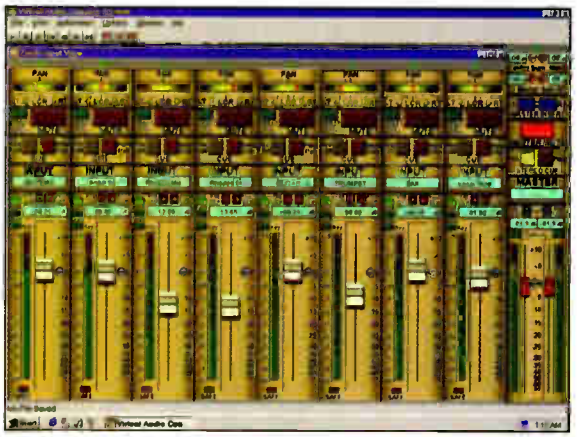
Audio History

GAMBLE DCX

DIGITALLY CONTROLLED ANALOG CONSOLE

One weekend this summer I drove up to Jim Gamble's secret mountain laboratory and visited the Elevation club (www.tahoe-sites.com/elevation) in Tahoe City, where a DCX console is installed. My mission? To find out if mixing with a mouse is just as easy as the old-fashioned way.

Elevation boasts a view of the south shore of Lake Tahoe, and owners Joscylen and Steve Sacks have installed an equally classy sound system: four ex-Grateful Dead Meyer Sound UM-1 wedges, with MSL-2s for mains, plus Bag End ELF subwoofers. DCX project manager Blake Beeman doubles as the house engineer, and, over the next two nights, I mixed Five Fingers of Funk and San Diego's Greyboy All-stars on the DCX.



Virtual versions of console controls can be manipulated onscreen with a mouse.

The DCX is a digitally controlled analog console. Cortek's VACS software puts graphic representations of all of the console's controls on a computer screen, and these are then manipulated with a mouse. I first listened to a DCX board mix of the Tony Furtado band, recorded the night before on the club's Otari CD recorder. The low end coming from the Meyer HD-1s in Jim Gamble's living room was incredible, and the open, full sound compared to that of a high-end recording console—what you'd expect from a Gamble.

Apart from the name, however, the DCX has little in common with its predecessors. The DCX's input modules mount vertically in a card cage, with a patchbay above and power supplies below. The DCX comes in three sizes. The largest, the 60-input Event, occupies a double-wide rack and offers eight stereo subs, eight stereo matrix outputs and 16 stereo auxiliary buses. Each input channel has two mic and two line inputs, plus two independent cue systems, a setup that allows you to line check a complete second set of inputs while another engineer is mixing. Each input module has jacks for mic and line inputs, pre- and post-EQ insert, gate and compressor sidechain, gate key and direct out. Only the back of the rack is reminiscent of an EX analog console, with RAM Latch multicore connectors and rows of XLRs.

The DCX's two-part software runs under Windows NT. An onboard Pentium computer runs the server software that communicates with each card in the mixer. In multiple DCX setups, the mixer may be controlled from any of up to eight computers over Ethernet. An administrator controlling a central server can override individual operators.

The DCX Event has more than 12,000 controls (compared to the 3,900 found on an EX56), which allows for the inclusion of full-featured gates and compressors on every channel. The absence of physical pots, faders and switches means that the usual shortcomings of mechanical devices—vulnerability to dirt and wear-and-tear, for example—are eliminated. The software-based controls are accurate, and response is precise and smooth.

MIXING WITH A MOUSE

Though Gamble had assured me that I'd be pleasantly surprised, I harbored serious reservations about the practicality of live computer-based mixing. But I found that, though it's only possible to see a portion of the entire console's control surface on even a large CRT monitor, the scrolling is quick and using the mouse to mix is intuitive and fun. Without once referring to a manual, I was mixing the entire band by the second night.

When confronted with a large mixing board, most mixers go through the same familiar motions, tracing a finger over to the input strip and then up to the intended control. On the DCX, one executes the same moves, but with different hand-eye coordination, because the cursor on a computer monitor represents your finger. But with the mouse, you can get to the end of the console with a flick of the wrist. The operator's line-of-sight moves, but not the ears.

Other mixing devices are possible. I brought a Kensington trackball, but some might prefer touchpads

BY MARK FRINK

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(or light sabers). Some very interesting future control and display options were discussed.

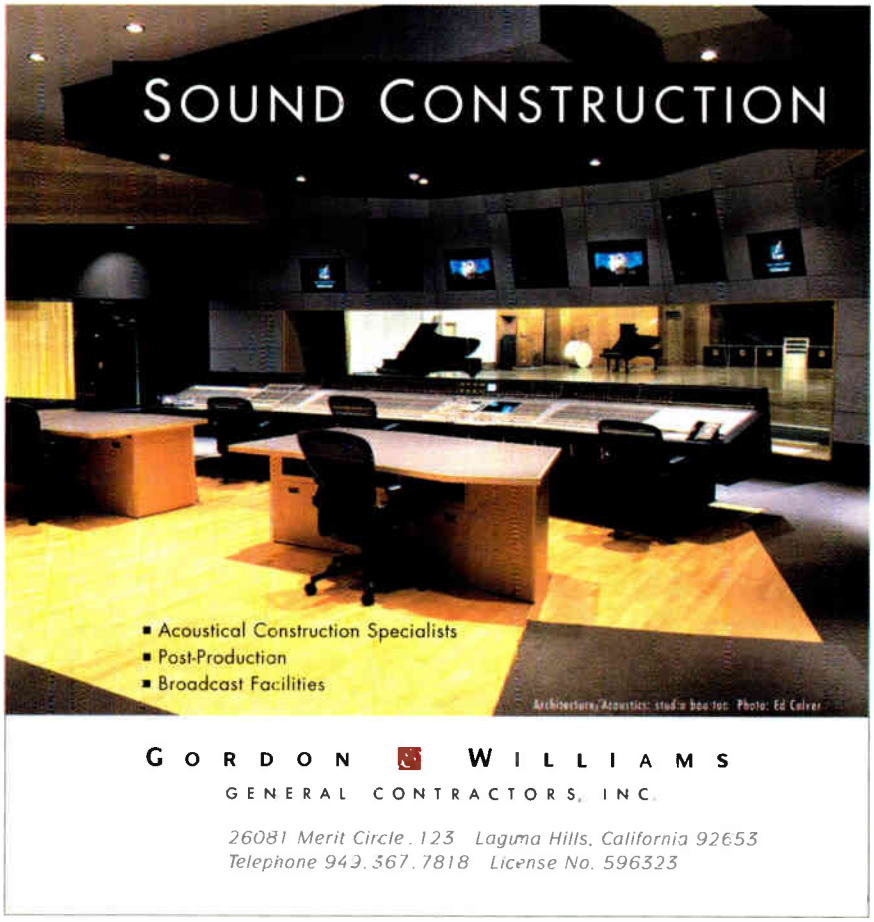
Up to eight copies of the client software may be run on multiple computers simultaneously, allowing for mixing by several operators and a division of mixing chores. Access to the controls from these additional workstations can be limited to a subset appropriate to their tasks. For example, an extra station might be dedicated to drums, while others could be used for instruments, vocals and effects. Operators may also customize their console views or windows to suit each individual's style. For example, the "money fader" can be placed onscreen right next to its EQ controls and FX sends. Also, with 16 stereo auxiliaries, it is easy to imagine a DCX shared by both an FOH and a monitor engineer, each using their own workstation.

There's more. With the use of a wireless LAN, it's possible to mix from any seat in the house. The second night at Elevation, I used a P150 laptop to mix from the end of the bar, and also from out on the patio (you can't smoke in a club in California). Imagine being able to mix from the tenth row with only a couple of seat kills. Theatrical producers will note that the seats saved by not putting a traditional console in the audience might even pay for the DCX over the long run.

Oh, yes. The David Andrews test was inadvertently performed the first night when the club was packed and a patron stepped on a cable coming from the distro, unplugging the rack. The console's modules maintained their state, despite the loss of AC, and the server only took a few moments to re-boot.

Grouping is easy, snapshots can be stored, and mixes can be automated. Because the mixer is configurable offline, changes can be made on the airplane to the first show or in the bus lounge, while the DCX rides on a semi. After familiarizing myself with the system over a couple of shows, I began to see that there are endless advantages. The exciting thing about this console is that the possibilities have barely been scratched. Look for it at AES.

Ramtech Industries: 800/817-2683; fax 352/466-0906. AudioMation Inc.: 702/656-0874; fax 702/656-1595. Secret Mountain Lab: 530/583-0138; fax 530/583-0138; Web site: www.gamble-boards.com. ■



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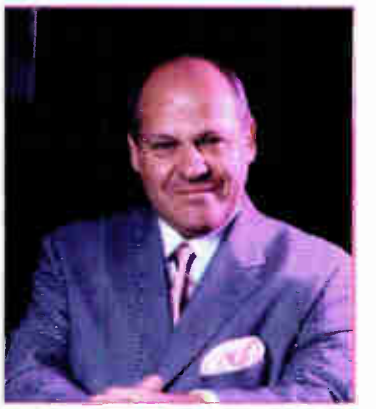

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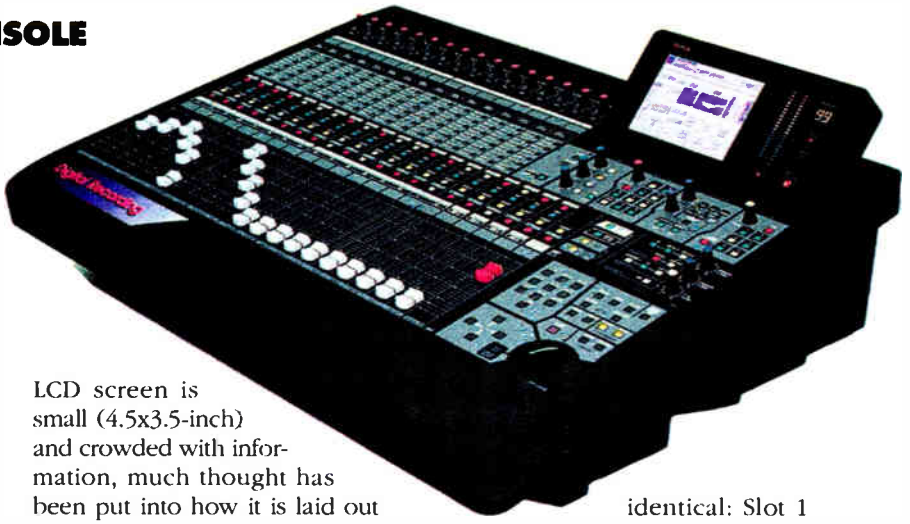
PANASONIC DA7

DIGITAL MIXING CONSOLE



Although Panasonic's Ramsa label has built well-respected sound reinforcement consoles for years, the name is not immediately associated with studio consoles or digital consoles. Panasonic's ability to make digital products is well-known, due to its ubiquitous SV3700 and 3800 DAT machines. It is less known that Panasonic has been selling the DX1000, a large, programmable digital mixer, into the theatrical market since the early '90s.

The DA7 is a distillation and refinement of the technology and lessons pioneered in the DX1000, but it is a horse of a different color: a different feature set aimed at a different market. Pricewise, the basic DA7, at $4,999, falls smack in the middle of the competition, with the Yamaha 02R, Tascam TM-D8000 and Mackie D8B above it and the Yamaha 03D, 01V and Tascam TM-D1000 below it. A tricked-out DA7 filled with the options described below retails around $7,000. Having firmly established that pro-quality audio fidelity can be attained in these mixers, the challenge for the manufacturer largely comes down to two main choices: which trade-offs will be made in order to make the low price points of these products, and how the user interface will be conceived and executed. Panasonic has done a truly masterful job of negotiating these two critical and extremely tricky issues.

FEATURES AND FUNCTIONS

The DA7 is a 32-channel, 8-bus configuration with six aux sends and six returns. Unlike much of the competition, there are no onboard effects processors. At 27.8x9.7x 21.9 inches (WxHxD), it's fairly diminutive, considerably smaller than the ancient Ramsa 8118 it replaced in my project studio. Weighing in at 51 pounds, it is not quite a featherweight, but far from a beast. Though the 320x240-dot, backlit LCD screen is small (4.5x3.5-inch) and crowded with information, much thought has been put into how it is laid out and what status information is always visible. Additionally, a larger, dedicated scene memory indicator and master level meter are to the right of the display.

There are 16 analog inputs, eight each XLR and TRS, the only differences between them being the connectors and availability of phantom power on the XLRs. All of these inputs accept signals from a minimum of -60 dBu to a maximum of +24 dBu, and sport analog TRS insert jacks. The mic preamps are the highest quality you'll find in a mixer at this level, though I wouldn't retire your Millennia just yet.

Accessing the other 16 channels requires the addition of optional I/O cards into some of the three slots on the back panel. The WR-ADAT ($299), WR-TDIF ($349), WR-AESS ($359) and WR-ADDA ($799) provide eight channels of input and output each in ADAT Lightpipe, Tascam TDIF, AES/EBU or S/PDIF, and analog (+4dBu nominal) formats, respectively. The WR-AESS and WR-ADDA present their connections on DB25 connectors, requiring breakout cables available separately from Panasonic. The AES card has four switches that set each of the I/O pairs to either AES/EBU or S/PDIF; it would have been convenient if that switching were in software.

The three option slots are not identical: Slot 1 routes inputs to channels 17-24, slot 2 to 25-32. Slot 3, when used for inputs, replaces analog inputs 9-16. The outputs from these cards can be mapped more freely, with any channel, bus or mix output assignable to any digital output channel. What's more, if any of the I/O cards is in slot 3, there is an insert mode that allows devices to be digitally inserted on any of the buses or mix outputs. Alas, the DA7 offers no way to accomplish digital channel insert points.

Other options include the WR-SMPT ($499), which accepts SMPTE timecode input on an XLR connector and video black burst on a BNC connector, and the WR-MTBR meter bridge ($999). Without the meter bridge, it is still possible to meter levels on the DA7's onboard display, but anyone who has tried metering on a small display will agree on the wisdom of budgeting for the meter bridge from the outset. The WR-TNDM ($539) card allows two DA7s to act as a single 76-input mixer (including channel inputs and aux returns). While the SMPTE card has its own special slot, the tandem card must occupy Slot 3 on both DA7s being linked. (The DA7's automation can also lock to MIDI Time Code as a standard feature.)

Aimed, as it is, at project studios, edit and production suites,

BY LARRY THE O

World Radio History

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and other applications where small size is a major plus, it is clear that real estate was one of the big areas in which Panasonic had to make tough calls on what to put in and what to leave out. One look at the back panel illustrates this. Aux sends and returns 1/2 are digital (S/PDIF), requiring two RCA jacks. The other four sends and returns are analog and had to be squeezed as unbalanced pairs onto TRS jacks (send 3/4 and 5/6, etc.). Of course, standard insert cables will work for splitting these out.

The DA7 offers two pairs of analog mix outs—Master (XLR, +4dBu) and Rec (TRS, +4dBu)—and two pairs of monitor outputs: A (TRS, +4dBu, intended for CR use), and B (same, but intended for Studio). Unfortunately, there is no direct way of toggling back and forth between the monitor outputs, greatly reducing their usability for switching between alternate speakers, although it can still be kludged by simultaneously pressing the L/R source select switches for the two outputs to turn one on and one off. The master L/R mix is also available in digital form on an XLR jack that can be switched between AES/EBU and S/PDIF formats. There is a companion digital input to this jack, its format set by the same switch, which can be used as either as a digital 2-track tape return or routed to inputs 15/16 or to the stereo L/R bus. Finally, in the way of audio I/O, there is also an analog 2-track tape return.

A/D and D/A conversion on the DA7 is 24-bit for the 16 analog inputs and the master outputs, and 20-bit for the analog aux sends and returns. Some of the converters are 64x oversampling, others 128x. I found the converter to sound excellent, enough so that I would certainly choose to use the DA7 as a front-end over the internal converters in ADATs, DA-88s and most workstations. The usefulness of the converters for this application is greatly enhanced by the availability in the DA7 of dither to any number of bits between 16 and 23 on all digital outputs. This is a thoughtful addition that, along with the high A/D/A converter quality, makes the DA7 a valuable investment for its interface capabilities alone. For example, placing the DA7 between a Pro Tools 24 system and an ADAT XT20 avoids the need to consume significant DSP resources in Pro Tools to accomplish a properly dithered multitrack transfer.

There are few non-audio connections on the DA7: a connection for the meter bridge, MIDI in/out, serial ports (DB9 and DIN8) for communications with personal computers, word clock in and out, and a remote switch jack. The DA7 can generate a word clock signal or slave to an external one, and there is switchable termination. Keeping the word clock cable run short enough could be tricky if the DA7 is in the middle of the room and the other devices being clocked (or generating the master) are in a rack. This will especially be the case if you are using an external clock source that is also clocking a Pro Tools system, as Pro Tools requires the clock cable run to be extremely short, dictating that the clock source be physically located adjacent to the Pro Tools interface.

In fact, with the DA7 filled with option cards and all the digital I/O connected, you will probably want to make a snake for all your digital connections, separate from your analog audio cables and protected in some fashion to keep kinks from developing in delicate ADAT optical cables and the like.

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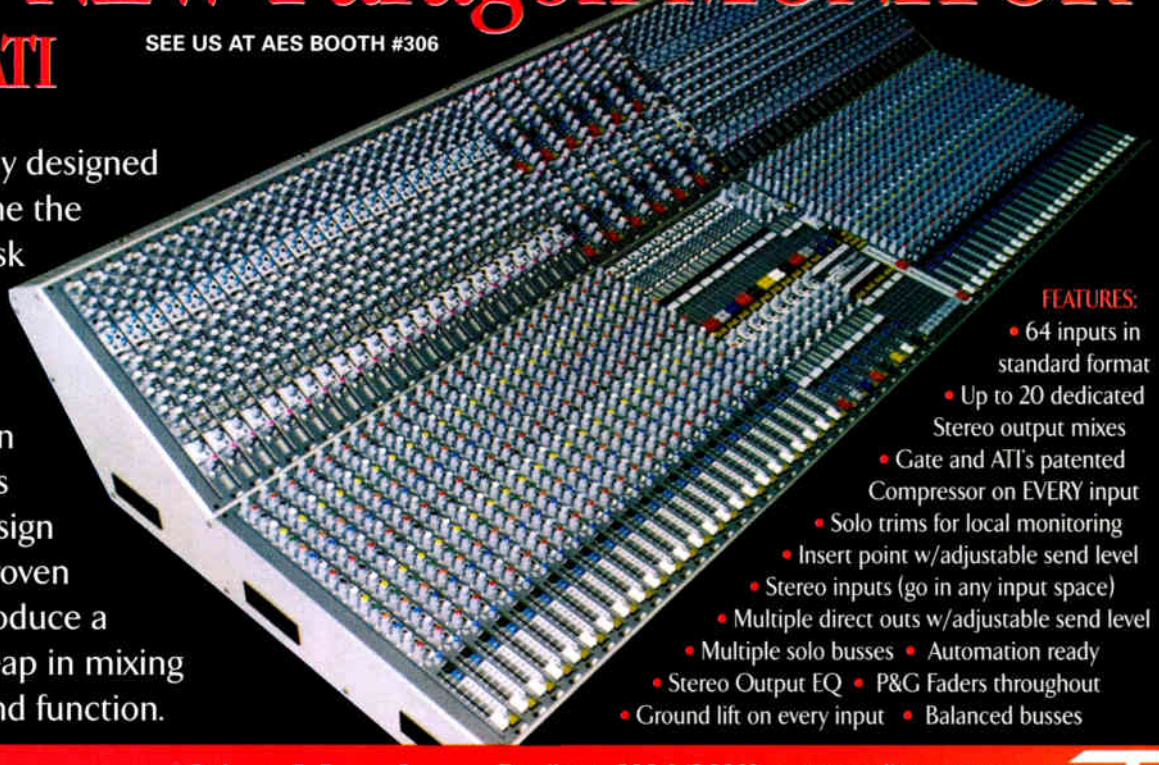

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If for any reason you are dissatisfied with an MSS-10, return it within 60 days in original condition

The remote switch is one of the many small touches that show that the DA7's feature set came directly from real-world "in the trenches" experience. It can serve two purposes: It can act as a remote talkback switch, or as an automation record in/out remote. Producers always want their own control of talkback and I have worked at several studios that modified their consoles to add that feature. Kudos to Panasonic for recognizing small but vital needs like this and dithering and including them as standard equipment.

THE USER INTERFACE

Given the requirements of low cost, small size and high functionality, Panasonic's only option was to employ a great deal of assignability for the console's sliders, knobs and buttons. While, on paper, the idea of making a few controls serve many purposes sounds elegant, in practice, it epitomizes the intractable power vs. ease-of-use tradeoff. Assessing the DA7's ease of use must absolutely be done relatively: easy compared to what?

If I were to compare the ease of using the DA7 with a typical analog 8-bus mixer, I would have to say the DA7 was quite a bit more complex and involves a learning curve. This is somewhat obvious, as an analog console almost always has only one function for any given control. Comparing it to other digital devices that pack a lot of features into a limited interface, I would have to say that Panasonic has done as good a job as I've ever seen, and as good a job as could be done with so many features onboard. This has been achieved through a clean layout of the physical controls, dedicated controls for a small number of the most critical access functions, a large (for this type of device) display, and a well-thought-out system of screens and menus. Let's take a closer look.

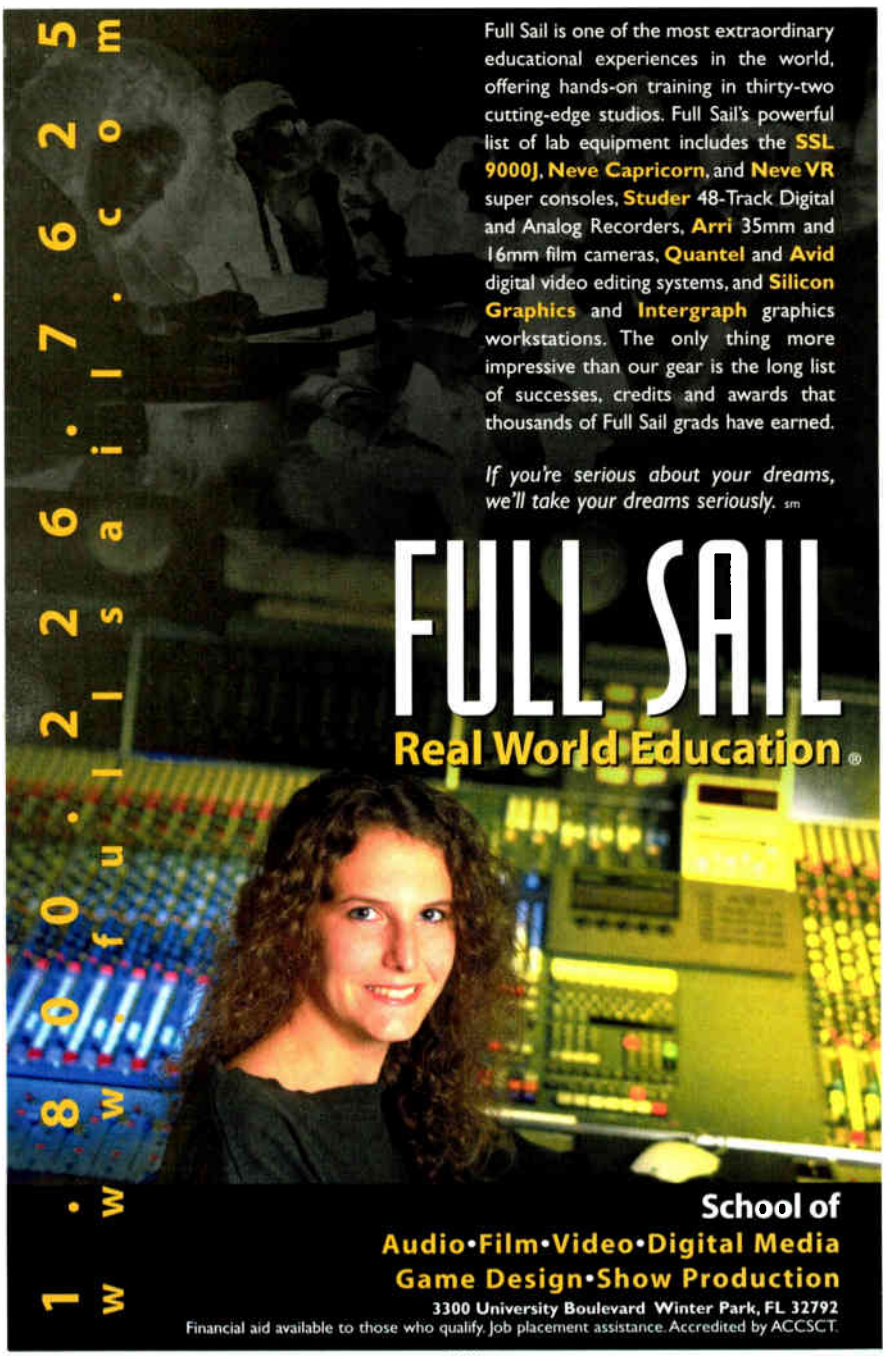
There are 16 channel "slices," each of which has, from top to bottom: a trim pot, channel number and "scribble" strips (not displays, simply areas to apply and write on the ubiquitous tape strips), a two-color LED indicating signal presence and peak overload, six LEDs showing aux send assignments or automation parameters (depending on the display mode selected); Solo, Flip, Select and Channel On/Off buttons; two more channel number strips; another scribble strip; a 100mm motorized fader; and yet another channel number strip.

Why all the channel number strips? The DA7's 16 channel slices can be flipped through four different layers: channels 1-16, channels 17-32, aux and bus levels, and a Custom/MIDI layer, in which each channel slice can be defined to control any channel in the console or act as a strip of MIDI controllers. The most critical controls for a given mix can be put in immediate proximity to each other on a Custom/MIDI layer. Again, the "trench" experience behind the DA7's design shines through.

The layers are globally flipped with four dedicated buttons located in an easy-to-reach area just above the master fader. Individual channels can be flipped between the two channel layers by pressing that channel's Flip button. A channel is selected for editing by pressing the Select button or by moving the channel's fader. (This is a preference that can be set.) Selecting a channel immediately brings its display to the screen. I quickly became comfortable flipping layers and selecting channels and soon became quite fast at it.

ONBOARD EQUALIZATION AND DYNAMICS

Each channel includes a 4-band parametric equalizer (high and low bands can be set to peaking, shelving or roll-



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off) and a dynamics section. The upper right of the DA7's surface, just below the display, features four areas with controls for EQ, panning and routing, dynamics and aux send assignments. Now we start to get into some serious assignability. Once a channel is selected, adjusting a control in any of these areas immediately brings up the display of the parameters for that area for the selected channel (also a preference).

For example, to get rid of 100Hz boominess, one would first press the desired channel's Select switch, which will likely bring up the channel display (depending on what you were last doing). This gives an overview of all of the channel's parameter settings, including small graphic displays of the EQ curve and dynamics settings. Next, press the EQ On switch, then the L button to select the low-frequency band and make a larger, more comprehensive EQ display appear. (The band designations are mostly for convenience; when all bands are set to peaking, the only difference between them is that the L and LM bands extend down to 20 Hz, while the H and HM bands go down to 500 Hz.) Tweak the gain, Q and frequency pots until you find and cure the problem frequency. Press another band's button to do more EQ on the same channel, or another channel's Select button to switch the display to that channel's EQ settings.

The EQ has ±15dB boost/cut in 0.5dB steps (fine for most applications) and Q can go from 0.5 to 50 (for severe notching). I found the sound of the EQ to be pleasing: smooth and musical, without any of the edge or grunge I have heard in some digital EQs. I even tried my fave torture test of setting a very high Q and maximum boost, then spinning the frequency dial and listening for glitches. There were none.

The dynamics section can be set to operate as a compressor with gate or as an expander, and can be pre- or post-EQ. There is an A/B Compare function, and stereo-linked channels (which I'll get to shortly) can use either or both channels as the threshold detection source. As with most digital compressors I've used, the attack time must be set much longer than on an analog compressor to get any kind of transparency. Attack times much shorter than 75 ms produced very audible "squishing," useful in some circumstances, but not the typical need. Once I got the attack time to around 100 ms, the DA7's compressors started to sound very good indeed. The compressor is serviceable for a number of limiting applications as well, but is less effective than when used as a compressor.

The assignability in the EQ and dynamics sections (for instance, the need to select an EQ band, or the use of a Parameter Select button in the Dynamics section to assign its two pots) require you to stay aware of what you have selected and what you're adjusting. As I pointed out before, this is a problem inherent to assignability and can't be eliminated, only finessed. Panasonic's approach is logical and, in most cases, there is more than one method provided for achieving a goal. Given that a mixing console is one of the most constantly used pieces of equipment in the studio, this quickly becomes second nature.

In addition to the channels, aux returns have EQ, and there are EQ and dynamics on the buses and stereo master. The master dynamics section was excellent in leveling the stereo mix,

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though I wish the attack time could be longer than 250 ms. I would like to have simultaneous compression and peak limiting in the master dynamics section, but perhaps that is where my wish list starts to bump up against Panasonic's price point constraints.

EQ and dynamics settings can be stored and recalled from libraries as well as copied between channels. Each channel also contains a delay of up to 300 ms, which opens up the possibility of using the DA7 in place of outboard delay devices for some slapback and simple echo applications.

TAKING CONTROL

The DA7 provides substantial facilities for 5.1 surround mixing. When the console is put into surround monitoring mode, there are two choices for which six outputs will be used. With one of the digital I/O option cards installed, the surround mix can be output digitally to a multitrack recorder.

Channels can be individually set to surround mode, and users can choose from three methods of panning: using the six pots in the EQ, dynamics and panning section; using the jog wheel for L/C/R and master fader for front/back; or the pattern generator. The pattern generator allows you to define up to five straight line, arc or circle segments for source movement, as well as defining the time in which the movement occurs. Although all of these methods are a bit klunky, they are effective, with the pattern generator offering particularly interesting options for dynamic movement.

For most surround panning, static or dynamic, I prefer an X-Y controller like a joystick. The good news is that the DA7's surround panning can be controlled via MIDI; the bad news is that the implementation does not use standard MIDI controller messages, so you can't use any existing MIDI controllers you may have, such as the joysticks or touchpads found on some synthesizers. According to Panasonic, a joystick controller that will control the DA7's surround panning will soon be available from JLCooper for $499 list.

One catch to surround mixing is the difficulty of 6-channel source/tape monitor switching, and the DA7 has no facility dedicated to this. You could kludge it, but you're best off finding an external switcher.

The DA7 offers several ways to group tracks. The simplest is to link two channels' faders, which requires only simultaneously pressing the Select buttons on an adjacent (odd/even) pair of channels. Plunging into the menu system, you can, instead, make these a true stereo pair, with shared and linked settings, including EQ, dynamics and delay. Four fader groups allow arbitrary grouping of channels, with one designated as the master; four mute groups can also be defined. Finally, of course, the buses or aux sends can be used as groups.

Most of the serious control happens in the DA7's master section. The area is dominated by the jog wheel in the lower right and the ten-key pad in the upper left. In the lower left are four arrow keys, plus Enter and Cursor Mode buttons. The upper right is a small array of buttons that provide primary access to the pages in the menu system, as well as library and scene memory save and recall, and the Undo button.

Normally, when working in the menu system, the arrow keys move the cursor, and the jog wheel (or the ten-key pad) changes the parameter value, but the Cursor Mode key swaps those functions. Just above the jog wheel is a very important button marked MMC/Cursor. When pressed, this button redefines the arrow keys, ten-key pad and Cursor Mode to provide MIDI Machine Control functions, which consist of transport, locate and looping functions. This is convenient if you are running MDMs and/or hard disk workstations and sequencers. Regrettably, track arming functions are not implemented; had they been, you would hardly ever need to leave the DA7 during a recording session and, in many cases, would be able to work without a remote for your MDMs.

AUTOMATION

The DA7 offers both scene and dynamic automation. Up to 50 scenes can be stored and recalled, with a separate, programmable crossfade time for each channel. Dynamic automation records fader moves, mutes, EQ, panning (including surround), aux sends, scene changes and more. Some deluxe features are implemented, like a programmable fadeback time if your level at punch in or out is very different from the one before or after that point, relative trimming of automation data and a misleadingly named Auto-Punch feature that does not punch in and out at preprogrammed times, but, instead, arms the selected channel(s) and parameter(s) to drop into record as soon as they are moved. What is

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missing is the ability for the automation to drop back out when you move the control back through the starting point (called "AutoTakeover" in SSL console automation).

However, the DA7 provides extensive offline event list editing, including channel and event type filters for thinning the view to only the data of interest.

Automation data, along with all other stored data in the DA7, can be bulk dumped over MIDI to a librarian program or another DA7. Panasonic has announced remote control software ($499) for both the Mac and Wintel platforms, which is said to provide additional automation functionality, as well as promising announcements at the fall AES show of more peripherals to enhance the DA7.

OPERATIONAL ASSESSMENT

The DA7 has so many utility functions I could virtually fill a whole review just listing them, but you can probably get the idea from a single example: The onboard oscillator has eight selectable frequencies, or can be pink noise, and is assignable to any combination of buses and sends. Do not let my lack of detail here make you doubt my word: The DA7 is packed with features that are very helpful in the real world. There are also a multitude of power shortcuts in the DA7 that, once learned, can speed operation significantly.

The manual seems fairly complete but is not a model of clarity and organization. Some features have step-by-step procedures, many more need them. Information is not always where you would look for it, the index is not always helpful in finding specific items, and some wording seems unclear or in need of proofreading. However, in most cases, you can find what you need with a bit of digging around and a few experiments.

After using the DA7 on several different music projects, I began to feel comfortable getting around all of its layers, menus and modes. Still, I have a lot left to learn. I am, however, settled in my opinion of it: The DA7 is a remarkable achievement in digital console technology. The competition covers much of the same ground, and even offers some features the DA7 does not, notably onboard effects processing. But the DA7 has a superbly selected quantitative and qualitative combination of features with a logical system of control that, given that there's no avoiding complexity in a product like this, succeeds in making crucial features immediately reachable and advanced features reasonably accessible. This is a console that takes some learning, but is eminently usable in the real world on real projects.

And upgrading should be no problem. The DA7's operating system is in flash ROM and could be updated through the computer ports. If Panasonic comes out with a Version 2 upgrade, I'd love to see its fourth layer (MIDI control) added with HUI-like functionality for controlling Pro Tools. Hey, they've already got the control surface!

Given the superb audio quality, humongous feature set, excellent user interface and attractive price point, Panasonic is either going to have to send over a bunch of goons to pry the DA7 out of my grubby little hands...or forget about ever seeing this one again and just send me a nice, peaceful invoice.

Panasonic Professional Audio, 3330 Cahuenga Blvd.; Los Angeles, CA 90068; 800/777-1146; fax 714/373-7903. Web site: www.panasonic.com/proaudio. ■

Larry the O provides music and audio services as Toys in the Attic and is a sound designer at LucasArts Entertainment.

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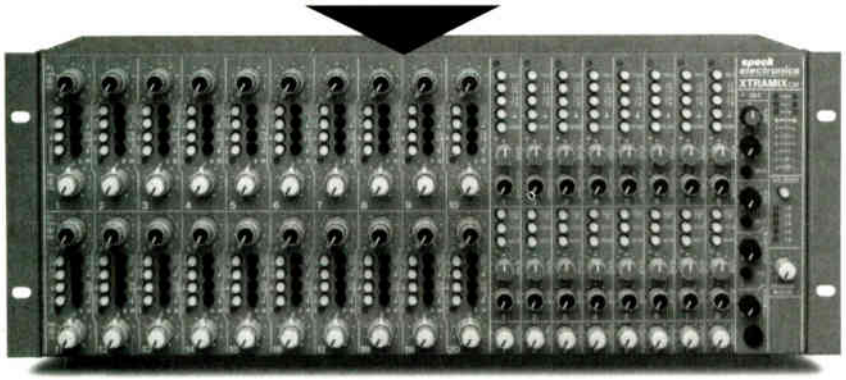

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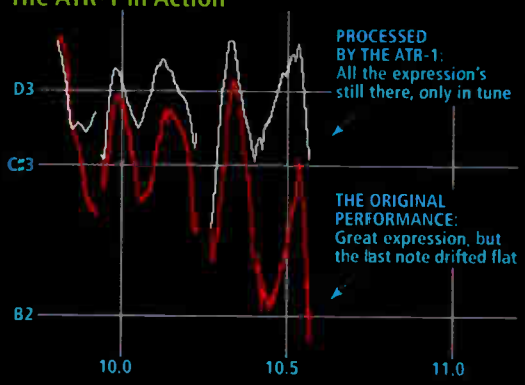
Of course, words are cheap (well, actually, when printed in a magazine ad like this they're fairly expensive). But hearing is believing. Try out the ATR-1 at your local Antares dealer or call us for a free demo CD. Either way, we're confident you'll be convinced. No, really.

The ATR-1 in Action



Here's what some ATR-1 users have to say:

"With the ATR-1, vocal sessions can focus on attitude, not intonation."
~MADAME MARIE CURIE*

"Nothing helps your peace of mind on tour like an ATR-1 in the rack."
~FRANZ KAFKA*

*not their real names

ANTARES AUDIO TECHNOLOGIES 11768 Atwood Drive, Suite 13, Auburn, CA 95603 | www.antares-systems.com
Distributed by Cameo International, Inc. | US and Canada: 888 332 2636 | from Overseas: 408 399 0008

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ANTARES
REALLY COOL STUFF FOR MAKING MUSIC

SEE US AT AES BOOTH #

The Mix 1998 AES New Products Guide

Welcome to *Mix*'s annual New Products Guide. In this guide, we focus on products that were introduced (or were shipping for the first time) in the months prior to—and including—new introductions at the 105th Audio Engineering Society convention in San Francisco. For those who plan to attend, here's some of the new technology that will be on view at the Moscone Center September 26-29, 1998. If you can't make it to AES in person, don't despair: We'll provide complete coverage of all of the show highlights in future issues.—*George Petersen*

Please note that all of the information presented here was supplied by the manufacturers. Specs, prices and availability may change, so contact the companies directly for more information.

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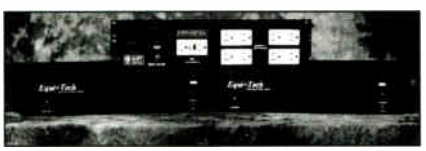
AC Power Products

Dorrough Power Line Monitor

The Dorrough PLM-120 is available in desktop or rackmount packages. The unit can capture, log on Windows 95 and alarm all violations as defined by the Computer Business Equipment Manufacturers Association (CBEMA) guidelines. The AC line voltage is sampled 3,840 times per second, and captures transients as short as 5 µs. With an RMS voltage range of 96 to 135V, the unit also monitors overvoltage conditions, frequency and phase changes. All alarm points are user-selectable.
5221 Collier Pl.
Woodland Hills, CA 91364
818/998-2824; Fax: 818/998-1507
Web site: www.dorrough.com



Equi=Tech Balanced Power Rack Systems

Equi=Tech, "The Pioneer of Balanced Power," introduces a slimmer, lighter and less expensive line of balanced AC rack systems for the recording studio, project studio, live sound venue or musician's rack. The new models (ET1R 10-amps, ET1.5R 15-amps, ET2R 20-amps) require only two rackspaces to install. The smaller package also means a lighter chassis and considerably lower price. (List: $879-$1,289.)
PO Box 249
Selma, OR 97538
541/597-4448; Fax: 541/597-4099
Web site: www.equitech.com

ETA Pro-Series Power Conditioning

The PD Pro-Series Conditioned Power Distribution units are 20 amps and feature 3-stage spike and surge protection, 2-stage EMI/RFI filtration, ground and fault line checks. Each module has 8 switched and two always-on outlets and one front panel convenience outlet. Models are available with rack illuminators, digital voltmeter readouts and sequential turn-on options. Retail price: $220 to $650.
1532 Enterprise Parkway
Twinsburg, OH 44087
330/425-3388; Fax: 330/425-9700
Web site: www.etasys.com

Galaxy Far Outlet

Ultra-compact rechargable source of 110VAC household current for powering electrical devices including audio amplifiers. 250 watts continuous, 400 watts peak power. The Far Outlet will run a 50-watt amp for up to 24 hours between charges. It also functions as a 12V battery charger.
601 E. Pawnee
Wichita, KS 67211
316/263-2852; Fax: 316/263-0642
Web site: www.galaxyaudio.com

New Frontier SX-15-IR2 & SX-20-IR2

Equipped with optional mounting brackets, the compact SX-15-IR2 and SX-20-IR2 are designed to provide dependable surge protection for audio, video, broadcast and computer equipment. Each unit features a magnetic-shielding steel chassis and two 3-prong AC receptacles on its top panel. Our patented Series Mode technology provides protection for up to 6,000 volts and unlimited surge current, without producing any ground contamination. SX-15-IR2 rated for 15 amp loads; SX-20-IR2 rated for 20-amp loads.

New Frontier SX-908 & SX-1808

Designed for audio, video, broadcast and computer equipment protection, the standalone SX-908 and SX-1808 feature six switched and two unswitched grounded AC outlets. Both models' Federal A-1-1 ratings assure users of dependable protection from destructive spikes, surges and inductive transients. Our patented Series Mode Technology protects against surges of up to 6,000 volts and unlimited surge current, without producing any ground contamination. SX-908 rated for 7.5-amp loads; SX-1808 rated for 15-amp loads.
2744 N. Sugan Road

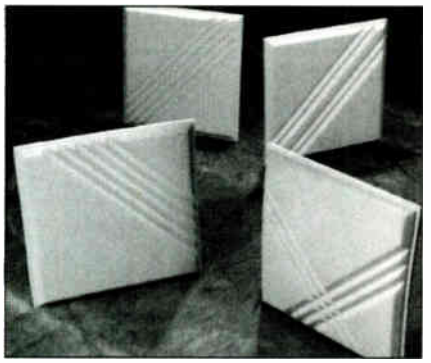
World Radio History

New Hope, PA 18938
215/862-9344; Fax: 215/862-0270
Web site: www.new.frontierelec.com

Acoustical Materials

Acoustical Solutions AlphaSorb Wall Panels

Fabric-wrapped acoustical wall panels and hanging baffles, used to control sound in studios, control rooms, auditoriums, conference rooms, etc. Class-A fire rated. NRC .80 - 1.05.



Acoustical Solutions AlphaTec Ceiling Tiles

2'x2'x2" drop-in ceiling tiles. Class-A fire rated acoustical foam panel with a rigid acoustic board backing. NRC .80 STC 21.
3603 Mayland Ct.
Richmond, VA 23233
800/782-5742; Fax: 804/346-8808
Web site: www.acousticalsolutions.com

Acoustics First Corp. Double Duty Diffuser

The Double Duty Diffuser is a production version of the time-proven Polycylindrical diffuser used on sound stages. As a bass trap, the 2'x4' model has an absorption coefficient of 1.00 at 125 Hz. High-frequency polar plots show 120-degree uniform dispersion with absorption less than 0.20. Delivered cost including lining and color choice of fabric covering is $260. Other sizes ranging from 2'x2' to 4'x8' are available.
2247 Tomlyn Street
Richmond, VA 23230
804/342-2900; Fax: 804/342-1107
Web site: www.acousticsfirst.com

RPG Flatffusor™

RPG Diffusor Systems announces the first flat sound diffusor, the Flatffusor. This new panel was developed to provide a low-cost diffusor with a thin profile to minimize the depth required for acoustical surface treatment. The new Flatfussor offers sound diffusion by varying the amplitude of the incident sound rather than the phase as with RPG's former reflection phase grating diffusors, forming a variable-impedance, binary-amplitude grating. The Flatffusor consists of a semi-rigid absorptive core laminated with an optimized 2D binary hole pattern and an outer upholstered facing.

RPG Room Optimizer™

At low frequencies, the acoustical coupling between the listener/loudspeakers and the room may cause significant acoustical distortion. Room Optimizer is the industry's first Windows 95 program that automatically and simultaneously optimizes the speaker-boundary interference and modal coupling to minimize this acoustical distortion. The program uses modern geometrical image-model prediction techniques along with powerful multidimensional optimization to achieve the smoothest and flattest bass response in a rectangular room. Setup Wizards for stereo and 5.1 multichannel music and home theater formats are provided.
651-C Commerce Drive
Upper Marlboro, MD 20774
301/249-0044; Fax: 301/249-3912
Web site: www.rpginc.com

Systems Development Group Art Diffusor Model F

It's easier and less expensive than ever to get the enhanced acoustical benefits of high-frequency two-dimensional diffusion. The Art Diffusor Model F combines uncompromising performance, elegance and ease of installation in a remarkably affordable package. You get true, two-dimensional diffusion above 500 Hz. The Model F is formed in rigid thermoplastic. Weighing less than 3 pounds, the Model F is a quick install, and cheap to ship. Performance, aesthetics, plus quick installation equal value.

Systems Development Group Cutting Wedge 2000

Cutting Wedge 2000 is a quiet revolution in acoustic foam. It's common knowledge that an air-space behind an absorber will nearly double the absorption coefficient. As early as 1993, SDG provided test data to our customers showing that applying standard Cutting Wedge with the wedge face to the wall increased low-frequency absorption. CW2K combines that idea with the ability to nest pieces on top of each other.
5744 Industry Lane, Ste. J
Frederick, MD 21704
800/221-8975; Fax: 301/698-4683
Web site: www.sysdevgrp.com

Cables and Connectors

Belden Brilliance High Flex Digital Audio Cable

Brilliance High Flex Digital Audio Interconnect Cable (1800F) meets the latest AES/EBU standards for digital audio applications and provides excellent performance in traditional analog microphone applications. The highly flexible, 110-ohm, shielded, single twisted-pair cable features Belden's patented French Braid shield which holds microphonic or triboelectric noise to a minimum while providing improved flex life over conventional shielding designs. Rugged, rubber-like cable jackets come in several matte colors.

Belden Brilliance Mid-Sized Star Quad Mic Cable

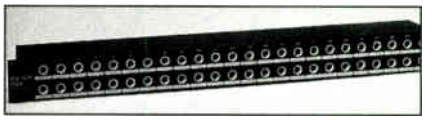
This 4-conductor cable (model # 1172A) incorporates effective noise-reducing features in a diameter three-fourths the size of standard Star Quad cable. Designed for both broadcast and live-performance applications, the cable features Belden's patented French Braid shield which holds microphonic or triboelectric noise to a minimum while providing improved flex life over conventional shielding designs. Rugged, rubber-like PVC cable jackets come in several matte colors.
P.O. Box 1980
Richmond, IN 47374
765/983-5200; Fax: 765/983-5294
Web site: www.belden.com

BGW Cable Management Panel

The Cable Management Panel is an effective way of dressing wire harnesses and cables. The panel is one rack-unit high and black powdercoat. It comes with five cable guides which could be turned for the ease of bundling and guiding cables.
13130 Yukon Ave.
Hawthorne, CA 90250
800/468-2677

CalSwitch Panduit Cable Ties

Four styles of Panduit Velcro Brand Cable Ties are now available from CalSwitch. All feature hook material on one side and loop material on the other, allowing ties to be fastened simply by wrapping the tie back on itself. Low profile makes them ideal for tight areas. Ties are designed for high cycle life. Call CalSwitch for a free product sample.
1010 Sandhill Ave.
Carson, CA 90746-1313
800/CAL-SWCH; Fax: 310/632-4301
Web site: www. calswitch.com

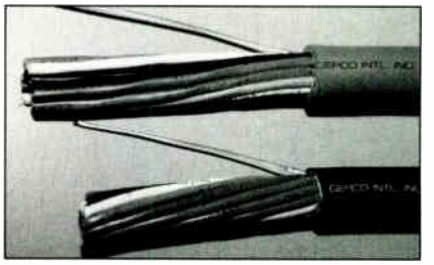


Furman PB-48/PB-48D Patch Bays

The PB-48 features ¼" TRS phone jacks that may be used with balanced or unbalanced systems. The PB-48D provides ¼" TRS phone jacks in front and D-Sub connectors on rear panel. Half-normal wiring is standard; may be defeated without soldering or cutting. Customizing is easy, even while unit is rackmounted. Both models feature sturdy all-steel, fully enclosed construction for excellent shielding from noise sources. List price: PB-48: $169. PB-48D: $229.
1997 McDowell Blvd.
Petaluma, CA 94954
707/763-1010; Fax: 707/763-1310
Web site: www.furmansound.com

Gepco 5522M

The 5522M digital audio microphone cable consists of two twisted 22-gauge (19x34) finely stranded, tinned copper conductors, with the addition of a 22-gauge (7x30) tinned copper drain wire for quick and easy assembly. The individual conductors are insulated with a low-density polyethylene dielectric for superior electrical and mechanical performance. The 5522M features a 95% tinned copper braid with a thick, rugged matte PVC jacket, limiting handling noise and increasing durability.



Gepco "GFC" Style Multipair Cable

To ease the installation of its multipair audio cable, GEPCO has color-coded the individual pair jackets of the GEP-FLEX cable series using the base-10 resistor color code. The GEP-FLEX cable series is available in 22 gauge (618 series, 2-32 pair), 24 gauge (724 series, 2-32 pair) and 26 gauge (803 series, 4-52 pair). Used for both remote applications and permanent installation, GEP-FLEX has been a staple in the diverse audio product offering available from GEPCO.
2225 W. Hubbard
Chicago, IL 60612
312/733-9555; Fax: 312/733-6416
Web site: gepco.com

Hosa-Pro Solid Silver Series

Esoteric cables for microphone, guitar, audio interconnect and S/PDIF made with ultra-pure solid silver center conductors and exotic dielectric materials. No expense has been spared to create a cable series intended for the accomplished professional who has the resources to pursue a transcendent level of audio purity.

—LISTING CONTINUED ON NEXT PAGE

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NO OTHER CABLES

SOUND BETTER

LAST LONGER

ARE QUIETER

& COST LESS

It's easy to pay more and get less, but why not let somebody else do it? Whirlwind cables outlast most bands and most record contracts. They also outperform the fantasy hi-fi and flavor-of-the-month brands you find at lots of dealers these days. From guitar cords to mic cables to snakes, we have more than twenty years of delivering the real thing to musicians who can hear the difference.

If your dealer doesn't stock them, call us toll free or send us an email for the current technical info and the name of a dealer who does. After all, it's your sound we're talking about.

whirlwind™

Toll Free: 888-733-4396 email: thebestcables@whirlwindusa.com

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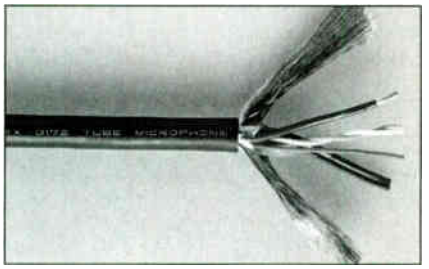
—LISTING CONTINUED FROM PREVIOUS PAGE
6920 Hermosa Circle
Buena Park, CA 90620-1151
714/736-9270; Fax: 714/522-4540
Web site: www.hosatech.com

Mogami Multipair Digital Snake
W3162 AES/EBU multipair digital snake. Demonstrates superb adherence to AES specification in Mogami's unique superflexible construction. Engineers love it for its unsurpassed performance and ease of installation. An extremely popular cable for high-end interface snakes for all the top digital consoles.



Mogami Tube Microphone Cable
W3172 Tube microphone cable. This new mic cable benefits from Mogami's experience as the innovator in high-definition cables, while using the latest design technology. Two layers of our ultra-high-density spiral shielding make this cable even quieter than our very popular 2478 tube mic cable. Ideal for microphones that can utilize six conductors. The best in the world for the finest recordings.
Marshall Electronics
P.O. Box 2027
Culver City, CA 90231
310/390-6608; Fax: 310/391-8926
Web site: www.mars-cam.com

Monster Cable StudioLink 500 TT Patchbay Cable
StudioLink™ 500 TT patchbay with patented Bandwidth Balanced windings deliver time-correct sound reproduction with pinpoint imaging. High density 95% braided copper shielding provides excellent rejection of RF and EM interference. DoubleHelix™ construction twists the conductors considerably tighter than ordinary balanced TT cables. StudioLink 500 TT features 24K gold contact connectors, ensuring maximum conductivity and minimum patchbay maintenance. StudioLink 500 TT cables come in a variety of colors, and prices range from $13.95 to $22.95.
455 Valley Dr.
Brisbane, CA 94005
415/840-2000; Fax: 415/468-0204
Web site: www.monstercable.com

Neutrik AES/EBU Digital Audio Adapter
The NADITBNC-F and NADITBNC-M adapters were developed to provide an excellent impedance transformer at a reasonable cost for meeting the needs between analog and digital applications.Their use also allows for longer cable runs via unbalanced coaxial lines, rather than twisted pair cables that present high attenuation values at the relevant frequencies. Impedance matching between 110 ohms and 75 ohms.

Neutrik NP3TT Bantam Style Plugs
The fourth generation of Neutrik bantam (4.4mm) size plugs. No special crimp tool required–uses standard RG58 tool. Only two pieces. Comes with red or black sleeve as standard. Eight other resistor-colored sleeves available. Compatible with all TT-size patch panels like the Neutrik TT EasyPatch patch panels and Neutrik NJ3TT series of dual jacks. Cost effective and easy to assemble.
195 Lehigh Ave.
Lakewood, NJ 08701
732/901-9488; Fax: 732/901-9608
Web site: www.neutrikusa.com

Radial Engineering Splitter, Snake, Direct Box
Radial Engineering will introduce the J48 Class-A phantom-only direct box, the Radial 8-ox eight channel isolation splitter featuring 8-in and three sets of 8-outputs, the Radial Roadster touring snake system with Stage-Bug, Stage-Slug and Dog-Sled zone and disconnect systems. The new Convertible "stretch" with front panel ID strips and DIDO (ditto), a digital direct box and preamp with Class-A front end, 96kHz sampling with 24-bit resolution with 110-ohm AES and S/PDIF outputs.
#114-1585 Broadway
Port Coquitlam, B.C.
V3C 2M7 Canada
604/942-1001; Fax: 604/942-1010
Web site: www.radialeng.com

RE'AN Longframe Audio Bay
A 48-point, ¼-inch (military-style) patch bay. Color-coded in red, blue, black or silver. One rackspace high. No other manufacturer offers this.
16 Passiar Ave.
Fairfield, NJ 07004
800/828-7266; Fax: 973/808-6517
Web site: www.rean.com

Switchcraft TTP96K3 Series
Switchcraft proudly introduces the TTP96K3 Series of audio patchbay kits. Features include 96 TT-style jacks with steel frames, gold-plated switching contacts and fanned ground lugs. A rugged, heavy-duty cable tray keeps the weight of the cables off of the jack terminals. The 3.5 inch height allows for extra-large destination strips, making channel identification much easier and convenient. Available in full normals, half normals and no normals.

Switchcraft 3.5mm Stereo Plug
Switchcraft proudly introduces a line of high-quality 3.5mm stereo plugs. Features include a high-quality, rugged cable clamp, a large handle to accommodate large OD cable and easy-to-solder terminals. The standard plugs are available with a nickel-finish plug finger and handle, a gold-plated plug finger and nickel handle and a gold-plated plug finger and a black finish handle.
5555 N. Elston Ave.
Chicago, IL 60630
773/792-2700; Fax: 773/792-2129
Web site: www.switchcraft.com

Wireworks Custom Plates
Wireworks has expanded its Perfect Custom Plates with nine new colors. The Spectrum Color Series, a line of color-anodized panels and plates (including red, orange, yellow, green, purple, gray, blue, silver and bronze), can be used for identification or to match and contrast the decor of an installation. Perfect Custom Panels can be ordered with cut-outs and tapping, precision engraving (including logos, diagrams and symbols), paint filling in your choice of colors, connector and components mounting, and wiring to your specifications.
380 Hillside Ave.
Hillside, NJ 07205
800/642-9473
Web site: www.wireworks.com

Computer Hardware & Software

Acoustic-X™ Room Optimization Software
This popular PC (Windows 95/NT/98) program lets users input information based on their room size, speakers and acoustical treatments and make intelligent choices to improve the quality of the acoustical space. Version 2.0 ($399) adds improvements such as the ability to work in either metric or Imperial (U.S.) measurements. Announced at AES will be a simplified, lower-cost (around $99) version designed for project studio users.
376 Queen St. East
Toronto, Ontario M5A 1T1
416/868-0809; Fax 416/861-0620
Web site: www.pilchner-schoustal.com.

AlterMedia Studio Suite V. 3.7
Studio Suite—affordable, comprehensive studio management software, serving the complex needs of recording/post facilities—is relational, cross-platform (PC/Mac) and networkable. Version 3.7 increases performance, includes Alarms, Expense Tracking, Customizable Personnel Titles and more. Features include: Click-n-Book Calendar, Contacts, Calls & Letters, Production Orders, Sessions, Invoices, Recording Budgets, Tape Library/Labels/Release forms, Track Sheets, Tape Stock, Recall Sheets (133+), Equipment Inventory, Maintenance, Part Inventory, Sample Librarian, Patchbay Labeler, Bar Code Labels, etc.
6300 Powers Ferry Road #600-200
Atlanta, GA 30339
800/450-5740; Fax: 770/303-0967
Web site: www.studiosuite.com

Coda Finale 98
Finale 98 music notation is the easiest, smartest and most time-saving version ever. No other program offers more ways to enter, edit, hear and print your music. Finale 98 is loaded with time-saving features including smarter real-time note entry, video tips on CD, an intuitive QuickStart interface, 30 time-saving plug-ins and tons more.

Coda Finale Allegro
If you haven't checked out Allegro for a while, you'll find this version is incredibly intuitive, easier and more powerful, with powerful MIDI capabilites, and preset templates to create music...fast!
6210 Bury DR.
Eden Prairie, MN 55346
612/937-9611; Fax: 612/937-9760

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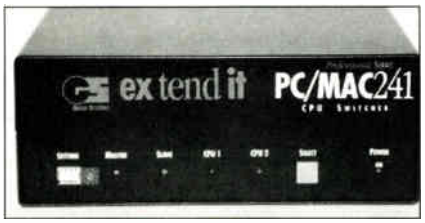
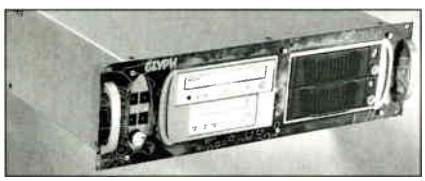


Gefen Systems ex-tend-it PC/Mac CPU Switcher

Hardware that switches between PC and Macintosh computers using one monitor, keyboard and mouse device. Ideal for any studio application where more than one type of computer is used. Saves time—no need to move from one workstation to another to access different computers. Saves precious space—no need to work with duplicate monitors, keyboards and mouse devices. $990.

Gefen Systems M & E Pro V. 3.3

New M & E Professional V. 3.3 features include the following. Sound Effects Editor lets you create your own private libraries and modify existing ones. QuickFetch lets you search any sound recorded on any hard disk volume. Based on finder search—plays the sounds the same way you play QuickSample sound. QuickFetch transfers files from the QuickFetch search screen to any designated folder. Add Notes Field: Group your sound effects and grade their quality using the Notes field to track the sounds. New CD libraries offered on hard disk. Better management of sound files on hard disk.
6261 Variel Ave., Ste. C
Woodland Hills, CA 91367
800/545-6900; Fax: 818/884-3108
Web site: www.gefen.com



Glyph DigDAT SCSI Tape Backup

The DigDAT is a multifunctional 6.8GB, 4mm SCSI tape streaming/backup drive. DigDAT breaks through the price/performance barrier by offering more than 6GB backups on inexpensive DDS-2, 120-meter DAT tape. DigDAT was specifically designed for A/V users as the drive will stream two hours of MPEG-2 video or up to 12 hours of MPEG-1 video to your computer in real time. Software archiving is available for Mac, Windows 95 and NT. Glyph supplies Optima Desktape (drag and drop interface) and Dantz Retrospect for Mac as well as Indigita TapeTrax (drag and drop interface) for Windows 95.

Glyph Trip

Three-space, rackmount storage units for the professional digital media storage market. The Trip models are multifunction devices providing the opportunity to cost-effectively tailor and outfit themselves with a complete digital storage solution in a single, space-saving 3-U height, rackmount enclosure. Professionals can select any format, size and type of storage and/or CD recording devices to meet their exacting needs. Call for more information.
735 W. Clinton Street
Ithaca, NY 14850
607/275-0345; Fax: 607/275-9464
Web site: www.glyphtech.com

Hardware Research Rackmount Computers

Rack mounted MacOS computer systems. Enclosures for existing Macintosh CPUs.
610 #10 Pisgah Church Road
Greensboro, NC 27455
336/282-8450; Fax: 336/282-3573
Web site: www.hardwareresearch.com

Headspace Beatnik Converter

The Beatnik Converter Windows 95/NT application allows you to convert a MIDI or digital audio file into an RMF (Rich Music Format) file. After creating an RMF file you can embed it into one of your Web pages for an interactive audio experience. The Beatnik Converter also offers RMF copyright encryption of every file, volume control, looping, data compression and high-quality consistant playback on multiple platforms (Mac/PC/Java). Price: $34.95.
217 S. B Street
San Mateo, CA 94401
650/696-9400; Fax: 650/696-9404
Web site: www.headspace.com

Line 6 Amp Farm

Amp Farm from Line 6, the 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. Retail: $595.
11260 Playa Court
Culver City, CA 90230
310/390-5956; Fax: 310/390-1713
Web site: www.line6.com

Liquid Audio Liquifier Pro V. 3.0

Liquifier Pro is audio mastering software that allows artists to prepare and publish CD-quality, copy-protected music for purchase and delivery via the Internet. One-touch encoding creates a single file that includes liner notes, album art and superior-quality audio that can be streamed or downloaded. Multilayer security features protect intellectual property by embedding an inaudible watermark into the audio and then encrypting it so that only the person who purchases the song can play it.
810 Winslow St.
Redwood City, CA 94063
650/562-2000; Fax: 650/549-2099
Web site: www.liquidaudio.com

Metric Halo SpectraFoo Radical 3

Adding to SpectraFoo's industry-leading audio monitoring and analysis tools, SpectraFoo Radical 3 incorporates standards-based PPM metering, correlation meters, sum and difference modes, octave analysis, signal generation and physical unit calibration. I/O support now includes Sonic Solutions and Sonorous STUDI/O as well as Pro Tools III, Pro Tools 24, Korg 1212 I/O, AudioMedia III and Lucid PCI24. Price: $99.95-$999.95 depending on configuration.
41 Top O Hill Road
Wappingers Falls, NY 12590
914/462-1230; Fax: 914/462-4865
Web site: www.mhlabs.com

Rorke Data StudioNet-FC

Rorke Data's StudioNet-FC includes a family of fiber-channel storage and network products that range from high-capacity, scaleable RAID/JBOD disk storage arrays to complete turnkey workgroup configurations, including bridges, hubs, NICs, cables and volume management software. StudioNet-FC is available in standard and expandable configurations that range from 18GB desktop arrays to 2-terabyte and tower and rack systems.

Rorke Data MaxARRAY LVD

Rorke Data's high-speed MaxARRAY LVD is a split-bus array of specially tuned Ultra 2 SCSI LVD disk drives enabling 80MB/sec bus rates. Configurations provide from 8 GB up to 72 GB of storage and come complete with two or

World Radio History

four Ultra 2 SCSI disk drives, all-metal enclosures, active terminator, whisper-quiet fan and power supply. Available with rackmount or desktop enclosure and fixed or removable drive options. Hostcards also available.
Technology Park II 9700 W. 76th St.
Eden Prairie, MN 55344
800/328-8147; Fax: 612/829-0988
Web site: www.rorke.com

Seer Systems Reality V. 1.5

Reality (V1.5) is the ultimate synthesizer, with five types of synthesis, and more new voices on the way! Fully polyphonic and multitimbral, Reality responds immediately to all input and provides total flexibility as an upgradeable, software-based synthesizer for Pentium PCs.
301 S. San Antonio Rd.
Los Altos, CA 94022
650/947-1915; Fax: 650/947-1925
Web site: www.seersystems.com

Sonic Foundry Acid

Acid is a loop-based music and production tool. Features include 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, .AIF or .ASF; 16 and 24-bit audio support; DirectX Audio Plug-In support for multiple real-time effects; supported by Sound Forge and CD Architect; hundreds of loops included. Requires Windows 9X or NT and Pentium 133 (Pentium II recommended) or Alpha AXP. MSRP: $399.
754 Williamson St.
Madison, WI 53703
800/57-SONIC; Fax: 608/256-7300
Web site: www.sonicfoundry.com

Symbolic Sound Kyma 4.6

Graphical Software environment for computer-based sound synthesis, processing and sampling on Macintosh and Windows PCs. With a multiple DSP hardware accelerator called the Capybara™. New release features improved performance, a new graphic user interface and additional sound modules. For sound designers for film, advertising, music, computer games and live musical performance.
PO Box 2530
Champaign, IL 61825-2530
217/355-6273; Fax: 217/355-6562
Web site: www. symbolicsound.com

Tracer Technologies DC-ART RT

The Diamond Cut Audio Restoration Tools Realtime is a complete set of Noise Reduction, Audio Enhancement Tools with full Realtime capabilities. Noisy audio in...clean audio out...in real time! The full noise reduction toolkit includes Denoise, Dehiss, De-esser, Declick as well as a new Paragraphic EQ and a full workbench of filters, enhancers and other restoration tools. DC-ART RT also offers Virtual Valve, a set of "virtual tubes" to add warmth. PC software $995. Full Stand Alone system: $2,995.
1600 Pennsylvania Ave., Unit 101
York, PA 17404
717/843-5833; Fax: 717/843-2264
Web site: www.tracertek.com

XTA Audiocore Software

Audiocore Windows control software enables centralized PC control of up to 32 XTA Audiocore series units. This gives the user instant and intuitive control over all the available parameters. All parametric equalizers are controllable by direct curve dragging with mouse control of frequency, gain and bandwidth. Multiple units may be ganged together for ease of use.
Riverside Business Centre, Worcester Road
Stourport UK DY13 9BZ
44/1299/879-977; Fax: 44/1299/879-969
Web site: www.xta.co.uk/xta

Digital Converters

Apogee DA-2000

The DA-2000 is a stereo reference D/A converter designed for the highest quality monitoring. Featuring 20-bit ultra-linear 8x oversampling R2R converters, the DA-2000 has six separate inputs (two AES/EBU, four S/PDIF), each front panel-selectable; balanced and unbalanced outputs; a built-in lineup oscillator; and, the first time in a D/A system: Apogee's proprietary UV22 system. Input switching is noise-free even when inputs are unsynchronized to each other. Invalid inputs are muted automatically to avoid damage to monitoring systems. $3,950.

Apogee PSX-100

The PSX-100 is a 2-channel, 24-bit A/D and D/A conversion system in a convenient 1-rackspace package. Using technology derived from Apogee's successful AD-8000, the PSX-100 offers powerful features including full 88.2/96kHz sampling operation; built-in ADAT optical, TDIF, S/PDIF and multiple AES I/O; digital copying features and flexible monitoring; format conversion; and Apogee Bit-Splitting (ABS) technology for high-resolution mastering with your existing MDM.
3145 Donald Douglas Loop S.
Santa Monica, CA 90405-3210
310/915-1000; Fax: 310/391-6262
Web site: www.apogeedigital.com

Benchmark AD2404-96

The AD2404-96 4-channel A-to-D converter has variable word lengths of 16, 20 and 24 bit, with sample rates of 44.1/48/88.2/96 kHz and varispeed. Operating in the 16- or 20-bit modes, it provides selectable TPDF or two noise-

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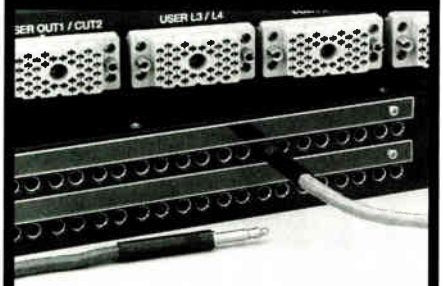
Patching Equipment



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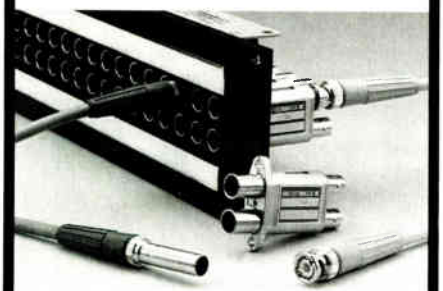
- Pre-Wired Audio Panels
- Patch Cords
- Available in both ¼ & Mini Sizes



Video Patching

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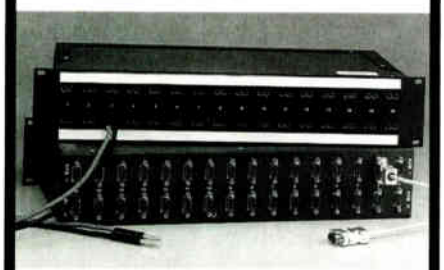
- Video Panels & Jacks
- Patch Cords
- RGB Panels



RS- 422 Patching

- One Rack-Unit:
  16 Port *(8 in, 8 out)*
  24 Port *(12 in, 12 out)*
- Two Rack-Unit:
  32 Port *(16 in, 16 out)*
  48 Port *(24 in, 24 out)*
- Interconnect Cables

audio accessories audio-line

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Mill Street, Marlow, NH 03456
Phone: 603/446-3335
Fax: 603/446-7543

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shaped redithering options. Intrinsic clock jitter is approximately 9pS and PLL provides ultra-clean lockup to an AES reference. The AD2404-96 features four 9-segment true-digital meters, 120dB dynamic range and spectacular THD+N performance.

Benchmark DAC2002

The DAC2002; two channels of the very finest 20-bit D-to-A conversion available. The DAC2002 has S/PDIF, AES and optical digital inputs and provides two channels of both balanced +4 dBu and unbalanced -10 dBV audio out. The proprietary 2-stage phase-lock-loop yields over 50 dB of jitter attenuation to the digital input signal. THD+N is better than a phenomenal -108 dBFS. Ideal for recording and broadcast studios as well as reference home systems.
5925 Court St. Road
Syracuse, NY 13206
315/437-6300; Fax: 315/437-8119
Web site: www.benchmarkmedia.com

dB Technologies AD122.96 MkII

The new AD122.96 MkII stereophonic analog-to-digital converter meets and surpasses the new 96kHz and 88.2kHz standards with a true 24-bit digital audio data stream and expanded -126dB noise floor. It extends the Vernier Transfer Function Correction technique into the high-frequency sample rates demanded by the next generation of storage and release media technology, while improving the dynamic range and distortions figure by one additional bit. List price: $7,295.

dB Technologies dB44.96 Multi-Channel Conversion System

Offers 44.1, 48, 88.2, 96kHz sampling frequencies and a choice of 2, 4, 6 or 8 channels. The expandable dB44.96 system frame may be ordered with a variety of plug-in modules. The following configuration is a self-contained, dual-channel single or double wire conversion system: M/DA820 2-channel D-to-A module, M.AD824 2-channel A-to-D module, M.DD1-2-1 single/double wire AES translator.
1155 N. La Brea Ave.
West Hollywood, CA 90038
323/845-1155; Fax: 323/845-1170
Web site: www.dbtechno.com

dCS 904/954 with DSD

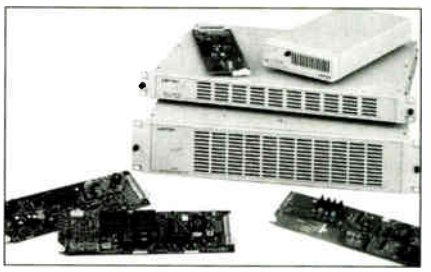
The dCS 904 ADC and dCS 954 DAC are reference-quality digital audio converters capable of supreme accuracy. Operating with full 24-bit wordlength at sampling frequencies of 44.1 through 192 kHz, these converters now also operate with the Sony/Philips Direct Stream Digital format. A unique discrete-component multi-bit converter, the patented dCS Ring DAC, is a key factor in the superb SNR (-120 dB @ 20 dBFS) and excellent linearity (to 29-bit precision).
Canorus Inc.
240 Great Circle Road Suite 326
Nashville , TN 37226
615/252-8778; Fax: 615/252-8755
Web site: www.canorus.com

Entech Number Cruncher 205.2

The N C 205.2 digital-to-analog converter brings a higher level of audio quality at an affordable price. Using high-quality circuitry for superior jitter reduction and 20-bit sigma-delta processing, it provides two RCA and one Toslink input and nine independent voltage regulators for better separation of digital and analog stages than what is commonly found in most consumer-grade digital components. Entech N C 205.2 retails for $449.95.
455 Valley Dr.
Brisbane, CA 94005
415/840-2000; Fax: 415/468-0204
Web site: www.monstercable.com

Fostex DP-8 Digital Patchbay/Converter

The Fostex DP-8 digital patchbay allows you to convert coaxial S/PDIF to optical S/PDIF. It will also pass ADAT lightpipe for use with all the latest digital mixers, D90, D160 and ADATs. List price $349.
15431 Blackburn Ave.
Norwalk, CA 90650
562/921-1112; Fax: 562/802-1964
Web site: www.fostex.com



Leitch MXA-6800

A member of Leitch's Digital Glue audio and video converters and interfaces, used to multiplex audio into SDI, the MXA-6800 multiplexer offers four SDI outputs, full EDH capability, hot switching on audio inputs, and 20-bit processing. It mutes during upstream video switching or audio data corruption and will be available in the following versions: unbalanced AES at 48 kHz, balanced AES at 48 kHz or 2-channel balanced analog. This multiplexer fits Leitch's 6800 and 7000 Series frames.
920 Corporate Lane
Chesapeake, VA 23320-3641
757/548-2300; Fax: 757/548-4088
Web site: www.leitch.com

Lucid ADA 8824

A/D and D/A platform, 8-channel interface featuring 24-bit A/D and D/A conversion, 8 channels of AES-3 I/O and 2 channels of S/PDIF I/O. Supplies 8 digitally controlled I/O to computers equipped with SonicStudio™ from Sonic Solutions.
Lucid Technology
14926 35th Ave. West
Lynnwood, WA 98037
425/742-1518; Fax: 425/742-0564

Midiman Pipeline 8x8

24-bit, 8-in/8-out (balanced ¼-inch TRS) D/A-A/D converter. Features dithering to 16, 20-bit, and 16/24-bit razor technology, along with external word clock. All inputs have individual assignable operation level of +4, -4, -10 dB. Outputs are assignable between +4 and -10 dB. Utilizes ADAT Lightpipe for digital interconnectivity. Supports sample rates of 44.1 and 48 kHz. Provides signal, -6dB and clipping level metering for each channel. $899.95.

Midiman S.A.M.

SAM flawlessly converts S/PDIF to ADAT Lightpipe and ADAT Lightpipe to S/PDIF. SAM also allows the user to digitally mix with the onboard digital micromixer in ADAT-to-S/PDIF mode. Features left and right channel signal and clipping level indicators, 56-bit internal processing and supports any sample rate from 39 to 51 kHz. $399.95.
45 E. St. Joseph St.
Arcadia, CA 91006
626/445-2842; Fax: 626/445-7564
Web site: www.midiman.net

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Our advanced drivers are designed with controlled dispersion patterns and significantly improved off-axis performance. The MSP one-piece woofer diaphragm is geometrically optimized for controlled roll off and a high dynamic range. The extremely flat membrane geometry creates minimal phase lag. And the glued and thermically bonded high-grade SBR surround ensures excellent power control and eternal durability. That's why there will be no forces beyond your Dynaudio's control, whatever you choose to listen to. We know. Do you!

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Mytek 8X96 Series 24/96 Converters

The 8X96 Series ADC and DAC are high-performance 8-channel A/D and D/A digital converters units featuring high-quality 24-bit, 120dB conversion and sampling 44.1 to 96 kHz and numerous digital interfaces such as AES/EBU, ADAT optical, TDIF and Sonic Solutions and Pro Tools. Converters also feature PRISM MRX bit splitting and external sync and noise shaping to 16-bit.

Mytek ADAC 9624 Mastering Converter

ADAC 9624 is a 4-channel, high-performance, 24-bit, 96kHz analog-to-digital and digital-to-analog converter with SCSI direct to hard disk and direct to DVD-RAM recording options. It features 120dB DR, audiophile signal path and numerous mastering options such as POW-R dithering algorithm, down sampling on format conversion.
P.O. Box 1023
New York, NY 10276
212/274-9191; Fax: 212/686-4948
Web site: www. mytekdigital.com

SEK'D 2496 ADDA DSP

The SEK'D 2496 ADDA DSP analog/digital-digital/analog converter uses two internal A/D converter chips per channel. Sophisticated DSP software algorithms produce world-class audio performance. The 2496 DSP features resampling and dithering all in real-time. Word Clock I/O and 24-bit 96kHz backup to regular 16-bit DAT tape for location or archiving. Specs: A/D conversion: 24-bit. Sample rates: 44.1/48/88.2/96kHz. Dynamic range: 128 dBA; THD+N: -100 dB @ 0 dBFs (20-20kHz, 1 kHz).

SEK'D 2496 ADDA "S" Converter

Half-rack, high-resolution analog-to-digital, digital-to-analog converter. Sampling rates: 44.1 kHz to 96 kHz. Twenty-four-bit audio resolution, >100dB dynamic range. Clock: internal or AES-EBU. Digital formats: XLR AES/EBU, S/PDIF on XLR and coaxial jacks. Two inputs, two outputs (analog). A/D specs: bandwidth > 20 kHz/>40 kHz. Dynamic range is 113 dB(A) THD+N: <100 dB at dBF's (20Hz-20k Hz, 1 kHz) D/A specs: Bandwidth >20 kHz/>40 kHz. Dynamic range 106 dB(A) THD+N: <-90 dB at 0dBF's.
407 Stony Point Road
Santa Rosa, CA 95401
800/330-7753; Fax: 707/578-2025
Web site: www.sekd.com

Tascam IF-TAD Format Converter

Tascam's IF-TAD is the first affordable digital audio converter that can translate from ADAT to the DTRS format and back. Priced at just $350, the IF-TAD gives project studios the ability to make high-quality transfers at an aggressive price point. The IF-TAD features Tascam's exclusive TDIF technology, signal-indicating LED for TDIF activity, ADAT optical I/O, signal-indicating LED for ADAT data activity and word sync out.
7733 Telegraph Rd.
Montebello, CA 90640
213/726-0303; Fax: 213/727-7635
Web site: www.tascam.com

Weiss ADCI 96/24

Analog-to-digital converter with 24-bit resolution and sampling frequencies up to 96 kHz. Built-in DSP performs a correlation function to combine multiple conversions on each channel for best possible performance. Price estimate: $7,500.
G Prime Limited
1790 Broadway #402
New York, NY 10019
212/765-3415; Fax: 212/581-8938
Web site: www.gprime.com

Disk-Based Recording

Aardvark Aark TDIF

The Aark TDIF is a clever audio card that interfaces eight channels of the TDIF digital audio standard with the PC so you edit and mix the audio without having to go back into the analog domain. Its 8-in/8-out, full-duplex drivers integrate easily with any PC editing software like SAWplus, Cakewalk, Samplitude, Cool Edit Pro, Steinberg and Sound Forge. I/O: 8 digital in/8 digital out in proprietary TDIF format on one 25-pin D-Sub Connector. Spec: PCI card, Windows 95.

Aardvark Aark 20/20

The Aark 20/20 is a professional 20-bit multitrack audio recording system for the PC. The professional custom outboard converters obtain a superior resolution that allows you to record directly to the disk. Its 10-in/10-out, full-duplex drivers integrate with any PC editing software like SAWplus, Cakewalk, Samplitude, Cool Edit Pro, Steinberg and Sound Forge. I/O: 8 analog in/out, 2 S/PDIF digital in/out, word clock in/out, video sync in (optional). Specs: 20-bit A/D D/A, 24-bit digital, Windows 95.

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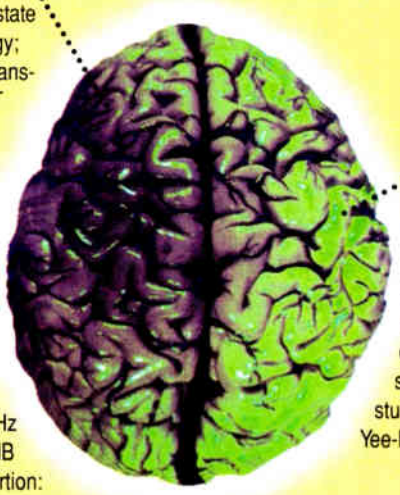
left brain

Discrete solid-state class-A topology; Jensen input transformer into FET input circuit. Noise: EIN < -129 dBv unweighted, 20 Hz to 22 KHz, 150 Ω termination resistor; Frequency response: 5 Hz to 50 KHz ± 0.5 dB (mic input) 2 Hz to 80 KHz ± 0.5 dB (Hi-Z input); Distortion: CCIR-DFD2 (1K) method = < -72 dBv @ 8V rms into 150 Ω load. (all measurements @ 40 dB gain).



right brain

Silky sound noiselessly dazzles with sparkling clarity & stunning dynamics. Yee-ha.

no brainer

The price: $1250 for the MP-2 (2-channel). $1975 for the MP-4 (4-channel). No matter how you look at it, it's the mic pre-amp you've always had in mind.

Great River ELECTRONICS

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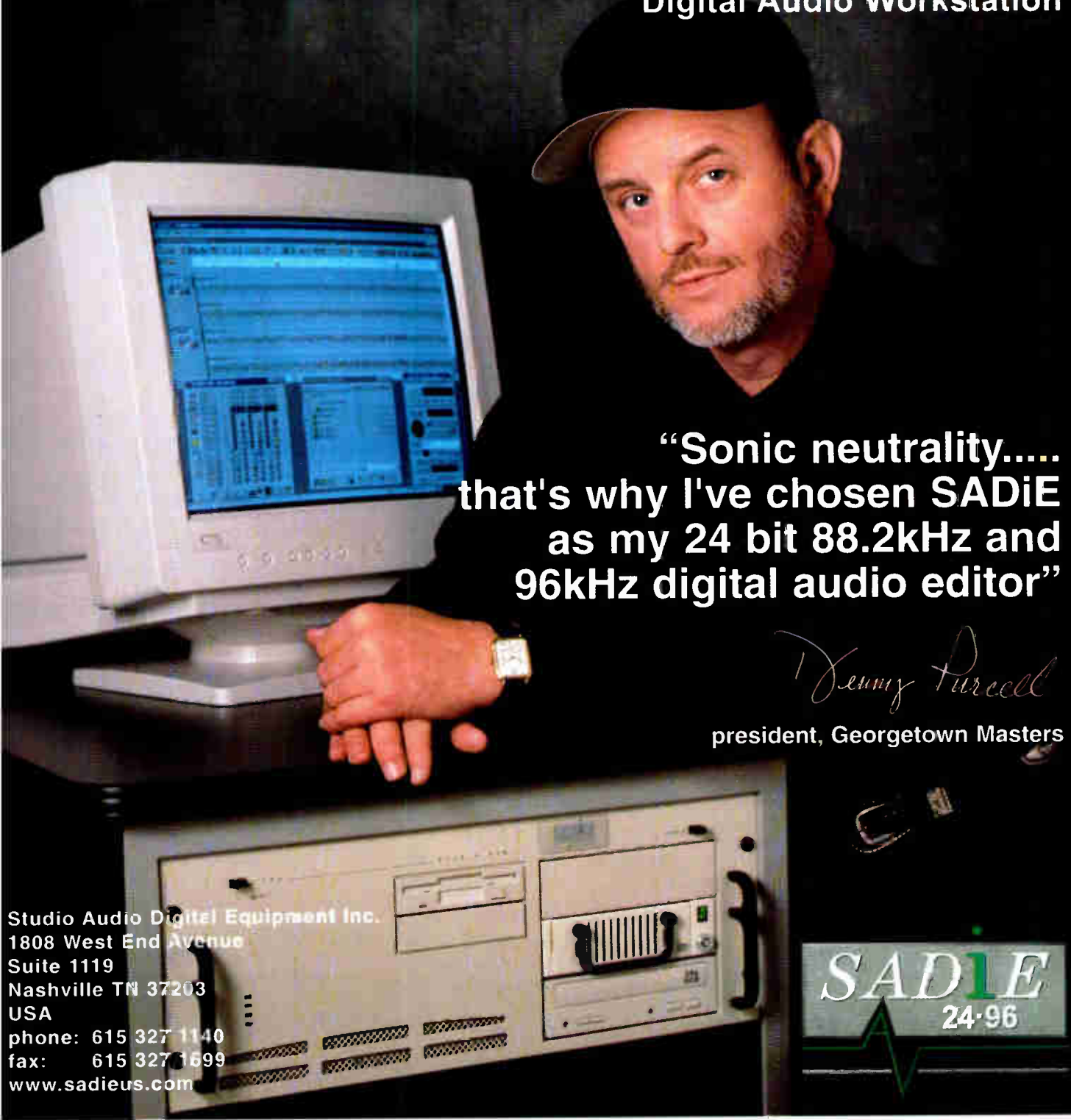

"Sonic neutrality..... that's why I've chosen SADiE as my 24 bit 88.2kHz and 96kHz digital audio editor"

Dennis Purcell

president, Georgetown Masters

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Nashville TN 37203
USA
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www.sadieus.com

SADiE 24-96

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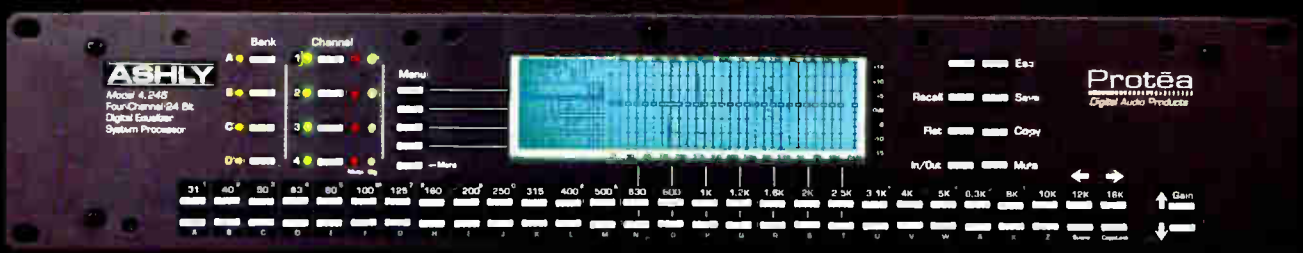
FINALLY, A POWERFUL 24-BIT DIGITAL EQ THAT THINKS IT'S ANALOG



Protêa The incredible new Protêa Digital Equalizer from ASHLY is like nothing you've ever experienced for live sound, permanent installations, or even recording. It completely redefines the possibilities of equalization with four independent channels of 28-band, 1/3-octave equalization, accomplished in full 24-bit digital resolution. Its simple, push-button interface is as close to analog as you can get, while maintaining unprecedented control over all parameters via a high-resolution LCD display which provides immediate visual representation of all functions. Need to adjust a frequency? Press the button and watch the fader move in real-time on the LCD display. Plus, it provides built-in full-function compressor/limiters, time-delay alignment functions, high and low pass filters, and much more, all fully programmable and storable. Whether you operate it from the front-panel, from the available full-function remote (which works from up to 1000 feet away with an ordinary mic cable or snake), or via the free Protêa System Software for Windows™, you won't believe the control and quality the Protêa affords you. We've even designed it to grow with you, with 2- and 4-channel digital equalization slave units available for expansion of up to sixteen channels of precise, reliable digital equalization. Never has digital equalization been so easy to use.

Optional 4.24RD Full-Function Remote Control with Display

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202 E. Washington, Ste. 306
Ann Arbor, MI 48104
734/665-8899; Fax: 734/665-0694
Web site: www.aardvark-pro.com

Alesis ADAT-PCR

The Alesis PCR is a PCI-format interface card that's compatible with both Mac and Windows platform computers. It offers the unique ability to both transfer digital audio between computers and ADATs and synchronize the ADAT and recording software with sample-accurate precision. The PCR includes software for recording, MIDI sequencing and audio editing. Combined with an ADAT, it offers the best of both linear and disk-based recording.
1633 26th St.
Santa Monica, CA 90404
800/5-ALESIS; Fax: 310/255-3401
Web site: www.alesis.com

AMS/Neve AudioFile 98

AudioFile 98 is a major upgrade of the popular hard disk editing system. It features a fast, proprietary 24-bit processing platform, waveform displays, real-time DSP, direct reading of OMFI disks, and optional offline archiving and multisystem networking.
Billington Rd.
Burnley, UK BB11 5UB
44/1282/457-011; Fax: 44/1282/417-282
Web site: www.ams-neve.com

Antex Electronics StudioCard 2000

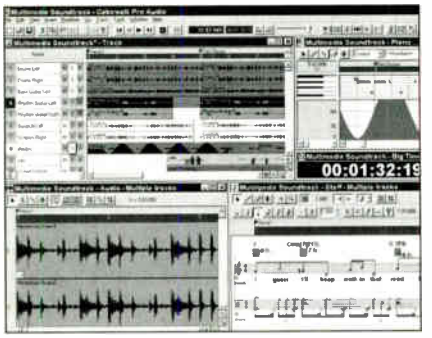
The Antex StudioCard 2000 brings 20-bit DAT quality to the best sound card in the business for audio-for-video applications. With NT drivers for both Intel and DEC Alpha, StudioCard 2000 gives video production professionals absolute audio/video synchronization, CD-quality sound, the ability to record or play back eight stereo tracks (using the four physical ins and outs), multidevice capability and more. What differentiates the StudioCard 2000 from other high-end digital audio adapters is its post-production-oriented features.
1125 W. 190th St.
Gardena, CA 90248
310/532-3092; Fax: 310/532-8509
Web site: www.antex.com

Audioactive Production Studio

Audioactive Production Studio software is a fast, high-quality audio solution for compressing audio files using MP3 technology. Production Studio converts PCM files and stores them in MP3 and compressed WAV audio formats. Encode files two times faster than real-time and convert them to a wide range of bit rates: 256, 192, 160, 128, 112, 96, 64, 56, 48, 32, 24, 20, 18, 16, 8 kbps. Two versions are available—Lite: $59 list; Pro: $369 list.
2101 Superior Ave.
Cleveland, OH 44114
216/241-7225; Fax: 216/241-4103
Web site: www.audioactive.com

BIAS Peak 2.0

In just two years since its inital release, BIAS Peak has evolved into a digital audio editing standard. Now Peak 2.0 is even more power- and feature-rich than before, with an improved tool set and user interface; expanded sampler support; and new features like DAE™ support, SMPTE sync, Playlist-direct CD burning, 24- and 32-bit file suport, and support for TDM, Audiosuite and real-time Adobe Premiere plug-ins. Power Mac only. MSRP $499.
P.O. Box 2481
Sausalito, CA 94966
800/775-BIAS; Fax: 415/467-8446
Web site: www.bias-inc.com



Cakewalk Pro Audio 7.0

64 tracks of audio; 256 tracks of MIDI. New 32-bit mix engine. 32-bit, real-time audio processing effects. Pitch shifting with formant preserved. Time compression and expansion with unique algorithms for different audio types. Monophonic audio-to-MIDI conversion. Control and automate studio hardware. Support for Direct X plug-ins. High-end multichannel sound card and hard disk recorder support. SMPTE/MTC/WordClock sync. Windows 95/NT 4. MSRP: $429.

Cakewalk Metro™ 4

Integrated MIDI/digital audio recording and editing. Real-time audio effects. Inspiring composition tools. Compose for film, video and Quick Time movies. Ideal for project studios. Macintosh. Suggested retail price: $249.
5 Cambridge Center
Cambridge, MA 02142
888/Cakewalk; Fax: 617/441-7887
Web site: www.cakewalk.com

CreamWare PULSAR

PULSAR is the first cross-platform PCI sound card employing four SHARC DSP chips, allowing operation of the included software for wavetable synthesis, sampling and digital mixing. Onboard dual ADAT lightpipes, stereo S/PDIF, stereo analog, MIDI interface and optional AES/EBU and TDIF connectors. All I/Os are independently and simultaneously operational with resolutions up to 24-bit/96k. Comes with Windows audio, MIDI, Direct X and VST ASIO drivers. MSRP: $1,298.

CreamWare SCOPE Sound Creation System

Scalable Object Programming Environment-massive DSP development platform. (2.7 Gigaflops employing 15 SHARC DSPs—fastest floating-point processors available.) Create any/all types of synthesis, sampling, mixing and signal processing. Third-Party friendly. Graphics development tools to create look and feel in a totally interactive workspace. Base SCOPE card is capable of 64 I/O. Optional I/O cards/formats (from 20 I/O), sync options, communications ports etc. Target MRSP $6,500.
446 Harrison St.
Sumas, WA 98295
604/527-9924; Fax: 604/527-9934
Web site: www.creamware.com

Digidesign Pro Tools 4.2

Digidesign's Pro Tools software V. 4.2 provides several major new features, including full direct support for ProControl. New features include the addition of stereo sends with fully automatable pan parameters for TDM-equipped Pro Tools systems, real-time auto fade-in and fade-out on open region boundaries to eliminate clicks and pops on non-zero-crossing region boundaries, and the ability to control MMC-compatible devices, allowing Pro Tools to directly control transport functions and transmit location information.
3401A Hillview Ave.
Palo Alto, CA 94304
650/842-7900; Fax: 650/842-7999
Web site: www.digidesign.com

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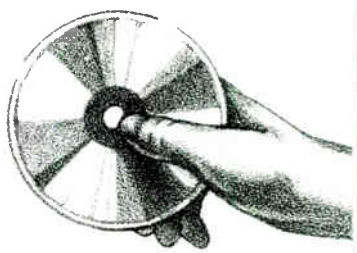

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URL: http://www.caig.com
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Digigram Xtrack 3.0

New version of Xtrack offers enhanced video sync for post-production, ability to use Active-X plug-ins, control via JLCooper CS-10-2 controller and improved API for OEM customization.
2101 Wilson Blvd. Ste. 1004
Arlington, VA 22201
703/875-9100; Fax: 703/875-9161
Web site: www.digigram.com

Digital Audio Labs V8 Series II for PCI

The V8 real-time studio system is a modular, open hardware PC platform with multitrack recording and editing, dozens of real-time streaming effects, total integration of ADAT and DA-88 formats, choice of software applications, plug-ins and more. This year DAL debuts the V8 Series II for PCI, the next generation CardDeluxe multichannel sound card, and a host of new software, plug-ins and other V8-approved products from Digital Audio Labs' V8 partners.
13705 26th Ave. N., Ste. 102
Plymouth, MN 55441
612/559-9098; Fax: 612/559-0124
Web site: www.digitalaudio.com

dSP Postation

The 32-track Postation offers audio recording, mixing, digital video and TEAM Network, for integration of multiple rooms within a facility. New products include Speed Monitor, a comprehensive digital surround mixing and monitoring matrix for the Postation, featuring routing and monitoring of simultaneous stereo, multichannel stem and surround mixes, and Machine Control II—a new Software Module offering control of three machines, synchronization and track arming with individual offsets. Also showing the Desktop Editor line.
25W 658 St. Charles Road
Carol Stream, IL 60188
630/653-1940; Fax: 630/665-4966
Web site: www.dsppl.com.au

Emagic Logic Audio Platinum

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. With a maximum of 96 audio tracks, numerous real-time DSP Effects and complete DTP quality scoring, it is clear that Platinum means professional. Available for Windows and MacOS.

Emagic Logic Audio Gold

Logic Audio Gold is a fully integrated digital audio recording and MIDI sequencing and scoring software package that offers a complete set of editing options for the budget-minded professional project studio. Up to 48 tracks of audio and support for medium-priced digital audio hardware like Korg's 1212 I/O, Emagic's Audiowerk8 and Digidesign's AudiomediaII and III cards. LA Gold is flexible enough to handle even ambitious MIDI/audio productions and scoring jobs. Available for Windows and MacOS.
13348 Grass Valley Ave.
Grass Valley, CA 95945
530/477-1051; Fax: 530/477-1052
Web site: www.emagic.de

Ensoniq PARIS V.1.6

PARIS (Professional Audio Recording Integrated System) version 1.6 offers 16 or 24-bit, 32-track recording, 128-track playback, powerful editing functions, 24-bit mixing with real-time effects processing, and it ships complete with a dedicated hardware mixing control surface. PARIS is based on cross-platform PCI technology. The PARIS Interface MEC (Modular Expansion Chassis) offers various I/O and Sync expansion options. On the PC side, PARIS supports Direct-X and VST plug-ins; VST for the Mac is also supported. PARIS Prelude offers 2 inputs, 2 outputs, PARIS software and the EDS-500 PCI card. MRSP: $1,299.95.
155 Great Valley Pkwy.
Malvern, PA 19355
610/647-3930; Fax: 610/647-8908
Web site: www.ensoniq.com

Euphonix R-1 Multitrack Recorder

The Euphonix R-1 is a 24-bit, multitrack disk-recorder designed to replace analog and digital reel-to-reel technology. The R-1 remote emulates the control layout and feel of traditional recorder remotes, providing a user-friendly transition to high-resolution, random-access recording. Standard features include: MADI digital I/O; constant-sample-rate vari-speed; serial machine control; sample/time-code synchronization; reverse play; jog; shuttle; rugged, modular hardware; and open-architecture. Premium quality 24-bit A/D and D/A converters are optional.
220 Portage Ave.
Palo Alto, CA 94306
650/855-0400; Fax: 650/855-0410
Web site: www.euphonix.com

Event Electronics Layla

Layla is a digital audio interface for PC and Mac computers comprising a PCI bus-master host card and a rack-mount audio interface with eight balanced 20-bit (128x oversampling) analog inputs, ten balanced 20-bit (128x oversampling) analog outputs, S/PDIF stereo digital I/O, word clock/superclock, MIDI in/out/thru and an on-board Motorola 56301 DSP; 24-bit resolution is maintained throughout the internal audio path. Specifications include frequency response of 10-22k Hz, ±0.5dB (20-22k Hz, ±0.25dB) and greater than 98dB of dynamic range.
PO Box 4189
Santa Barbara, CA 93140-4189
805/556-7777; Fax: 805/566-7771

Fairlight MFX3plus & FAME Revision 14.3

Revision 14.3 software for Fairlight MFX3plus and FAME workstations supports wide word audio for allowing 16, 20 and 24-bit formats to be used freely in any combination within a project. The new "Overwrite Recording" mode of MFX3plus and FAME, providing destructive multichannel recording with seamless drop-in/drop-out capability, is ideal for music recording and post-production mixing. Revision 14.3 expands Fairlight's Direct FileExchange initiative to include file format compatibility with Waveframe.

Fairlight FAME V. 2.0 Software

Supports all audio surround formats up to six playback channels (5.1) and features an upgraded user interface for up to four times faster operation. Other new features: M/S decoding on stereo inputs, compressor/limiter dynamics on all mixing buses, dynamics and EQ available to inputs patched directly to tracks; an external stereo input added to the monitor section allows monitoring of left/right feeds post-Dolby insertion without using mixer resources. Allows for storage of automated files on the hard drive and combined backup, as well as bidirectional title loading.
3855 Hughes Avenue, 2nd Floor,
Culver City CA 90232
Tel: 310/287-1400; Fax: 310/287-0200
Web site: www.fairlightesp.com.au

Fostex FD-4

FD-4 is a digital 4-track hard disk recorder and built-in mixer. Mixer section features 3-band EQ, sweepable mid,

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balanced XLR inputs, inserts and two stereo effect returns. Recorder section features full cut/copy/paste editing, no data compression and two additional record tracks for unlimited stereo track bouncing and overdubbing. Full MIDI synchronization and digital I/O, SCSI standard for recording to any external SCSI drive. List price $599.
15431 Blackburn Ave.
Norwalk, CA 90650
562/921-1112; Fax: 562/802-1964
Web site: www.fostex.com

Gadget Labs Wave/824

The Wave/824 is the first professional interface for project and home studios with eight channels of true 24-bit recording for under $500. Features include: PCI add-in card and external break-out box with balanced and unbalanced connections (both XLR and 1/4" TRS), +4dBu and -10dBv levels selectable by software, MIDI interface, D/A converters with dynamic range >105 dB. Compatible with popular audio applications under Win 95/98, Win NT and Mac OS. Price: $499.
333 SW 5th Ave., Ste. 202
Portland, OR 97204
503/827-7371; Fax: 404/685-0922
Web site: www.gadgetlabs.com

Mark of the Unicorn Audio 2408

The 2408 system includes a PCI card, rackmount audio interface and Mac/PC software. Connections: (8) 20-bit analog I/O, (3) ADAT light pipe connectors, (3) Tascam TDIF I/O and S/PDIF. The 2408 is 24-bit capable via lightpipe, S/PDIF and TDIF connections. Any combination of I/O sources can be used, configured in three groups for a maximum of 24 channels. The system can be expanded up to 72 I/O channels by adding up to three rack units to a single PCI card. Software includes wave drivers for Windows and DAW software for Mac.

Mark of the Unicorn Digital Performer 2.4

Digital Performer is an integrated digital audio and MIDI sequencing production tool. It provides a comprehensive recording, playback and editing environment for a large variety of audio applications. Digital Performer allows you to simultaneously record and playback multiple tracks of 16 or 24 bit digital audio and MIDI data in a totally integrated, creative environment. You get the capabilities of a multitrack digital recording system—automated digital mixer, reverb, effects, EQ, and compression—all in one package.
1280 Massachusetts Ave.
Cambridge, MA 02138
617/576-2760; Fax: 617/576-3609
Web site: www.motu.com

Merging Technologies DUA Audio Interface

This cost-effective A/D D/A solution for Pyramix users provides four analog inputs and outputs (20-bit), two AES/EBU input and outputs (24-bit), and an external AES/EBU or Wordclock sync input. The DUA breakout box provides standard XLR audio connections and headphone monitoring, and connects to the Adiana PC card that contains all A/D D/A electronics and AES/EBU I/O circuitry.

Merging Technologies Pyramix V 2.0

A Windows 95/NT4.0 digital audio workstation designed for broadcast applications, with full-featured functionality for high-end audio mastering and audio post-production applications. Version 2 software features include support for the Merging DUA Audio Interface, 16 tracks of Hard Disk record/playback using the new PCI-based Merging Keops audio card, 16 live inputs/outputs and a new Timezone time compression/expansion plug-in.

Merging Technologies Sphynx

The Sphynx is a high-resolution modular audio interface solution for Pyramix users and other audio professionals.

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This rackmount unit is remotely controlled by Pyramix or can also be used as a standalone unit. The modularity allows for custom configurations based on quality and audio interface requirements. It has 8 inputs and 8 outputs, which can be either analog, AES/EBU, 48 kHz/24 bit or 96 kHz/24 bit.
3340 Dundee Rd., 2C-3
Northbrook, IL 60062
847/272-0500; Fax: 847/272-0597
Web site: www.merging.com

Metalithic Digital Wings for Audio Elite

DWA Elite is a complete digital recording solution for Windows PCs. The DWA Elite package integrates all the elements needed for enhanced hard disk recording: 10x10 rackmount stackable breakout box with analog and digital I/O, 32-bit PCI sound card, open architecture, ASIO and standard Windows drivers, Digital WIngs for Audio 2.0 recording/editing/mixing software, and Sound Forge XP DSP effects and waveform editor.
3 Harbor Dr., Ste. 206
Sausalito, CA 94965
415/332-2690; Fax: 415/332-6735
Web site: www.metalithic.com

Minnetonka MxTrax for Yamaha DSP Factory

MxTrax takes full advantage of the awesome real-time mixing and DSP effects power of the Yamaha DSP Factory. MxTrax's unique drag-and-drop mixer allows you to design custom mixers easily. View your project through the automated mixer or through the powerful multitrack editing screen. Save entire mixing and editing projects and perform undos/redos later. List $599.
17113 Minnetonka Blvd.
Minnetonka, MN 55346
612/449-6481; Fax: 612/449-0318
Web site: www.minnetonkaaudio.com

Mixman Technologies Studio

Mixman Studio has what you're looking for in PC music-making tools. Patented synchronization and beat matching make this digital audio mixing tool powerful yet easy to master. Includes hundreds of professional, CD-quality samples. Also available, a professional soundisc library.

Mixman Technologies Studio Pro

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850 Montgomery St., Ste. 350
San Francisco, CA 94133
415/403-1380; Fax: 415/403-1388
Web site: www.mixman.com

Opcode DATport Audio Interface

DATport, a Universal Serial Bus (USB) interface, is a high-quality, plug 'n play, 2-channel, 24-bit digital link between any external digital S/PDIF audio device and any USB-compatible computer. Supports DAT machines, digital multitrack recorder, MiniDisc systems and front-end A/D converters. DATport auto configures with no dip switches, IRQ or DMA. DATport supports all appropriate digital audio editing software. Requires Windows 98; Macintosh drivers coming soon. SRP $199.95.

Opcode Studio Vision Pro 4.1

Studio Vision Pro 4.1 is the latest version of Opcode's professional recording software for the Power Mac. Studio Vision Pro combines audio recording with Pro Tools 16- and 24-bit TDM systems and advanced MIDI sequencing capabilities. The new 4.1 version now supports VST real-time audio plug-ins and ASIO software support for compatibility with many new audio cards including Korg, Event, Lucid, Sonorus, Alesis and Lexicon. Price $995.
3950 Fabian Way Suite 100
Palo Alto, CA 94303
650/856-3333; Fax: 650/856-0777
Web site: www.opcode.com

Orban Audicy V. 2.0

The Audicy digital audio workstation with V. 2.0 software allows users to connect Audicy workstations to Windows 95 or NT file servers. Broadcasters using Audicy now have instant access to file servers, storage systems, removable disk drives, CD recorders and .WAV file downloads from the Internet. Audicy networking easily accommodates multiple users and workstations. Implementations for Novell server support are under way. Price based on configuration.
1525 Alvarado St.
San Leandro, CA 94577
510/351-3500; Fax: 510/351-0500
Web site: www.orban.com

Otari RADAR II

The RADAR II HDR Series from Otari is a multitrack hard disk recorder capable of 24-bit operation at 48kHz sampling rates. Supplied with a single 9-gig removable hard drive, RADAR II provides up to 42 minutes of record/replay capacity. More record time can be achieved by adding extra hard drives. Multiple RADAR II systems can be interlocked to provide 48-track operation via a single RE-811 full-function remote. Optional 48-track metering is also provided.
378 Vintage Park Dr.
Foster City, CA 94404
650/341-5900; Fax: 650/341-7200
Web site: www.otari.com

Roland VS-1680

Roland's VS-1680 is a hard disk-based recording studio with: 16-track playback; 8-track simultaneous recording; a

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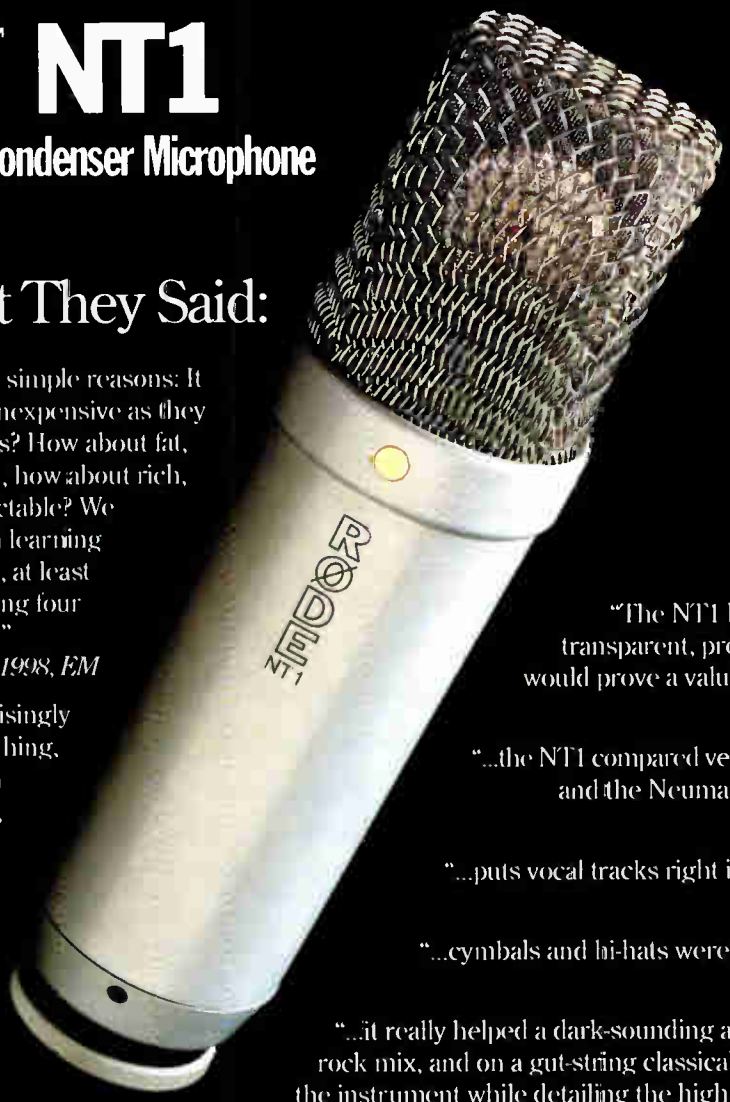

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—Brian Knave, April 1998, EM

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—Brian Knave, April 1998, EM

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—Brian Knave, April 1998, EM

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—Brian Knave, April 1998, EM

"...it really helped a dark-sounding acoustic guitar cut through a busy rock mix, and on a gut-string classical guitar, it captured the warmth of the instrument while detailing the high end and minimizing boominess."
—Brian Knave, April 1998, EM

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Roland VS-880EX

Roland is proud to premiere the VS-880EX Digital Studio Workstation. Building upon the success of the original VS-880, the upgraded VS-880EX model offers high-powered digital recording with stunning built-in effects, more inputs and outputs, more simultaneous recording tracks, more Virtual Tracks, a refined backlit display and a simplified user interface complete with the acclaimed EZ Routing navigation system.
7200 Dominion Circle
Los Angeles, CA 90040-3696
323/685-5141; Fax: 323/722-0911
Web site: www.rolandus.com

SEK'D Samplitude 24/96

High-resolution digital audio workstation software for Windows NT and 95. 24-bit, 96kHz recording rates, 32-bit floating-point internal precision. Mastering with multiband dynamics, enhancer. CD-burning on-the-fly. Records 22, 32, 44.1, 48, 88.2 and 96kHz. Direct support, live mixer mode to process audio in real time without recording. Three and 5-band parametric EQ, dynamics, room simulation, FFT draw filter, real-time noise reduction. Unlimited tracks, object editor.

SEK'D Samplitude Studio 4.5

Samplitude Studio 4.5 is a state-of-the-art digital recording studio for the Windows and NT PC. With fully automated mixing capabilities, flying faders, CD burning on-the-fly, DirectX third-party plug-in support, unlimited tracks, built-in noise reduction system, room simulator, compression, limiting, expansion, distortion, digital delay, 32-bit floating point precision. Samplitude Studio 4.5 fits the bill!
407 Stony Point Road
Santa Rosa, CA 95401
800/330-7753; Fax: 707/578-2025
Web site: www.sekd.com

Sonic Solutions Sonic Studio S4

Sonic Studio provides a host of creative options that let you fine-tune your productions. Sonic Turbo Bit Mapping delivers precise control to noise-shape 24-bit recordings down to 16-bit for CD, producing the dynamic qualities of high-bit recording on a 16-bit medium. Its unique double-precision mode provides exceptional resolution for working with 24-bit, 96kHz High-Density Audio. SonicStudio offers tools to master to DDP, CD-R and Sony 1630 and PCM-9000. It provides full PQ code editing directly from EDLs, ISRC and UPC code entry, flow-through CD authoring and more.
101 Rowland Way
Novato, CA 94945
415/893-8000; Fax: 415/893-8008
Web site: www.sonic.com

Sonifex Courier

Courier is a robust and lightweight portable recorder that has been designed to make the job of recording, editing and transferring audio simple, quick and reliable. Courier records high-quality digital audio to PCMCIA hard disk and has graphical scrub-wheel editing. By using audio files that are DOS and Windows-compatible, Courier is able to load data directly onto the editing/playout system at your studio or via mobile telephone, modem and ISDN communication.
Sonifex Ltd.
61 Station Rd.
Irthlingborough, Northants
UK NN9 5QE
44/1933/650-700; Fax: 44/1933/650-726
Web site: www.sonifex.co.uk

Sonorus AUDI/O AES/8

The AUDI/O AES/8 is a bidirectional digital format translator. Supporting standard digital audio formats and sample-rate conversion, the AUDI/O AES/8 features Tascam TDIF, ADAT lightpipe and four AES/EBU inputs and outputs (switchable to S/PDIF) on standard XLR connectors. AUDI/O AES/8 supports 44.1kHz or 48kHz internal clock, AES, ADAT, TDIF and word/video clock formats. As on its companion, STUDI/O, the exclusive Sonorus 24-bit ADAT interface provides full 24-bit resolution. Priced under $1,000.
111 E. 12th St., 2nd Fl.
New York, NY 10003
212/253-7700; Fax: 212/253-7701
Web site: www.sonorus.com

Soundscape Mixtreme PCI Card

Mixtreme PCI card: 16 in/out. Dual TDIF interface with mixing software and the ability to run third-party plug-ins from the SSHDR-1 PLUS DAW. Plug-ins include TC Works, Aphex, Wave Mechanics and Synchro Arts.

Soundscape SSHDR-1 PLUS

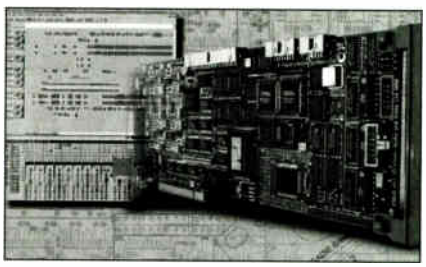
SSHDR-1 PLUS: 12-track modular recorder/editor hardware/software for Win '95 and NT. Applications: post-production, project studio, radio, film and TV. $4,500 starting price.
4478 Market St., #704
Ventura, CA 93003
805/658-7325; Fax: 805/658-6395
Web site: www.soundscape-digital.com

Steinberg Cubase VST/24 4.0

Cubase Audio VST/24 builds upon all the great features of Cubase Score VST 4.0 and adds digital audio recording up to 24 bits, using hardware from companies such as Lexicon, Apogee, Sonorus and Event. We have also given you a 96k sampling rate for getting the highest bandwidth technology has to offer in digital recording. Cubase Audio VST/24 also includes an additional 32 tracks of digital audio above Cubase VST and Cubase Score VST, for a total of 96 tracks of digital audio, and features up to 400 real-time effects. List price $799.
21354 Nordhoff St., Ste. #110
Chatsworth, CA 91311-5857
818/993-4161; Fax: 818/701-7452
Web site: www.steinberg.net

Storm Audio Systems Vortex PCM2000

The Vortex PCM2000 (PCMCIA type II digital I/O card) provides a professional stereo digital audio interface for MacOS and PC-compatible portable computers. PCM2000 supports 2-in/2-out of 16-24 bit/32, 44.1, 48kHz S/PDIF digital audio. Two cards can be used for a total of four channels. The card comes with Metric Halo MacOS drivers and a bundled version of Metric Halo's MLM-100 metering software and is fully compatible with Storm's full line of A/D/A converters.
500 North Rainbow Blvd. Ste. 300
Las Vegas, NV 89107
702/221-2027; Fax: 702/655-5879
Web site: www.stormaudio.com



Studio Audio SADiE 24 96

The SADiE 24 96 multiple I/O workstation is capable of 192kHz editing and mixing and full surround sound panning, and it can be configured to provide up to 32 inputs and outputs. For $9,995 including computer, it's perfect for any audio editing application, including film and TV post-production, CD/DDP mastering, music editing, radio production, telecine transfer, speech editing, education and multimedia. Support for 24-bit 96kHz audio is standard, making every SADiE 24 96 system DVD-ready. Based around Windows 95/98 PC platform.
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Web site: www.sadieus.com

Syntrillium Cool Edit Pro V1.1

Cool Edit™ Pro v 1.1 is a digital audio recorder, editor and 64-track mixer for Windows. This updated version has many new features including faster DSP effects and crash recovery. It's compatible with just about any sound card. It's like having thousands of dollars' worth of professional audio equipment all in one easy-to-use software package. List Price $399.
PO Box 62255
Phoenix, AZ 85082-2255
602/941-4327; Fax: 602/941-8170
Web site: www.syntrillium.com

Tracer Technologies Quartz Audio Pro 32

Quartz Audio Pro 32 is a professional PC-based digital audio multitrack recorder and editor. This 32-bit Direct-X compatible multitrack includes a full arsenal of effects that can be separately layered and assigned to each track, 128 tracks of digital audio, full pan and level automation, and full SMPTE, MIDI and AVI synchronization (slave or master). This affordable application also supports up to four sound cards in a single machine as well as multiple I/O cards. List price $349.
1600 Pennsylvania Ave., Unit 101
York, PA 17404
717/843-5833; Fax: 717/843-2264
Web site: www.tracertek.com

WaveFrame 408+ & Sampler Option

The WaveFrame 408+ is the next generation in WaveFrame editing. With eight tracks per SCSI bus, fast waveform display, file import/export (including OMF) and mulitchannel digital I/O, the 408+ provides the highest performance in a

—LISTING CONTINUED ON NEXT PAGE

World Radio History

ndon – At the world famous bbey Road Studios. "Our GX8000s ove between the studios and on cation for use on a wide range of ojects." Neil Aldridge, Chief Engineer.

Nashville – Mastering the new George Strait album at Georgetown Masters. "Everyone was astounded when they heard it at 88.2kHz compared to 44.1kHz. Its reliability has also been amazing." Denny Purcell.

Montreal – Major multinational TV production company CINAR uses its GX8000s in a variety of applications. "By recording at the maximum possible dynamic range, we're preparing for new formats as they become available." Francois Deschamps, VP of Studios.

London – Digital Audio Technology supplied its 48 track Genex system for 20-bit location recording at the Glyndebourne Opera Festival. "The ability to access remote drives made the continuous recording of a two and half hour performance possible. It couldn't have been done with tape." Ian Silvester, Owner.

Hollywood – Recording the new 20th Century Fox fanfare at the Newman Scoring Stage. "We liked the sound of the live mix so much that we didn't remix it at all." John Kurlander, Grammy award winning scoring Mixer.

AROUND THE WORLD IN 24-BITS

SEE US AT AES BOOTH #1668

Up to 24-bit / 192kHz sample rate · Simultaneous recording of 8 x 20-bit tracks on a standard 2.6Gb MO disk, using internal A-D converters · Forwards, backwards or varispeed lock to timecode or bi-phase · SCSI interface for links with external editors (SADiE, etc.) · Sample accurate synchronising of up to 8 machines · New GXR48 remote control

Genex

Manufactured in the UK by Genex Research. Exclusive worldwide distribution by HHB Communications.

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HHB

CIRCLE #150 ON PRODUCT INFO CARD

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Building Hits...

PETERSON/LA TOUF

TracKen Place Studios - Hollywood, CA
Design: Boto Design
Photo: J. Scott Smith

Dale and Frank have done it again! The hits are already rolling out from the studios they've just built.

Specializing in construction for the entertainment industry, Peterson/La Touf Contractors have established a solid reputation in an industry that is accustomed to quality and innovation. A turnkey builder capable of everything from minor tenant improvements to elaborate state of the art studios, Peterson/ La Touf has a combined 46 years of experience constructing recording studios, post production facilities, television facilities, sound stages and commercial buildings.

The quality of our materials and craftsmenship is unsurpassed. From concept to completion, our full time, on-site management staff oversees each phase of construction, consulting with you every step of the way to insure total satisfaction with the completed project.

Call today and find out for yourself why Peterson/La Touf has distinguished itself from the competition.

TracKen Place rec room
Design: Peterson / La Touf
Photo: J Scott Smith

Brandon's Way. Studio B
Design: studio bau:ton
Photo: J Scott Smith

Peterson/La Touf
CONTRACTORS INC.

9122 Glenoaks Blvd.
Sun Valley, CA 91352
818.252.4818
Fax: 818.252.4819

CIRCLE #151 ON PRODUCT INFO CARD

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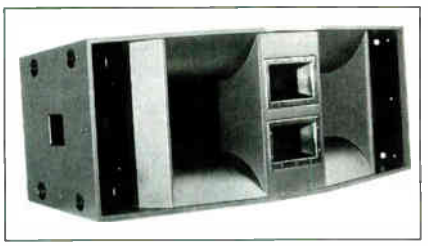
DAW for post-production. The new sampler option developed in conjunction with E-Mu brings sampling back to the WaveFrame platform with Event Processor cue sheet. WaveFrame 408+ starts at $10,500.
1226 Powell St.
Emeryville, CA 94608-2618
510/654-8300; Fax: 510/654-8370
Web site: www.waveframe.com

Loudspeaker Products

Adgil Designs Director Surround System

The Director is a programmable, microprocessor-controlled system designed to control audio monitoring in multichannel environments. It can handle one main monitoring system with up to eight output channels (2, 4, 6 or 8) and two auxiliary stereo systems. Functions include Mute, Dim, Mono and Solo from an external console, individual Cut on speakers, preset monitoring levels, variable levels and more. Can also be used as line level, fixed 1:1 mixer for stems or sub-mixes.
34 Nelson Street
Oakville, Ontario
Canada L6L 3H6
905/469-8080; Fax: 905/469-1129
Web site: www.sascom.com



Apogee Sound ALA-3 & ALA-9

Apogee's ALA-3 and ALA-9 feature an extremely narrow vertical pattern with seamless acoustic addition among adjacent enclosures. The patented rigging system allows enclosures to be "tight-packed" or "flat-packed" easily, giving the designer unprecedented control over resultant pattern of the array. By focusing sound only where it's needed and keeping acoustic spillage off walls, floor and ceiling, a Linear Array system can greatly improve intelligibility, articulation and gain-before-feedback compared to conventional systems.

Apogee Sound S-2

Apogee Sound introduces the ultra-compact FS-2 stage monitor, a radical achievement in small size vs. high performance. Ideal for the concert stage, the unit features extremely high output capability and specialized sonic properties that enable it to cut through any amount of ambient stage "wash." Its small size makes the FS-2 very versatile, permitting it to be used for televised events, industrial theater, houses of worship and other applications where sight line obstructions cannot be tolerated.
2180 S. McDowell Blvd.
Petaluma, CA 94954
707/778-8887; Fax: 707/778-6923
Web site: www.apogee-sound.com

Bag End TA 2000-C

The TA2000-C is a two-way, full-range loudspeaker using true time-align® technology. One 12" woofer; one 1" compression driver; 70-20k Hz (± 3dB); 101dB SPL (1W/1m); 8 ohms; 200 watts continuous/800 watts peak; 80°H x 60°V dispersion (horn rotatable for 60°H x 80°V dispersion); trapezoidal 7-ply poplar plywood enclosure with recessed handles, interlocking corners, durable black carpeting and a 35mm stand adapter. The TA2000-C is ideal for all portable P.A. and DJ applications.

Bag End TA 5000-C

Bag End TA 5000-C is a two-way, full-range loudspeaker using true time-align® technology. One 15" woofer; one 1" compression driver; 50-19k Hz (± 3dB); 101dB SPL (1W/1m); 8 ohms; 200 watts continuous/800 watts peak; 90°H x 40°V dispersion; trapezoidal 7-ply poplar plywood enclosure with recessed handles, interlocking corners; durable black carpeting and a 35mm stand adapter. The TA5000-C is ideal for all portable PA and DJ applications.
22272 N. Pepper Road Unit D
Barrington, IL 60011
847/382-4550; Fax: 847/382-4551
Web site: www.bagend.com

Celestion CDX1-1750

The CDX1-1750 employs the innovative new Sound Castles diaphragm clamping system. The new technology ensures even clamping pressure on the diaphragm surround, reducing distortion. The patent-pending Sound Castles system also allows the full interval volume of the rear cover to act as an acoustic chamber, resulting in superior, lower mid-band response. A specially designed, matched wavefront phase corrector acts as an acoustic lens, producing smooth, coherent waves ensuring the reduction of unwanted resonance or standing waves.
Dist. by Group One Ltd.
200 Sea Lane
Farmingdale, NY 11735
516/249-1399; Fax: 516/753-1020
Web site: www.g1ltd.com

Community CPL23

The ultracompact CPL23 has an 8" LF and coaxial, horn-loaded 1" HF. Applications include background/foreground music in restaurants, retail, classroom/meeting room A/V; supplementary coverage in houses of worship, theaters and music clubs. Features include 50-20k Hz bandwidth, high-output (250W capable, 90.5dB SPL sensitivity), 100°H x 100°V coverage. Models: CPL23B (black), CLP23W (white), and 70V/60W CPL23BT and CPL23WT. 11.75"H, 9.75"W front, 4.8"W rear, 12.25"D; 18.8 lb. with included yoke bracket.

Community WET228

The weather-resistant, compact WET228 has two carbon fiber cone 6.5" LF woofers and a coaxial, horn-loaded 1" polyimide HF. An all-Fiberglas enclosure and baffle with a Weather-Stop Grille protect components. Applications include water/theme/amusement parks. music pavilions, swimming pools, cruise ships, stadium fill, musical fountains. 50-18k Hz, 250W RMS/600W program, 94 dB SPL (1W/1m), 90°H x 40°V, threaded mounting inserts; accessory WETBKT1 yoke bracket, 20"H x 10.13"W x 11.5"D; 30 lb.
333 E. 5th St.
Chester, PA 19013
800/523-4934; Fax: 610/874-0190
Web site: www.community.chester.pa.us

D.A.S. Sound Touring Series

D.A.S. adds three new loudspeakers to its Sound Touring Series. The ST-15 is a trapezoidal-shaped floor monitor. Features include bi-amplified/passive selector, two-way internal passive filter with 1.25kHz crossover point, 4" titanium HF diaphragm, 15" woofer for low/mid frequencies. The ST-152 is a full-range system, similar to the ST-15 but with two 15" woofers. The ST-18 is a horn-loaded, bandpass subwoofer system with an 18" woofer. Freq. response is 35-300 Hz, sensitivity is 98 dB SPL. Recommended amp is 600W/8 ohms.

D.A.S. R Series

This range of two- or three-way passive/active systems is designed primarily for heavy-duty installs. Comprises three full-range systems and three low-frequency subwoofer cabinets. All three full-range systems feature a bi-amplified/passive selector, two-way internal passive filter with 1.25kHz crossover point, 4" HF titanium diaphragm, and neodymium HF compression driver. The three subwoofers complement the full-range systems with 1 x 18" front-loaded, 1 x 18" horn-loaded and 2 x 18" front-loaded configurations. Additional features include built-in flypoints, rotatable horns.
PO Box 987/1 Enterprise Dr.
Old Lyme, CT 06371
860/434-9190; Fax: 860/434-1759
Web site: www.dasaudio.com

Digital Designs DD161d Studio Monitor

This 4-ohm, 6.5-inch two-way speaker has a frequency response of 40-22k Hz with power handling of 100 watts/250 peak and a sensitivity rating of 90 dB. Tweeter is a liquid-cooled, transmission line, rubber-edged aluminum alloy tweeter. The minimum phase crossover has a solid-state, self-resetting fuse with bi-wired inputs with solid brass, gold-plated, five-way binding posts. The 9x13.5x11"

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cabinet has two vented box alignments and one acoustic suspension alignment. $499/pair.

Digital Designs Magma C Series

This 4-ohm, 6.5", two-way speaker has a frequency response of 45-22k Hz with power handling of 100 watts and a sensitivity rating of 90 dB. The 20mm tweeter is liquid-cooled and works with a minimum phase crossover. The 9x13.5x11" cabinet has two vented box alignments and one acoustic suspension alignment, is internally braced and weighs 50 pounds per pair. Accurate and reliable, ideal for home and project studio. $279/pair.
912 N. Classen
Oklahoma City, OK 73106
405/239-2800; Fax: 405/239-7100
Web site: www.digitaldesignsaudio.com

Dynaudio Acoustics BX30

The BX30 subwoofer is a compact, yet powerful, low-frequency extension system for near-field and main monitoring systems. The BX30 uses a single 12" drive unit with Ferrofluid cooling coupled to a 140-watt power amplifier. Reflex tuning and a sophisticated protection system allow a high acoustic power output and a frequency response that extends down to 22 Hz (-3dB). Estimated price: $1,999/ea.

Dynaudio Acoustics M2A

The M2A is a self-powered three-way loudspeaker designed for the highest-quality studio monitoring applications in mid-field or near boundary conditions. The four closely coupled drivers ensure point source accuracy and include two 8" bass units driven by a Class D power amplifier, a 3" neodymium mid and a 1" high-power tweeter extending to over 30 kHz. The cabinets are available in a range of colors and finishes.

Dynaudio Acoustics M4+

The M4+ is a totally no-compromise high-quality, high-power loudspeaker system for use in the largest recording studio music monitoring applications. It is capable of providing accurate low-distortion monitoring at all power levels, with high dynamic range and excellent frequency response. All the drive units in this four-way system have been especially developed with exactly matching characteristics to provide a perfectly integrated sound source.
357 Liberty St.
Rockland, MA 02370
781/982-2626; Fax: 781/982-2625
Web site: www.aximarketing.com

EAW KF400a Powered Loudspeaker

KF400a powered three-way loudspeaker. LF: 15"; MF: 8" cone-loaded; HF: ¼" exit driver on CD horn. Components driven by a Class H Close Coupled Power™ Module. Coverage pattern: 65°x 45°. Frequency response: 62-20k Hz (1W @ 1m, +3 dB). Long-term maximum output: 122 dB. Peak output: 126dB. Cabinet includes flytracks. Weight: 163 lbs. Dimensions: 35" x 20.7" x 19.5". Power module operates on 95V - 250V AC, 47 Hz/66 Hz. Input sensitivity: 0.775V. Input impedance: 600 ohms. List price: $2,399.
One Main St.
Whitinsville, MA 01588
508/234-6158; Fax: 508/234-8251
Web site: www.eaw.com

Electro-Voice Xi-2123

The Xi-2123 is a 12-inch, three-way, small-format, tripole-configured sound reinforcement system. The Xi-2123 is a member of the X-Array Install family of high-performance loudspeakers. All X-Array systems feature Ring Mode Decoupling (RMD™), Electro-Voice's unique technique for producing level independent tonal character and fidelity. The Xi-2123, in addition to providing RMD fidelity also features a three-element line array (tripole configured) to control vertical directivity to below 300 Hz.
600 Cecil St.
Buchanan, MI 49107
616/695-6831; Fax: 616/695-1304
Web site: www.electrovoice.com

Event Tria

The Tria system comprises a floor-loaded Very Low Frequency driver housed in a station that is also home to five power amplifiers, active crossovers, and trim and level controls, plus two biamplified satellite speakers, each with a magnetically shielded 5.25" polypropylene cone driver and 1" natural silk dome neodymium high-frequency driver. Frequency response: 38-20k Hz, ± 2dB (-3dB @ 35Hz); Continuous power (VLF): 80W; (Satellite, per side) 80W/40W. $849.

Event 20/20p

The 20/20p offers many of the performance benefits and all of the convenience of a self-powered monitor system, but at a substantially reduced cost. The system comprises a 20/20 cabinet loaded with two full-range 100W amplifiers—one of the amps drives the powered cabinet, and the other drives a passive 20/20 satellite. Features include independent low and high-frequency trim controls for each speaker, extended low-frequency response and full circuit protection. $599/pair.
PO Box 4189
Santa Barbara, CA 93140-4189
805/566-7777; Fax: 805/566-7771
Web site: www.event1.com

Ferrofluidics APG 2000 Series Ferrofluids

Latest generation of Ferrofluid technology offers improved performance over the popular APG 800 and APG 900 Series Ferrofluids. Contact the manufacturer for further details.
40 Simon St.
Nashua, NH 03061
603/883-9800; Fax: 603/883-2308
Web site: www.fero.com

Gemini XRS-1503

Professional Loudspeaker designed for high levels of sound reproduction. Specifications include woofers with die-cast aluminum frames and massive, vented magnet structures incorporated into tuned, ported cabinets. The extremely rigid cabinet is constructed from Oriented Strand Board (OSB) with integral reinforcement, which contributes to the XRS-1503's ability to deliver clean, accurate bass reproduction. Gemini recommends the XRS-1503 for full-range applications or for use in conjunction with subwoofers for extended bass response. MSRP $450. ($900/pr.)
8 Germak Dr.
Carteret, NJ 07008
800/476-8633; Fax: 732/969-9090
Web site: www.geminidj.com

Genelec: New Loudspeaker

Genelec will be introducing an entirely new approach to active monitoring. At the time of this writing it is impossible for us to accurately reveal the product name, description and price. Be sure to visit the Genelec Demo Room and witness the future of active monitoring.
7 Tech Circle
Natick, MA 01760
508/652-0900; Fax: 508/652-0909
Web site: www.genelec.com

Hafler Trans•ana

Hafler will introduce the Trans•ana reference monitor, which is a two-way near-field monitor bi-amplified active crossover with a 6" woofer and 1" tweeter. Hafler sound quality at a more economical price. Hafler will also introduce the TRMIDS powered subwoofer.
546 S. Rockford Dr.
Tempe, AZ 85281
602/967-3565; Fax: 602/894-1528
Web site: www.hafler.com

Hot House ASB 115 Modular Sub/SBX LF

The Active Sub Bass ASB115 offers a new level of precision audiophile sub-frequency reproduction in an extremely compact 20"W x 21"D x 24"H package. Designed to provide high SPL and accurate, low-distortion bottom octave response when added to any full-range system via the SBX controller, the 115's 38-pound, purpose-built, hyper-excursion (2" peak to peak) driver and built-in 1,000-watt amplifier guarantee bullet-proof, high-impact performance. Frequency response: 20-120 Hz. Price: ASB115 $3,499.
275 Martin Ave.
Highland, NY 12528
914/691-6077; Fax: 914/691-6822

JBL LSR12P

The LSR12P Active Subwoofer has been designed as a companion to the LSR28P and LSR32 Monitor systems for multichannel mixing to Dolby AC-3, Pro Logic or DTS formats. A 12" Neodymium Differential Drive woofer is mated to a 250-watt continuous power linear amplifier. This bass reflex enclosure is ported through a Linear Dynamics Aperture which eliminates port compression and reduces port noise. A unique bass management system includes left, center, right and discrete inputs.

JBL LSR28P

The LSR28P Linear Spatial Reference Bi-amplified Monitor combines JBL's patented Differential Drive Technology with breakthroughs in psychoacoustic research. The 8" two-way design 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/octave crossovers provide optimum power and signal processing resulting in an unparalleled reference monitor system.
8500 Balboa Blvd.
Northridge, CA 91329
818/894-8850; Fax: 818/830-1220
Web site: www.jblpro.com

Klipsch KSF-S5

The KSF-S5 is a surround loudspeaker featuring two 1" neodymium magnet compression drivers with 90° x 60° Tractrix Horns and one 6.5-inch woofer. Available in matte-black finish or white vinyl, the KSF-S5 features timbre

World Radio History

matching with a proprietary new technology delivering full room coverage with diffused and detailed sound. The system's power handling is rated at 100 continuous watts, while its bandwidth spans from 60-20k Hz.

Klipsch KSP-S6

The KSP-S6 is a two-way system using two 1" K-96-S neodymium compression drivers coupled to 90° x 60° Tractrix Horns and two 6.5" K-1057-K woofers. Housed in a triangular-shaped sealed enclosure with horns and drivers mounted at right angles to each other, the KSP-S6 provides a broad and even 180° of coverage. The system also features a maximum continuous power handling of 150 watts (600 watts peak) and 94dB sensitivity (@ 1w/1m).
8900 Keystone Crossing, Ste. 1220
Indianapolis, IN 46240
888/600-5776; Fax: 888/666-5776
Web site: www.klipsch.com

KRK V8

The KRK V8 features video shielding with an 8" Kevlar woofer and a 1" silk tweeter. Frequency response is measured at 49-22k Hz (± 2dB), with a crossover point at 1.6 kHz. The V8s provide 130 watts of maximum power handling and a maximum SPL of 108 dB. V8s will retail for $1,249 per pair.
Dist. by Group One Ltd.
200 Sea Lane
Farmingdale, NY 11735
516/249-1399; Fax: 516/753-1020
Web site: www.krksys.com

Martin Audio Ltd. C115

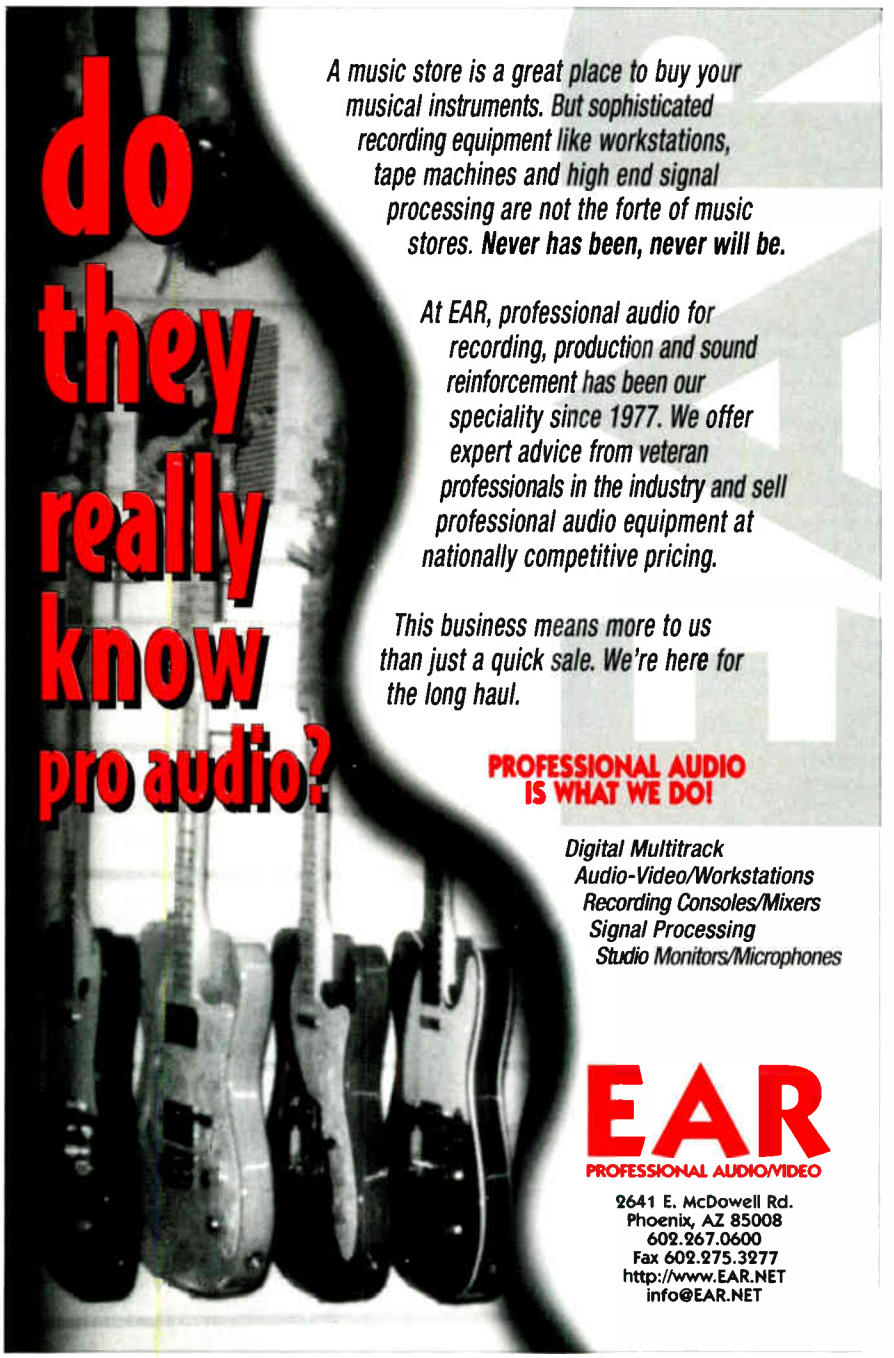
The C115 is a surface-mount loudspeaker designed specifically for distributed systems (wall bracket included). The speaker utilizes a 5", two-way ICT (Inductively Coupled Transducer) drive unit for a frequency response of 80-20k Hz. The C115 is available in low-impedance and 70v transformer configurations. The polypropylene injection-molded enclosure is impervious to most weather conditions and offers maximum protection to the weather resistant ICT drive unit.
P.O. Box 44019
Kitchener, ON N2N 3G7
519/578-0213; Fax: 519/578-1575
Web site: www.martin-audio.com

Meyer Sound Laboratories PSW-6

The PSW-6 is the first commercial subwoofer to provide directional low-frequency control over two full octaves in a precise, cardioid-shaped coverage pattern. The operating frequency range is 30-125 Hz (-6dB points), with a maximum SPL of 140 dB @ 1 meter. The directional coverage pattern has a front-to-back ratio of over 15dB (typically more than 20dB, from 30-125 Hz). List price $15,000 ea.
2832 San Pablo Ave.
Berkeley, CA 94702
510/486-1166; Fax: 510/486-8356
Web site: www.meyersound.com

Munro Associates M3F

The M3F is the latest addition to the range of Munro Associates/Dynaudio Acoustics loudspeaker systems and is designed for high-quality monitoring in small to medium film and television dubbing theaters. The small, narrow cabinet ensures that up to five channels can be easily positioned at the front of any room or behind a narrow screen. Each cabinet contains two 12" bass units, two 6" mids and a high-sensitivity horn loaded tweeter.
Unit 21, Riverside Studios, 28 Park Street
Southwark, London UK SE1 9EQ
44/171/403-3808; Fax: 44/171/403-0957
Web site: www.munro.co.uk



CIRCLE #152 ON PRODUCT INFO CARD

World Radio History

NHT Pro/Vergence M-00

Two-way active monitor. 4.5" woofer. 1" soft dome tweeter. Sealed, cast-aluminum enclosure. Response controls: +4/-10dBu, HF pad. Connectors: XLR, TRS, phono. 75 watt built-in amp/crossover. Defeatable auto standby. Magnetically shielded. Dimensions: 9.5" H x 5.5" W x 7" D. Wt: 17 lbs. MSRP $700 pair.

NHT Pro/Vergence A-20

Two-piece active reference monitor. Loudspeaker: two-way; 6.5" woofer, 1" metal dome tweeter. Magnetically shielded. Separate 250-watt amplifier. Frequency response: 45-21k Hz ±3dB. Response controls: 5-position gain, HF, LF. LED display of line voltage, heat sink temp. and SPL. Loudspeaker dimensions: 14" H x 7.5" W x 11.4" D. Mirror image pairs. Wt: 151 lbs. Amp dimensions: 19" x 2U. MSRP: $1,900 system w/amp.
NHT Pro/Vergence Technology
555 First St. #302
Benicia, CA 94510
707/751-0270; Fax: 707/751-0271
Web site: www.nhtpro.com

OAP Audio Products Q-Series

The Q-Series, OAP's newest family of flyable loudspeakers, is now in production. This family of products, with its revolutionary bracketry and flexible arraying capabilities includes large-format horns in stand-alone or two-way systems, coaxial speakers and subwoofers. The Q-Series is available in a variety of finishes to meet your venue's aesthetic requirements and comes standard with a passive crossover system easily convertible to active. Call the factory for more information or visit our web site.
310 Peachtree Industrial Blvd.
Buford, GA 30518
770/945-1033; Fax: 770/945-1843
Web site: www.loudspeakers.com

P. Audio PX1800

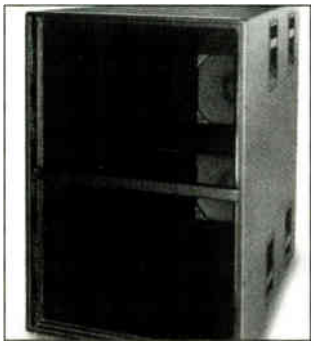
P. Audio releases a breakthrough in high-power low-frequency sound reinforcement transducers. Cohesive design has yielded a massive 2-3dB increase in acoustic output over competitive systems in the critical 30-80Hz range. New frame, magnet structure and suspension have reduced harmonic distortion by 6 dB over competitors and provided large yet balanced linear excursion. A 4" edge-wound aluminum voice coil provides maximum sensitivity in the usable frequency range and reduces power compression. Suggested retail $417.
Dist. by Professional Audio Systems
2270 Cosmos Ct.
Carlsbad, CA 92009
760/431-9924; Fax: 760/431-9496
Web site: www.pas-toc.com

PMC IB1S

PMC's IB1S Monitor Loudspeaker combines the latest in drive unit technology and PMC's renowned transmission line loading techniques to produce the ultimate midfield monitor loudspeaker. Specifically designed for all critical monitoring situations from music and speech recording to audio, video and film post-production, the IB1S is ideally suited to all quality assessment applications. Exceptional low-frequency extension and resolution. Lower coloration and distortion. Consistent monitor balance at all levels. Higher SPLs without distortion or compression.

PMC 2W1

An entirely new product using our transmission line technology. The sculpted enclosure houses a 152mm flat carbon bass driver and a 34mm HF driver. Both are driven by a balanced dual 120w amp producing deep, controlled, accurate bass. Rotary controls for LF roll-off, LF tilt, HF tilt & EQ in/out are easily accessed. Signal input: XLR Mains: IEC on rear. Approx. dimensions: 400 x 200 x 300mm (HxWxD). Weight 15 kg.
Bryston Ltd./PMC
677 Neal Dr.
Peterborough, Ontario
Canada K9J 7Y4
705/742-5325; Fax: 705/742-0882
Web site: www.bryston.ca



Professional Audio Systems BH-2

PAS answers the challenge of consistent long-distance coverage. The new BH-2 bass horn houses a pair of 12" drivers in a 60Hz vented horn. This provides low-frequency support in the octave-and-a-half below 200 Hz—the range of most power in music and voice—and where directional control becomes a concern. BH-2 arrays mated with the PAS LT-2 mid/high pack offer ideal long-distance intelligibility and directional control. List price $2,659.

Professional Audio Systems TOC 360 Series

PAS' TOC 360 Series are high-powered coaxial systems in fireproof metal enclosures for installation in plenum or suspended ceilings in large facilities. Their high-power capacity and controlled dispersion make them appropriate in areas with high noise levels. Each model contains Time Offset Correction (TOC™) optimized for the coaxial driver used. High power capacity and sensitivity produce SPL peaks greater than 106 dB at 30 feet! List price $757 - $1,307.
2270 Cosmos Ct.
Carlsbad, CA 92009
760/431-9924; Fax: 760/431-9496
Web site: www.pas-toc.com

Quested Monitoring Systems F11

The F11 is a self-powered near-field monitoring system that features a biamplified two-way design. The stylish high-density molded cabinet design houses a 6.5" bass driver coupled with a 28mm soft dome tweeter assembly. Full magnetic shielding is standard. The F11 is ideal for all near-field music and post-production applications.
2120 West Greenview Drive #1
Middleton, WI 53562
608/831-8700; Fax: 608/831-7100
Web site: www.turbosound.com

Radian Engineering RPX112

12" two-way stage monitor, features a single point-source, coaxial loudspeaker rated at 1,000 watts program, 500 watts RMS. Dispersion 60°, conical. Employs a 4" edge-wound voice coil on the woofer section with a 2" exit compression driver on the highs. List price: $1,695.
600 N. Batavia St.
Orange, CA 92868
714/288-8900; Fax: 714/288-1133
E-mail: info@radianaudio.com

Renkus-Heinz CT Series

CT Series loudspeakers combine Renkus-Heinz CoEntrant, Complex Conic and TRAP technologies in three-way systems offering outstanding performance with a wide range of coverage pattern control. CT-5 features a CoEntrant driver and front-loaded, heavy-duty, 800-watt 15" woofer. Maximum SPLs up to 128 dB over 35-17k Hz. CT-6 has a horn-loaded 800-watt 15" woofer that extends low-frequency directional control down to 200 Hz. Up to 133 dB SPL from 60Hz to 17kHz.
17191 Armstrong Ave.
Irvine, CA 92614
949/250-0166; Fax: 949/250-1035
Web site: www.renkus-heinz.com

Selenium High Power Woofer Series

At AES, Selenium will introduce a new series of High Power Woofers, utilizing a completely new patent pending cone material, QCF (Quartz Composite Fibre) and baskets. This new cone material offers many advantages and must be seen and heard. In addition, Selenium will offer a new series of 12" and 15" coaxials and top-end compression drivers. The new additions join the already successful wide range of quality Selenium products.
15 East Uwchlan Ave #424
Exton, PA 19341
610/280-3595; Fax: 610/280-3598

Shedwerks TLC-3

Console-top near-fields in a sealed enclosure; unpowered. Frequency response 60-20k Hz. Sensitivity 84 dB. Crossover frequencies 280 Hz, 4 kHz. Woofer size and type: 6.5" paper cone, foam-surround. Midrange size and type: 5.25" paper cone, rubber surround. Tweeter size and type: .75" phase correct soft dome. Power rating 100W RMS. Cabinet dimensions: 8.5"H x 9.5"D x 9.5"W. 34 pounds. Notes: Downfiring woofer, phase correct crossovers, Zolatone finish, gold five-way binding posts, non-marking vibration-damping feet. Price: $899.

Shedwerks TLC Bath Camera

Project studio near-fields. Sealed enclosure, unpowered. Frequency response 40-20k Hz. Sensitivity: 84 dB. Crossover frequencies 280 Hz, 4 kHz. Woofer size and type: 6.5" poly cone, rubber surround. Midrange size and type: 5.25" poly cone, rubber surround. Tweeter size and type: .75" neodymium phase-correct dome. Power rating: 90W RMS. Cabinet dimensions: 11"H x 9.5"D x 8.5"W. 34 pounds. Notes: rear-firing woofer, phase correct crossovers, Zolatone finish, gold five-way binding posts, designed for project studio use. $899.
4411 Brookford Ave.
Woodland Hills, CA 91364
818/225-1809; Fax: 818/225-1309
Web site: www.angelfire.com/biz/theloudspeakerco.

World Radio History

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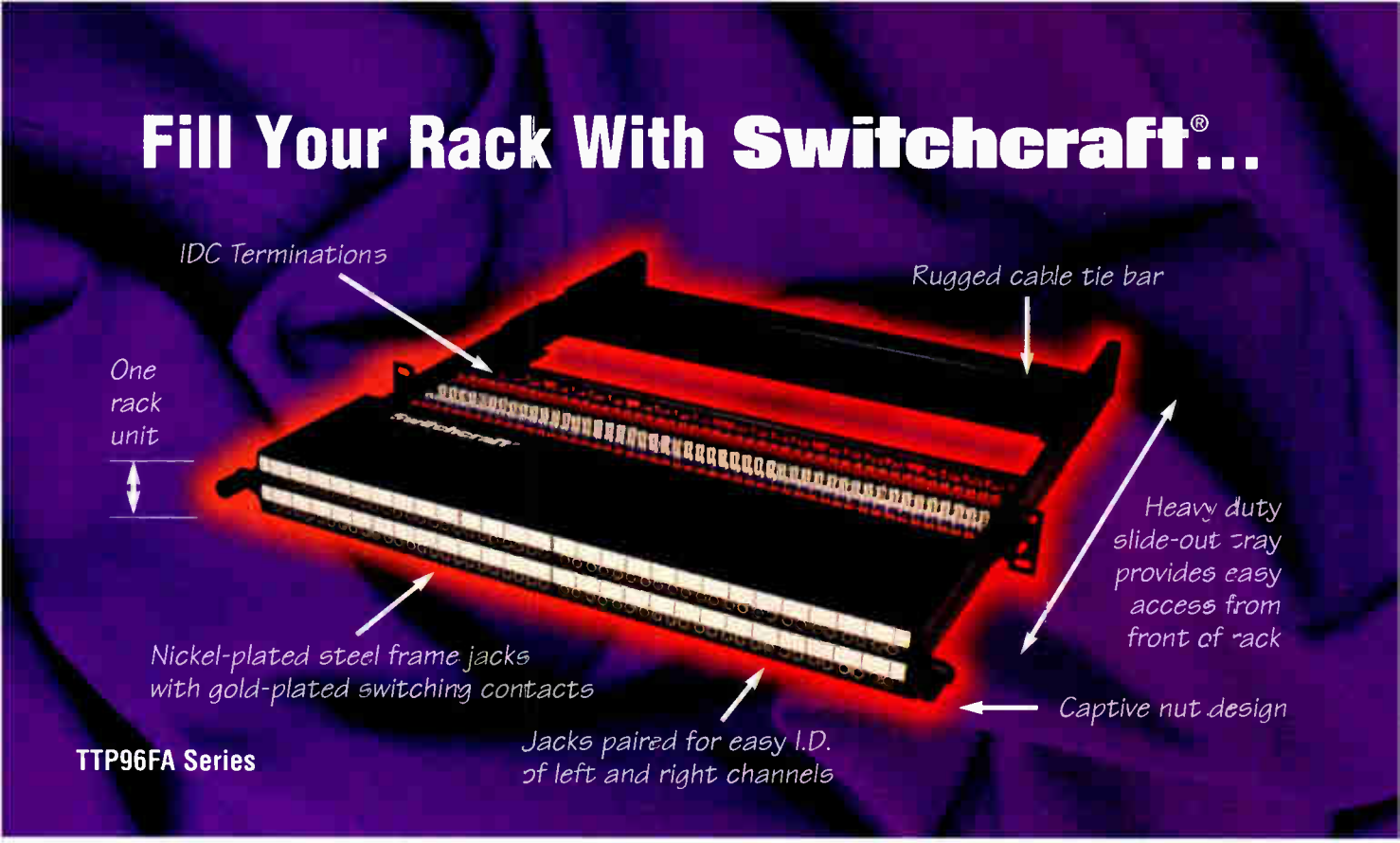

Introducing the Front Access Patchbay Series...

an exciting new reason to make Switchcraft your source for audio panels.

Our innovative front access patchbay gives you space where you've never had it before and convenience you've never dreamed of, in a quality package you've come to expect from Switchcraft. Our heavy duty slide-out tray gives you access to the 96 nickel-plated steel frame jacks ***from the front*** of the unit.

But that's only the beginning! See the photo above for all of the features and benefits, which make this panel ideal for use in studios, tape editing rooms, mobile facilities and anywhere space is limited.

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- 1/4" Nickel-plated steel frame jacks
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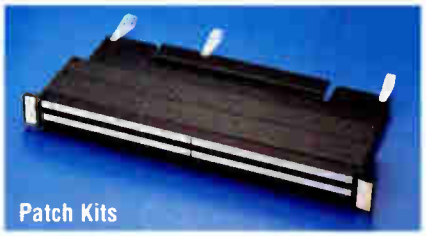
- 3 1/2" or 1 3/4" panel height

- TT Nickel-plated steel frame jacks
- Rugged cable tie bar
- Extra wide labeling strips
- 1 3/4" panel height

- Extra wide labeling strips
- Fully-wired with EDAC connectors



- Choose from a variety of normaling configurations
- 3 1/2" or 1 3/4" panel height (1/4" or TT)

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CIRCLE #163 ON PRODUCT INFO CARD

Sonar MM-X2

Two-way in-ear micro monitor using a specially designed horn-loaded bass system, combined with a vibrating armature for the high frequencies. The MM-X2 uses an electro-acoustic hybrid crossover design to provide smooth extended-frequency response, while minimizing distortion and phase problems.
Sonar (distributed by Precision Systems Integrated)
305 River Road
Tullytown, PA 19007
215/949-8300; Fax: 215/949-8400

Sound Bridge Acoustic Labs Series 5000

Series 5000, our high-performance series, features six time-corrected products targeted at mid-touring and permanent install markets. SBAL is committed to developing new and innovative products to meet the needs of the professional audio market.
3501 Interstate-35E South
Waxahachie, TX 75165
800/628-9084; Fax: 972/935-0881
Web site: www.soundbridge.com

Sound & Lighting Specialists 112RT

The SLS 112RT is a high-efficiency, two-way loudspeaker with extremely smooth response. The 112RT utilizes ribbon driver technology coupled to a premium 12-inch woofer. The 13-ply birch enclosure is equipped with multiple fly points and is tuned for usable bass response down to 44 Hz. Typical coverage is 60°H x 40°V. The list price with fly points is $2,624.

Sound & Lighting Specialists T3/R

The SLS T3-R is a premier large-format loudspeaker. The three-way speaker utilizes ribbon driver technology coupled to a high-efficiency 10" horn-loaded, mid-range transducer. The low-frequency section is comprised of a 15-inch, 800-watt continuous woofer with flat response down to 40 Hz. The T3-R is available with ATM Fly Trac or fixed fly points. Typical coverage is 60°H x 40°V. List: $4,695.
3110-A South Scenic
Springfield, MO 65807
417/883-4549; Fax: 417/883-2723
Web site: www.slsloudspeakers.com

Sundholm Acoustics SL6.5 and SL10/s

The SL6.5 is a two-way system incorporating a 6½" bass-mid driver and 1" silk dome tweeter with a ±3 dB response of 45-20k Hz. $795. The SL10/s is a stereo subwoofer system designed to complement the model SL6.5. The -3dB point is 34 Hz. $1,295.

Sundholm Acoustics SL8.0

The SL8.0 is a two-way system featuring an 8" driver with a 1" aluminum dome with a response of ± 3dB, 40-20k Hz. $995.
16630 S.E. Round Oaks Court
Milwaukie, OR 97267
503/794-2661; Fax: 503/786-1550
Email: love@teleport.com

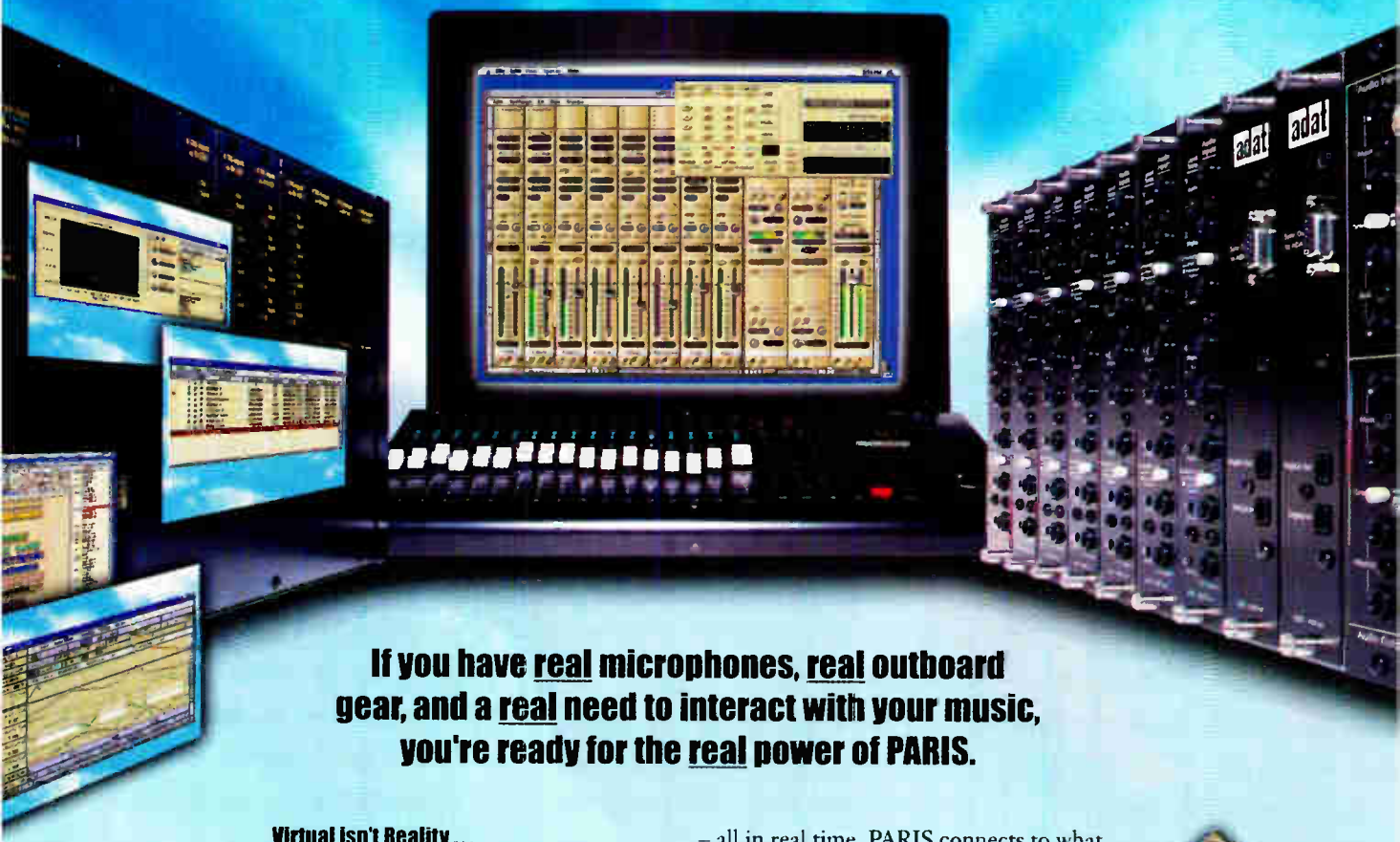
Tannoy Reveal

The Tannoy Reveal is the latest in reliable accuracy for professional-quality studio monitoring at an affordable level. The soft-dome HF unit is seamlessly matched to a bilaminate bass unit by the hard-wired, low-loss crossover network. The thick, curved baffle is designed to minimize diffraction and adds to the distinctive style of this dynamic, shielded monitor. Retail price $399/pair.
Tannoy/TGI North America Inc.
300 Gage Ave., #1
Kitchener, Ontario Canada
N2M 2C8
519/745-1158; Fax: 519/745-2364
Web site: www.tannoy.com

CIRCLE #154 ON PRODUCT INFO CARD

World Radio History

Software vs. Hardware: A PARIS Perspective



If you have real microphones, real outboard gear, and a real need to interact with your music, you're ready for the real power of PARIS.

Virtual Isn't Reality...
Software DAWs fall short when they perform in the real world. PARIS gives you all the advantages of an expandable computer-based recording and editing system. *But there's more.* PARIS adds extensive hardware options, 24-bit inputs and outputs, 100mm faders, and world class signal processing to a single, integrated studio. Combine all that with pedal-to-the-metal *Intelligent* software, and you have the most effective integrated audio workstation in the world.

In with the MEC (Modular Expansion Chassis)...
PARIS stands out because it fits in. The Interface MEC gives you more ways to expand your inputs and outputs than any other digital audio workstation – all with the addictive sound of 24-bit resolution. With all of these ins and outs, you can track live music, mix with outboard effects, import and export to digital tape – all in real time. PARIS connects to what you have – now, and in the future. It fits in.

Out with the Mouse...
How much control could you possibly muster with one measly mouse? **Never enough.** PARIS includes a dedicated control surface that lets you mix your music with all 10 fingers, as nature intended. Put yourself back in control.

A Final Perspective...
One reality you can bet on – PARIS is, by far, *the* most complete integrated studio on earth. *And it's available today!* Compare for yourself. Who else is shipping a 128 track, Mac and PC compatible system, with real-time effects and a dedicated control surface? **No one.**

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1998 Nominee

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www.ensoniq.com

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Technical Audio Devices (TAD) T-R9

Designed to support today's demands for DVD Audio sound reproduction in both the professional studio application and home theater sound environments, TAD/Pioneer introduces a new Ribbon Super Tweeter model PT-R9. Featured in this wide-range tweeter is a super-light beryllium vibration board for excellent response from 5-120k. Another feature is full-surface drive, made possible by the use of advanced Alnico 750 magnet with its high-precision magnetic field structure.
TAD/Pioneer
1925 E. Dominguez St.
Long Beach, CA 90810
310/952-2387; Fax: 310/3952-2412
Web site: www.tad-pioneer.com

Turbosound TFM-330

The Turbosound TFM-330 is a high-power biamplified stage monitoring system designed for the most demanding professional 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-designed 15" LF driver and a high-power 2" high-frequency compression driver on a custom waveguide. The HF horn pattern is designed to give essentially the same response at varying distances from the loudspeaker.
2120 West Greenview Drive #1
Middleton, WI 53562
608/831-8700; Fax: 608/831-7100
Web site: www.turbosound.com

Westlake Audio Lc3w10

Newest addition to the popular Lc Series of products from Westlake Audio Inc. Three-way design for near to mid applications. Features 10" polypropylene woofer with 5" midrange and 1" tweeter. System employs passive crossover with option for either Bi-amp or Bi-Wire operation. Rated response of 40-18k Hz, with sensitivity of 91 dB @ 1M for 2.83V input. Impedance of 5 ohms nom., 3 ohms min. Price is $2,759 per pair.

Westlake Audio Lc265.1

Westlake Audio's first dedicated center-channel speaker system. Can also be used in 3- and 5-channel configurations. Three-way design uses dual 6 ½" woofers with 5" midrange, 1" tweeter coaxial driver. Passive crossover gives option of Bi-Amp or Bi-Wire operation. Response is rated at 48-18k Hz with sensitivity of 91 dB @ 1M for 2.83V input. Impedance of 5 ohms nom., 3 ohms min. Price is per speaker, $1,347.
2696 Lavery Court, Unit 18
Newbury Park, CA 91320-1591
805/499-3686; Fax: 805/498-2571
Web site: www.westlakeaudio.com

Yamaha MSP5

The MSP5 powered monitors feature a bi-amplified design providing 40 watts of power to the speaker's 5-inch woofer while a separate amplifier feeds 27 watts to the system's 1-inch titanium tweeter. The result is an impressively flat frequency response and a well-articulated stereo image making the MSP5s perfect for applications in which the accuracy of the monitoring system is of primary concern. The MSP5 features both +4dB XLR and -10dB line level inputs. List price is under $600/pair.
6600 Orangethorpe Ave.
Buena Park, CA 90622
714/522-9011; Fax: 714/739-2680
Web site: www.yamaha.com

Microphone Products

AKG C3000 PRO

A studio and stage microphone featuring a revolutionary capsule design—a gold-sputtered 1-inch diaphragm plus a microtransducer. Switchable cardioid and hypercardioid patterns; switchable 10dB pad; 12dB/octave bass roll-off at 75 or 150 Hz, 20-20k Hz response. Max. SPL 137 dB at 1% THD; 140 dB at 3% THD. Includes shockmount. Non-reflective finish. Protective carrying case.
1449 Donelson Pike
Nashville, TN 37217
615/360-0499; Fax: 615/360-0275
Web site: www.akg-acoustics.com

Alesis/GT Electronics AM Microphones

From Alesis' new GT Electronics division, large-diaphragm condenser mics include two Class A FET models and two tube models. The cardioid AM51 ($549) has a -10dB pad and low-frequency roll-off. The AM52 ($699) provides cardioid, omni and figure 8 polar patterns. The $999 AM61 cardioid tube mic offers a hand-tooled capsule and a gold evaporated diaphragm, while the $1,299 AM62 tube mic offers five polar patterns (cardioid, omni, figure 8, hypercardioid and supercardioid).
1633 26th St.
Santa Monica, CA 90404
800/5-ALESIS; Fax: 310/255-3401
Web site: www.alesis.com

Applied Microphone Technology 97 C

The 97 C is an all-round percussion mic, with 7-inch gooseneck clamps to rim or tension rod of drum. Can also be used for hi-hat.
PO Box 33
Livingston, NJ 07039
908/790-0405; Fax: 908/790-0407
Web site: www.appliedmic.com

Audio Engineering Associates R44 C

The R44 C is our update of the classic RC 44BX bi-directional ribbon microphone. The ribbon is made from new old stock RCA material. Our goal is to produce a microphone that those who still respect and use RCA mics would be proud to own. It will debut at the 105th AES in San Francisco 40 years after RCA ceased production of the 44BX. Standard finish is black and bright chrome.

Audio Engineering Associates R44 S

The R44 X functional "RCA 44" prop shell is a duplicate of the vintage RCA 44 ribbon microphone. Internal shock-mounted Rycote clips allow modern microphones to be easily hidden inside. A 2-meter cable connects the internal mic connector to the outside world. It is available in the standard range of RCA finishes. The R44 S parts will interchange with original parts for repair and restoration projects.
1029 N. Allen Avenue
Pasadena, CA 91104
626/798-9128; Fax: 626/798-2378
Web site: www.wesdooley.com

Audio-Technica AT4060 Tube Microphone

The AT4060 combines premium 40 Series engineering and vintage tube technology. With a dynamic range exceeding that of other tube mics, the AT4060 provides the coveted

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World Radio History

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sound of valve design without compromising the specification standards necessary to excel in today's diverse recording situations. It features high max SPL capability, low self-noise and very high output. Dual gold-vaporized large-diaphragm elements provide extended frequency response. Includes power supply, cable, shock mount and protective case.
1221 Commerce Dr.
Stow, OH 44224
330/686-2600; Fax: 330/686-0719
Web site: www.audio-technica.com

AudioDeutchKraft A-51, A-51 S

The A-51 is a studio condenser mic with a large-diameter, gold-sputtered diaphragm, cardioid capsule and low-noise discrete FET electronics. The A-51 is priced at $349, including shockmount and carrying case. Priced at $399 (with shockmount and case), the A-51S is a similar mic, but is equipped with a low frequency roll-off switch and a switchable -10 dB pad. Both mics carry a 1-year warranty.
P.O. Box 82282
Portland, OR 97282-0282
503/772-3007; Fax: 503/772-3097
Web site: www.audiodk.com

Audix CX-101

The CX-101 is a large-capsule, single-pattern cardioid condenser microphone designed for both studio and live broadcast applications. The CX-101 has a one-inch gold vapor diaphragm and a very low noise floor—17 dB(A). It features a rugged brass housing and the Audix trademark black satin finish. Operation requires phantom power of 48 to 52 volts. The CX-101 has a suggested retail price of $499 (US) and comes with shock-mount stand adapter and aluminum carrying case.

Audix TR40

The TR40 test and recording microphone features a quarter-inch diameter pre-polarized condenser capsule with omnidirectional polar pattern. It delivers a linear frequency response of 20-19k Hz (± 1 dB), making it a cost-effective solution as a test and measurement mic. The omnidirectional capsule makes it ideal for studio and live recording applications. It's made of rugged, machined aluminum and features a gold-plated XLR connector at the base. The suggested retail price is $249.
P.O. Box 4010
Wilsonville, OR 97070
800/966-8261; Fax: 503/682-7114
Web site: www.audixusa.com

Benson Audio Labs B2 Boundary Mic

Studio quality condenser boundary cardioid microphone features a rugged steel mesh housing, non-reflective matte black finish and rubber pad laminated to base reduces low-frequency artifacts. Excellent for stage presentations, conference tables and podiums. Preamp/DC converter is housed in a separate steel barrel that can be hidden away, if needed. Handling more than 140 dB SPL, it is excellent for bass drum applications. Frequency response: 40-20k Hz (± 2 dB). Impedance: 250 ohms. Sensitivity: -54 dBm. Operating voltage: 9-52VDC.

Benson Audio Labs PC20 Series Studio Condenser Mic

Studio-quality condenser microphone with interchangeable cardioid, hypercardioid and omni capsules. Vapor deposited, conductive gold-coated, Mylar diaphragm. Direct coupled transformerless design. Solid brass turned barrel. Gold-plated XLR connector. Non-reflective matte black finish. Frequency response: 20-20k Hz (+2 dB). Roll-off switch: 80 Hz, 6dB/octave. S/N ratio: greater than 65 dB. Impedance: 250 ohms. Sensitivity: -58 dBm. Operating Voltage: 48VDC.
4017 Washington Rd., Ste. 320
McMurray, PA 15317
412/914-0575; Fax: 412/914-0571
E-mail: bensonaudiolabs@prodigy.net

Beyerdynamic MCE82

The MCE82 is a stereo microphone for XY recording. It is suitable for stereo recording in ENG/EFP applications, home recording, reporting, film, video and interviewing. Two electret condenser elements housed in a single microphone housing are set at a 45° angle. Bass filter eliminates noise. Operates on 12 to 48 volts. Transducer: condenser, basic electret x 2. Frequency response: 50-20k Hz. Polar pattern: cardioid x 2. Impedance: 200 ohms. Sensitivity: 7.9 mV/Pa.

Beyerdynamic MCE90 Cardioid

Cardioid studio condenser mic with a wide frequency response, low self-noise and the capability of handling high SPL. Ideal for commercial or project studio work. Transducer: condenser (basic electret); frequency response: 30-20k Hz; polar pattern: cardioid; max SPL: 139 dB/154 dB; sensitivity: 10 mV/pa; impedance: 190 ohms.
56 Central Ave.
Farmingdale, NY 11735
516/293-3100; Fax: 516/293-3288
E-mail: salesusa@beyerdynamic.com

BPM Microphones CR-95

The BPM CR-95 transformerless large diaphragm condenser microphone will enhance any studio application. Equipped with a dual true 1-inch gold large diaphragm in a pressure gradient transducer capsule, the CR-95 offers the finest quality of recordings. Three recording positions (cardioid, omni and a true figure-8) with switchable -10dB bass cut. Included accessories: Road case, cable, wind screen and elastic suspension. List: $1,299.99.

BPM Microphones TB-95

The BPM TB-95, like our CR-95, encompasses the attributes of a world-class mic. The tube electronics give the TB-95 the warmth and depth you expect in a microphone of this stature. Three recording positions (cardioid, omni and a true figure-8) and switchable -10dB and bass-cut. The power supply is built to unyielding standards and provides an extra fuse and external switchable voltage setting. Included accessories: road case, cable and elastic suspension. List $1,999.99.
PMI Audio
23773 Madison St.
Torrance, CA 90505
877/563-6335; Fax: 310/373-4714
E-mail: info@pmiaudio.com

Brauner VM1S Stereo Tube Mic

Custom-made in Germany with the original EF 806 S and AC 701K Telefunken tubes, the Brauner VM1S is a stereo version of the large diaphragm VM1 that created a worldwide buzz this year. Like the VM1, the VM1S delivers natural-sounding recording of vocals and instruments.

Brauner VM1U/VM2 Cardioids

Brauner Microphones will present two new mics to complement its successful VM1/VM1S large diaphragm tube mics. The VM1U upgradeable cardioid microphone and VM2 Cardioid are cardioid versions of the VM1 at lower price points. Dirk Brauner will be on hand at AES to discuss his unique designs.
Dirk Brauner Rohrengeratemanufaktur
van de Wallstrasse 1
D-46499 Hamminkeln
Germany
49/12856-9270; Fax:49/2856-9271
Web site: www.dirk-brauner.com

CAD AraSys™ Digital Wireless

AraSys (Advanced Radio Systems) is CAD's initial launch into the wireless market incorporating significantly advanced design elements. AraSys features enhanced frequency response, improved gain and noise standards over current standards. Extraordinary RF immunity and most importantly, unparalleled transient stability which eliminates the "crashing" associated with most analog and digital wireless systems: Extremely competitive price point.

CAD VSM-1

CAD's latest large-diaphragm condenser microphone featuring servo-valve topology—a natural bridge between the valve technology of the VX2 and the servo technology developed for the Equitek Series. This single tube servo-coupled microphone delivers extraordinary bandwidth, frequency and transients with exceptional gain and low noise. Breakthrough technology.
250 Corporate Ninety, 2550 S.O.M. Center Rd.
Willoughby Hills, OH 44094
440/943-0110; Fax: 440/943-0104
Web site: www.cadmics.com

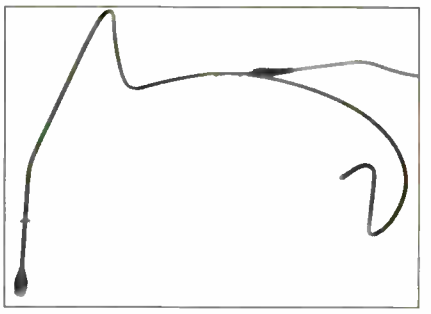
Countryman A3 Awards Mike

The all-new A3 is a lectern microphone with separate hypercardioid, cardioid and omnidirectional outputs featured by Countryman Associates. Each pattern has its own individual capsule, preamplifier and output for triple redundancy. Simultaneous multiple patterns allow the house, monitor and remote truck mixers to individually adjust the amount of ambience and optimize their mixes for distance, wide angle or close-talking situations.
417 Stanford Ave
Redwood City, CA 94063
650/364-9988; Fax: 650-364-2794
Web site: www.countryman.com

World Radio History

Crown International Inc. LM201

Slim, rugged and unobtrusive, the LM-201, an improved model of our LM-200, is an excellent choice for legislature and other demanding lectern applications. A ball-and-socket joint combined with a rugged mic arm and shock-mounted mic capsule and base, provide quiet, long-term operation. The LM-201's built-in pop filter provides excellent "pop" protection, and its supercardioid pattern rejects background noise and reverb while improving gain-before-feedback. Durable. Quiet. Great performance.
1718 W. Mishawaka Road
Elkhart, IN 46517
219/294-8200; Fax: 219/294-8020
Web site: www.crownaudio.com



DPA Microphones 4065

The DPA 4065 headband-mounted condenser mic is designed for maximum performance under difficult and often humid conditions when mounted on the human body. The sensitivity is made to match the level of the human voice to the general input sensitivity of most wireless transmitters, and when powered correctly, can handle sound pressure levels to 144 dB SPL before clipping occurs. The exemplary DPA 4065 is excellent for both stage and studio applications. Retail: $599.
Dist. by TGI North America Inc.
300 Gage Ave., #1
Kitchener, ON Canada N2M 2C8
519/745-1158; Fax: 519/745-2364
Web site: www.dpamicrophones.com

Earthworks SB71

A stealth microphone. Nine inches long, matte black, 40 Hz to beyond 20 kHz. Very cleanly directional. Intended for live sound and recording applications. Great for voice, drums and guitar. Rugged, affordable and directional. Retail: $399.

Earthworks Z30XL

Hypercardioid 30-30k Hz ± 1.5 dB at 15 cm. Extraordinary rejection and reach. Incredible for miking high-quality sources. Especially accurate for recording voice. Retail: $900.
P.O. Box 517
Wilton, NH 03086
603/654-6427; Fax: 603/654-6107
Web site: www.earthwks.com

Josephson Engineering C7000S

The C7000S is a new version in the Josephson Series studio microphone design. Three capsules are used to allow the user to derive any of the intensity stereo or surround sound formats using a single microphone.
530 N. 8th St.
San Jose, CA 95112
408/294-1188; Fax: 408-294-5588
Web site: www.josephson.com

Lectrosonics UDR200B Wireless

Updated software for the UDR200B theater/stage wireless microphone systems to handle up to 42 receivers will be shown at AES. New features include password protection and multicolored warning displays for low transmitter batteries. An improved, higher speed serial protocol utilizing

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an RS232 interface provides near real-time monitoring even with the maximum number of receivers in use. Runs on Windows 3.1 or 95.
581 Laser Rd. NE
Rio Rancho, NM 87124
505/892-4501; Fax: 505/892-6243
Web site: www.lectro.com

Microtech Gefell UM 900

Studio condenser microphone with large-diameter M7 capsule, five switchable patterns and a vacuum tube amplifier with phantom powering. Price $3,750.
Dist. by G Prime
1790 Broadway #402
New York, NY 10019
212/765-3415; Fax: 212/581-8938
Web site: www.gprime.com

Neumann M 147 Tube

Following the unprecedented success of the TLM 103, Neumann is introducing a new single-pattern (cardioid) tube microphone. The M 147 combines the well-known K 47 capsule (used in the U 47 and U 47 FET) with a newly developed tube circuit. The tube is the same as used in the award-winning M 149 tube mic, and like the M 149, the M 147 is transformerless. Preliminary specs: frequency response is 20-20k Hz; self-noise is 12 dB (A); source impedance is 50 ohms. Retail: approx. $2,000.

Neumann U87 Gold

For its 70th anniversary, Neumann offers a limited edition of its benchmark U87, with the same specs as the standard U87 Ai, this gold plated "Jubilee Edition" will be available as a ($4,000) single mic with gold-plated suspension, and an $8,000 stereo set with two U87 Gold mics and suspensions. Both versions ship in a gold-finished aluminum case with the Neumann 70th anniversary logo.
1 Enterprise Drive, PO Box 987
Old Lyme, CT 06371
860/434-5220; Fax: 860/434-3148
Web site: www.neumannusa.com

SDSystems LCM Series

LCM condenser microphones provide solutions to unique problems for musicians and audio technicians. Each model provides superior sound which is pure, natural and very clear. Each element and mounting system is specifically designed to pick up sound from the instrument at optimum sensitivity and location. All clamps are handmade of lightweight stainless steel. Microphones are available for the following instruments: Soprano, Alto, Tenor, Baritone Sax, Flute, Trumpet, Clarinet, Bassoon, Violin, Cello, Bass.
Dist. by Advanced Sonic Concepts Inc.
P. O. Box 237
Chatsworth, NJ 08019
609/726-9202; Fax: 609/751-3681
Web site: www.sdsystems.com

Sennheiser EK3041

Miniature, true diversity receiver. Offers 32 switchable PLL-synthesized UHF frequencies in a 24MHz switching bandwidth, HiDyn plus noise reduction, frequency range of 450-960 MHz. Ideal for ENG applications, the EK3041 measures only 2.72x4.76x0.72-inches. Can be used in conjunction with all of Sennheiser's UHF transmitters. SRP: $1,600.

Sennheiser EM3532

Two-channel, computer controllable, UHF true diversity wireless microphone receiver. Offers more than 4,800 selectable frequencies within a maximum switching bandwidth of 24 MHz; each receiver can store and display up to 32 UHF channels. Freq. response: 45-20k Hz; freq. range: 434-960 MHz; Signal-to-noise ratio: 116 dB. Compatible with all Sennheiser UHF transmitters. SRP: $4,650.
PO Box 987/1 Enterprise Dr.
Old Lyme, CT 06371
860/434-9190; Fax: 860/434-1759
Web site: www.sennheiserusa.com

Shure UC Wireless UHF Systems

Shure's new UC Wireless System is a flexible and affordable contracting tool offering frequency agility, interchangeable microphone capsules and extensive LED metering. The main elements comprising the UC Wireless System include a diversity receiver and a choice of body-pack or handheld transmitters. As many as 16 systems may be operated simultaneously. The UC UHF Wireless System is FCC and IC approved. Retail prices range from $1,450 to $1,650 USD.

Shure UT Series UHF Wireless

UT Series offers professional quality at affordable prices. Incorporating many of the same features found on their professional UHF products, the new units collectively comprise the UT Series, a product group which effectively extends Shure's T Series of VHF wireless systems into the realm of UHF operation. Offered in versions with up to eight compatible frequencies operable between 600-862 MHz, each turnkey UT Series system includes a wireless microphone or a bodypack transmitter, and a newly designed, proprietary MARCAD UHF diversity receiver.
222 Hartrey Ave.
Evanston, IL 60202-3696
708/866-2200; Fax: 708/866-2353
Web site: www.shure.com

SoundField 5.1 Mic System

The first 5.1 microphone system, SoundField 5.1 allows recording/broadcast engineers to create a complete 5.1 mix from a single, multiple element microphone. The existing SoundField ST250 and MKV microphone systems have the capability of delivering a special, B-format output comprised of 4 outputs representing X,Y, Z and W to define a complete three-dimensional space. SoundField's new Surround Sound Decoder translates X,Y, Z and W into L, C, R, LR, RR and mono subwoofer output for 5.1, Pro-Logic or other surround formats from a single source.
Charlotte St. Business Centre
Wakefield, West Yorkshire
WF1 1UH
United Kingdom
44/924/201-1089; Fax: 44/1924/201-618
Web site: www.proaudio.co.uk/sndfield.htm

Stedman Proscreen 100

This professional pop-eliminator for vocal applications utilizes a unique patented polarized metal screen to eliminate pops far more effectively than fabric filter designs. The Proscreen 100 allows more sound passage without high frequency losses that occur with fabric filter designs. Increased comfort for the vocalist with a less obstructive, no-surround bezel style, plus the entire filter can be cleaned between uses to prevent the spreading of germs makes the Stedman Proscreen 100 the most professional filter available. Screen diameter: 4.6 inches; length: 7.2 inches; standard 5/8-inchx27 mounting threads.
4167 Stedman Dr.
Richland, MI 49083
800/873-0544 or 616/629-5930; Fax: 616/629-4149

Xwire XH905

A 20-bit digital handheld wireless microphone system with E-V N/D757 microphone element. Power and channel select controls are recessed at the bottom of the XH905 avoiding inadvertent control changes. LED display the current operating channel. Transmitter's 20-bit A/D, receiver's 20-bit D/A ensure full dynamic range and frequency response of incoming and outgoing signals. Entire process takes place without the use of compression/expander I/Cs, resulting in a signal/noise >120 dB and a frequency response from 10-20k Hz. Retail: $1,095.
4630 Beloit Dr. #10
Sacramento, CA 95835
916/929-9473; Fax: 916/924-8065
Web site: www.xwire.com

World Radio History

Microphone Preamps

Aphex 1788

This 8-channel remote-controlled mic preamp is designed to improve sound quality and add functionality for live sound and recording. Every function is remotely or locally controllable, including a new circuit which provides continuously variable gain. A revolutionary new limiter controls the output of the mic by up to 20 dB. Control up to 128 channels via MIDI, RS-232 or 422. Software for scene saves and recall, control and monitoring and auto-learn.
11068 Randall Street
Sun Valley, CA 91352
818/767-2929; Fax: 818/767-2641
Web site: www.aphexsys.com

ART Tube Channel

The Tube Channel is a combination mic/line tube preamp, an optical tube compressor and a 4-channel tube parametric EQ in a single rackspace. Each section may be used in any combination or separately. XLR and ¼-inch inputs and outputs are provided with ¼-inch inserts between the sections.
215 Tremont St.
Rochester, NY 14608
716/436-2720; Fax: 716/436-3942
Web site: www.artroch.com

CLM Dynamics DB400s

The CLM Dynamics DB400s is a high-quality full-featured 4-channel mic preamp, incorporating independent variable threshold limiters. All four limiters may be used independently, simultaneously, or linked in pairs. Mid and side decoding is incorporated by linking pairs of channels. The DB400s can process stereo signals to control spatial width via its internal WHIP™ (wide horizontal image plane) matirx, used to widen or narrow the soundstage of live or previously recorded stereo signals. List $2,499.99
Dist. by PMI Audio
23773 Madison St.
Torrance, CA 90505
877/563-6335; Fax: 310/373-4714
Email: info@pmiaudio.com

Crane Song Flamingo

Flamingo is a high-quality, 2-channel discrete Class-A mic preamp. It can be operated in a musically transparent mode, or with switch selectable vintage and iron sounds. Gain is adjustable in 6dB steps to 66dB gain. Metering is via a 2-channel, 22-element LED VU meter. Flamingo is 1-rackspace tall. Balanced analog inputs and ouputs. List $2,025.
2117 E. 5th St.
Superior, WI 54880
715/398-3627; Fax: 715/398-3279
Web site: www.cranesong.com

dbx 576

Silver Series 1-channel vacuum tube mic preamp, 1-channel vacuum tube compressor. 12AU7 tubes, 3-band EQ with semiparametric mids on preamp, PeakstopPlus™ limiter and optional digital output. Straight through or dual mono operation.
8760 S. Sandy Parkway
Sandy, UT 84070
801/568-7660; Fax: 801/568-7662
Web site: www.dbxpro.com

Demeter HC-1 Optical Tube Compressor Limiter

The HC-1 is a mono compressor using the revolutionary "H" tube preamp with classic photocell compressor section. The unit has a variable attack (0.5 to 100 ms) and release (100 ms to 3 seconds). Input sensitibity switch, overload LED, compression control (above 24 dB), charge and VU meters, sidechain outputs, link inputs, low-frequency compression sensitivity switch and output gain control.
15730 Stagg St.
Van Nuys, CA 91406
818/986-7103
Web site: www.demeteramps.com

Focusrite ISA 430 Producer Pack

The ISA 430 is designed to be the ultimate producer/engineer "Do it all box" to be carried from session to session. All the circuits are vintage Focusrite designs, packaged together for the first time in one affordable box. Six-band original Rupert Neve ISA110/215 EQ, compressor from the original Rupert Neve ISA130, gate, de-esser, limiter, insert point, mic, line and instrument inputs, VU input meter, peak level output meter, optional digital output, battery back-up of all logic settings. Price: $3,000.

Focusrite Platinum Voicemaster

The Voicemaster is the most highly specified vocal recording path ever made available to the home studio owner; no other box need be required to get a professional vocal sound during recording or mixdown. Includes audiophile quality Class A discrete transistor mic pre, highpass filter, noise reducing expander, vocal saturator, opto compres-

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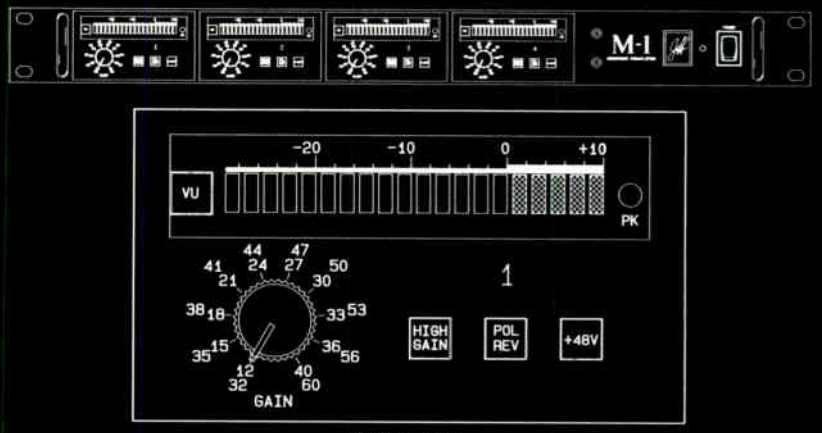
M-1

MICROPHONE PREAMPLIFIER



(ACTUAL SIZE)

Gloria Estefan, Dolly Parton, Neil Young, Lou Reed, Laurie Anderson, Bob Dylan, Madonna, Eric Clapton, George Harrison, Paul McCartney, Paul Simon, Joe Henderson, James Carter, Ernie Watts, Bill Hollman, Saturday Night Live, The Muppets and many others have done great work with the M-1. The M-1 is clearly superior, *satisfaction guaranteed*. Here's why:

The Jensen JT-16-B Input Transformer. The world's best mic-input transformer. If you thought transformers were a compromise, you haven't heard the JT-16-B!

The 990 Discrete Op-Amp. The 990 discrete op-amp is superior to the monolithic op-amps found in other equipment.

No Coupling Capacitors in the Signal Path. DC servo circuitry and input bias current compensation circuitry eliminate all coupling capacitors and the degradation they cause.

Standard features: LED-illuminated push-buttons; phantom power switch; polarity reverse switch; conductive plastic gain pot and high-gain switch; shielded toroidal power transformer with 6-position voltage selector switch; gold plated XLRs; ground-lift switches.

Options: VU-1 meter (shown); PK-1 meter; Jensen JT-11-BM output transformer;

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P.O. Box AA631
Evanston, IL 60204

Phone: 847-864-8060

Fax: 847-864-8076

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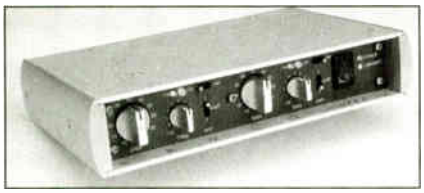
sor, enhancer, voice-optimized 3-band EQ and opto de-esser. Price: $699.
Lincoln Road
High Wycombe, Bucks
UK HP12 3FX
44/1494/462-246; Fax: 44/1494/459-920
Web site: www.focusrite.com



Grace Design Lunatec V2

Built for field recording, the Lunatec V2 offers world-class mic preamplification in a rugged, portable package. Features include: 6-12V DC power, gain range of 10-60 dB with rotary switch controls, 10dB output trim controls, 48V phantom power, two-position highpass filter (switchable from 50/100 Hz to 75/125 Hz) with 6- or 12dB/octave slope, MS decoding and a five-year limited warranty on parts and labor. List: $1,495.

Grace Design Model 801R

Designed for remote recording, the Model 801R sets a new standard in remote-controllable mic preamplification. Using the same circuitry as the Model 801, the Model 801R allows recording engineers to control 48 channels from the front panel or up to 1,000 feet away with the remote control. Features include: 18-64dB gain, 48V phantom power, phase reverse and channel mute. List is $5,495 for the 801R and $1,000 for the remote controller.
P.O. Box 204
Boulder, CO 80304
303/443-7454; Fax: 303/444-4634
Web site: www.gracedesign.com

Great River Electronics MP-2, MP-4

MP-2 is a 2-channel microphone preamp with discrete Class A transformer input unit. MP-4 is a 4-channel unit. List price is: MP-2 $1,250; MP-4 $1,975.
3056 E. 65th St.
Inver Grove Heights, MN 55076
612/455-1846; Fax: 612/455-3224
Web site: www.greatriverelectronics.com

Lawson Shaman

The Lawson Shaman microphone preamplifier is a pure tube mic preamp providing variable gain up to +55 dB and transformer balanced output levels in excess of +26 dBm. The Shaman unit also provides a direct input to accommodate electric guitar, bass, keyboards, drum machines etc. The Lawson Shaman microphone preamplifier features Jensen transformers, XLR balanced inputs and outputs, switchable 48V phantom, -20dB pad, phase reversal and VU meter.
2741 Larmon Drive
Nashville, TN 37204
615/269-5542; Fax: 615/269-5745
Web site: www.LawsonMicrophones.com

Neotek MicMax

MicMax Precision Microphone Preamplifier is the Neotek Elite mic preamp on steroids and without cost constraints. It has the professional features you demand, including input impedance selection, phase reverse and highpass filter. It also offers outstanding performance, including less than .001% THD at +30dBu output, and EIN of -129dBu. The unit is a fully balanced dual preamplifier in a 1U chassis with meters and digital gain readout.
Neotek, a division of Martinsound Inc.
1151 W. Valley Blvd.
Alhambra, CA 91803
626/281-3555; Fax: 626/284-3092
Web site: www.martinsound.com

PreSonus M-80

An 8-channel mic/instrument preamp with mix bus, the M-80 includes Jensen Transformers, FET Class A discrete input buffers and Jensen's twin servo gain stage providing very high headroom (+28 dBu). Each channel features phase reversal, phantom power, 20dB pad, rumble filter and full output metering. Special features include 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. Retail: $1,999.95.

PreSonus VXP

The PreSonus VXP dynamic voice processor includes a mic pre, smart compressor, expander, de-esser and 4-band semi-parametric EQ. The heart of the VXP features a Jensen transformer, Class A discrete, twin-servo mic preamp with phantom and eight of Presonus' own Blue Max "smart" preset compression curves optimized for voice processing. The VXP also provides seamless noise reduction via a preset downward expansion curve.The VXP has a very low noise design (S/N>96dB) and internal power supply. Retail: $599.95.
501 Government St.
Baton Rouge, LA 70802
504/344-7887; Fax: 504/344-8881
Web site: www.presonus.com

Radikal Technologies Micamp by DACS

State-of-the-art extremely low noise variable stereo mic preamp in a one-space rack. 110-220 switchable. Virtually transparent. Even the world's finest microphones are audibly improved. Wonderful on solo instruments and vocals. The Micamp lends an air of spaciousness unheard in any tube preamp.
1119 North Wilson Ave.
Teaneck, NJ 07666
201/836-5116; Fax: 201/836-0661

Summit Audio Inc. MPE

Designed by Mr. Rupert Neve, the Summit MPE incorporates two distinct audio paths capable of being used together or separately. The first is a very high-performance microphone amplifier having its own transformer-coupled output stage. The second is a comprehensive 4-band equalizer in addition to high- and lowpass filters with its own transformer output stage. Signal paths are discrete Class A amplifiers; all parameters are digitally controlled and can be stored and reset.
2636 South Rodeo Gulch Road, Unit C
Soquel, CA 95073
408/464-2448; Fax: 408/464-7659
Web site: www.summitaudio.com

Symetrix 302 Dual Microphone Preamp

A 2-channel, stereo/mono preamp. Variable gain inputs with 15dB pads allow the 302 to handle any input up to +14dBV. Phantom power is available at both inputs. Both channels include a polarity switch. XLR inputs, Euroblock and ¼-inch TRS jack outputs. List: $249.
14926 35th Avenue West
Lynnwood, WA 98037
425/787-3222; Fax: 425/787-3211
Web site: www.symetrixaudio.com

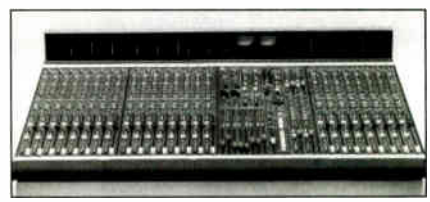
TC Electronic Gold Channel

This 2-channel digitally-enhanced microphone preamplifier features high-resolution 24-bit A/D conversion with 48/96kHz equalization and dynamics processing. Features include an expander/gate, Softlimiter™ compressor/limiter, equalizer and additional processing tools, all accessible through an easy-to-use channel strip interface with high resolution metering. AES/EBU, TosLink S/PDIF and ADAT I/Os are all provided, in addition to standard mic and line inputs and word clock in. List: $2,495.
790-H Hampshire Rd.
Westlake Village, CA 91361
805/373-1828; Fax: 805/379-2648
Web site: www.tcelectronic.com

Tube Tech MEC 1A

The MEC 1A is a single-channel, all-tube-based combination microphone preamp, equalizer and compressor with 48V phantom power, phase reverse, a lowcut roll-off filter, -20dB pad and ¼-inch unbalanced high-impedance input. The unit uses Tube Tech's well known optocompressor gain reduction element and is linkable for stereo operations. Retail: $3,995.
Dist. by TC Electronic
790-H Hampshire Rd.
Westlake Village, CA 91361
805/373-1828; Fax: 805/379-2648
Web site: www.tcelectronic.com

Mixing Consoles



Allen & Heath GS3000

The GS3000 is an 8-bus, in-line analog desk for commercial/project recording studios and sound reinforcement use. Housed in a choice of 24- and 32-input frame sizes, the desk features twin-fader, dual-path inputs and two patchable tube preamps. All mic/line inputs have a 100mm "A" path fader, with a 60mm "B" path fader above. Additional amenities include: 16 dual stereo inputs, 4-band British EQ with two sweepable mids, and six auxes.
8760 S. Sandy Parkway
Sandy, UT 84070
801/568-7660; Fax: 801/568-7662
Web site: www.allen-heath.com

World Radio History

Amek Recall RN

Amek's Recall RN console is a new incarnation of the successful Recall live performance desk, featuring 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 the console's existing live automation system, Showtime. As a result, Recall RN is equally at home in live mixing/recording or studio tracking environments.
1449 Donelson Pike
Nashville, TN 37217
615/360-9488; Fax: 615/360-0273
Web site: www.amek.com

ATI MX101 Mono Field Mixer

ATI announces the MX101 Mono Field Mixer, a low-cost addition to its Nanoamp Series of studio and field mixers. The MX101 combines three low-noise mic/line inputs with phantom power, switchable low-cut filters, limiter and headphone cue with a mic and tone generator and bright 3-color LED meter feeding a clean +22dBm XLR output in a tiny 1.25 lb package with several easily replaceable and rechargeable battery modules.
Audio Technologies Inc.
328 W. Maple Ave.
Horsham, PA 19044
215/443-0330; Fax: 215/443-0394
Web site: www.atiguys.com

ATI Paragon Monitor

ATI will unveil an extremely compact version of its exciting new Paragon Monitor mixing console. Dubbed the "Unplugged" Paragon, it provides 48 inputs in a frame size of less than 4.5 feet. With up to 20 stereo output mixes, VCA groups, output EQ, moving fader automation and 24 gates and compressors, it's the ultimate small tour/broadcast mix console. An extender frame is also available to increase channel capacity.
Audio Toys Inc.
9017-C Mendenhall Ct.
Columbia, MD 21045
410/381-7879; Fax: 410/381-5025
Web site: www.audiotoys.com

Avalon Modules for Sony 3000 Consoles

Avalon M3 mono pure Class A microphone preamplifer plug-in module for Sony 3000 console. 100% discrete with high performance microphone transformer. +48V, high-gain switch, switched gain 4dB steps. Power supply ± 18V to ± 32V. $900. Avalon E3 mono pure Class A parametric 4-band equalizer with active-passive filter design. Switched high-low frequencies 30Hz-32k Hz, dual mids

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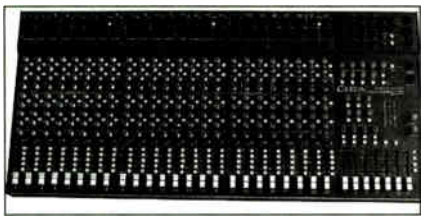
sweep, X10 frequency and 3-position "Q" bandwidth. $1,700.
PO Box 5976
San Clemente, CA 92673
949/492-2000; Fax. 949/492-4288
Web site: www.avalondesign.com

Behringer MX3242X 4-Bus Mixer
This 4-bus design has an internal effects engine with 20-bit ADCs/DACs , 24-bit DSP and reverb. Features: 16 channels in an in-line design; four subgroups; 4-band sweep mid EQ (on main channels); six aux sends, four stereo effects returns; 8-segment LEDs for each channel, subgroup and master mix; phantom power; talkback mic and more.
PO Box 9031
Syosett, NY 11791-9031
516/364-2244; Fax: 516/364-3888
Web site: www.samsontech.com



Carvin C2440 Concert Series Mixer
Carvin's new C2440 mixer features a 4-out plus 3 master design with six auxiliary sends. The three masters provide an L-R mix, center mix, 6 to 1 mono mix or a separate mix for subwoofers from the L-R mix. A "switching" power supply eliminates 60 Hz hum. 3-band EQ with a mid-shift switch and low-cut switch complement the XLR and ¼-inch line inputs. Price: $999.95.
12340 World Trade Drive
San Diego, CA 92128
800/854-2235; Fax: 619/487-8160
Web site: www.carvin.com

DOD SR606
Housed in a 1U chassis, the SR606 Line Mixer/Distribution Amplifier offers six ¼-inch inputs and six ¼-inch outputs (all TRS balanced) to provide numerous routing possibilities. The SR606 can be used to mix six inputs into a left/right stereo output, or as a 6x6 buffer amplifier. The product can also be used as a distribution amplifier, splitting a single input into six outputs or two inputs into three outputs.
8760 S. Sandy Pkwy.
Sandy, UT 84070
801/566-8800; Fax: 801/566-7005
Web site: www.dod.com

Etek NoteMix Powered Mixer
14-channel digital powered mixer with three aux sends/returns, three digital effects (echo, reverb, surround) phantom power, pre-fade listen, balanced mic inputs, channel inserts, monitor out and tape outputs, two 500-watt digital power amps, unique "notebook computer" chassis style w/ shoulder-strap carrying case. Suggested retail $1,499.
Eko/Etek c/o Wave Distribution
1170 Greenwood Lake Turnpike
Ringwood, NJ 07456
973/728-2525; Fax: 973/728-2931
Web site: www.wavedistribution.com

Harrison digital.engine
The digital.engine is the digital signal processing core of a digital Harrison MPC or SeriesTwelve console. Designed and developed to integrate with all existing Harrison SeriesTwelve and MPC control surfaces, allowing the boards to function as fully digital, analog or hybrid consoles. Processing is 40-bit, 96kHz; 576 channels with full processing, 136 buses, sub-millisecond console-wide latency.
7104 Crossroad Blvd., Ste. 118
Brentwood, TN 37027
615/370-9001; Fax: 615/370-4906
Web site: www.glw.com

LCS RIF-108
A remote interface for LCS's LD-88 Digital Mixer, the RIF-108 supplies eight motorized faders and 32 buttons. Communication is via RS-422 over standard twisted pair wiring, enabling the RIF-108 to be located over 300-feet from the LD-88. One RIF-108 may be connected directly to each LD-88 in a system, and multiple RIF-108s may be strapped together. Buttons on the surface are provided for remapping the faders to level controls, including Console Faders, Wild Tracks™ SCSI faders, Groups, Matrix, Virtual Groups, Output Masters and System Levels.
130 E. Montecito Ave. #236
Sierra Madre, CA 91024
626/836-0446; Fax: 626/836-4883
Web site: www.lcsaudio.com

Mackie Digital 8 Bus
56-input, 72-channel, fully automated, digital mixer for professional music, sound-for-picture and installed live applications. 24-bit A/D and D/A converters, Apogee's UV-22 Super CD Encoding and 32-bit internal signal processing with dynamic and snapshot automation of volume, pan, mute and effect parameters. 25 100mm smooth motorized faders, 12 aux sends per channel, built-in meter bridge, Intel-Compatible 166MHz CPU with floppy and hard drives and connections for optional SVGA monitor, Ethernet, QWERTY keyboard and mouse. Tape transport controls and jog/shuttle wheel. $9,999 retail.
16220 Wood-Red Rd. NE
Woodinville, WA 98072
800/898-3211; Fax: 425/482-1152
Web site: www.mackie.com

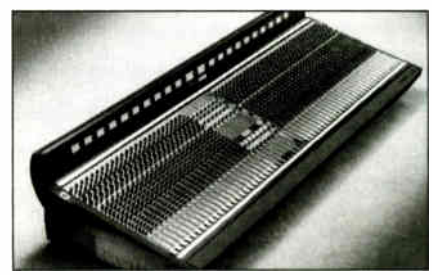
Neotek Elite
The Neotek Elite console is perhaps the best sounding analog console in production, mainly because it uses discrete, Class A devices in critical circuits. Now available with moving fader automation on both main and monitor faders. Factory direct sales make it an excellent value. The Elite can be ordered in many sizes of solid alloy chassis fitted with any number of input modules, each of which features Neotek's acclaimed microphone preamp and parametric EQ.
1151 W. Valley Blvd.
Alhambra, CA 91803
800/582-3555; Fax: 626/284-3092
Web site: www.martinsound.com

Oram Pro Series 48
The Series 48 large-format console is the flagship of Oram Pro's range. John Oram has developed the ultimate analog board under a "Total Operational Recall" system (TOR™) with Flashback™ instant flash memory backup. Working on one function, one control, this system can instantly reset all controls in real time, utilizing a microprocessor on every channel. Each channel also features two mic inputs, dynamics, noise-floor metering. 7.1 mixing and a Hi-Def EQ.
The Old Forge, Hook Green
Meopham, Kent DA13 0JE UK
44/1474/815-300; Fax: 44/1474/815-400
Web site: www.oram.co.uk

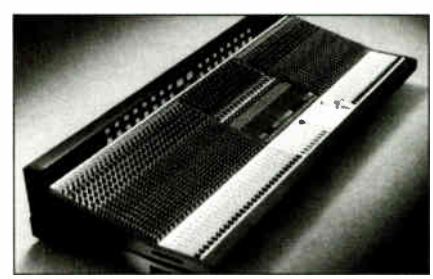
Peavey SRM 2410 Monitor Console
This 24-input monitor console has transformer split built-in 4-band EQ w/2 mid-sweep pads and polarity on each input, eight mono buses, one stereo bus and L/R bus, two tunable notch filters on each sub out, Clear-Com compatible intercom. Universal power supply. Built into a flight case. $2,999.
711 A St.
Meridian, MS 39301
601/483-5865; Fax: 601/486-1187
Web site: www.peavey.com

Solid State Logic Axiom-MT
SSL's Axiom-MT digital multitrack console has up to 96 fully featured channels providing all the traditional SSL in-line facilities, with every control dynamically automated, including the surround panning on both large and small faders. Axiom-MT's channel banking facility enables a 96-channel system with its 48 multitrack buses, 12 main mix buses, 12 aux buses and over 200 mix returns controlled from a 48-fader control surface, an invaluable feature for mobiles and other space-limited installations.
Springhill Rd., Begbroke
Oxford OXS 1RU England
44/1865/842-300; Fax: 44/1865/842-118
Web site: www.solid-state-logic.com

Sony Oxford OXFR3 Version 1.2
Upgraded features such as motorized joy stick panners, expanded multiformat surround sound features and off-line automation capabilities. Sony is responding to the demand for 5.1 music production with this new upgrade package. No cost to existing customers.
1 Sony Drive
Park Ridge, NJ 07656-8003
201/358-4197; Fax: 201/358-4907
Web site: www.sony.com/proaudio



Soundcraft SM20
Designed to accommodate the increasingly popular use of in-ear monitoring systems, the SM20 is the latest addition to Soundcraft's respected range of dedicated stage monitor consoles. Available in 40, 48 and 56-input frame sizes, the SM20 can provide any combination between 20 straight mono sends and 7 stereo plus 6 mono sends. Drawing on elements from previous SM consoles, the SM20 packs more features into a smaller size than any of its predecessors.



Soundcraft Series Five Monitor
With input channels boasting a feature set similar to that of the highly respected Series Five front-of-house console, the Series Five Monitor offers an equally high level of control over stage sources like its brother, but adds to this the comprehensive routing and output control required from a monitor console. Available in 24-bus and 32-bus frame types, both versions support stereo outputs—9 stereo on the 24-bus, and 17 stereo on the 32-bus console.
1449 Donelson Pike
Nashville, TN 37217

World Radio History

615/399-2199; Fax: 615/367-9046
Web site: www.soundcraft.com

Sound MX Remote MX

Remote MX is a remote-control audio mixer consisting of a rackmounted mixer unit and a small control unit. From the control unit, performers on stage or in the studio can create their monitor mix, control its volume and even EQ individual channels with a 7-band graphical equalizer. The mixer unit connects to the insert jacks of any mixer board, and is linked to the control unit via a single XLR cable.
488 University Ave. Suite 411
Palo Alto, CA 94301
650/328.5479; Fax: 650/328-5480
Web site: www.soundmx.com

Soundtracs Virtua Digital Console V. 5.1

A fully digital production console providing 48 channels on an intuitive touch-sensitive work surface with VDU and LCD displays. 32-bit floating point architecture with 105 dB of dynamic range. Dynamic automation and snapshot recall of all functions, LCRS panning and digital interfacing through ADAT optical, S/PDIF and AES/EBU. 9-pin machine control is standard. Price range: $35,000 to $50,000.

Soundtracs DPC II Digital Console

Digital production console providing 160 automated channels with worksurfaces of between 16 and 96 moving faders. 24-bit conversion and 96 kHz operation in all current formats including 5.1 and 7.1. Price range: $150,000 to $300,000.
Blenheim Rd., Longmead Business Park
Epsom, Surrey KT19 9XN, UK
44/181/388-5000; Fax: 44/181/388-5050
Web site: www.soundtracs.co.uk

Speck Xtramix cxi

The Xtramix cxi is a 40x8x2 compact mixer that combines the benefits of a keyboard mixer and an 8-bus recording mixer into a 4-rackspace chassis. Features: 76 total inputs; 20 stereo channels, 8 stereo effects returns, 8 stereo line returns. 18 output buses; 8 subgroups, 8 effects sends and stereo outputs. SpeckDirect price: $2,990.
925 S. Main St.
Fallbrook, CA 92028
760/723-4281
Web site: www.speck.com

Spirit Digital 328

Digital 328 offers an intuitive and easy-to-use hardware-based interface that will be pleasantly familiar to analog 8-bus console users. The key to Digital 328's simple operation is its "E-Strip"—the horizontal row of encoders and backlit buttons that provide instant access to traditional channel strip controls. Standard features include: 16 mic/line input channels, 3-band fully parametric EQ, four external effects sends, two internal Lexicon effects units, motorized faders, machine control and two TDIF and ADAT interfaces.

SEE US AT AES BOOTH #185

Double Duty Diffusers™

AcousticsFirst™

Amazing Product Cures Flabby Bottoms

Recently, a Pennsylvania physician called to see if we could cure his "flabby bottom". We prescribed our Double Duty Diffuser. ▲ The long bass waves tend to roll around the room cancelling here, reinforcing there. The bottom end tends to sound boomy, mushy or flabby. ▲ The solution is a bass trap such as our highly efficient DDD. Similar devices have been around for years but only large sound stages and recording studios could afford them. Now, Acoustics First has a superior product for under $200. ▲ And the Double Duty Diffuser does more than trap bass. It disperses high frequencies, eliminating standing waves and flutter echoes.

Toll Free
1-888-765-2900

Acoustics First Corporation
2247 Tomlyn Street
Richmond, VA 23230-3334 USA
Fax: 804-342-1107
E-mail: acoustics@i2020.net
Web: http://www.acousticsfirst.com

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CIRCLE #161 ON PRODUCT INFO CARD

CLEARMOUNTAIN'S SessionTools

NEW! Version 1.5 New Layouts!

US AT AES BOOTH #117

THE STUDIO MANAGEMENT SOFTWARE SOLUTION FROM BOB CLEARMOUNTAIN

SessionTools, from Apogee Electronics, is the new networkable studio management software solution.

Created by award-winning mixer/ producer Bob Clearmountain, with Ryan Freeland, and now in everyday use in Bob's own studio, Apogee's *SessionTools* is ideal for single or multi-room facilities.

A dozen sophisticated layouts handle clients, work orders, invoices, track sheets and recall data. And now Version 1.5 includes new and revised layouts and recall sheets!

Powerful database software operates on PCs running Windows 3.x, 95/98 or NT, and the Macintosh OS*, on a single computer or across a mixed network.

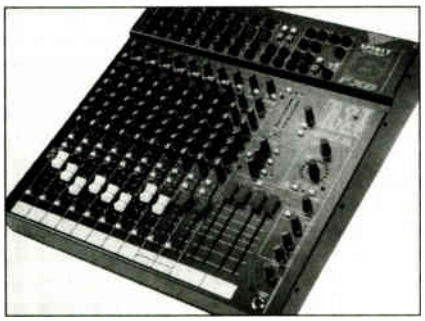
SessionTools includes comprehensive label layouts for most current recording media including CD, DAT and cassette inlays, tape library management and much more, at a price you can afford.

*Macintosh version available now.

Visit your Apogee dealer today for a demo, see our Web site at www.apogeedigital.com, or call 310-915-1000 for more info.

CIRCLE #162 ON PRODUCT INFO CARD

World Radio History

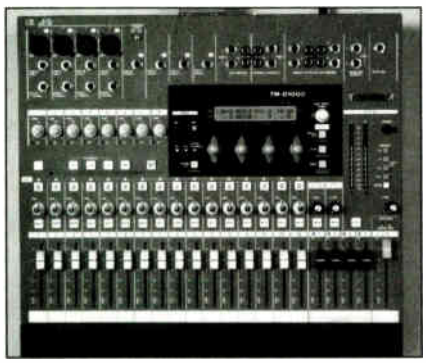


Spirit Folio FX8

Capable of producing digital-quality sound for live or recording applications, the Folio FX8 is a four-bus multipurpose mixer featuring a built-in Lexicon effects processor section (reverbs, choruses and delays) with dual-effect capability. The mixer's eight mono mic/line inputs are each equipped with Spirit's UltraMic™ preamp, British 3-band EQ with sweepable mid, three auxiliary sends and 100mm fader. Folio FX8 also provides two stereo channels with 2-band EQs, three auxes and 100mm faders. Optionally rackmountable.
4130 Citrus Ave., Ste. 9
Rocklin, CA 95677
916/630-3960; Fax: 916/630-3950
Web site: www.spiritbysoundcraft.com

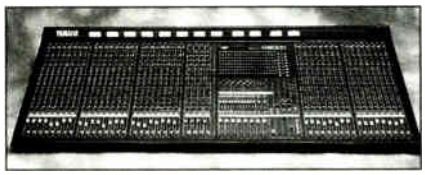
Studer D950 Digital Mixing System Version 1.1 Software

Version 1.1 software for the Studer D950 large format mixing console features several new operating features that tentatively include VCA-style control grouping of all functions, dithering capability on any selected digital output, full copying of module parameters to other modules, saving and loading of multiple console channel strip setups, and more. The D950 is a fully configurable digital console system capable of more than 250 channels and 120 buses.
1308 Borregas Ave.
Sunnyvale, CA 94089-1001
408/542-8880; Fax: 408/752-9695
Web site: www.studer.ch/studer



Tascam TM-D1000 Digital Recording Mixer

The 16-channel TM-D1000 has four XLR mic inputs with 48V phantom power, eight channels of TDIF-1 digital I/O, four digital outputs, standard four channels of dynamics processing and ten effects onboard, two XLR AES/EBU and two S/PDIF. The IF-TD1000 interface card adds eight channels of TDIF and four channels of AES/EBU or S/PDIF. The FX-1000 Effects Board adds four channels of dynamics processing and a stereo pair of reverb, chorus, delay, flange, etc.
7733 Telegraph Rd.
Montebello, CA 90640
213/726-0303; Fax: 213/727-7635
Web site: www.tascam.com



Yamaha M3000 Sound Reinforcement Console

The M3000 is sound reinforcement console featuring 40 mono and four stereo inputs and 16 mix buses. Each input channel features four bands of fully parametric EQ. Onboard automation consists of eight VCA groups and 128 MIDI mutes. Other features include a 20x8 matrix, 48-volt phantom power, the ability to transmit MIDI program changes, a comprehensive talkback system and a test oscillator. List: $12,995.
6600 Orangethrope Ave.
Buena Park, CA 90622
714/522-9011; Fax: 714/739-2680
Web site: www.yamaha.com

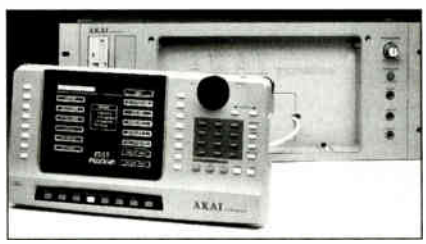
Yorkville PowerMAX 16

Yorkville introduces the world's most powerful portable powered mixer. The PowerMAX 16 features four built-in amplifiers delivering 800 watts/ch mains and 275 watts/ch monitors for a total of 2,150 watts! Other features include: AFL/PFL solo bus, sweepable mids, stereo digital effects, graphic EQ for mains (stereo) and monitors (x2), channel inserts and overload protection. US retail: $2,699.
4625 Witmer Industrial Estate
Niagara Falls, NY 14305
716/297-2920; Fax: 716/297-3689
Web site: www.yorkville.com

Music Products

Akai S5000 Digital Sampler

The Akai S5000 uses the DOS (FAT32) disk format and .WAV files as the native sample format, allowing any standard PC .WAV file to be loaded directly for instant playback from any attached hard drive, including downloaded Internet samples. The S5000 features a 64-voice system, is upgradeable to 128 voices, and offers eight individual analog outputs (upgradeable to 16) and a stereo master analog output, large LCD graphic display and easily accessible function keys. Retail: $1,999.



Akai S6000 Digital Sampler

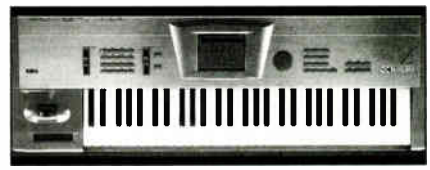
The S6000 features a 64-voice system, upgradeable to 128 voices, 16+2 analog outputs, balanced stereo input jacks, programmable keys for rapid access to functions, removable remote control surface and a large LCD graphic display. The S6000 uses the DOS (FAT32) disk format and .WAV files as the native sample format, allowing any standard PC .WAV file to be loaded directly for instant playback from any attached hard drive—including downloaded Internet samples. Retail: $2,999.
4710 Mercantile Dr.
Fort Worth, TX 76102
817/831-9203; Fax: 817/222-1490
Web site: www.akai.com/akaipro

Fender SFX Satellite

Don't trade in: Add on! The SFX Satellite turns any amp with an EFX loop into a modern SFX stereo system. Add the complete range of specially programmed Fender Digital Signal Processing including reverb, chorus, delay, flange and more. 80 watts of power, a 12-inch speaker and the spatial magic of SFX. Keep your tone and expand your zone! Specs: 80 watts, 32 stereo digital presets, SFX Matrix. Weight: 55 lbs. Size: 19.6Hx24.5Wx15.6-inch D. Price: $749.99.

Fender SFX Keyboard 200

The definitive amp for modern keyboardists. SFX technology takes your onboard stereo patches and sends them swirling around the room. Featuring 32 stereo digital presets including a vintage Fender VibraTone™ effect that will give you the spins, three channel (2 stereo, 1 mono/mic) preamp, Dual powered amplifier, Delta Comp™, subwoofer out, line inserts and more. Specs: 80 watts/channel (160 RMS), 32 stereo digital effects, SFX Matrix, 12-inch, 10-inch speakers and piezo horn. Weight: 82 lbs. Size: 33hx19.5wx13.5-inch D. Price: $999.99.
7975 N. Hayden Rd.
Scottsdale, AZ 85258
602/596-9690; Fax: 602/596-1384
Web site: www.fender.com



Korg Trinity V3 Music Workstations

The new Trinity V3s combine the critically acclaimed sounds of Korg's PCM-based Trinity keyboards with the power of the DSP-based Z1 synthesizer, available in 61/76/88-note instruments that add six voices of the powerful 13-algorithm Multi Oscillator Synthesis System of Korg's Z1 synthesizer to the Advanced Control Synthesis System sound generator from the Trinity line. These enable Trinity V3 to cover a wide range of synthesis methods, including PCM, analog, digital and physical modeling.
316 S. Service Rd.
Melville, NY 11747
516/333-9100; Fax: 516/333-9108
Web site: www.korg.com

Kurzweil Audio Elite System

This 88-key, weighted-action professional keyboard will, in addition to all the standard K2500 features and V.A.S.T.® (Variable Architecture Synthesis Technology), include: Sampling, 128MB RAM, orchestral and contemporary expansion boards, Stereo Piano board, P/RAM-2 program memory expansion (1.25MB), 2GB hard drive, external CD-ROM drive, two DMTi (Digital Multitrack Interface) digital patchbay/converters, KB3 option, Live Mode, KDFX 8-channel DSP and huge sound library with 40 Kurzweil CD-ROMs.
PO Box 99995
Lakewood, WA 98499-0995
253/589-3200; Fax: 253/984-0245
Web site: www.youngchang.com/kurzweil

Line 6 POD

POD from Line 6, the first great-sounding direct recording tool for guitarists designed to deliver a wide range of legendary amp tones and realistically re-create the sound of

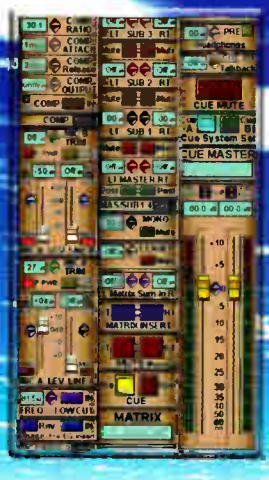
—LISTING CONTINUED ON NEXT PAGE

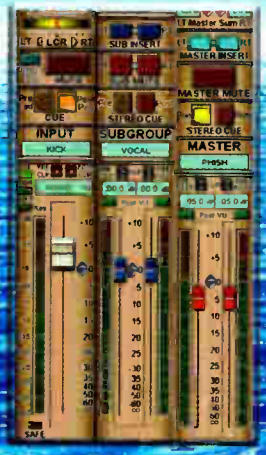
World Radio History

GAMBLE

Digitally Controlled Audio Mixing Systems

DCX EVENT





WALK ON WATER

Gambleboards.com

CORTEK SOFTWARE
1.702.836.9466
Corteksoft.com

audiomation, inc.
1.702.656.1867
Audioart.com

RAMTECH INDUSTRIES INC.
1.800.817.2683
Ramtech.net

World Radio History

CIRCLE #153 ON PRODUCT INFO CARD

—LISTING CONTINUED FROM PREVIOUS PAGE

miked speaker cabinets. POD features a stereo recording output with an integrated cabinet/speaker/microphone emulation, digital effects, MIDI in and out, and footswitch input. A portable, fully programmable desktop unit that uses the same digital modeling technology used in the AX2 212, Flextone Series and the acclaimed Amp Farm TDM plug-in for Pro Tools. $399 retail.
11260 Playa Court
Culver City, CA 90230
310/390-5956; Fax: 310/390-1713
Web site: www.line6.com

Northstar "Graham Lear's Latin Rock Drumscapes™"

Complete drum and percussion tracks from Graham Lear (formerly of Santana). Tracks average 3-4 minutes in length. 700 individual drum, percussion and cymbal samples are also included. Price: $89.95.
13716 S.E. Ramona
Portland, OR 97236
503/760-7777; Fax: 503/760-4342
Web site: www.northstarsamples.com

Pioneer CDJ-100S

Pioneer New Media Technologies introduces its most affordable CD player for DJs—the CDJ-100S. Innovative features include a front slot for loading CDs, similar to car CD players, and Digital Jog Break—which produces sounds that, before now, were only heard with vinyl records and turntables, as well as entirely new sounds to create exciting new mixes. Retail: $599.
2265 E. 220th St.
Long Beach, CA 90810
310/952-2108; Fax: 310/952-2100
Web site: www.pioneerusa.com

CIRCLE #164 ON PRODUCT INFO CARD

Tech 21 CompTortion

Compression and distortion in compact pedal format. Effects are independently adjustable, enabling the user to control the exact ratio. Sounds range from totally clean to light distortion to smooth overdrive, and from zero compression to completely squashed. Multifunctional and exceptionally versatile, effects can be utilized separately or mixed together. Also can be used for just a clean boost. Will not depersonalize an instrument's individual tone. Controls include Comp," "Tortion," Tone and Level. Price: $125.
1600 Broadway
New York, NY 10019
212/315-1116; Fax: 212/315-0825
Web site: www.tech21nyc.com

Power Amplifiers

AB International Precedent Series II

We are proud to announce our new Precedent Series II, Multichannel Series, and 70V amplifiers, which feature Enhanced Rail Technology. With this new technology, AB amplifiers perform with clearer and richer sound while consuming 30% less AC power, and are 20% lighter in weight than competitive amplifiers using conventional power supplies and cooling. Our Multichannel amplifiers feature Soft Clip Limiting, internal crossovers and are available in two, three, four or six channels.
1830-6 Vernon St.
Roseville, CA 95678
916/783-7800; Fax: 916/784-1050
Web site: www.abamps.com

BGW Millennium MIL2TMC-2/MIL3TMC-2

The BGW Millennium Series is now available with a factory installed, internally mounted, TMC-2 cinema bi-amp crossover/processor card. This allows the user to fine tune the crossover points, equalization, attenuation and delay line while saving processing costs and freeing up valuable rackspace. The TMC-2 fits above the input connectors and is fully accessible on the rear of the Millennium 2TMC-2 and 3TMC-2. A security cover fits over the face of the card to protect the settings.
13130 Yukon Ave.
Hawthorne, CA 90250
800/468-2677; Fax: 310/676-6713
Web site. www.bgw.com

World Radio History

Bryston 9B-ST Pro

The Bryston 9B-ST is a superior quality, multichannel power amplifier delivering 120 watts of power at 8 ohms, and 200 watts at 4 ohms. The 9B-ST is basically a five-channel version of our very popular 3B-ST stereo amplifier, but intended for use in applications where compactness, versatility and expandability are of prime importance.
677 Neal Dr.
Peterborough, Ontario
Canada K9J 7Y4
705/742-5325; Fax: 705/742-0882
Web site: www.bryston.ca

BST Liker Power Amp Series

Liker 330 stereo power amp ($434). 180W/channel @ 4 ohms RMS. MOSFET transistors and T-airflow tunnel. Continuous current protection and built-in active crossover. Liker 630 ($565) 360W/channel @ 4 ohms RMS. Liker 930 ($665) 490W/channel @ 4 ohms RMS.
1305 Waters Ridge Drive
Lewisville, TX 75057
972/353-6463; Fax: 972/353-6490
Web site: www.bstsound.com

Chevin Research Q 6

The Q 6 is a 4-channel amplifier offering 600 watts per channel at 4 ohms in two rackspaces. Part of the A Series, the Q 6 by Chevin is one of the only amplifiers used both in critical studio monitoring and touring sound reinforcement applications. List is $2,849. Chevin Research is distributed in the U.S. by Sennheiser Electronic Corporation and the Q6 carries a five-year warranty.

Chevin Research A Series

A range of high-powered, audiophile quality audio amplifiers. Features include: highly reliable designs with no wiring looms; single, sturdy main board; tight tolerance, well-specified components; easy access to all sections; excellent sonic quality with symmetrical layout, high slew rates, low distortion and noise. Call for more information. Dist. by Sennheiser Corp.
1 Enterprise Dr., PO Box 987
Old Lyme, CT 06371
860/434-9190; Fax: 860/434-1759
Email: jalexander@sennheiserusa.com

Crown CP660 Amplifier

Crown's new CP660 6-channel power amplifier provides super flexibility and the best watts-to-dollar ratio around. With six independent channels, the CP660 takes the place of three 2-channel amplifiers, yet still fits in a standard two-rack space. Its 75-watt average power output per channel is ideal for a variety of surround-sound uses, as well as many paging, zoning and background music applications. Plus, any pair of channels can easily be bridged for double the power.
1718 W. Mishawaka Rd.
Elkhart, IN 46517
219/294-8200; Fax: 219/294-8020
Web site: www.crownaudio.com

Gemini XP-1200 Professional Stereo Amp

Gemini's affordable XP-1200 professional 3-rackspace power amplifier features short circuit/DC/thermal protection. Recommended for fixed installations, small P.A. applications and the DJ market, the XP-1200 offers two-speed fan cooling, stereo to mono bridge switch, ground lift switch, level controls, XLR and quarter-inch input jacks, 5-way binding posts and three Neutrik speakon outputs. Gemini's XP-1200 puts out 600w/ch @ 4 ohms, 400w/ch @ 8 ohms, and 1,200 watts @ 8 ohms in bridged mono. Retail: $950.
8 Germak Dr.
Carteret, NJ 07008
800/476-8633; Fax: 732/969-9090
Web site: www.geminidj.com

Hot House Model 1500

The new Model 1500 is a less-expensive, scaled-down version of our renowned dual-monoblock model 2000 studio reference amp. With its split-dual power supply and studio-quiet fan cooling, it's capable of driving highly reactive and low impedance loads with ease, while providing the same highly transparent three-dimensional sound for which the Hot House Hign Resolution Control Room Amplifier series are famous. RMS, power output per channel: 500 w/4 ohm, 750 w/2 ohm. THD: 0.01%. $3,599.
275 Martin Ave.
Highland, NY 12528
914/691-6077; Fax: 914/691-6822

Mackie Designs M 2600

2,600 watts at 4 ohms bridged, 1300+1300 watts at 2 ohms stereo, 850+850 watts at 4 ohms stereo, 500+500 watts at 8 ohms stereo. Able to drive 2 ohm loads all night. 5 year warranty. 24dB Linkwitz-Riley electronic crossover with selectable crossover points. Variable highpass filters, limiter, switchable amp modes, self start, gain controls with calibrations in both dB and volts. Superior T-design cooling, 3 rackspaces. U.S. list: $1,199.
16220 Wood-Red Rd. NE
Woodinville, WA 98072
800/898-3211; Fax: 425/485-1152
Web site: www.mackie.com

MC Squared MC750

The MC750 is a digitally controlled high-power amplifier package designed for fixed and portable sound reinforcement applications. Endorsement of the quality of the MC750 is perhaps best reflected by the fact that two of the world's top studio monitor manufacturers have appointed MC Squared as OEM suppliers. The amplifier design offers

—LISTING CONTINUED ON NEXT PAGE

CIRCLE #165 ON PRODUCT INFO CARD

World Radio History

—LISTING CONTINUED FROM PREVIOUS PAGE

750 watts/channel stereo, utilizing a Class AB bipolar output design, no dynamic switching of supply voltages, sophisticated monitoring facilities, and many other desirable features.
2120 West Greenview Dr. #1
Middleton, WI 53562
608/831-8700; Fax: 608/831-7100
Web site: www.kmsa.com/mc2

Miles MPR-1K Modular Power Amplifier

The Miles Technology MPR-1K Modular Power Amplifier features Class D technology for cool, efficient operation with up to six channels in a compact 2-rackspace design. Providing 170 watts/ch into 4 ohms with all channels driven, the MPR-1K is available with a choice of input panels and various connector and/or crossover options. Each channel includes a switchable lowcut filter, compressor, limiter, a 21-detent gain control and indicators for signal presence, compression and clip.
1826 S. Third St.
Niles, MI 49120
616/683-4400 or 800/280-8572; Fax: 616/683-4499
Web site: www.milestech.com

Nagra MPA

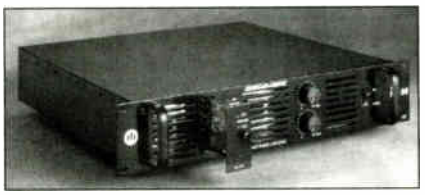
The Nagra MPA is a reference-quality, rack-mountable stereo MOSFET amplifier that can deliver 250 watts/ch into 8 ohms in continuous operation. Its sonic performance is world class: audio bandwidth is 10 Hz to 100 kHz±0.5 dB, rise time is 1.5 µS and S/N ratio is 110 dBA. The optional RCMI feature provides switching for up to four line-level balanced inputs, volume, balance and mute all from an IR remote. Weight: 35 lbs.
Canorus Inc.
240 Great Circle Road Suite 326
Nashville , TN 37226
615/252-8778; Fax: 615/252-8755
Web site: www.canorus.com

QSC PLX Series

The PLX Series is QSC's newest generation of amp technology. Incorporating QSC's exclusive PowerWave™ switching power supply, the PLX Series combines the audio performance of the award-winning PowerLight Series with the value of the best selling MX Series. Featuring advanced SMT design, four initial models deliver up to 1,500 w/ch at 2 ohms in a compact 2U chassis weighing only 21 lbs. and measuring14-inches deep.
1675 MacArthur Blvd.
Costa Mesa, CA 92626
714/754-6175; Fax: 714/754-6174
Web site: www.qscaudio.com

Rane MA3 Multichannel Amp

The MA3 delivers 40 watts of continuous average power into 8 ohms (60W into 4 ohms). Features include high-capacity linear power supply, toroidal transformer, sealed heat-tunnel forced air cooling, load sensitive servo limiter, load sensitive headroom meters, optional internal constant voltage transformers (70.7V or 100V) with internally selectable 80Hz highpass filter, 2U. Retail: $699.
10802 47th Ave. W.
Mukilteo, WA 98275
425/355-6000; Fax: 425/347-7757
Web site: www.rane.com



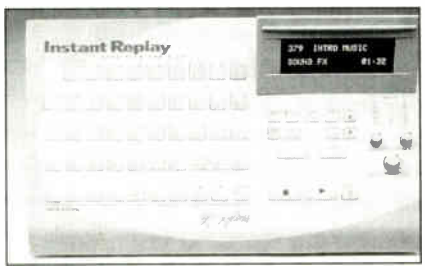
Renkus-Heinz P Series Power Amps

New stereo power amps feature plug-in loudspeaker controller modules and optional remote computer control and supervision. Model P2400 delivers 350w/ch @ 4 ohms, the P2700 is rated at 500w/ch @ 4 ohms and the P3500 @ 750w/ch @ 4 ohms. Optional controller modules tailor the equalization, crossover, time delay and protection circuitry needed by the particular Renkus-Heinz speaker being used. Remote control features include computer control of power, volume, polarity and mute for each amplifier channel. Monitoring functions include temperature, protection circuitry, input and output signal levels and clipping.
17191 Armstrong Ave.
Irvine, CA 92614
949/250-0166; Fax: 949/250-1035
Web site: www.renkus-heinz.com

Samson 1000 Watt Power Amp

Designed for larger live sound venues, this rugged new power amp from Samson delivers 500w/ch into 4 ohms and 1,000 watts into 8 ohms (bridged mono). Fan-cooled, it features a stable, bipolar design; two output level indicators with multisegment LEDs; dual protection LEDs; relay controlled outputs linked to the protection LEDs; banana jack outputs plus Speakon™ connectors.
PO Box 9031
Syosset, NY 11791-9031
516/364-2244; Fax: 516/364-3888
Web site: www.samsontech.com

Recording/Editing/Duplication Devices and Media



360 Systems Instant Replay 2.0

This completely self-contained professional digital audio recorder offers instant access to 1,000 individual audio cuts of any length. Audio can be recorded, titled, arranged and played with simple key strokes, with no cut length limitations. Instant Replay 2.0 supports both an internal hard drive and an optional Zip drive that uses low-cost, removable 100MB Zip disks. Suggested retail price $3,095, 16-hour storage; $3,250, 24-hour storage.
5321 Sterling Center Dr.
Westlake Village, CA 91361
818/991-0360; Fax: 818/991-1360
Web site: www.360systems.com

Akai DD8 Version 2.0 Digital Audio Dubber

The Akai DD8 is the first affordable digital dubber offering high-quality 24-bit linear data format and a 96k sampling rate, delivering the extremely low noise floor and wide dynamic range required for feature films. Regardless of sync type or rate, the DD8 will play audio in sync, forward or reverse at any speed and offers direct read and write capabilites of most standard DAW formats in film production without the need for OMF transfer.

4710 Mercantile Drive
Fort Worth, TX 76102
817/831-9203; Fax: 817/222-1490
Web site: www.akai.com/akaipro

Alcorn McBride Digital Audio Machine

The Digital Audio Machine is a compact, rugged audio source that provides nearly instantaneous playback of stereo audio in response to contract closures or RS-232. Over 500 different clips may be stored on the unit's removable PC-card media. Total playback time is several hours—or even longer using an optional internal hard drive. The Digital Audio Machine may be battery-powered, and is vibration and shock resistant. It bolts easily under a vehicle seat, or three may be mounted in a single rackspace.

Alcorn McBride Digital Binloop

The Digital Binloop is a rack-based audio reproducer used throughout the world's theme parks. It plays up to 24 tracks of 16 or 24-bit audio. It can also accommodate up to 12 tracks of digital video. Each track may contain over 500 separate clips, and may be triggered independently. The media is PCMCIA Flash cards or MiniDiscs, offering an MTBF of 17 years. The Digital Binloop may be controlled using RS-232, MIDI or contact closures. A SMPTE reader and generator are built in.
3300 S. Hiawassee, Bldg. #105
Orlando, FL 32835
407/296-5800; Fax: 407/296-5800

Ampex ATR-102 Large Format Music Recorder

A 1-inch, 2-channel mixdown recorder. Designed for critical recording applications. This recorder pushes the limits of musical focus and listener involvement. A new tape path assures gentle tape handling and solid azimuth alignment of the 1-inch tape. The 1-inch transport will also allow surround sound mixing and mastering support. The "Large ATR" allows quick conversion for half-inch, 2-channel mixing.
ATR Service Co.
1502 Cobb St.
San Mateo, CA 94401
650/574-1165; Fax: 650/574-2064

Athan Corp. ATH-800-T

A new timing idler for A800 Studer tape machine. This idler has polyurethane on tape surface to prevent slippage.
50 South Linden #10
South San Francisco, CA 94080
650/589-5206; Fax: 650/742-9091
Web site: www.athan.com

World Radio History

ATR VS-20 Mastering VSO

VS-20 variable-speed oscillator. Designed for mastering and studio application. Features 0.01% speed steps from 50% to 200% of nominal tape speed. The small VS-20 has a large, bright percent of speed display. Will operate an analog tape transport that operates on a nominal 9,600Hz center frequency. Price $825.
1502 Cobb St.
San Mateo, CA 94401
650/574-1165; Fax: 650/574-2064

Denon DN-2300F

Dual MiniDisc Drives—one plays, one records/plays. Full DJ feature set, including Hot Start, Program Memory, Pitch Adjust, Pitch Bend, Auto Cue, End of Message, Auto Loop, Data Memory, Shock Proof, Dual Displays, Two Piece Configuration, 19" Rack Mount. Suggested retail price: $2,300.
222 New Road
Parsippany, NJ 07054
973/575-7810; Fax: 973/808-1608
Web site: www.del.denon.com

Digidesign ProControl

Digidesign's ProControl hardware control surface integrates with the company's Pro Tools TDM systems. This high-end modular hardware interface gives users hands-on interactive control of all Pro Tools' recording, mixing, editing and effects processing functions. The base system consists of a single unit with three sections: Main Section, Meter Section and Fader Section with eight faders. Optional add-on fader packs provide eight additional channels for expanding the system up to 32 faders total.
3401-A Hillview Ave.
Palo Alto, CA 94303
650/842-7900; Fax: 650/842-7999
Web Site: www.digidesign.com

Marantz CDR630 Compact Disc Recorder

Superscope Technologies Inc. is pleased to introduce the Marantz CDR630, the latest addition to the Marantz family of professional stand-alone compact disc recorders. The CDR630 is designed to provide the audio professional with an economical way to record CDs while retaining the exceptional performance and ease of use Marantz is famous for. Suggested retail price: $1,200.

Marantz PMD520 3-Head Independent Dual-Well Cassette Deck

Superscope Technologies introduces the Marantz PMD520 professional 3-head independent dual-well cassette deck. Key features include tape monitoring while recording, auto bias system, overlap record and fully independent operation and inputs/outputs. The PMD520 was designed with the real-time duplicator in mind. Features include high-speed record (2x), loop through outputs, fine speed adjust, tape stop alarm, auto rewind and a 25 pin I/O port for custom control. Retail price is $999.
Superscope Technologies Inc.
1000 Corporate Blvd.
Aurora, IL 60504
630/820-4800; Fax: 630/820-8103

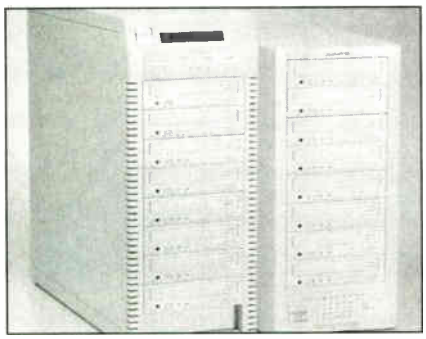
CIRCLE #166 ON PRODUCT INFO CARD

CIRCLE #167 ON PRODUCT INFO CARD

World Radio History

MediaForm CD-3707 CD-R Copier

The CD-3707, a seven-drive CD-R copier, delivers both simple one-button operation and unattended duplication of up to 200 CD-Rs. This system allows 200 CD-Rs to be copied right from the spindle. Four CD-3707s can be networked together for a total of 28 drives. The Easi-DAT or Easi-Audio option can be added to any CD-3707 for easily importing from any digital or analog pro audio source.



MediaForm CD-5900 CD2CD/PowerPro

The CD2CD/Power Pro is a standalone duplicator that will copy up to eight CD-Rs simultaneously. Up to four Power Pros with expansion units can be chained together for a total of 64 drives. The CD2CD/Power Pro also offers the Easi-DAT/Easi-Audio options which allows audio producers to interface their existing DAT of SCSI drives to the CD2CD/Power Pro. List price starting at $3,850.
400 Eagleview Blvd.
Exton, PA 19341
610/458-9200; Fax: 610/458-9554
Web site: www.mediaform.com

Microboards Copywriter A2D

CD-to-CD stand-alone duplicator with built-in analog-to-digital conversion. Interface: microphone in, audio line in, audio line out, ext. SCSI port. Supports: CD DA, CD-ROM mode 1 and 2, XA, CD Bridge, Photo CD, CD Extra, Multi Session, Mixed Mode. Duplication speed: 4x (write), 8x (read). Retail: $1,849.

Microboards DSR Series

The DSR Series of duplication devices bring the quality and reliablitiy of CD-R/DVD to the audio professional. Expensive networking is a thing of the past with the DSR 8000. The DSR 8000 uses a VMI (virtual media interface) for user-friendly, advanced daisy chaining of three 5-bay enclosures to each master unit. The SDR 1000 gives the audio professional an entry-level system with the capability of expanding to a three-drive configuration. DRS 8000 retail $6,995. DSR 1000 retail $1,695.
1480 Park Rd., Ste. B
Chanhassen, MN 55317
612/470-1848; Fax: 612/470-1805
Web site: www.microboards.com

Nagra ARES-C Recorder/Editor With Timecode

The Nagra ARES-C portable digital recorder/editor is the ultimate in reliability from field to studio. Technologically advanced software-based design eliminates all moving parts resulting in a superior performing recorder/editor completely silent in operation with low power consumption. The SMPTE/EBU 80-bit format accommodates all current frame-rate standards with the internal time code generator, two internal timecode readers and instant chase-lock synchronization. Price $9,900.
240 Great Circle Rd., Ste. 326
Nashville, TN 37228
615/726-5191; Fax: 615/726-5189
Web site: www.nagra.com

Quantegy GP9 Grand Master Platinum

The ultimate in sound and performance from Quantegy, the leader in audio recording media. GP9 is the first new analog mastering tape introduction in over four years. GP9 takes advantage of advanced technology to bring to the audio professional the most durable and sonically superior analog ever produced. GP9 is the culmination of Quantegy's 50 years of analog tape manufacturing experience.

Quantegy MDR074P MiniDisc Recordable

The Quantegy recordable MiniDisc has been engineered to ensure optimum reliability and consistant quality to satisfy every recording need. Quantegy MDR offers superior performance in digital audio recording and playback for programs transmission in local radio stations, CA TV, Broadcasting, sound effects, background music and audio archiving. A high carrier-to-noise ratio and extremely low block error rate provides outstanding sound reproduction.
800 Commerce Dr.
Peachtree City, GA 30269
770/486-2800; Fax: 770/486-2808
Web site: www.quantegy.com

Studer V-Eight Modular Multitrack Recorder

The Studer V-Eight is a 20-bit, 8-channel modular multitrack recorder based on the ADAT type II S-VHS tape format. 24-bit A/D and D/A converters are standard, as is an integrated 8-channel monitor mixer. The highly optimized, software-controlled industrial-grade tape transport uses 3 direct drive motors that completely eliminate the need for idler wheels and mechanical brakes. The V-Eight "Cockpit" remote controller can handle up to 8 machines creating a fully integrated multitrack environment.
1308 Borregas Ave.
Sunnyvale, CA 94089-1001
408/542-8880; Fax: 408/752-9695
Web site: www.studer.ch/studer

Tascam DA-45 HR 24-Bit DAT

The DA-45 HR is the world's first high-resolution, 24-bit DAT recorder. The three-rackspace DA-45 features XLR balanced and RCA unbalanced analog I/O, AES/EBU and S/PDIF digital I/O, Word Sync I/O and a parallel interface—all of which ensures easy integration into the most demanding production environment. With two recording modes, the new DA-45 HR enables operators to take advantage of the recorder's 24-bit capability or to maintain backward compatibility with first-generation 16-bit machines. The DA-45 HR's menu-driven environment features easy-to-read displays.
7733 Telegraph Rd.
Montebello, CA 90640
213/726-0303; Fax: 213/727-7635
Web site: www.tascam.com

Signal Processing, Hardware-Based

Antares ATR-1

The ATR-1 Auto-tune Intonation Processor is a single-unit rackmounted miracle. The ATR-1 allows real-time pitch correction of any monophonic source, without distortion of artifacts, while preserving the expressive nuance of a performance. With unsurpassed sonic quality, AutoTune transparently corrects any intonation problem, and has been used on hundreds of soundtracks, live performances and multi-Platinum albums.
11768 Arwood Rd., Ste. 13
Auburn, CA 95603
530/878-4400; Fax: 530/878-8577
Web site: www.antares-systems.com

ART Dual Tube EQ

The Dual Tube EQ is a 2-channel, 4-band parametric tube equalizer. Features include: variable input and output levels, selectable low shelving filter (40 Hz, 120 Hz), sweepable low-mid (range selectable 20-200 Hz or 200-2k Hz), sweepable hi-mid (range selectable 200-2k Hz or 2-20 kHz), selectable high shelving filter (6 kHz, 19 kHz). Channels may be cascaded for a mono eight-band EQ.
215 Tremont St.
Rochester, NY 14608
716/436-2720; Fax: 716/436-3942
Web site: www.artroch.com

Ashly Protea 4.24GS/2.24GS

Ashly Audio Inc. has unveiled two additional products to the Protea Series, digital 24-bit/programmable graphic equalizer/system processors. The 4.24GS and 2.24GS allow the flexibility of adding additional channels of graphic equalization to an existing sound system using the Protea 4.24G, or installing the products independently for tamper-proof audio equalization. Control and programming are easily achieved by using the 4.24G mother unit, 4.24RD Full Function Remote Control, or Ashly's Protea System Software and a PC.
847 Holt Road
Webster, NY 14580
716/872-0010; Fax: 716/872-0739
Web site: www.ashly.com

Avalon AD2074

Avalon AD 2074 mastering opto-compressor: multiband compressor, pure Class-A discrete, 3 bands of compression, parametric sidechain contol, switch inserts, +30dB headroom, low noise. $6,400.

Avalon VT Series VT-737 SP/VT-747 SP

VT-737 SP Special Performance music/voice channel mic pre/compressor/equalizer with 4 dual-triode tubes and discrete Class-A electronics. Opto-compressor, low noise, 4-band passive-active equalizer, +30dB headroom, variable highpass filter. Instrument DI input. $2,495. The VT-747 SP is a Class-A tube and discrete opto-compressor with twin parametric sidechain filters, plus 4-band audio equalizer. Low noise, +30dB headroom, $2,495.
PO Box 5976
San Clemente, CA 92673
949/492-2000; Fax: 949/492-4288
Web site: www.avalondesign.com

Big Briar Moogerfooger Lowpass Filter

Genuine synthesizer-style Moog Filter circuit designed by Bob Moog, the circuit's original inventor. Professional-quality, all-analog device for table or floor use. Works witn any instrument-level or line-level audio signal. Modular functions include wide-range four-pole, voltage-controlled lowpass filter and fast-acting envelope follower. Four voltage-controlled parameters may be varied by rotary panel controls, expression pedals or external CV's. List price: $289.

Big Briar Moogerfooger Ring Modulator

Professional-quality analog synthesizer-style ring modulator, designed by Bob Moog for table or floor use. Produces sum and difference pitches from instrument-level or line-level audio input. Modular voltage-controlled functions include ring modulator, carrier oscillator, and LFO. Panel-controlled parameters are Mix, Carrier Frequncy, F+LFO Rate, and LFO Amplitude (all controllable from expression pedals or external CV's) and Input Drive Level. List price: $289.
554-C Riverside Dr.
Asheville, NC 28801
800/984-1990; Fax: 828/254-6233
Web site: www.bigbriar.com

World Radio History

YAMAHA M3000.
LARGE FRAME CONSOLE AT A SMALL FRAME PRICE.

Group/Aux Bus Diversity
Mix busses configure to become group or aux busses with the touch of a switch. Mix busses function to fit your mix requirements. For example, one moment M3000 has 8 group outs and 8 aux outs, the next 16 aux outs, the next it has 6 groups and 10 auxes. The next...

20x8 Mix Matrix
The outputs of the 16 mix busses, the stereo bus and two sub in busses are routed to the 8 output Mix Matrix. This 20x8 matrix provides an exceptionally flexible system enabling you to address a wide variety of complex mix scenarios.

8 VCA Groups
Yamaha pioneered VCAs in sound reinforcement consoles. Now we deliver them at an unprecedented price point.

MIDI Mute Groups
Store and recall up to 128 scenes or patches for instant response to rapid performance transitions.

$12,995 MSRP.
NO KIDDING.

The Yamaha Sound Reinforcement Console line is legendary. From the PM1000 on, they have set the price/performance standard for the industry.

Now there is a new standard. The Yamaha M3000.

With the diversity to serve as a front-of-house or a monitor mixer, or both simultaneously, it's ideally suited for fixed installations, houses of worship, theaters, night clubs and theme parks – not to mention concert and industrial gigs.

Rental companies can reduce inventory costs! M3000 can mix FOH on Friday and monitors on Saturday, so there's no need to stock both main and monitor consoles. The M3000 also gives regional touring companies PM features at an affordable price.

We think you will agree that this level of performance, along with the quality and reliability you have come to expect from Yamaha, will make the M3000 an invaluable tool.

The legend grows!

Since you are already thinking of a perfect application for the M3000, call 714-522-9000 for more information.

YAMAHA Commercial AUDIO

©1998 Yamaha Corporation of America
6600 Orangethorpe Avenue, Buena Park, CA 90620

Yamaha PA Web Site–http://www.yamaha.co.jp/product/proaudio/homeenglish/

Yamaha is a registered trademark of Yamaha Corporation.

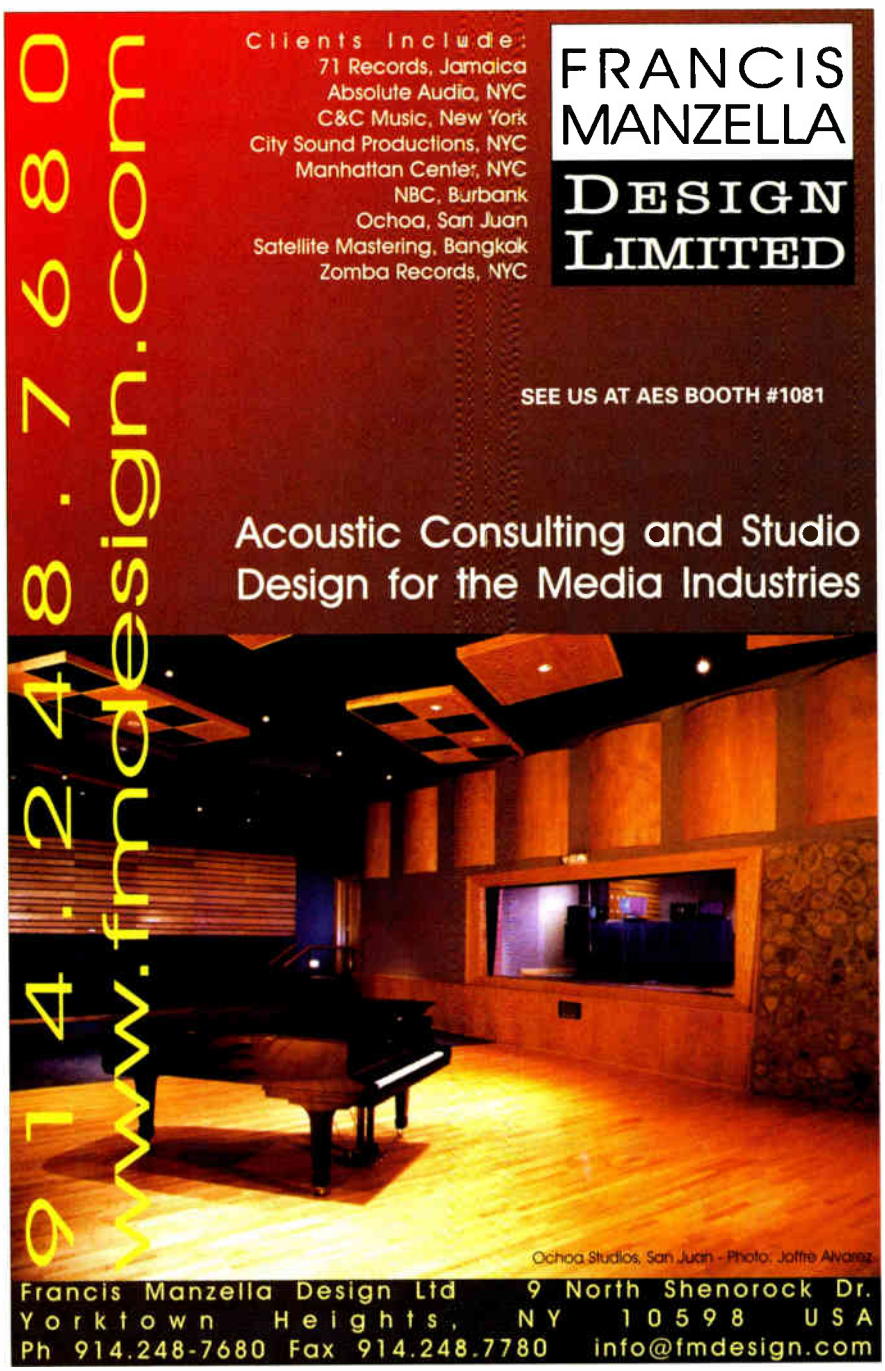
World Radio History

CIRCLE #168 ON PRODUCT INFO CARD

BSS FCS966
The FCS966 is the newest addition to the Opal range. The 966 is a dual-channel, 30-band graphic EQ with high and low-contour controls, constant Q filters, electronically balanced inputs and outputs, TRS, XLR and Phoenix connectors.
1449 Donelson Pike
Nashville, TN 37217
615/360-0277; Fax: 615/360-0480
Web site: www.bss.co.uk

Cedar X-Series
The rackmount restoration tools operate in real time, with a simple user interface, 24-bit AES/EBU I/O and 40-bit floating point processing. The DCX declicker removes up to 2,500 clicks and scratches/second per channel. The

CRX decrackler completely removes crackle and most buzzes, and significantly improves unpleasant effects of many amplitude distortions. The DHX de-hisser reduces broadband noise from all sources without dullness, compression or loss of ambience.
43 Deerfield Road
Portland, Maine ME 04101
207/828 0024; Fax: 207/773 2422
Web Site: www.cedar-audio.com/cedar-audio



CIRCLE #169 ON PRODUCT INFO CARD

Crane Song Trakker
Trakker is a single-channel, Class A compressor/limiter that can emulate many vintage and modern compressor/limiters. Its character switch provides choices from modern transparent to vintage operation, with additional choices from soft knee optical to hard knee, in-your-face compression or limiting. Trakker can link up to 8 channels for stereo bus or sound mixing. List: $1,500.
2117 E. 5th St.
Superior, WI 54880
715/398-3627; Fax: 715/398-3279
Web site: www.cranesong.com

Cutting Edge Omnia Junior
Built on the hardware platform that takes advantage of the processing prowess of its big brother (Omnia.fm), the Omnia Junior provides multiband processing for budget-conscious FM stations. Featuring three bands of limiting, a wideband AGC, thunder bass boost, warmth control, anti-aliasing, distortion-controlled final clipper, digital stereo generator with integral composite clipper and baseband filter for rock-solid peak control. Omnia Junior can be upgraded at any time to a full Omnia. Still no digital grunge at $4,500 list.
2101 Superior Ave.
Cleveland, OH 44114
216/241-3343; Fax: 216/241-4103
Web site: www.nogrunge.com

dbx Professional 566
Silver Series dual-channel vacuum tube compressor/limiter. 12AU7 tubes, PeakstopPlus™ limiter and optional digital output.
8760 S. Sandy Parkway
Sandy, UT 84070
801/568-7660; Fax: 801/568-7662
Web site: www.dbxpro.com

Demeter HC-1 Optical Tube Compressor Limiter
The HC-1 is a mono compressor utilizing the revolutionary "H" tube preamp with classic photo cell compressor section. The unit has a variable attack (.5 to 100 milliseconds) and release (100 milliseconds to 3 seconds). Input sensitibity switch, overload LED, compression control (over 24 dB), charge and VU meters, sidechain outputs, link inputs, low-frequency compression sensitivity switch and output gain control.
15730 Stagg St.
Van Nuys, CA 91406
818/986-7103
Web site: www.demeteramps.com

DigiTech S200
Single rackspace 2-in, 2-out true stereo multi-effects processor. Custom LED display with dual DSP engines. List $339.95.

DigiTech Quad 4
Four in, 4 out. Four processors in one. Large custom display. Multiple signal path routings. List: $479.95.
8760 S. Sandy Pkwy.
Sandy, UT 84070
801/566-8800; Fax: 801/566-7005
Web site: www.digitech.com

World Radio History

Compatible With The Most Popular Video Standard

Designed for professional studio applications, the Denon DN-M1050R MiniDisc recorder and DN-C680 CD player both feature RS-232C/422A serial ports for external control capability.

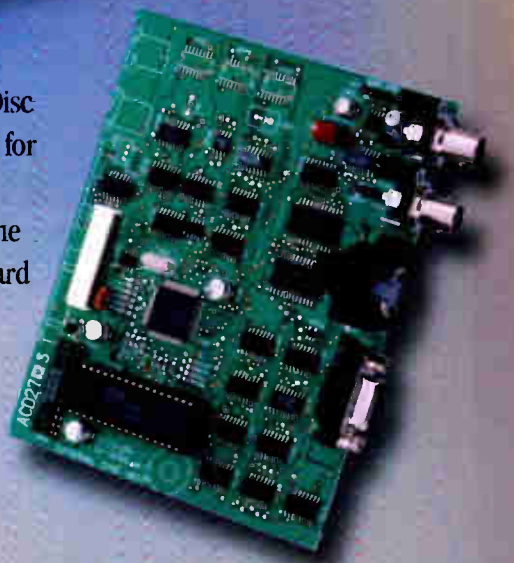
Delivering broadcast-quality performance, both decks can be outfitted with the optional Denon ACD-27 SMPTE Time Code card that emulates the industry-standard Sony® VTR control protocol. In addition to providing BVW-75 Betacam™ emulation, the optional upgrade card provides linear time code XLR balanced input, along with BNC Video Sync and Word Sync inputs.

DN-M1050R MiniDisc Recorder/Player

- AES/EBU, SPDIF, Balanced and Unbalanced Analog I/O
- PC Keyboard Port
- Variable Pitch ±9.9%
- Optional SMPTE, Sampling Frequency Converter and Hot Start Upgrade Cards
- External Control via 9-pin RS-232C/422A and 25-pin Parallel Ports

DN-C680 CD Player

- AES/EBU, SPDIF, Balanced and Unbalanced Analog Outputs
- Optional SMPTE Time Code and Sampling Frequency Converter Upgrade Cards
- Variable Pitch ±9.9%
- External Control via 9-pin RS-232C/422A and 25-pin Parallel Ports
- Auto Cue To Music Function/Jog Dial and Shuttle Wheel



Optional ACD27MS SMPTE Card for DN-M1050R MiniDisc

Optional ACD27CS SMPTE Card for DN-C680 CD Player

Denon Electronics, 222 New Rd., Parsippany, NJ 07054, (973) 575-7810
Denon Canada, Inc., 17 Denison St., Markham, Ontario, Canada L3R 1B5, (905) 475-4085
Labrador, S.A. de C.V., Zamora No. 154, 06140 Mexico, D.F. (52-5) 286-5509

Visit our web site: www.del.denon.com

Sony is a registered trademark of Sony. Betacam is a trademark of Sony.

World Radio History

DENON

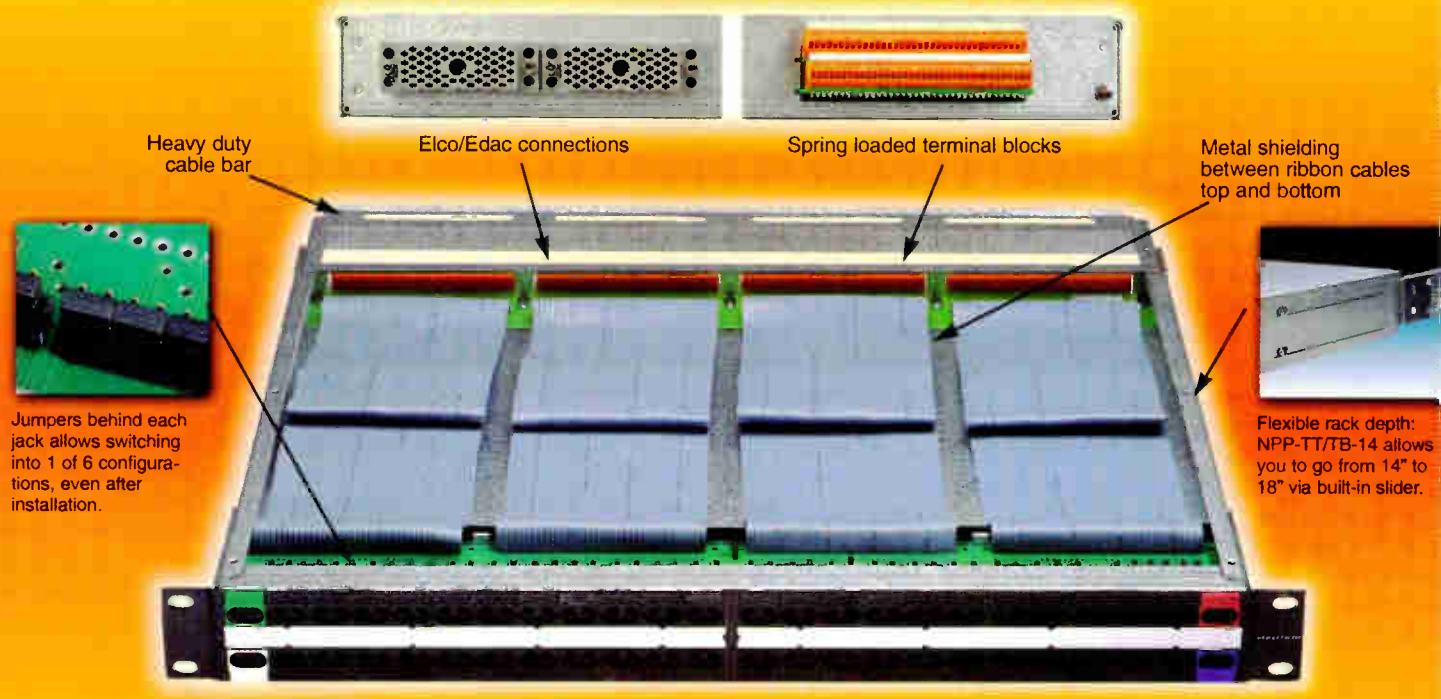
The First Name In Digital Audio

CIRCLE #170 ON PRODUCT INFO CARD

EASY PATCH

The Analog/Digital patch bays for today and tomorrow...from Neutrik®

Two choices to "wire up" Easy Patch for fast termination.



The Easy Patch series of easy to use patchbays eliminates signal degradation and offers excellent crosstalk performance required in today's broadcast facilities, mobile trucks, recording studios and audio installations.

Their analog/digital signal capability, reduced wiring time and quality workmanship are unmatched by competitors' patchbays.

The Easy Patch gives you features and options no other patchbay provides:

- Galvanized, heavy duty metal housing.
- Flexible depth from 14" to 18".
- Hard gold plated contacts designed specifically for A/D signals.
- Six jumper switching configurations.
- Ten color coded ID tabs - optional.

You asked for innovation, productivity and value in a patch bay series and Neutrik listened.

Demo Easy Patch for yourself. Call **732-901-9488** and ask for our NEW product guide and the name of your nearest Neutrik representative.

Neutrik... your one stop source for all your audio connector needs...today and tomorrow.

NPP-TT/TB at 7½" depth with spring loaded terminal block connection.

SEE US AT AES BOOTH #452

NEUTRIK USA
CONNECTING THE WORLD

195 Lehigh Avenue, Lakewood, NJ 08701-4527
Phone: 732-901-9488 Fax: 732-901-9608
E-Mail:neutrikusa@aol.com Web Site:www.neutrikusa.com

World Radio History

CIRCLE #171 ON PRODUCT INFO CARD

Dolby DP569 Multichannel Dolby Digital Encoder

The Dolby DP569 is a 1-U high, multichannel Dolby Digital (AC-3) encoder for use in digital TV, Cable and DVD authoring applications. Supporting channel configurations from mono to 5.1-channel surround sound and encoded bit rates from 56 to 640 kbps, the 19" rack-mount DP569 provides three pairs of AES-3 digital audio inputs; a single AES-3 output; and inputs and outputs for clock reference signals, multiplexed bitstreams, EBU/SMPTE LTC and VITC timecode, plus remote control.
100 Potrero Ave.
San Francisco, CA 94103-4813
415/558-0200; Fax: 415/863-1373
Web site: www.dolby.com

Drawmer MX40 4 Channel Punch Gate

1U, 4-channel noise gate with "Peak Punch." Proprietary "Peak Punch" circuitry, which accelarates the leading edge of the signal adding true punch to drum kits and percussion, etc. Single Trigger Frequency control enables simple "Point and Gate" frequency-conscious operation with Key Input and Key Listen. Variable Release, full Auto Attack, Switchable Range and Bypass. Master/Slave configurable. Balanced XLR Inputs/Outputs. $629.

Drawmer MX50 Dual Channel De-Esser

Variable frequency range (800 - 8k Hz). Floating threshold de-ess function reduces the level of sibilant peaks while preserving signal quality. Full or split band de-essing via front panel push-button. Unique Drawmer "air" switch restores relative levels of frequencies above the sibilant band. Option of +4dB or -10dB operation. At +4dB, the signal has electronically balanced inputs and outputs, and at -10dB, the signal is unbalanced inputs and outputs. $735.
2721 Calle Olivo
Thousand Oaks, CA 91360
805/241-4443; Fax: 805/241-7839
Web site: www.proaudio.co.uk/drawmer.htm

Focusrite Platinum Compounder

The Compounder is a dual-channel dynamics unit that can operate in stereo or dual mono modes. A unique feature is the addition of a passive inductor bass boost circuit, which can add enormous amounts of extra low-end harmonics and punch, especially useful for heavy dance final mix compression. Includes two channels of: noise gate/expander, compression, limiter, huge bass filter, class A discrete VCA for high-quality "Focusrite Sound" compression. Price: $699.

Focusrite Platinum Tonefactory

The Tonefactory is a device to get great guitar, instrument or synth sounds down to tape, with no other extemal box required. The unit gives the home studio owner complete signal control for both recording or mixdown at a very affordable price, a true "studio tool box." Includes a discrete transistor mic pre, filters, opto compressor, overdrive, passive tone controller, insert point, noisegate, parametric EQ, O/P meter and fader. Price: $699.
Lincoln Road
High Wycombe, Bucks
UK HP12 3FX
44/1494/462-246; Fax: 44/1494/459-920
Web site: www.focusrite.com

Gold Line EQ2

EQ2 is a 20-bit digital parametric EQ with Windows interface and precision delay.
Box 500
W. Redding, CT 06896
203/938-2588; Fax: 203/938-8740
Web site: www.gold-line.com

JOEMEEK SC2.2 Stereo Compressor

The SC2.2 Stereo Compressor is similar to the 1998 TEC Award-Nominee SC2. A redesigned PC board accommodates a smaller chassis reducing the price. An added fifth position slope control offers more compression effects. A new meter reads input level or gain reduction via a front panel switch. The Output Gain control was added to the front panel with an illuminated on/off power switch. The input/output controls use detented pots for greater accuracy. Suggested List $1,499.99.

JOEMEEK SC3 Stereo Compressor Digital

JOEMEEK introduces the new SC3 enhanced analog Stereo Compressor with 24-bit digital converters on both inputs and outputs that's ideal for bypassing the less-than-perfect A/D stages of most hard disk and CD recording systems. The Digital input and output are AES/EBU and optical. S/PDIF requires adaptors. The JOEMEEK SC3 Digital Stereo Compressor is a powerful tool for the digital studio and essential for the hard disk, CD recordist, and any digital recording media. Suggested List $2,499.99.
Dist. by PMI Audio
23773 Madison St.
Torrance, CA 90505
877/563-6335; Fax: 310/373-4714
Web site: www.joemeek.com

Kurzweil K2500 Live Mode

The Kurzweil Live Mode turns a Kurzweil K2500 series rack or keyboard into a powerful giant "live" signal processor, allowing the entire architecture to be used for real-time processing of external signals, including all algorithms, effects, modulators, etc., for only $299. Live Mode is free to all K2500 owners as a download along with KB-3 mode at our FTP site.
Box 99995, Lakewood, WA 98499-0995
253/589-3200; Fax: 253/984-0245
Web site: www.youngchang.com/kurzweil

Lafont LP22 ADR/Foley Processor

The LP22 is a unique processor designed specifically for use in film and televison post-production. Features include a high gain (75dB), low noise (129dB S/N) mic preamp with high and lowpass filters (overlapping frequencies), compressor, limiter, expander, gate and de-esser. Multiple LP22s can be linked for stereo or multichannel requirements, and an insert point with bypass permits insertion of external devices. Phantom power, phase reverse and a compressor side chain insert are included.

Lafont LP23 Telephone Simulator

The LP23 is a processor designed to simulate telephone, radio and intercom sound easily, without patching in a multitude of outboard devices. Components include extended-range high, low and bandpass filters with variable Q, a balance control between direct and filtered signal, a distortion generator with harmonics control, a squelch circuit and a noise generator with its own set of filters. The output stage has a gain control to compensate for signal loss.
34 Nelson St.
Oakville, Ontario
Canada L6L 3H6
905/469-8080; Fax: 905/469-1129
Web site: www.sascom.com

Lexicon MPX G2 Guitar Effects Processor

The MPX G2 allows you to place authentic effects anywhere in the signal chain without altering your amp's basic tone. Place compression, wah and analog overdrive in front of the amp, with other effects, like delay, chorus and reverb, in the amp's effects loop. For direct recording or live sound applications, use the G2 as a stand-alone programmable analog preamp with effects. The MPX G2 delivers the effects guitarists want, analog or digital, with extraordinary re-creations of the classics. U.S. retail $1,799.

Lexicon MPX 100 Dual Channel Processor

The MPX 100 is a true stereo dual-channel processor with 24-bit internal processing, 20-bit A/D - D/A 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 gives you completely independent effects on the left and right channels.
3 Oak Park
Bedford, MA 01730
781/280-0300; Fax: 781/280-0490
Web site: www.lexicon.com

Manley Laboratories Tube EQ

Manley's new tube EQ is a stereo, 4-band all-tube design inspired by vintage tube EQs, older British and American console EQs and modern outboard parametrics. Unlike modern EQs, this one uses only passive techniques with real inductors and capacitors on rotary switches to select frequencies. Also unique are the new shelf curves inspired by the Pultec EQP1-A. It also features two steep filters and gain controls. The tube circuit is used strictly for flat gain.
13880 Magnolia Ave.
Chino, CA 91710
909/627-4256; Fax: 909/626-2482
Web site: www.manleylabs.com

Millennia N SEQ-2 Twin Topology

Stereo 4-band parametric EQ of exceptional sonic purity. Features "Twin Topology"—switchable pure Class-A vacuum tube or discrete J-Fet solid-state equalizers in one box. The NSEQ-2 is fully transformerless while employing absolute minimalist design.
4200 DaySpring Ct.
Placerville, CA 95667
530/647-0750; Fax: 530/647-9921
Web site: www.mil-media.com

Neotek MultiMax

MultiMax adds complete surround monitoring to any console with at least eight buses. In addition to insertion of any analog or digital encode/decode surround processor, it contains a complete bass management system for use with or without a separate subwoofer. MultiMax also features three pre-mix inputs and a standardized stereo

—LISTING CONTINUED ON NEXT PAGE

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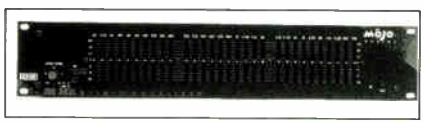
downmix output. With an internal noise reference, precision attenuator and individual mutes, you have complete speaker control from the front panel or optional remote.
1151 W. Valley Blvd.
Alhambra, CA 91803
626/281-3555; Fax: 626/284-3092
Web site: www.martinsound.com

Oram Pro Sonicomp 2

Sonicomp 2 is the first compressor from English manufacturer Oram Pro. Complementing its high-end range of rackmount units, Sonicomp is a 2U unit with a 6mm sculptured front panel with large VU meters and hand-turned aluminum control knobs, finished in the distinctive Oram blue livery. Individual LDR/solid-state switching, linkswitch to enable stereo program compressing, bypass, switch and controls for input, threshold, ratio, attack, decay and output level.
The Old Forge, Hook Green
Meopham, Kent DA13 0JE UK
44/1474/815-300; Fax: 44/1474/815-400
Web site: www.oram.co.uk



Rane MQ 302L EQ

The MQ302L ⅓-octave equalizer is the latest in Rane's Mojo Series product line. One set of 45mm sliders controls both left and right channels for faster, more accurate setup. Features include Constant-Q technology, +4 dBu (signal) and OL (overload) indicators with ±12 dB level control, ±12dB EQ range, EQ Bypass, 115dB Dynamic Range, balanced XLR and 1/4" I/O, internal power supply with low noise toroidal transformers. Suggested retail: $599.
10802 47th Ave. W.
Mukilteo, WA 98275
425/355-6000; Fax: 425/347-7757
Web site: www.rane.com

Rolls RPQ160

The RPQ160 is a 4-band parametric equalizer for the professional audio installation and music market. Each frequency band has a variable Frequency select control that adjusts the frequency center, a Width (Q) control, and a ±15dB Level control. Additional frequency control is provided with variable high and lowpass shelving filters. An overall Level control, a Bypass switch, and a Power LED round out the front panel. The RPQ160 has RCA, 1/4" and XLR inputs and outputs provided on the rear panel.
5143 S. Main St.
Salt Lake City, UT 84107
801/263-9053; Fax: 801/263-9068
Web site: www.rolls.com

Sabine Graphi-Q™

The all-new Graphi-Q from Sabine is a 24-bit all digital 31-band graphic EQ with analog-style control. Features include patented Clipguard adaptive clip level control, 12 FBX feedback filters per channel, full-function compressor/limiter and 1,000 ms adjustable digital delay. The Graphi-Q is available in single (GRQ-1301) or dual-channel (GRQ-1302) models, with optional single and dual-channel slave units and remote software available. The GRQ-

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interfacing

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Burbank CA 91505
info@deskdoctor.com
http://www.deskdoctor.com

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DIGITAL HEADPHONES

Need to monitor one or more AES/EBU sources? The Graham-Patten DAC-20 may be just what you're looking for. It's a precision 20-bit digital to analog converter complete with headphone amplifier, housed in a compact, rugged aluminum enclosure. But the DAC-20 isn't just for monitoring. With two balanced line level outputs, it's the perfect choice as a general purpose D-to-A. It's ideal for studio or field use.

The DAC-20 is part of the SoundPals™ family, an expanding set of tools for the digital audio trade. To learn more, call us today or visit our web site.

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www.gpsys.com
800.422.6662
+1.530.273.8412

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1301 lists for $899.95, the GRQ-1302 $1299.95.
13301 Highway 441
Alachua, FL 32615-8544
904/418-2000; Fax: 904/418-2001
Web site: www.sabineinc.com

Sonifex Red Box Series

A new series of affordable equipment connection boxes called the Redbox Range have been released. Five different Redbox modules have been produced. Twin mono or stereo limiter, 6-way stereo or 2x6-way mono distribution amplifier, dual microphone amplifier, stereo to mono converter, balanced to unbalanced bidirectional converter. They can be rack or surface-mounted and come with a stylized red anodized finish.
61 Station Road
Irthlingborough, Northants
UK NN9 5QE
44/1933/650-700; Fax: 44/1933/650-726
Web site: www.sonifex.co.uk

Sony DPS-V55

Multi-effects processor. Four channels. Two inputs to four discrete outputs, two inputs to two outputs (x2), or four mono inputs to four mono, or two pair of stereo outputs. Offers reverb, delay, chorus, pitch shift and more. 45 different effect algorithms. 20-bit A/D and D/A converters. 200 presets. List: $550.
1 Sony Drive
Park Ridge, NJ 07656-8003
201/930-1000; Fax: 201/358-4807
Web site: www.sony.com/proaudio

SPL Qure

The Qure is a dual-channel, 3-band EQ for recording and mastering. Tubes, coils and transistors are used selectively in the frequencies they work best. The Qure control cures harshness, enhances vocals and increases the dimensions of the mix. Nominal input: +6 dB. Input impedance: 22K ohms. Output impedance: <600 Ohms. Frequency response: 10-100k Hz. EQ range: 15-21k Hz. THQ: 0.01855% at 1 kHz. S/N: -99dBu.

SPL Transient Designer 984L

The Transient Designer is a four-channel dynamic effect processor with Differential Envelop Technology for level-independent sound processing. At last it's possible for transients to be accelerated or slowed down and sustain prolonged or shortened.
56 Central Ave.
Farmingdale, NY 11735
516/293-3200; Fax: 516/293-3288
Email: salesusa@beyerdynamic.com

White Instruments ParaMedic X

Following on the heels of the new White Digital ParaMedic Equalizer with 70 digital filters and the ParaMedic+ which adds digital delay to the equation (both of these products were introduced at NSCA), comes an AES introduction: the ParaMedic X, which incorporates a digital crossover and limiter. This Series represents the latest technology in digital signal processing engines. The ParaMedics have no front panel controls, for economy and security. All setup and operating functions are conducted from a PC running Windows 95 and Windows 2 software.
1514 Ed Bluistein Blvd.
Austin, TX 78721-3500
512/389-3800; fax: 512/389-1515

Signal Processing, Software-Based

Antares AutoTune for Direct X

AutoTune, the world's best-selling DSP plug-in, is now available for PC as a Direct X plug-in. AutoTune for Direct X allows pitch correction of any monophonic source, without distortion or artifacts, while preserving the expressive

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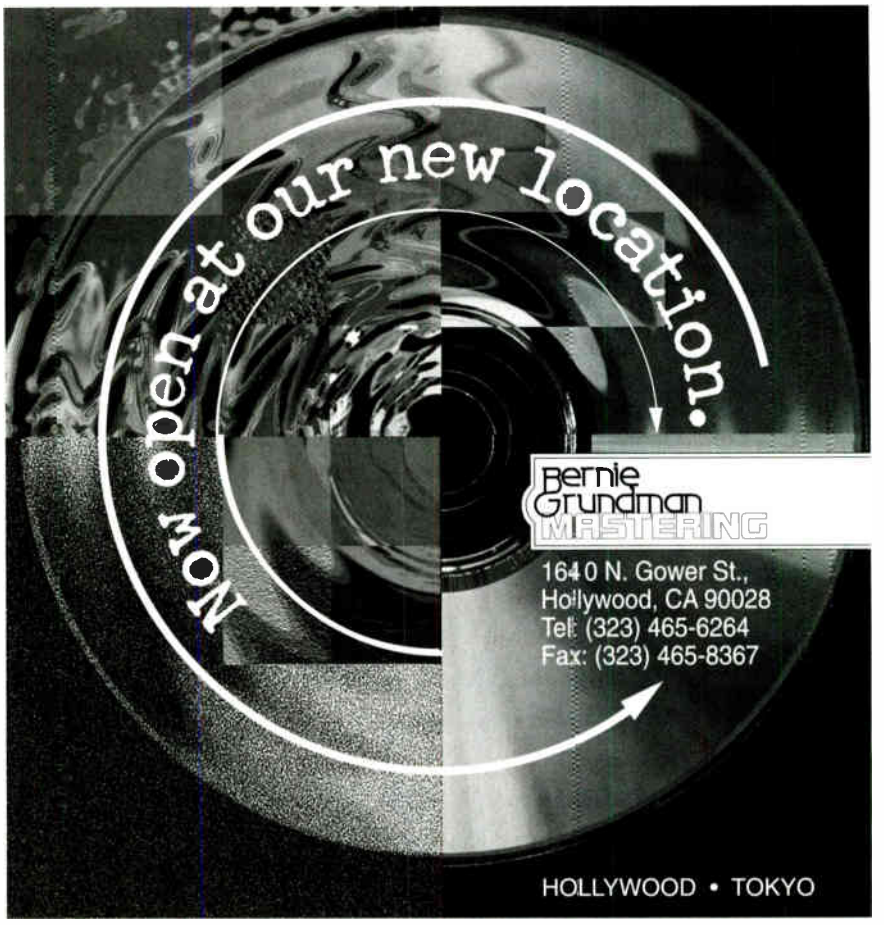

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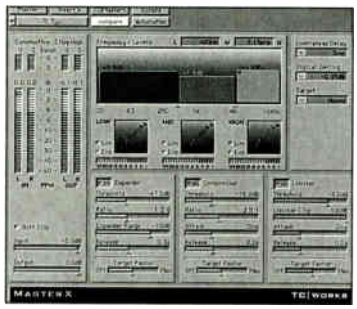
nuance of a performance.
11768 Atwood Drive #13
Auburn, CA 95603
530/878-4400; Fax: 530/878-8577
Web site: www.antares-systems.com

Arboretum Systems Hyperprism 2
Signal processing software for Power Mac. 36 different audio effects, including real-time analog-style vocoder, ultra-realistic hyperverb, unique Z-morph and frequency shifter effects, fat-sounding pitch-time changer, new compressor and limiter, plus filters, delays, stereo effects and more. Works in real time on sound files and with live audio playthrough. Special driver support for Digidesign and Korg audio cards.

Arboretum Systems Ionizer V. 1.2.5
Powerful software-based noise reduction and mastering system for Power Mac. 512 bands of gated EQ, for expansion, compression and limiting. Unlike other analog and digital EQs, Ionizer's filters are linear phase. No phase distortion is added to your signal. High-quality solution for audio restoration, dialog cleanup, sound design and mastering. Special driver support for Digidesign and Korg sound cards.
75 Aura Vista
Pacifica, CA 94044
650/738-4750; Fax: 650/738-5699
Web site: www.arboretum.com

DUY DSPider
Spanish DSP expert DUY release DSPider, the world's first modular, multitasking plug-in for Pro Tools TDM systems. DSPider allows users to create unique DSP processes by patching together any of 40 DSP modules to create rich reverbs, crisp gates and other-worldly modulators and synthesizers. DSPider ships with over 100 ultrahigh-quality presets covering every possible audio processing need. List: $1,499.
Distributed by Cameo International
464 Monterey Ave., Second Floor
Los Gatos, CA 95030
408/399-0008; Fax: 408/399-0036
Web site: www.cameoworld.com

Event DSP.FX Virtual Pack Plug-ins
The DSP.FX Virtual Pack is a suite of eight world-class tools, including reverb, multitap delay, multiband parametric EQ, multi-element chorus, analog tape flange, tremolo, pitch-shift and autopan. Features include host-based processing, an intuitive graphic user interface, real-time parameter control via MIDI, ultra-efficient CPU usage, and 32-bit floating-point architecture for precision sound at all dynamic levels. Operates in stand-alone mode or within any DirectX compatible audio application. Complete set: $299.
PO Box 4189
Santa Barbara, CA 93140-4189
805/566-7777; Fax: 805/566-7771
Web site: www.event1.com



TC Works Master X
Master X is a studio mastering plug-in for Pro Tools TDM systems and is based on the core technologies of the industry studio standard Finalizer Plus. Features include multiband expansion, compression, limiting with adjustable band crossovers and gain control. List Price $995.
790-H Hampshire Rd.
Westlake Village, CA 91361
805/373-1828; Fax: 805/379-2648
Web site: www.tcworks.de

Wave Mechanics Pitch Doctor
Software automatic tuning algorithm plug-in for Digidesign Pro Tools TDM. Automatically corrects for pitch and intonation problems on vocals and instruments without "chipmunk" like artifacts. Works with Pro Tools 4.1 automation to correct a vocal track in just two passes. Incorporates formant-preserving technology for natural-sounding pitch correction. Ships bundled with PurePitch V. 2.0 pitch shifting/harmony processing software. Suggested Retail $695.
c/o Wave Distribution
1170 Greenwood Lake Turnpike
Ringwood, NJ 07456
973/728-2525; Fax: 973/728-2931
www.wavedistribution.com

Sync, Control and Automation Systems

Brainstorm SR-3
The SR-3 Time Code Repair Kit is a regenerator designed specifically for that purpose. Its three main functions are to repair drop outs, reduce jitter and correct video phase. Housed in a small, portable enclosure, its front panel features a large timecode reader and LEDs to identify format and video phase. The SR-3 can also be used as a timecode generator to create new code. List price $699.
1155 N. La Brea Ave.
West Hollywood, CA 90038
323/845-1155; Fax: 323/845-1170
Web site: www.brainstormtime.com

Doepfer Musikelektronik Regelwerk
MIDI fader box with 24 faders, two buttons and LEDs for each fader; fader and button functions are free programmable (including SysEx), with different catch modes, immediate/fetch/relative, max/min definition, group/master functions, programming via rotary encoder and LC display, one MIDI in, two MIDI out, one sync in/out, 19-inch case, 4U, gray front panel, about $750.
Geigerstr. 13
Graefelfing D-82166 Germany
49/89/8980-9510; Fax: 49/89/8980-9511
Web site: www.doepfer.com

Encore Electronics Knobby
Knobby is a programmable MIDI controller with eight knobs and a four-way rocker switch. It's primarily intended to control Propellerhead's Rebirth, but can be used with any instrument or program that receives MIDI controllers. Knobby can be battery-powered, and includes an external power supply. List price is $89.99.
611 Laird Ln.
Lafayette, CA 94549
925/229-8875; Fax: 925/229-8875
Web site: www.encoreelectronics.com

Outboard Electronics TiMax
The Outboard Electonics TiMax System is a computer-controlled crosspoint matrix system with time delay at each crosspoint. This system provides complete show control and automation, along with the capacity for true audio imaging by manipulation and control of the time delay processing.
Dist. by Precision Systems Integrated
305 River Road
Tullytown , PA 19007
215/949-8300; Fax: 215/949-8400

Peavey MediaMatrix-NT
Utilizing the Windows NT 4.0 operating system, new LAN-based versions of MediaMatrix allow control and monitoring of MediaMatrix from anywhere in the world. Beyond increased speed, MediaMatrix-NT's client/server design isolates the system from invasive programs and allows the system to continue running even if an entire server goes down. Additionally, a full line of I/O devices (including remote controlled mic preamps) and DPU cards use CobraNet technology to further expand the networking concept.
711 "A" Street
Meridian, MS 39301
601/483-5365; fax: 601/486-1278
Web site: www.peavey.com

Stramp CP-3
The Stramp CP-3 SSL parallel-to-Sony serial converter is designed to control Sony 9-pin protocol devices (audio or video) from 4K, 5K and 6K Series SSL consoles. Transport motion functions to the SSL interface via a D25sub connector. Track record arming and tallies route via DL-41 (Cannon DL-96 pin) to select tracks 1-24. Available interfaces allow control of up to three Tascam or ADAT MDMs, as well as Digidesign Pro Tools (V. 4.2) from the SSL. List: $2,965.

Stramp SR-X StudioController
Designed to simplify dubbing in ADR studios, the SR-X generates the "Ready…1…2…3" countdown sequence, while a take length indicator shows talent where takes start and end. Take numbers can also be inserted into a video monitor. The SR-X switches off the air conditioner fan and starts a logging (safety) transport via GPI triggers. SR-X switches red light and the original sound on/off in the talent booth and generates a trigger for a beep one second prior (recorded on the logging transport). Trigger sources include video editors or DAWs with programmable GPIs, optional Sony RS-422 or MIDI.
Audio Vertrieb Peter Strueven GmbH
Am Muehlenberg 26,
D 25451 Quickborn, Germany
49/4106-4094; Fax: 49/4106-69895
E-mail: stramp@t-online.de

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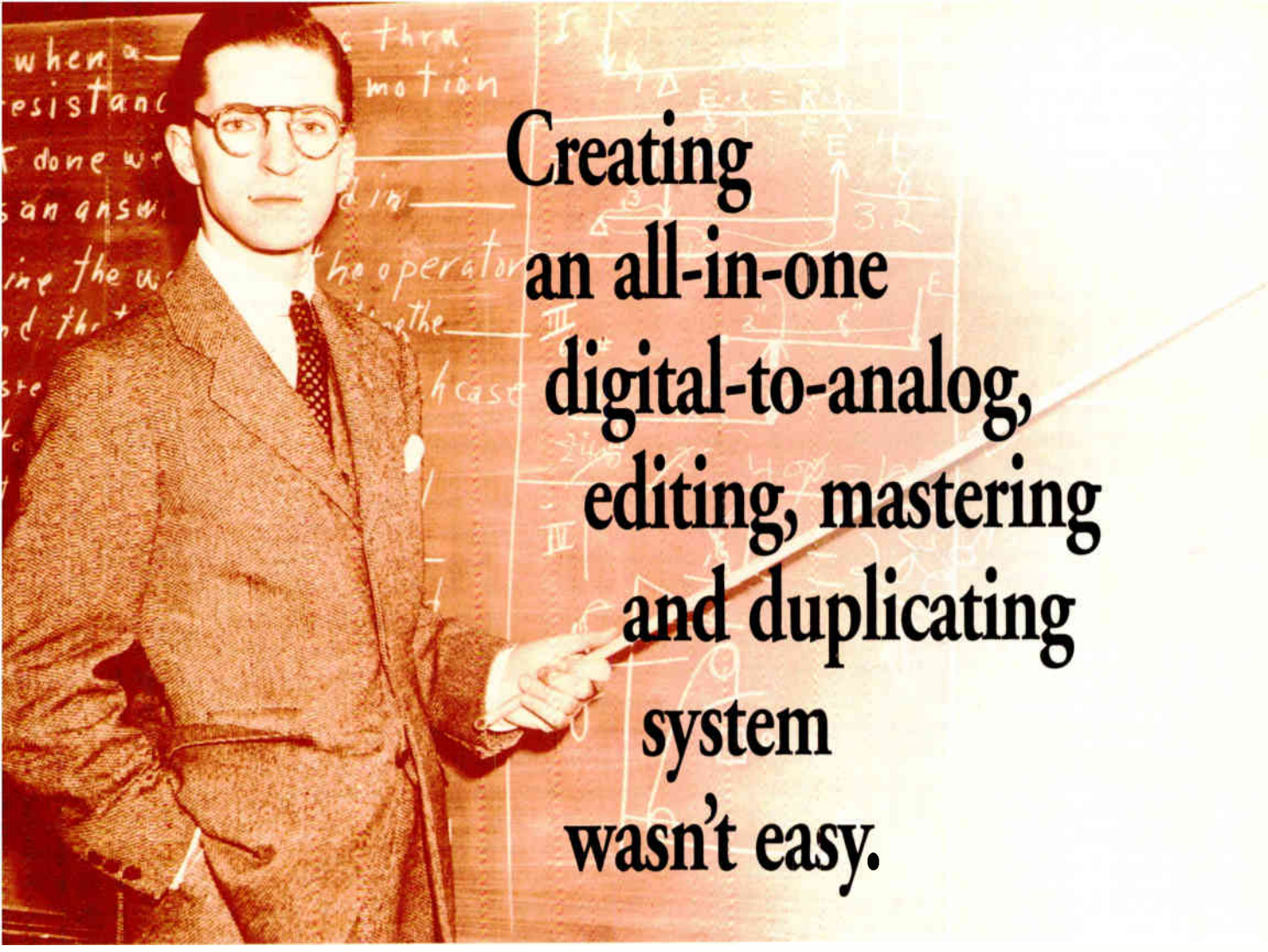

Creating an all-in-one digital-to-analog, editing, mastering and duplicating system wasn't easy.

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It's also easy to find out more. Simply contact us at **1-800-828-6107, ext. 498** or **612-887-7498**; e-mail us at **pro.sound@telex.com**; or visit our web site at **www.telex.com**.

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Uptown Automation for Windows 98

Uptown will introduce a new version of its fader automation software. Uptown for Windows will be released this fall with a completely new look with user-customizable screens and an improved mix filing system. Designed by former GML engineer Tom Schlum, Uptown for Windows will retain the same ease of use and user-friendly interface that continues to make it the world's most popular moving fader automation system.
9017-C Mendenhall Court
Columbia, MD 21045
410/381-7970; Fax: 410/381-5025
Web site: www.faders.com

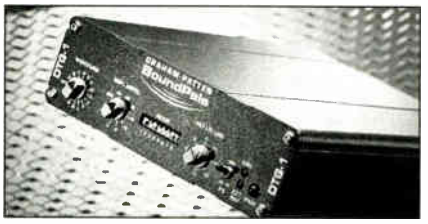
Test Equipment

AudioControl IASYS V1.15

IASYS is a breakthrough, patented system setup analyzer which measures in the time, amplitude and frequency domains. Using fuzzy logic, IASYS gives clear recommendations for delay settings, limiter adjustments, equalization and crossover frequencies and levels. Version 1.15 adds ⅓-octave spectrum analysis in addition to the powerful test already included. With all computing power built into a portable, rugged chassis, IASYS represents the new generation of useful and affordable test equipment.
22410 70th Ave West
Mountlake Terrace, WA 98043
425/775-8461; Fax: 425/778-3166
Web site: www.audiocontrol.com

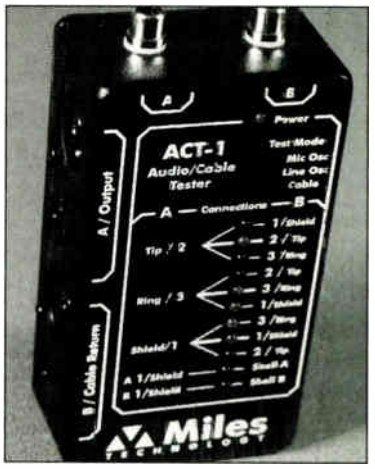
Gold Line TEF MLS for Windows

TEF MLS for Windows is a new Windows-based software package for the TEF20 analyzer, and features full Windows and NT compatibility.
Box 500
W. Redding, CT 06896
203/938-2588; Fax: 203/938-8740
Web site: www.gold-line.com



Graham-Patten DTG-1 Digital Test Generator

Graham-Patten's SoundPals™ line is a growing family of modular building blocks for digital audio signal processing, format conversion and distribution. The latest addition to the line is the DTG-1 Digital Test Generator. The DTG-1 generates sine waves at six pre-programmed frequencies, 1kHz tone with L/R channel ID, phase ID, sine wave frequency/amplitude sweep/step, white noise, pink noise, and silence. The DTG-1 is housed in a rugged, compact aluminum enclosure. It lists for $749.
PO Box 1960
Grass Valley, CA 95945
530/273-8412; Fax: 530/273-7458
Web site: www.gpsys.com



Miles ACT-1 Audio/Cable Tester

The ACT-1 Audio/Cable Tester checks all XLR, ¼-inch and RCA cables, and cables with any combination of those connectors. Unlike other testers, it immediately displays any cable wiring, shorts or opens, and XLR shell to pin-1 wiring. Tests cables from one end using a termination at the other end. The ACT-1 also provides a mic or line level test signal at 500 Hz. It is sturdy, compact and operates with a 9-volt battery.
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Web site: www.milestech.com

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Burlington A/V Recording Media, Inc.
106 Mott Street • Oceanside, New York 11572

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CIRCLE #178 ON PRODUCT INFO CARD

World Radio History

COLORSOUND
S Y S T E M S

Multiformat, Multisession/Multiuser environment for sound recording, editing and mixing.

In today's production facilities there is a growing need for adapting your work environment to handle many different projects at once. Rooms have to be multipurpose and pieces of a project need to be immediately available to several users at once in order to speed up the production process.

There is also a need to organise all the audio elements in a generic database where the client defines the search fields/options depending on its own organisation and work flow.

The system is designed with all this in mind. It can handle an unlimited number of sessions (i.e. rooms) with one or more users on each session. The philosophy is to centralise all the audio and processing resources on a powerful multiprocessor server, based on a heirarchical tree structure where any element, group of elements or full sections can be easily moved and shared over a number of remote control stations. Data does not need to be copied or run around a facility using "sneaker-net".

Features:

-Integrated and centralised audio recording, editing, mixing and retrieval environment.

-True multiuser/multisession environment with user access control via network.

-A Silicon Graphics Origin multiprocessor server offers all the scaleable processing power for an unlimited number of sessions. This means:

-The studio can accommodate different kind of jobs under workflow requirements.

-Projects, sections or individual elements can be freely distributed over rooms with no time spending.

-Multiple users can share any session.

-Tree structure of audio and mixing elements for:

- -Easy hierarchical editing.
- -Powerful processing at any level.
- -Comprehensive organisation in groups with database support.

-Project division and merging allowing easy workflow between studios.

-Comprehensive database with user configurable search fields and options. Full history storage of every element of each node (editing, processing, automation, etc).

-Scaleable up to hundreds of audio elements for playback, limited only by server processor and disk options.

-User configurable processing blocks (plug-ins) can be freely interconnected and nested for maximum flexibility on each individual node.

-Output busses available for multiformat mixing, including non-standard surround environments. An arbitrary number of speakers can be freely located in a virtual area.

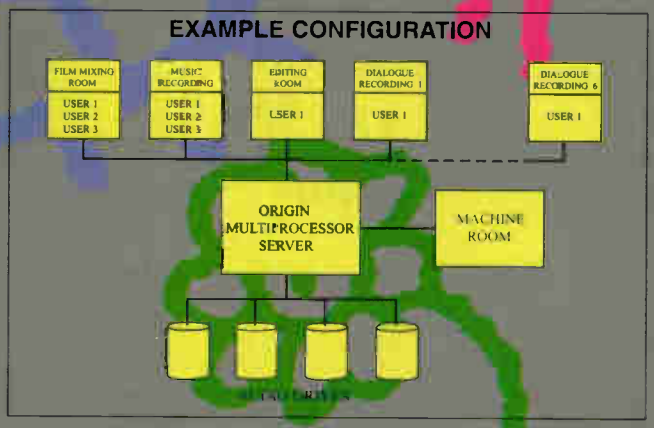
-Direct audio playback from PC, MAC and UNIX drives in all standard formats (AIFF, WAV, Sound Designer II, MPEG II, etc).

-64 bit floating point architecture throughout the system enables the best digital sound quality.

-Integrated hard disk video and serial machine control per session.

-Individual hardware controller surface modules that can allow for a custom built multiuser console.

-Full scalability of the system starting from one station.



Showing at the "Screening Room" in Hotel Milano, San Francisco (near Moscone Center during AES. September 26-29th). Book for a demo sending an E-Mail or Fax to COLORSOUND SYSTEMS.

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Tektronix UPL Audio Analyzer Firmware

New firmware for the UPL Audio Analyzer offers the ability to play back arbitrary sequences of any length. Files in both the .CPR format and the WAV format can be loaded and played back to carry out tests with music or speech signals. The analysis functions have been expanded to include ⅓-octave band analysis. This function is of vital importance for all acoustic measurements. In up to 30 ⅓-octave bands, the levels are measured simultaneously.
P.O. Box 3960
Portland, OR 97208-3960
800/426-2200; Fax: 503/222-1542
Web site: www.tek.com/measurement

Other Products

Anthro AdjustaCart

AnthroCarts are mobile, modular, incredibly strong furniture for all of your audio/music equipment. New is a 60-inch wide AdjustaCart, perfect for a MIDI setup. Comes with large adjustable keyboard area for sit down and stand up use. Prices start at $899.
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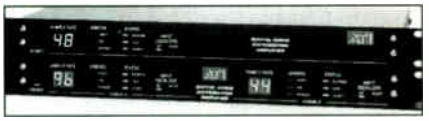
800/325-3841; Fax: 800/325-0045
Web site: www.anthro.com



ATI AES/EBU Distribution Amps

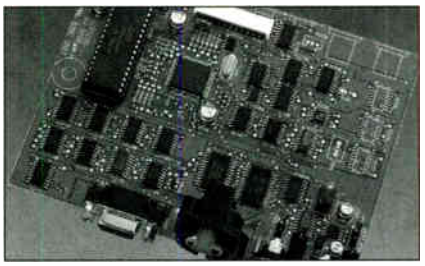
The AES/EBU Digital Audio Distribution Amplifiers are available in single and dual input configurations. Features include data reclocking and regeneration; up to 12 XLR or 24 BNC isolated outputs per channel, transformer balanced inputs; loop-thru inputs with switchable terminations; input cable equalization; input signal status and errors are decoded and displayed. Accepts sample rates from 27 to 96kHz. Standard sample rates of 32, 44.1, 48, 88.2 and 96kHz are displayed via numerical readouts.
328 W. Maple Ave.
Horsham, PA 19044
215/443-0330; Fax: 215/443-0394
Web site: www.atiguys.com

ATM Fly-Ware Structural Rack Series

ATM Fly-Ware has developed a structural system for flying equipment racks overhead. The SR Series of flying hardware is ATM Fly-Ware's answer to the need for a structural rack system suited for overhead suspension applications as well as installations with light-duty decking. Tabs are strategically located in recessed positions to allow the addition of rack panels to enclose the rack frame on all sides except the front. The SR Series also allows for ventilation at the sides, front and rear while creating an aesthetically pleasing appearance.
21000 S. Wilmington Ave.
Carson, CA 90810
310/834-5914; Fax: 310/834-3042
Web site: www.atm-fly-ware.com

Denon ACD-27

The new ACD-27 accessory card for Denon's DN-C680 professional CD player or DN-M1050R professional MiniDisc recorder/player enables either machine to emulate the industry-standard Sony VTR control protocol (used by the popular BVW-75 Betacam™) and respond to commands including Play, Stop, Shuttle, Jog and Cue. The ACD-27 is also fully compatible with the standard IEC-461 longitudinal time code format, permitting the DN-C680 or DN-M1050R to sync to SMPTE time code.
222 New Road
Parsippany, NJ 07054



973/575-7810; Fax: 973/808-1608
Web site: www.del.denon.com

Doremi V1m

After the great success of the low-cost highly popular V1 digital random-access video recorder (DVR), we are now shipping an even lower-cost unit, the V1m. Designed to "drop in" replace analog VTRs, the V1m offers full-screen NTSC (720x480 lines) and PAL (720x576 lines) resolutions. It records compressed video with two audio tracks, time code and VITC. The V1m will follow your audio workstation, slow motion controller and video assist software.

Doremi V1-X Server

Built with reliability in mind, our X-based server will give you the peace of mind you need when operating and maintaining a video server. The V1-X-Server allows up to 24 channels of video to share common storage. Monitoring stations running Mac OS, Windows 95/98 or Windows NT4.0 can also be connected to monitor the server activity and edit video and audio on any of the channels.
3631 Cahuenga Blvd. West
Los Angeles, CA 90068
323/874-3411; Fax: 323/874-3401
Web site: www.doremilabs.com

EDNET DolbyFax+Plus Networking

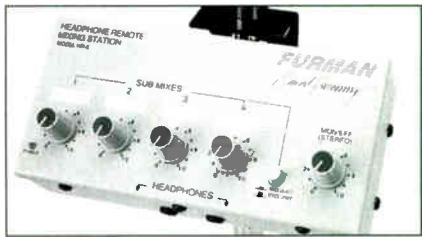
An integrated network system for long distance collaboration during recording, production, editorial or audio mix approval. Dolby AC-2 encoded 2-channel stereo audio with AES/EBU/SPDIF digital and analog input/output is transmitted bidirectionally, with simultaneous SMPTE timecode, RS-422 remote machine control, and chase synchronization of video or DAT deck. ISDN connections to other facilities are established through the user-friendly front panel interface. Options: hand-held diagnostic terminal; rugged travel case.

EDNET EDlink+Multipoint

A networking service providing global digital audio connectivity with up to ten (10) concurrent sites form a single uplink source. Available compression standards are MPEG Layer II or III, apt-X, Dolby AC-2, G.722 and others. Connectivity is via ISDN (single or multiple), standard POTS phone line, or outbound connection to satellite for even broader distribution. Options: Multichannel audio connections (up to 8 tracks) specially arranged between up to three concurrent sites.
One Union Street
San Francisco, CA 94111
415/274-8806; Fax: 415/274-8801
Web site: www.ednet.net

Fender Passport P-150

The Passport P-150 is a fully self-contained sound reinforcement package. It includes microphone, 4-input mixer, 75 w/channel stereo power amplifier and two speakers that snap together to form a convenient carry case. List price: $699.99.
7975 N. Hayden Rd.
Scottsdale, AZ 85258
602/596-9690; Fax: 602/596-1384
Web site: www.fender.com



Furman HDS-6 Headphone Distribution System

The HDS-6 rackmount distribution system provides a studio console interface and the amplification necessary to drive a chain of HR-6 personal headphone mixers. Up to eight custom headphone mixes can be created right on the studio floor; each HR-6 remote mixer provides five volume controls: four monaural (for mixer channels or buses), plus one for stereo mix or effects. List Price: HDS-6 with one HR-6, cables and mic stand clip: $349. Additional HR-6s: $129 each.
1997 McDowell Blvd.
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707/763-1010; Fax: 707/763-1310
Web site: www.furmansound.com

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Intelix A/V Balun Series

The Intelix A/V baluns allow audio and video equipment to be routed through Cat 3 or 5 Unshielded Twisted Pair (UTP) cable. The Intelix V1 Video Balun allows the transmission of composite baseband video signals over a structured wiring system. The V2A2 A/V Balun allows the transmission of 2-way composite baseband video and audio signals. The V3 allows the transmission of composite baseband red/green/blue signals. The V1A2 allows the transmission of composite baseband video and stereo audio signals.
8001 Terrace Ave.
Middleton, WI 53562
608/831-0880; Fax: 608/831-1833
Web site: www.intelix.com

Lectrosonics Wireless Intercom/IFB System

256 programmable UHF frequencies in 100 kHz steps for each of nine different blocks from 537.600 MHz to 793.500 MHz. The T1 transmitter features a DIP switch selectable direct interface to RTS and ClearCom intercom systems or mic/line-level inputs. The R1 receiver is a compact, all-aluminum design that operates on a 9-Volt alkaline or lithium battery with a scanning process to locate and store frequency settings into memory.
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Rio Rancho, NM 87124
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Web site: www.lectro.com

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TRACKING

Surround your talent and mic with *Studio Traps* and turn any room into a great sounding studio. Our Quick Sound Field iso system can be set up to get the traditional dead studio sound or simply rotate the traps to dial in that bright and clear, high presence effect of live sound.

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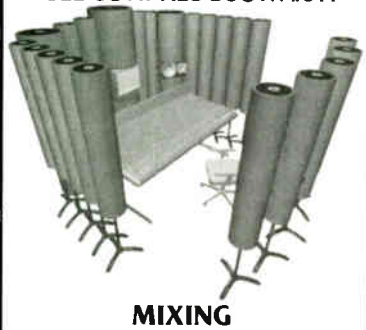

MIXING

Enclose your monitors, console and mix position with *Studio Traps* and convert any room into a world class control room. Our ATTACK Wall iso system creates an acoustic subspace that delivers a very accurate and powerful bottom end, along with precise detail and pinpoint imaging. Your mix will truly hold together.

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CIRCLE #180 ON PRODUCT INFO CARD

Middle Atlantic Oak Laminate Racks

The OBRK Series of studio-grade oak laminate racks from Middle Atlantic are available in 8, 12, 16 and 20-space versions measuring 18-inches deep. The slope-faced OSR Series comes in 16- and 24-space versions measuring 19½ inches deep at the top and 23 inches at the bottom. Suggested retail prices for the OBRK Series begin at $169 USD. OSR Series list prices start at $300 USD.

Middle Atlantic SPK Series Speaker Stands

Featuring "tipless" six-ply, triangular-shaped laminated steel bases and fully adjustable tops, the new SPK Series of loudspeaker stands from Middle Atlantic are offered in model configurations standing 36 and 42-inches high. Computer dimensioned to optimally resist resonance, both models are equipped with rotating top platforms to facilitate precise loudspeaker positioning. Suggested retail price for a pair of 36-inch stands (model SPK-36) is $178. A pair of 42-inch stands (model SPK-42) lists for $199.
North Corporate Dr.
Riverdale, NJ 07457
973/839-1011; Fax: 973/839-1976

Musicam TEAM (T1/E1 Audio Multiplexor)

TEAM, the newest product from Musicam USA, is a universal audio transmission system for T1 or E1 leased lines. Modular construction and support of both linear and multiple audio coding standards make TEAM ideal for STL use and future multiple audio transmission requirements. TEAM lets you assign the data capacity of a T1 line up to six stereo or 12 mono audio channels. Deutsche Telekom, the primary provider of audio circuits in Germany has ordered 700 units.
670 N. Beers St., Bldg. 4
Holmdel, NJ 07733
732/739-5600; Fax: 732/739-1818
Web site: www.musicamusa.com

Omnirax Synergy Series

The Omnirax Synergy Series provides a flexible furniture solution for most mixers, and will house mixers from Mackie, Yamaha, Tascam, Soundcraft, Ramsa and others in a wide variety of configurations. Versatile Synergy Series models come standard with a padded wrist rest and a 12-space rack bay. Optional solid mahogany "Cheeks" add warmth and elegance. Overall dimensions: 41.5Hx43Dx78.13-inches W to 121.75-inches W. Retail price from $999.95 to $1,899.95.

Omnirax Coda-D8

The Coda-D8 provides a compact ergonomic workstation for the Mackie Digital 8-Bus Mixing Console. Sleek contours and ergonomic design make for comfortable and creative sessions. Features include a bridge for both video and near-field monitors, adjustable sliding computer keyboard and mouse shelf and 18 rack spaces for outboard equipment. Casters ease mobility and access to cables. Overall dimensions: 38.5Hx71.25Wx38.5-inches D. Price: $899.95.
PO Box 1792
Sausalito, CA 94966
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Sound Ideas "Larger Than Life" SFX Series

The Larger than Life SFX Series is an astounding collection of awesome audio effects, designed to make an impact! Hand-picked from the extensive archives of Sound Dogs, one of Hollywood's most elite production teams, these sound effects are undiluted and full strength. We're talking BIG—explosions, gunfire, thunder, horror, crashes, bangs and much more. For productions that are serious about sound, the Larger Than Life SFX Series delivers full power, force and energy.
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Web site: www.sound-ideas.com

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Start your personal studio with the ultimate workstation set-up. This fine maple countertop with meter bridge shelf and a set of speaker wings is an ideal solution to organizing your work space. Fits two Yamaha 02Rs or a Mackie 32•8 or just about any standard mixer up to 9-inches high. The speaker wings can handle up to 50 lbs. each. The unit can comfortably house our standard RA14 racks, on either side underneath.
134 Bay Street
Jersey City, NJ 07302
201/222-2826; Fax: 201/222-5457
Web site: www.taytrix.com

Telex Intercom Keypanels

Telex introduces four new cost-effective keypanels for the RTS™ line of Matrix intercoms (ADAM and ZEUS). The new user stations include programmable units suitable for rack, wall box and portable mounting options. The units are fully compatible with all existing Telex RTS Series Matrices, which provide a wide variety of communications options and 44.1 kHz 24-bit processing for clarity of communications. The units are end-user priced from less than $600 and up.
9600 Aldrich Ave. S.
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612/884-4051; Fax: 612/884-0043
Web site: www.telex.com

Telos Systems ZephyrExpress™

The ZephyrExpress combines a full-featured ISDN digital audio codec, ISDN terminal adapter and three digitally controlled mixers, all in a portable rugged chassis. 20kHz stereo audio can be transmitted from the field on a single ISDN phone line. The mixer section features two mic inputs with 48-volt phantom power, lowcut filters, limiters, plus a stereo line-level input. Weighing only 7 pounds, the ZephyrExpress is perfect for remote concerts and live events. $5,280 list.
2101 Superior Ave.
Cleveland, OH 44114
216/241-7225; Fax: 216/241-4103
Web site: www.zephyr.com

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The Ultralife U9VL-FP Lithium 9-Volt Battery lasts up to four times longer than alkaline 9-volt batteries, including Duracell Procell. It maintains an exceptionally flat, stable voltage during discharge, which means more consistent signal quality from wireless microphones and other battery-powered audio-video equipment. The U9VL-FP comes sealed inside a protective pouch for maximum off-the-shelf energy and guaranteed freshness. For more information, call 800/332-5000.
160 Summit Ave. Summit Plaza
Montvale, NJ 07645
201/930-4900; Fax: 201/930-1144
Web site: www.ulbi.com

White Instruments DA Amplifier #4928

White will introduce a Distribution Amplifier Model #4928. What's significant about this distribution amplifier is that all of the controls will be on the rear-panel so they are out of the way from "uninvited" adjustments. All input and output levels are controlled by precision dip-switches in 1 dB increments for repeatable settings. Dual input models can be mono summed. All units feature optional high-quality output transformers.
1514 Ed Bluistein Blvd.
Austin, TX 78721-3500
512/389-3800; Fax: 512/389-1515
Web site: www.whiteinstruments.com

XTA DS800 Audio Distribution System

An 8-input, 32-output self-contained audio distribution system. In standard format, each input is split into two transformer-isolated outputs and two actively balanced outputs. The unit can be internally reconfigured for up to 32 outputs. Each input features remote-activated pad, adjustable input gain, mic/line switch, 48V phantom power, five-segment LED metering and "listen" facility (headphone output and gain control). When using multiple units the "listen" facility can be ganged together to a single headphone output.
Riverside Business Centre, Worcester Rd.
Stourport UK DY13 9BZ
44/1299/879-977; Fax: 44/1299/879-969
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For more on these new products, read our AES show report in next month's *Mix*.

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CIRCLE #182 ON PRODUCT INFO CARD

World Radio History

—FROM PAGE 94, MIKE HEDGES

I was working with the Beautiful South. I had two MKH40s, and we used them a lot on acoustic guitars, piano and backing vocals. They sounded great, so I bought half a dozen more, and also bought some MKH20s and MKH30s. So I started off with two, and I now have more than 20. I think they were originally designed for classical recording, because they have very high gain and very low noise. This means you don't have to use a lot of gain on the mic preamp, and you get a very clean sound. They also accept massive amounts of volume, so you can put it against a guitar amp on full and it will take it. And they have a very true, very natural sound. We now use Sennheiser microphones two-thirds of the time.

Despite your impressive selection of vintage and analog gear, you're not an anti-digital Luddite, it seems. I understand your studio has three Pro Tools systems—one 32 I/O and two 16 I/O, totaling 64 real tracks.

Pro Tools is probably the biggest step forward in recording in the past 25 years. But not because it's a replacement for the tape recorder. Most hard disk recorders are designed to replace the tape recorder, and to me that's just weird. There's no way I'd use a hard disk to replace a tape machine, because a) they don't sound as good, and b) I just don't see the point.

Hard disk recorders can't record backward, you can't turn the tape over, you can't record half and double speed, and get the same effect as a tape recorder. So I don't use Pro Tools as a tape recorder. Instead, I see it as a very easy interface to experiment with sound and manipulate sound. The editing possibilities in Pro Tools are just streets ahead of anything else. I don't use it for its EQ or compression, because it's too drastic. But I do use it for things like turning sounds over, changing the relative pitch of a section of the sound, changing the position in the stereo spectrum whilst changing the pitch whilst having it go partly backward and partly forward. Things like that. It does anything. It's fantastic.

PHOTO: PAUL TINGEN

Hedges' control room (formerly a ballroom) features a vintage EMI console from Abbey Road, and Pro Tools.

Why do you have three systems?

I do different things on them. You have to be careful with Pro Tools that you use it to enhance the music, and not to the detriment of it. So I have different things set up on different systems. We use one to run certain kinds of effects, the other will be chopping up pieces and creating other effects, and I may use one as a slave machine. When I have 16 tracks of strings, I may put them into Pro Tools and lock it up to the 16 and 24-track analog tape machines. I'll occasionally use Pro Tools in the mix as well, as an effect. The stuff in Pro Tools can be slipped in time against other instruments, or done backwards or repitched, or the sound can be changed dramatically, or put into Q-Sound or treated with any of the other TDM plug-ins. And we mix to half-inch analog—30 ips, no Dolby—DAT and Pro Tools. At the chateau, that's to a Telefunken 2-track tape recorder and a 20-bit Panasonic DAT. Half-inch tape is my mastering medium of choice, and the DAT becomes the listening copy, so we don't have to touch the master for playback. And we may do additional editing and sequencing and crossfades in Pro Tools after the mix, and then we'll put that down to half-inch, as well.

What do you think is the core contribution that you make to a band's record when you produce them?

I think the essence of much of my work is definitely a vibe thing: making people feel comfortable and getting good performances out of them. I don't think there's a Mike Hedges sound. I don't have a formula. How I work depends entirely on what the band is after and how they work and how they sound. They write the songs and usually know what they want.

You occasionally get a band that needs a lot of production input and where you have to change a lot, but that's rare. Most bands know what they're after, if not in production terms, then in terms of the emotional effect they want to have on the listener. That's the central issue, and my job is to help them create sounds and arrangements that evoke those atmospheres and emotions in the listener. Capturing a great performance with fantastic sonic quality is combining the best of both worlds. ■

Paul Tingen is a freelance writer and musician based in the UK.

PHOTO: FRANCOIS JANIN

Studios Guillaume Tell (Paris) installed a Sony OXF-R3 ("Oxford") console in its Studio B this year.

—FROM PAGE 89, MUSHROOM STUDIOS

phones have original tubes in them. They just don't wear out."

Another longtime fixture at Mushroom is freelance engineer Rolf Hennemann, a Vancouver native who is credited with discovering Heart and bringing them to Mushroom. He says he always comes back to the facility because "it's like coming home. There's overstuffed furniture; it's more of an old-fashioned studio. Some people are scared of the board, because it's not an SSL or whatever they're used to, but if they just open their mind a little bit, it's really user-friendly, and that combined with the great natural room sound—I know that room well enough to get a really good drum sound in half an hour."

Memphis-based engineer Joe Hardy (Steve Earle, The Replacements, ZZ Top) has also recorded at Mushroom. He was up there last winter to record Colin James' most recent album, a jump blues collection that went Gold in Canada after only two-and-a-half weeks. Hardy says that Mushroom is "kind of funky, but it was pretty much perfect for what we were trying to do.

World Radio History

There aren't that many rooms like that anymore where all the musicians can go in and play live, and acoustically the room is quite good."

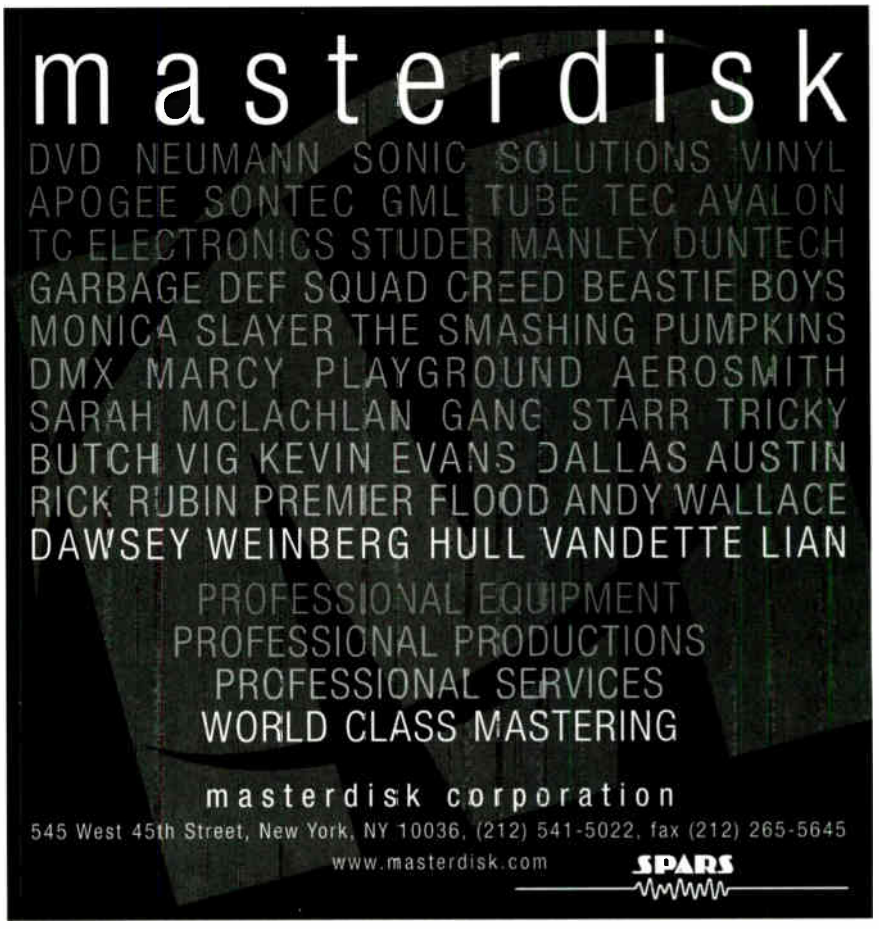
For the Colin James recordings, Hardy set up drummer George Raines in the live room, and the rest of the musicians in the main studio. "The drummer always gets the big room on rock records," he says, "but we weren't going for that type of sound. We were doing stand-up bass and horns and all that kind of stuff—like what the Cherry Poppin' Daddies try to do, but this is like the real deal, so it made perfect sense to use a facility like this."

Hardy brought along some of his own microphones and his own monitors, as he does for all of his sessions, but on upright bass and sax, he used the studio's vintage RCA ribbon mics. "These things were the size of a poodle," he says, "and they had weird leather straps on them. They were oddball cool things, and they sounded great—real legit for what we were trying to do."

Obviously, a facility like this wouldn't be much good if the equipment weren't well-maintained. The studio benefits from Richmond's many years' experience working on gear, and maintenance tech Charlie Knowles has been on contract practically since Richmond started; he and the studio's assistant engineers implement a meticulous system of testing and maintaining the gear. And studio manager Valerie Biggin makes sure that whatever clients want beyond the facility's equipment list (which includes an extensive selection of state-of-the-art recorders, outboard gear, near- and mid-field monitors, and mics as well as the vintage stuff) is obtained—though she says that the most important quality the studio has is its vibe.

"I'm proud of the fact that people can relax here; people bring their dogs when they come to work, and they bring their kids. I brought my newborn baby here when she was only six weeks old. I had a playpen in my office, and I had her here for almost her first year, and all the clients were great with it—and I had so many hands to help! It's just that kind of place."

Charlie Richmond explains the studio this way: "I'll drive a car that's not pristine or new," he says. "but it better be in superb mechanical condition, and our studio is much the same way. It may not look as slick as some brand-new facilities, but it sounds great, and that's what goes on the record." ■



CIRCLE #183 ON PRODUCT INFO CARD

CIRCLE #184 ON PRODUCT INFO CARD

World Radio History

Audio for DTV

THE FORMAT, EXPLAINED

Digital television (DTV) is coming to a display screen near you—soon. The transition will bring higher image resolutions, wider screens and multichannel digital audio, but not without cost and a steep learning curve for producers, broadcasters and consumers alike.

Don't ask anyone involved in the transition to digital television how things are going unless you've got a well-stocked bar and a few hours to kill. Contrary to what the government had in mind when they ordered the transition process to start this fall, all is not well in the land of DTV.

By Skip Pizzi

World Radio History

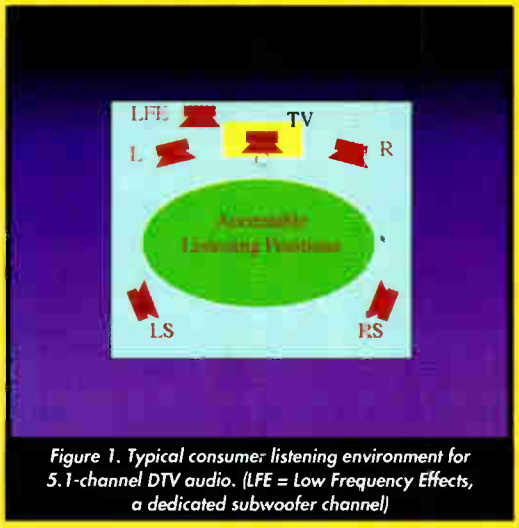


Figure 1. Typical consumer listening environment for 5.1-channel DTV audio. (LFE = Low Frequency Effects, a dedicated subwoofer channel)

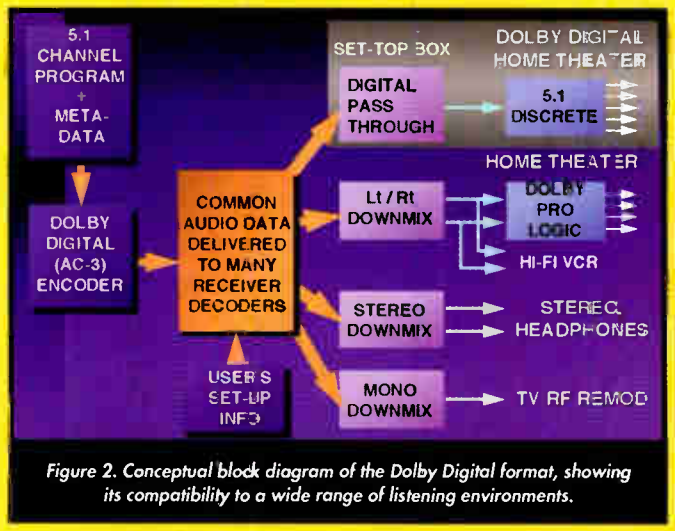


Figure 2. Conceptual block diagram of the Dolby Digital format, showing its compatibility to a wide range of listening environments.

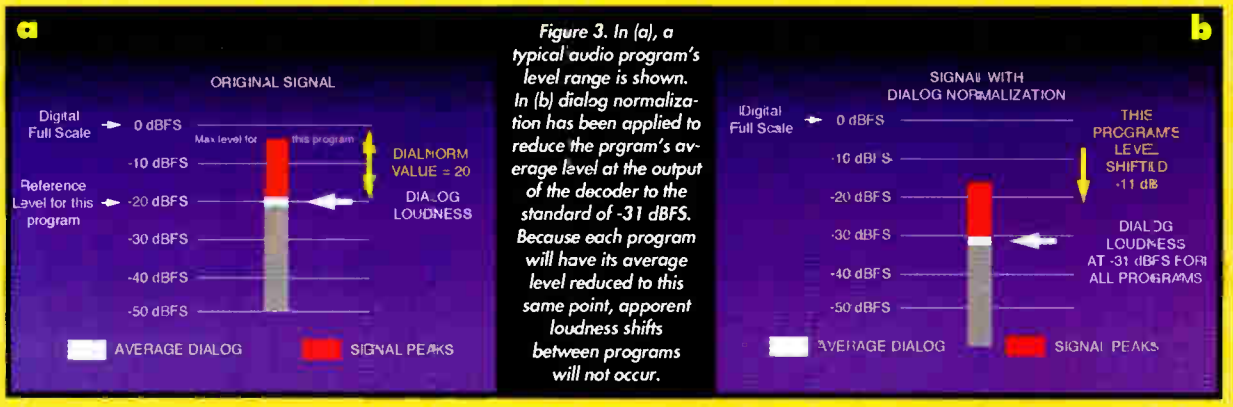


Figure 3. In (a), a typical audio program's level range is shown. In (b) dialog normalization has been applied to reduce the prgram's average level at the output of the decoder to the standard of -31 dBFS. Because each program will have its average level reduced to this same point, apporent loudness shifts between programs will not occur.

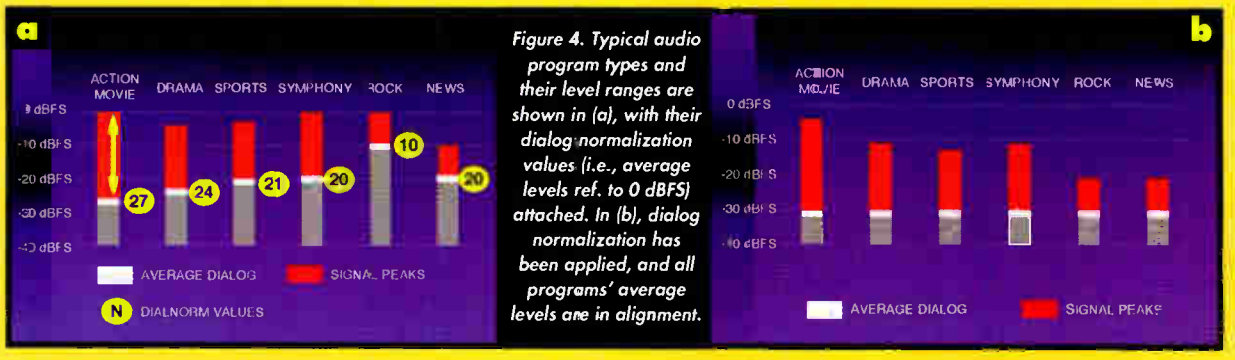


Figure 4. Typical audio program types and their level ranges are shown in (a), with their dialog normalization values (i.e., average levels ref. to 0 dBFS) attached. In (b), dialog normalization has been applied, and all programs' average levels are in alignment.

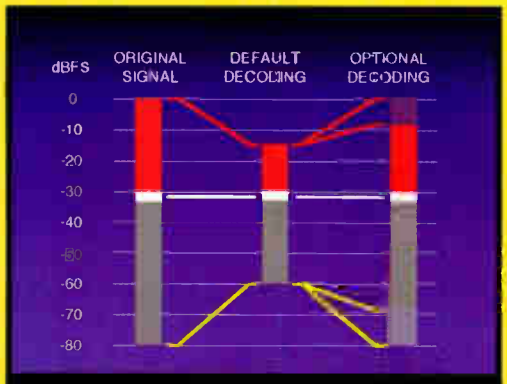


Figure 5. The dynamic range control feature of Dolby Digital (AC-3) allows several types of audio compression/limiting to be applied by the decoder, depending on the listening environment or user's selection.

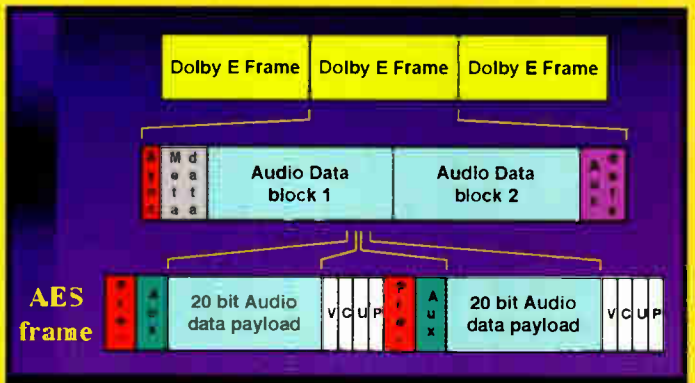


Figure 6. Each Dolby E frame contains two subframes with audio data, metadata, auxiliary data and sync data. The audio data blocks are in the form of AES3 subframes, where the 20-bit audio payloads actually carry compressed multichannel data in the "non-audio" format.

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World Radio History

CIRCLE #185 ON PRODUCT INFO CARD

Most of the problems revolve around the three C's: Cost, Cable and Consumer Confusion. (Okay, that's four, but one's just alliterative.) The receivers will be expensive, even after economies of scale set in. More important, cable television systems, which serve the majority of U.S. homes, may not carry all of the DTV broadcast channels, or their set-top boxes may not integrate easily with some sets. Worst of all, the massive confusion surrounding DTV could sentence the format to early oblivion due to non-acceptance by consumers. Although few really believe that this worst-case scenario will happen, the battles continue to rage on key issues, even while broadcasters in the largest markets (and their networks) are supposed to be installing equipment and ramping up for the start of DTV service.

One bit of good news, relatively speaking, is the audio format for DTV. Compared to the contact sport taking place on the video side over scanning and modulation formats, aspect ratios, colorimetry, up/down conversion and other issues, DTV's audio environment seems positively serene. But there's more than meets the ear here, as well. While the news is mostly positive, there's a lot of it, and it all needs to be learned by the audio-for-video community in pretty short order. So let's get to it.

MULTICHANNEL TV SOUND

The home theater movement of the past few years has been based on the Dolby Surround format, which is matrix-encoded into the two channels of analog audio found in a growing number of TV broadcast/cablecast programs, and most VHS videotapes and laserdiscs. (Dolby calls the surround-encoded 2-channel signal LT and RT for "left total" and "right total.") This is nominally a 4-channel format, providing left, center and right front channels, plus a bandlimited (100 to 7k Hz) mono surround channel that is fed to two or more rear speakers. If a subwoofer is used, it's generally fed by lowpass-filtering a mix of the three front channels at the receiver. Dolby Pro Logic decoders do a pretty good job of sorting all this out from the stereo input signal, but it's still not quite discrete multichannel sound, as any film mixer familiar with the vagaries of the surround matrix can tell you.

In contrast, DTV's audio provides up to six discrete channels: left, center and right front, plus full-range left and right surrounds, and a bandlimited (25 to 120 Hz) low-frequency effects (LFE) channel (See Fig. 1). This is called a 5.1-channel system, where the "0.1" arises from the limited bandwidth of the LFE channel. (This channel was originally intended to cover only the lowest octave of the audio range [approx. 50 to 100 Hz], therefore giving it about one-tenth the bandwidth of the other channels.)

Note the differences between 5.1 and Pro Logic Surround decoding: 1) In 5.1, the connection between the sound mixer's output buses and the listener's speakers is direct, not subject to the limitations of a 4-2-4 matrix encode/decode process. 2) The surround information is provided in full bandwidth and in stereo, allowing much more dramatic and realistic atmospheric soundfields. 3) Digital audio provides better and more consistent frequency response and dynamic range. 4) The LFE channel allows producers to better control what is fed to the home-theater subwoofer.

DOLBY DIGITAL (AC-3) CODING

To minimize the data-rate impact of this multichannel digital audio signal, perceptual coding ("data compression") is

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used. The U.S. DTV system has selected the Dolby Digital (AC-3) coding format as its standard audio transmission format, carrying the 5.1-channel signal in 384 kb/s of data. Without such compression, this signal would occupy more than 4 Mb/s in linear PCM form.

Dolby Digital is also included in the NTSC versions of DVD video discs and players, as well as hundreds of recent laserdisc products. The DVD-Video format implements AC-3 at a maximumn 448 kb/s data rate, however, which has been proposed as a late change to the DTV format but has not been approved. (Dolby Digital itself can operate up to 640 kb/s.) Other variations of Dolby Digital appear in the more recent versions of the RealAudio online streaming audio format from Real Networks (V.3.0 and above) and Liquid Audio's streaming preview and downloadable music formats. For marketing purposes, Dolby is now calling for consumer hardware and media that implement the Dolby AC-3 algorithm to be labeled "Dolby Digital."

Dolby Digital encoding is currently possible using stand-alone hardware (from Dolby only) or via peripheral hardware for computer workstations (both PC and Mac, from a variety of manufacturers). Software-only encoders are also available from several sources, but these are not able to encode in real time on typical platforms.

DOLBY DIGITAL'S ADAPTIVE CAPABILITY

The rapidly growing quality and quantity of home theater systems are widening the range of audio reproduction systems that program producers must consider when mixing their soundtracks. The coming of DTV will only further stretch this spectrum of possibilities to reach from the proverbial 4-inch speaker in the TV to a killer 5.1 system—with stereo and Pro Logic hardware in between. (See Fig. 2.)

Because of this, the most welcome change that Dolby Digital may bring to audio-for-video is its ability to address a wide variety of listening environments with something other than a one-size-fits-all approach. It does this by including some dynamic "instructions" that travel alongside the audio in the Dolby Digital stream as auxiliary data. This so-called Dolby Digital metadata provides scalable decoding information about the audio, which can be interpreted in different ways by different receivers. This allows a program's mix to be tailored by its producer to the general environment in which it will be heard, but without requiring multiple versions of the soundtrack to be broadcast. The same audio data is simply decoded and reproduced in different ways depending on the receiver's configuration. Bandwidth is conserved, yet multiple variations of the soundtrack are effectively broadcast, each to their appropriate listening environments.

"We (producers) do a little bit more work—and in the end we'll probably find it's not that much more—so that every consumer can just get great sound without even knowing why," says Steve Venezia, a film applications engineer in Dolby's Los Angeles office. Venezia expects producers to jump on the metadata bandwagon after some exposure to its value. "Once the tools are available, a lot of the fear will be gone. And once they can hear the encode/decode process and understand what the metadata can do, they'll embrace it."

Until then, the workings of the metadata concept may be somewhat daunting. The learning process begins with an overview of the primary features involved: channel format, downmixing, dialog normalization, dynamic range control and mix level.

CHANNEL FORMAT

The most basic item that metadata can communicate to the decoder is how many audio channels are currently being encoded in the Dolby Digital stream. While movies and sports are likely to be provided in full 5.1, some dramas and sitcoms may be in stereo, and news might remain in mono.

Some helpful Dolby Digital nomenclature in this regard is the audio coding mode. It refers to the number of channels and their location in the form F/R, where F is the number of front channels and R is the number of rear channels. For example, 5-channel surround is called 3/2 mode, while stereo is 2/0, and mono is 1/0.

DOWNMIXING

A Dolby Digital-encoded 5.1-channel audio program can be decoded to six discrete audio outputs, or "downmixed" to any of several other modes. These alternate modes include surround, stereo or mono. (Not all decoders will offer all downmixing modes.)

Note that the LFE channel is not included in any of these downmixes, so any audio directed to this channel will not appear in any playback environ-

World Radio History

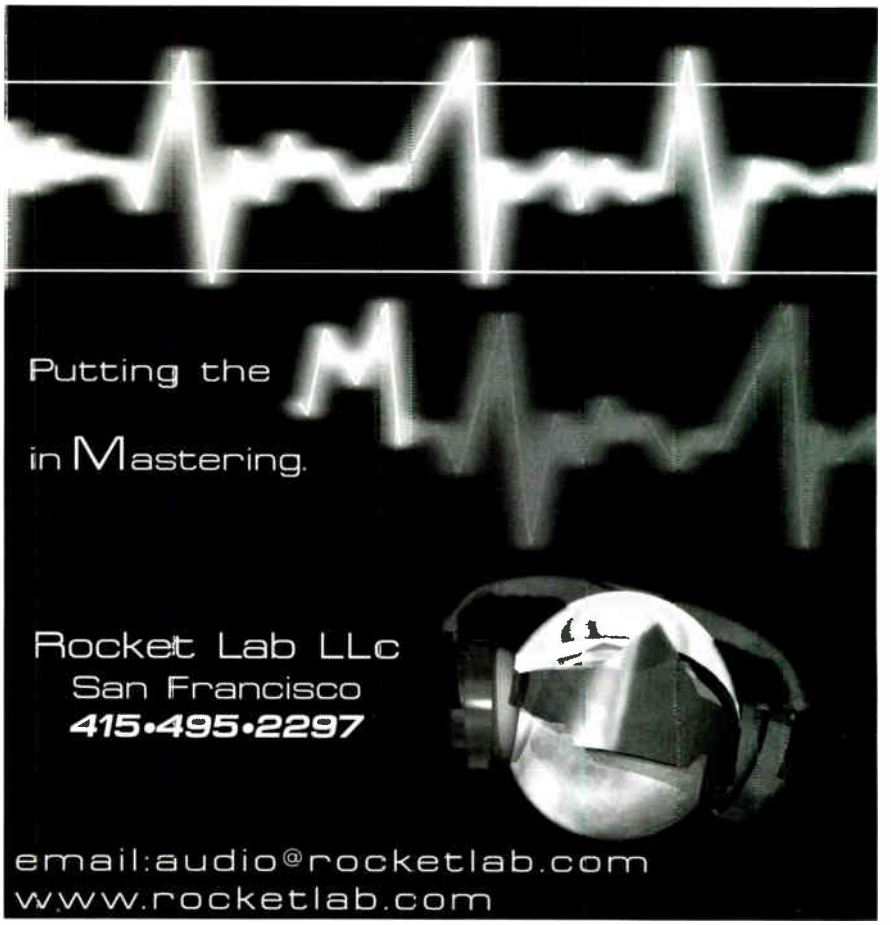
ment except one using the discrete 5.1-channel configuration. (Dolby Digital decoders also incorporate bass management features, which allow the user to determine how LF audio is redirected from one or more of the main speakers over to the system's subwoofer. This helps ensure that all of the bass carried in any of the channels is properly reproduced.

DIALOG NORMALIZATION

This feature has nothing to do with surround sound per se but attempts to solve another common problem in TV audio: the wide variation in apparent loudness between different programs' audio content. A program's producer chooses one of 31 different dialog normalization (DN or Dialnorm) values, and this data is carried in the Dolby AC-3 metadata. Each step represents a 1dB change. The listener's Dolby Digital decoder uses this value to set its audio output level for smooth loudness transitions between different program-content types. Of course, the absolute audio listening level is set by the user's volume control, but once set, DN should eliminate the need to adjust this control as program types are changed.

The term "dialog normalization" comes from the film-sound community, and its effect is not limited to only dialog content, as you might think. It applies to the entire mix, but it is generally a reference to dialog since dialog is typically held at a relatively constant level throughout the program and is the sound element people most commonly use to determine the appropriate listening level at home. Further, the DN effect is not actually applied to the encoded program but appears simply as metadata that the decoder interprets and uses to adjust its output volume setting. This allows each program to best utilize the dynamic range of digital storage and transmission media, and apply desired audio processing for aesthetic reasons, but still fit within the context of a listening environment that selects the program from among many choices. DN is also not affecting the dynamic range of the program (like a compressor or limiter would), but simply setting the output level of the audio decoder.

The assignment of a program's dialog-normalization value is based on the average loudness level of its audio content. The DN value is the difference in dB between the maximum level possible (0 dBFS) and this average loudness level, as Fig. 3 illustrates. The smaller



CIRCLE #189 ON PRODUCT INFO CARD

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World Radio History

BAD ANIMALS/SEATTLE TACKLES DTV

BY STEVE LAWSON

Creating multichannel audio soundtracks is bringing the fun back to audio recording. At Bad Animals/Seattle, we recently had the challenge of producing a 5.1 mix for Harris/PBS/DTV Express, a 66-foot traveling Digital Television road show that is currently visiting 40 cities over 15 months to inform educators and municipal leaders about the opportunities and possibilities of DTV, and to help prepare broadcasters for a rapid, cost-effective digital transition. You might have seen the truck on the floor at NAB.

So what's involved in mixing for DTV? The first trick (unless you have a DTV recorder to slave to your workstation) is to get an NTSC dub that will work with your rig. For us, that proved to be somewhat problematic. Our video counterparts don't need to worry as much as we do about timecode. We need to operate at a frame rate our machines will recognize—like 29.97. What we first received was somewhat different—a 30 fps pulldown from a 60 fps HDTV master. No problem—we just took that submaster to our friendly video neighbor and did an insert edit of video onto a tape that had been prestriped at 29.97.

The DTV Express features a fun "shoot-em-up" action drama, sports, the newscast of the future and, of course, commercials. So it was audio heaven for sound designers Mike McAuliffe, Gary Littell, Dave Howe and Suzie Brutke.

For the drama, the team created surround ambience for a party scene and had a field day with the actual gunfight and "surrounding" explosions. There's nothing like being able to use that dedicated subwoofer channel to shake the room when the big one detonates. The newscast of the future is much like the newscast of today, but the ambiences and music bumpers are in surround. The sports featured a baseball game with the crowd enveloping the viewer. It's a treat to be able to create sound design tailored to the front and rear, and side to side.

the difference between the maximum and the program's average level, the lower the DN value it is assigned. The lower the DN value is, the lower the output volume of the AC-3 decoder is set in direct proportion. This means that "louder" programs will be played back at lower volumes than those in which the average level is already "quieter" (i.e., farther away from maximum level). Fig. 4 shows some examples of different program types and their typical DN values. Note that after normalization, all average levels are aligned to an equivalent value so they have essentially the same perceived loudness

What did we learn in this first experience with DTV? First and most important, that it's nothing to fear. Our Yamaha 02R and Avid AudioVision had more than enough horsepower to get the job done. We monitored through Meyer HD1s left and right, Tannoy PBM 6.5 in the center, with the self-powered Genelec 1029s in the rear. The six discrete stems were mixed to a Tascam DA-88; HD Vision in Dallas handled the encoding to the Dolby Digital format. We learned that when editing tracks for surround, you need to really lay-up the sound effects "fat." As always, it's better to have too many elements than too few at the mix.

And we learned that, yes, there are new timecode gremlins lurking in our future. Wouldn't it be great if manufacturers could make audio equipment work more like video equipment and just use timecode as edit "triggers"? But in the meantime, DTV is coming to a broadcast facility near you. The need for 5.1 mixes will grow. And you will be able to handle the work! ■

Steve Lawson is the owner of Bad Animals/Seattle.

The Bad Animals sound design team for the DTV project (L to R): Dave Howe, Mike McAuliffe, Gary Littell. Not pictured, Suzie Brutke.

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overall, even though they may have very different dynamics.

DYNAMIC RANGE CONTROL

To further accommodate different listening conditions and product capabilities, dynamic range control (DRC) is also offered by Dolby Digital. This feature is also used to control the level build-up that occurs from downmixing. (Downmixing 5-channel surround audio into stereo can result in as much as an 11dB increase, and downmixing stereo to mono can add 6 dB.) Once again, these effects are not actually applied to the audio but are transmitted as metadata to allow the decoder to apply processing conditionally, but in a manner that remains under the producer's control.

To avoid a one-size-fits-all processing style, Dolby Digital provides three simultaneous processing modes: original mode, line mode and RF mode. Original mode applies no dynamics processing in the decoder. It is intended for use in full-blown 5.1-channel home theater listening. Line mode applies mild processing and is automatically invoked for most downmixing processes to manage level build-up. It emulates the processing typically applied to consumer videotape mastering. RF mode applies heavier processing, emulating conventional TV broadcast processing. It is intended for use when listening through TV built-in or other small speakers.

Dolby Digital encoders may assign default processing amounts for the line and RF modes in the metadata stream, depending upon audio signal levels and DN values, in order to guarantee no program will overload when being downmixed. Producers can override these defaults to adjust the amount and style of dynamics processing that will be applied by the decoder in each mode, so as to be best suited to the program characteristics. Dolby Digital decoders will usually invoke default choices for which form of DRC to use under various conditions (e.g., downmixing). On some decoders, users may have the ability to alter these default choices when it is desired to hear some more or all of the original program dynamics. (See Fig. 5.)

MIX LEVEL

This optional feature allows the TV audio mixer to simply report, via the metadata stream, the actual studio monitor loudness when the program was mixed. Although this data is not currently used in the consumer decoder, it could find use in deriving a more accurate loudness compensation process because for the first time it would be able to know the difference between the original mixing loudness and the reproduced loudness at home.

AUTHORING THE METADATA

A major unsettled issue at present is the form in which this metadata will be authored by producers. One question involves the physical form of the authoring hardware and its user-interface. (Should it be computer-based or in dedicated hardware? Should it be rack-mounted or handheld?, etc.) "Right now what we're looking for is operational experience to develop really useful interfaces," says Steve Lyman, a senior staff engineer at Dolby's San Francisco headquarters.

Lyman predicts that other manufacturers' equipment will integrate Dolby Digital metadata authoring capability, to make it easy for producers and engineers to create it as they create the program material itself. An example is a

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mixing console's automation system, which could easily output metadata indicating channel format or downmixing instructions. To facilitate this, Lyman says, Dolby will propose a standard metadata format. "What we intend to do is to publish the protocol for the carriage of metadata, along with the metadata spec itself," says Lyman. "We want to make it as open as possible."

Another issue considers how and where the metadata authoring should take place. Today these parameters can only be set during the original Dolby Digital encoding process. In the future, metadata decisions may be made or changed as a program works its way down the distribution path from the original mixing stage through the network operations center to the broadcast station and/or cable head-end.

Dolby's Steve Venezia has learned that producers like the idea of controlling the encoding process. "Producers want to be able to set those metadata flags themselves," Venezia notes. "They want to handle the encoding and deliver the program complete and QC checked, rather than have someone else choose parameters that may affect the final sound quality downstream."

SIGNAL ROUTING IN PRODUCTION

Dolby Digital (AC-3) is an emission coder, meaning that it is intended for the final delivery to the end-user, and not intended for use during intermediate production stages. This is because in order to make the most efficient use of the transmission spectrum, the coding algorithm was not optimized for repeated ("cascaded" or multi-generational) applications. Ideally, it should only be applied to a finished program's audio mix as it heads for the broadcast modulator, so that Dolby Digital encoding and decoding only occur once before consumers hear the program.

The lack of any other widely available 5.1-channel codec in the domestic TV marketplace meant that Dolby Digital began to be applied "upstream" of this final point. The codec began to find its way into service areas that the codec industry refers to as contribution and distribution, rather than strictly the emission domain for which it was designed. (Contribution refers to the point-to-point "backhaul" channels used to feed a remotely originated program back to the network center. Distribution applies to the point-to-multipoint paths used to feed finished programs from networks to broadcast/cable outlets. Emission covers the final point-to-multipoint delivery from broadcasters/cablecasters to their audiences.)

Broadcasters contemplating this architecture began to realize there would be problems with it. What if a station wanted to add a local voice-over to the network audio, such as a local newscast promo over the end credits of a prime-time show? The Dolby Digital network signal would have to be decoded, the voice-over added, then the new mix re-encoded. Network audio would have gone through two generations of encoding.

More fundamentally, how would this Dolby Digital signal be shipped around the broadcast plant? Many broadcasters have just finished implementing AES3 routing (typically two router layers—or four audio channels) per crosspoint, but now they were faced with accommodating Dolby Digital routing as well. Finally, some noted that the data block for Dolby Digital (AC-3) is 32 ms, which places its boundaries at different locations from those of the video signal. This implied that artifact-free editing or "audio follow video" switching of the DTV signal would not be possible without some additional processing or decode/re-encode cycles.

To solve all of these problems, Dolby has proposed its new Dolby E format, debuted in concept at the 1998 NAB Convention. It is designed for professional application in the contribution and distribution domains of DTV audio. In a nutshell, Dolby E provides the following:

- Up to eight channels of full bandwidth digital audio (typically at better-than-20-bit resolution).
- A data compression format that tolerates several (eight to ten) generations of re-coding, plus a final application of Dolby Digital coding, without noticeable artifacts.
- A block structure that aligns with video blocks for glitch-free editing/switching in the compressed domain.
- A path for the metadata to pass to the Dolby Digital encoder.
- An output stream that fits into a single AES3 path (as "non-audio data").

Fig. 6 shows the framing structure of Dolby E and how it fits into the AES3 architecture. Dolby E hardware is currently in design, with the first products expected sometime in 1999. Early reaction from broadcasters has been largely positive, according to Dolby's Steve Lyman. "The reaction so far has been overwhelmingly good. Most broadcasters have realized that six [channels] don't go into four, and they like the solution we're offering. We're working very hard to bring it to market as soon as we can."

IMPACT ON PROGRAMMING

Over the next few years the domestic TV market will gradually convert to DTV, both on the broadcast and consumer sides. For consumers this includes conventional, stand-alone television "appliances" plus new PC-based DTV receivers. (Some predict that early DTV adoption will be far stronger in the latter product type.)

Although the picture is what most consumers notice first, improvements in sound are an important part of the DTV package. From the producer's perspective, the ability to compatibly adapt a soundtrack to the ever-widening range of listening environments is compelling. But the high quality of DTV sound is what attracts them the most. Steve Venezia of Dolby Labs cites great early interest among producers. "Sports will be an early adopter of 5.1, and so will commercials. Advertisers would do it tomorrow if they could."

Movies will also be an easy transition, since most are being mixed in 5.1 already. "The big question is episodic television," says Venezia. "Most today are mixing in LT/RT stems, and to move to 5.1 will take a big conversion in the number of layback tracks and console buses."

Production time is another concern, Venezia adds. "Most hour-long dramas are mixing in two days, and half-hour sitcoms are mixing in one day. They're worried 5.1 might take so much longer, but they may find it not to be so much. Just because it's 5.1 channels doesn't mean you have to put something everywhere." As in the early days of stereo, a gradual maturity will likely set in, Venezia expects, as producers move away from wacky surround pans and fly-bys, and begin to use the format to reinforce their storytelling in subtler ways.

Meanwhile, the technical conversion has already begun on the Hollywood soundstages. It's now the creative community's challenge to be ready to work with 5.1-channel audio for the television of tomorrow. ■

Skip Pizzi is audio technical manager for Microsoft Media Services in Redmond, Wash. He is also editor-in-chief of Mix*'s sister publication* BE Radio *and enjoys watching video engineers squirm.*

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CIRCLE #193 ON PRODUCT INFO CARD

World Radio History

BY TOM KENNY

POST·SCRIPT

SOUND FOR FILM

"... WHEN THE HELICOPTERS WERE CIRCLING OVERHEAD"

by Larry Blake

To this day, *Jaws* remains one of my desert island films. While not as consistently quotable as those other '70s classics the first two *Godfather* films, it has more than its share of great moments. One of my favorites is the speech that the grizzled seaman (Robert Shaw) gives about his experience on the USS Indianapolis, when his fellow crew members were eaten by sharks while waiting for rescue operations after the ship sank. In one of the great lines of the film, Quint tells his spellbound audience of two, "You know when I was the most scared? It was when the helicopters were circling overhead."

That line also applies to my approach when mixing a film: The closer I get to the finish line, the more scared I get. When I start printmastering, I keep waiting for the stems to go south, to either rip or, today, to fail to boot. When I finish printmastering, but before I can make safety copies, I still worry that something is going to happen.

My anal-retentive self never acknowledges that the finish line is actually approaching, so I carry it as far into the release of the film as the director will support me. This month's column is the first in a three-part series reviewing my involvement with the *post* post-production of the film I just finished, *Out of Sight*. The November column will be on foreign-language versions, while December will deal with archiving material recorded on digital dubbers. This month, I'll look at one of the more frustrating of my self-imposed tasks: attempting to have *Out of Sight* projected properly in commercial movie theaters.

The double-edged sword of film sound is that all mixing stages mix to the same standardized EQ curve at the same level. And since theaters are all allegedly aligned the same, too, the translation from mix room to Hell Multiplex is a simple one, right?

Of course, the answer is an equivocal yes. Yes, in that if a theater is aligned to the wide-range "X" curve and is playing the film back at the standard 85dB level, yes, you will hear the essence of the mix. The theater will almost certainly not have the headroom and clarity of the systems that you would find on most mixing stages, but we really can't expect that theaters would spend money aligning something other than their popcorn machines, can we?

On most films, I'll check a theater or two in both New York and Los Angeles (and also New Orleans, so my momma can hear it right). That's usually as far as I can go simply because the budgets and profile of films that I work on don't allow more than that. I was lucky this past summer with *Out of Sight*, whose budget exceeded the sum of all the films I have supervised in the past. Being as it had good word of mouth (and consequent support from Universal), it was easy to expand my horizons. I traveled across the U.S. during the eight days preceding the June 26 opening, beginning in New York and moving on to Detroit, Chicago, San Francisco, San Jose and back to Los Angeles.

In addition to checking 21 theaters personally, I also spearheaded the alignment of an additional 15 houses, employing theater service technicians across the nation. Some worked for Dolby, DTS or SDDS, some for the theater chain in question, and some were independent contractors.

We also did a mailing to every theater, including a letter from the director, Steven Soderbergh, and a technical note from me on projecting the film. The first time I ever saw such a letter was the one Stanley Kubrick had in prints of *Barry Lyndon*. Cool, I thought. On most of the films I have done for Steven, we

—CONTINUED ON PAGE 274

PHOTOMONTAGE: ALEX BUTKUS

World Radio History

PRODUCTION SOUND FOR TV'S "NASH BRIDGES"

BULLETS AND THE BARRACUDA

by Blair Jackson

Nash Bridges is not your typical cops and robbers TV show. Yes, there are killings galore, fiery explosions, high-speed car chases, shattering glass, innocents in peril, tough punks, dope dealers, terrorists, streetwalkers, crazed wackos, over-zealous rookie cops and hardened veterans walking that fine line between vigilante-ism and doin' it by the book; in short, many of the same elements that have marked police dramas from *The Streets of San Francisco* and *Cannon* in the '70s to *NYPD Blue* and *Homicide* in the '90s. But there is also a keen intelligence at work on *Nash Bridges*, perhaps not immediately apparent beneath the surface flash and action. The major characters are varied and well-drawn, the acting always solid, the scripts usually intelligent and thought-provoking. Like the best shows on television, *Nash Bridges* has developed and grown in its three seasons (it's just started its fourth) to the point where the core cops and their loved ones feel like family; we care about these people. The charismatic principal star and executive producer of the series, Don Johnson (as inspector Nash Bridges) is equally adept at playing comedy or high drama, and this show has plenty of both, with a large dose of the sometimes absurdist humor coming courtesy of Cheech Marin, who plays Nash's affable sidekick, Joe Dominguez.

I'll be the first to admit that it was the show's alternately glossy and gritty patina that first attracted me. *Nash Bridges* uses the San Francisco Bay Area—my home—in a way that few television programs and films ever have. Just as Johnson's previous series, *Miami Vice*, had a look, so does *Nash Bridges*; it's in the juxtaposition of bright colors and dark surfaces, and in the spacious lofts and warehouses that are nearly as striking as the constantly shifting exteriors where much of the action takes place. This show is always on the move—not in the self-consciously arty way of a show like *Homicide* (with its difficult-to-watch hand-held photography), but in the sense of always going new places, or showing old places in fresh new ways.

It's a visual feast (kudos to director of photography Victor Goss), and the audio side of the show is similarly intriguing, from the wonderfully clear and involving production sound, to the effects and the seamless blend of sound elements with the always-fascinating scores by former Roxy Music, Frank Zappa and UK keyboardist/violinist Eddie Jobson. But it was the scenes of Nash and Joe racing around San Francisco in Nash's souped-up, canary-yellow Barracuda convertible, chatting all the while in crisp, audible tones, that made me want to investigate the show's production sound requirements further.

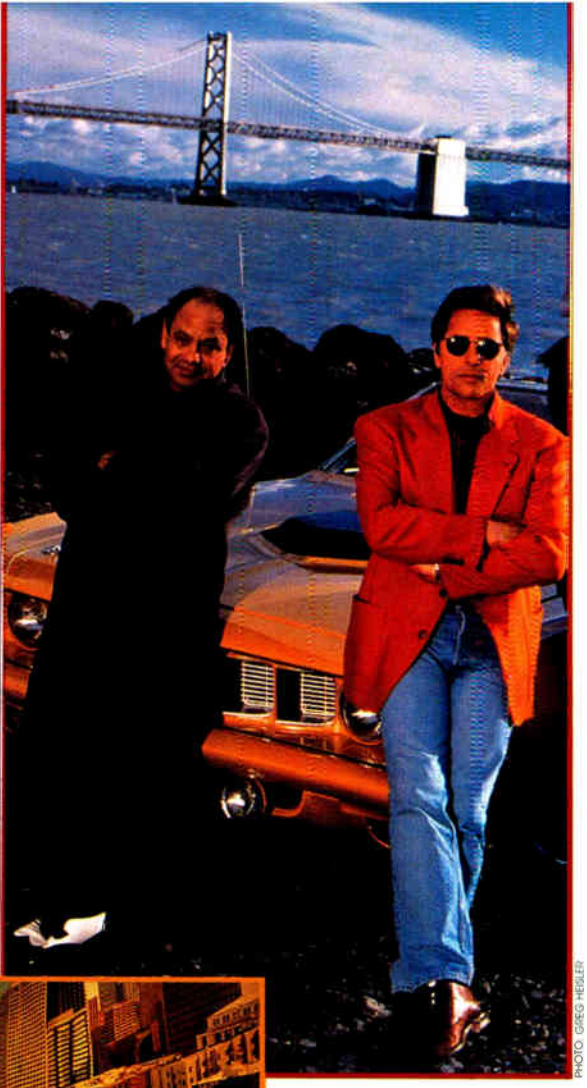

PHOTO: GREG HESLER

PHOTO: STEVE JENNINGS

Above: Cheech Marin (L) and Don Johnson by the bay. Left: production sound mixer Agamemnon "Aggie" Andrianos

On a cloudy late spring day, I head over to San Francisco's Fisherman's Wharf area, to the historic restored ferry boat Eureka, which houses the set of the Special Investigator's Unit—the offices for Nash's police division—to watch as a few scenes are shot for what would be the final episode of the 1997-'98 season. Tourists walking nearby crane their necks to catch a glimpse of Don Johnson and Cheech Marin being ushered through a security cordon in electric carts. On the set, the lighting crew is setting up reflectors, actors are milling about eating donuts and fruit, and the set crew scatters papers on various desks to give the room that slightly messed up look endemic to police offices. The cry of seagulls and the barking of sea lions off nearby Pier 39 provides a nearly constant cacophony to the proceedings on the boat. Those atmospherics are omnipresent elements in the SIU scenes; hell, the interrogation "room" set on the boat has no back wall at all, so the seals and sea gulls and lapping water can really be heard in every shot.

All of this is the concern of Agamemnon Andrianos—"Aggie" to his friends and workmates—who heads the three-person production

—CONTINUED ON PAGE 276

World Radio History

BOB Rock ON

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CIRCLE #124 ON READER SERVICE INFO CARD

A VISIT WITH POST-PRODUCTION GURU DON ROGERS

by Maureen Droney

After a career in post-production that's already spanned 45 years and contributions to more than 1,000 motion pictures, you'd expect to find Donald C. Rogers retired and relaxing—traveling, puttering around the house, maybe playing a little golf. Instead, a visit to his Studio City hillside home catches him only briefly between meetings and phone calls as he gracefully fields questions and keeps our interview on track and on schedule.

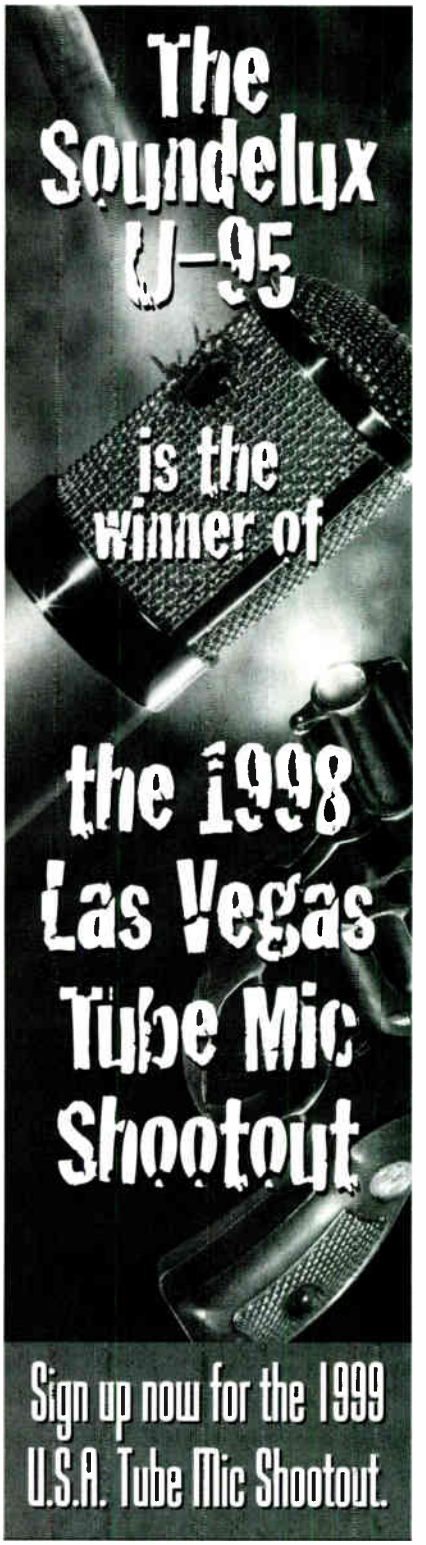
Rogers' courtly but efficient demeanor still shows remnants of his Navy background—he was a pilot in an anti-submarine squadron as well as an electronics technician and radar operator. It was that electronics background that landed him his first job in the film industry. That first job, operating a playback machine for a choreographer on the lot at 20th Century Fox, is the basis for one of those classic industry stories. While playing a little number by Irving Berlin over and over for dancers practicing a routine for the film *There's No Business Like Show Business*, he realized that the blonde in the jeans with messy hair and cream on her face was none other than Marilyn Monroe. "I played that darn record in that rehearsal hall for six weeks," he recalls with a laugh. "It took six weeks for them to learn to dance that number. Eventually, I did five more films with Marilyn. She was truly a wonderful lady, and I was lucky enough to get to know her on a first-name basis."

Firmly hooked on the business, Rogers found his next job as cable puller; from there, he moved up to microphone boom man on the Fox scoring stage, where he was a member of the sound crew that received Oscars for *The King and I* and *South Pacific*. "I stayed at Fox until early 1960," he says. "When the actors' strike happened, the major studios decided to shut everybody out—sound, camera, electrical, all of it. Some of the films I'd worked on at Fox had been for Todd-AO, and I'd met Fred Hynes who was head of that company. Fred had told me to come and see him if I was ever out of a job; with the strike on, I remembered those words and called him. At the time, Todd-AO was just a little independent studio that did re-recording and had a camera department. They didn't have a boom man's job for me, but there was a night shift opening for a recordist, on *Spartacus*, with Stanley Kubrick directing. So I went to work at night and was on that film for nine months. Re-recording took a lot longer in those days, and *Spartacus* was a big 70mm release, panned 6-track and very involved. During the last couple of months on that film, Fred came to me and asked, 'Do you know anything about cameras?' Well, I didn't even know how to load my Brownie properly, but they needed somebody to take over the camera department, so after *Spartacus* I spent every morning for six months at the Mitchell Camera Company in Glendale learning every detail about the 65mm cameras. Then I'd come back over to Todd-AO in the afternoon where I worked on trailers and commercials and things like that."

That six-month crash course paid off; as head of Todd-AO's camera department, Rogers became an essential component of many landmark films, in charge of packaging the location camera and sound equipment, from organizing equipment and clearing customs to teaching equipment operation. Five out of his 11 years with Todd-AO were spent in Europe; he lived in Rome while working on *The Bible* with Dino DeLaurentis and John Huston and in Strasburg, Austria, during the making of *The Sound of Music*.

From Todd-AO Rogers went on to the Samuel Goldwyn Studios, where he served as the director of technical operations from 1971 to 1992. "Getting that offer to go to Goldwyn was the highlight of my life," he recalls. "Gordon Sawyer was sound director there, and he was the

—CONTINUED ON PAGE 280



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CIRCLE #195 ON PRODUCT INFO CARD

World Radio History

POST NOTES

In San Francisco, five-time Oscar winner **Gary Rydstrom** was promoted to the new position of Director of Creative Operations at Skywalker Sound. Fret not, the new title will have no effect on his sound design/re-recording schedule…**Global Broadcasting Corporation**, in conjunction with KRON-TV, sent a live HDTV signal to six sites around the Bay Area, allowing viewers to participate in the Fourth of July waterfront Festival…While at AES, ask around about **Dubeytunes'** new Pro-Control suite. Stuart Dubey had to take a week off at Mount Shasta with just his guitar after the rugged schedule to get the studio bau:ton-designed room up…At **Russian Hill Recording** (S.F.), actors in doing ADR included Ed Harris, Sean Penn, Werner Herzog and Sharon Stone, while **Daryn Roven** recorded music (Santa Cruz reggae group Root Awakening) and voice-over for a series of Odwalla radio spots…Over at sister company **Crescendo!**, mixer **Tim Claman** won a Gold Clio for a series of Nike spots called "Running," "Golf" and "Tennis." Engineer **Jay Shilliday** pumped out mixes for 7-Up, Hewlett-Packard and the Good Guys, among many others…**Andy Greenberg** of **One Union Recording Studios** in S.F. mixed five TV spots, featuring BMX biker tricks, for Adidas. Down the hall, **Eric Eckstein** designed, recorded, edited and mixed ten spots for EA Sports, featuring the "Road Rash" video game…**Andy Newell** of **earwax productions**, San Francisco, composed the music and did the sound design for six Clio-winning spots…**James LeBrecht** and **Patti Tauscher** of **Berkeley Sound Artists** began the editorial and sound design on the feature *Existo*…The buzz in the New York film community is the announcement that **New York Studios** will build a 700,000-square-foot, $160-million film and television production facility (the largest outside of Hollywood) in the Brooklyn Navy Yard. Full-service, from start to finish. Read more about it in months to come…Meanwhile, NYU's school of continuing education has added a **Music for Film and Video** course to its curriculum, taught by composer/producer Bob Gerardi…The NFL has retained **SportVision Systems**—the firm formed by industry leaders Jerry Gepner, Bill Squadron and Stan Honey—as its broadcast technology consultants for new stadiums…Sound designer **Jun Mizumachi**, formerly of Crew Cuts/Buzz, has joined **Howard Schwartz Recording** in New York…**David Browning**, mixer for *Spin City* while at National Sound, has joined the staff of East Side Audio…Sync Sound, NYC, has added two new **AMS AudioFiles** and upgraded its other four to 24-bit operation, and sister company Digital Cinema has upgraded its Logic 2 to a Digital Film Console…Up in Seattle, plenty of radio spots wended their way through **Bad Animals**, with **Dave Howe** mixing a series for the Mariners and Magnolia Hi-Fi Talent, hooked up from Waves in L.A., was none other than facility owner Steve Lawson) and **Mike McAuliffe** recording and mixing for Tully's Coffee and Nordstrom…In Atlanta, meanwhile, **Crosstown Audio** edited and mixed a Discovery Channel program on distance learning called "Wolves @ Our Schools"…Also in Atlanta, Ed Bair of **Bair Tracks** won two Clios and eight Promax awards for the audio on his net-

THE TONIGHT SHOW PREPS FOR 5.1

A little more than a year ago, NBC announced that it had worked out a deal with Sony and was planning to begin broadcasting The Tonight Show in high-definition television in January 1998. The announcement was a bit premature, and the plan was modified to the spring of 1999, to which everyone involved with production breathed a big sigh of relief. Still, the gauntlet had been thrown, and video and audio began prepping for a massive changeover.

The first order of business on the audio side was the purchase of a new 5.1-capable console, according to Bob Whyley, an independent engineer hired by Jay Leno's production company to mix the nightly show. He visited studios, talked with people involved in multichannel mixing and ended up at Euphonix, purchasing a two-cube CS3000 with 104 faders and 24 auxiliary outs—"truly the mother of all Euphonix consoles," Whyley says.

The control room was finished in late spring so that Whyley would have appropriate time to experiment with discrete mixes and fold-downs. To bypass the ancient router (12-bit, at 75 kHz) at the Burbank facility, 20-bit Fibax A-to-Ds are sending multiple channels direct to videotape masters. The monitor setup includes two self-powered Tannoy AMS10s left and right (a third coming this month for the center), two Tannoy A210 subs and the self-powered 8-inch Tannoy A800s for left and right surround. For the experimentation phase, Whyley purchased eight DA-98s to lay down 6-channel stems of the show.

"One of the biggest questions with regard to 5-channel surround is what to do with the center channel," Whyley says. "In the recent proliferation of 5.1 DTS discs, some engineers have chosen simply to mix left and right and ignore the center channel. The Euphonix has a very interesting panning array that no other console has—it has a focus control, which allows you to either focus an item, an instrument or a vocal specifically in the center, or you can spread it left and right any amount in between. That's the point I'm going to experiment with. Euphonix also has a very nice 5.1-to-sterea matrix that does it automatically for me.

"I envision surround mixing for a show like The Tonight Show as an attempt to add more depth and add a sense of realism to the viewer at home," Whyley continues. "By that, I mean, I intend to use the rears for audience, ambience and some reverb. But things will not be panned to the rears. The cast will always be in the center. I would love to construct a 180-degree sound field in the front where the band will reside. How for to the rear we pull any of that, I'm not sure yet. That's part of my experimentation."

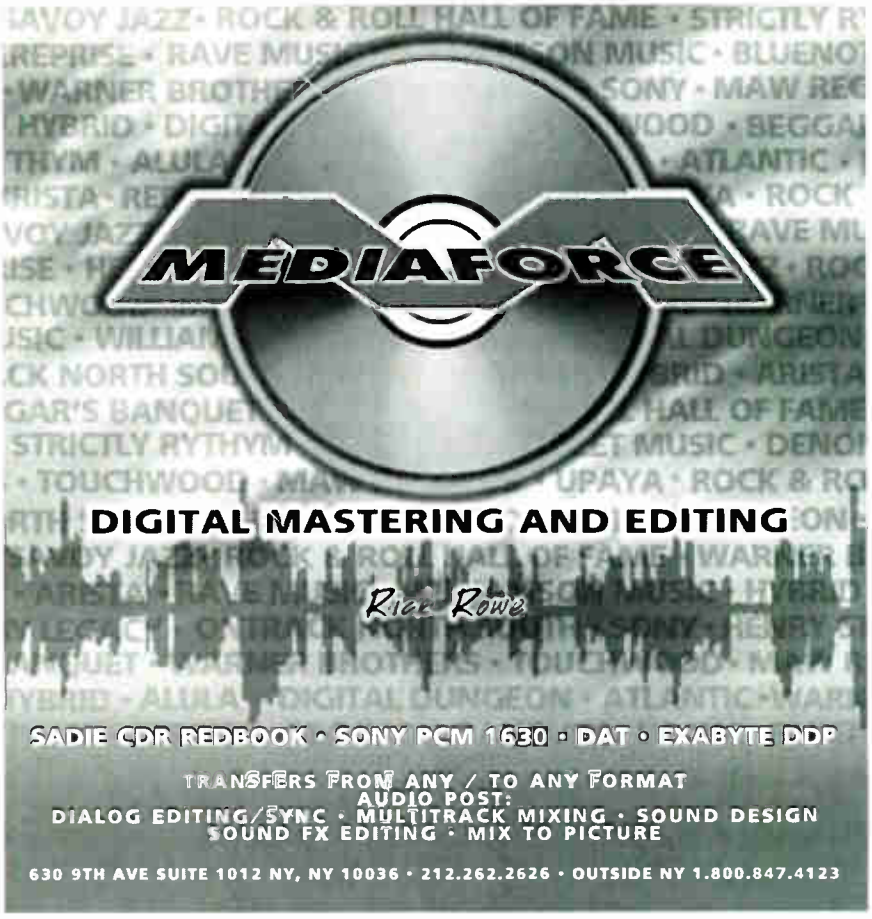
—Tom Kenny

World Radio History

work image campaign for Cartoon Network, called "Cartoon Crisis Center"; Bair also sweetened and mixed the promos for a TNT original movie called *Thicker Than Blood*...Big news in the Hollywood film mixing community: **Michael Minkler**, with hundreds of credits and seven Oscar nominations, has been appointed senior vice president of the studios at Todd-AO. Minkler's mix partner will be **Frank Montano**, a four-time nominee...**Jeff Koz** of **HUM** wrote the music and **Jimmy Hite** of **Margarita Mix** mixed a series of eight spots for GEICO...**Digital Sound & Picture**, Los Angeles, has been busy mixing *Species 2*, *I'm Losing You*, *Judas Kiss*, *Jawbreaker* and other films...**Chicago Recording Company** has opened the first DVD authoring suite in Chicago...**National Mobile Television** has purchased the first SSL **Axiom-MT** digital console in the U.S. for use in its High-Definition TV truck...**Matchframe** in Burbank and **Hollywood Recording** have purchased Internet-based sound effects software **M&E Pro Intranet** from **Gefen Systems**...**Skywalker Sound** has purchased two **StageTec Nexus** digital routing and interconnect systems, for interfacing to AES ins/outs of digital dubbers...**noise** in San Francisco has installed a **Tascam TM-D8000** digital mixer in one of its three production rooms...In Hollywood, Tascam seems to be moving ahead in the race to become a standard film dubber on re-recording stages, with **Universal Studios** installing eight **MMR-8** recorders and eight **MMP-16** players in its TV and film mixing facilities. ■

PHOTO: ROBERT WOLSCH

Superdupe, one of New York Media Group's seven audio and video facilities, purchased the first Soundtracs DPC II console in the U.S., pictured here. The room was designed by John Storyk and features 5.1 monitoring from Spendor's Active Surround monitor system. Then, the company promptly ordered two more DPC IIs to be the centerpieces of its eighth facility, called Lower East Side, which will open later this year on East 12th and Broadway. (One of the other seven facilities is called East Side Audio.) Expect to see more on Lower East Side in months to come. Also, two more DPC II consoles were bought by Magmasters Sound Studios in Soho, London. ■



CIRCLE #196 ON PRODUCT INFO CARD

CIRCLE #197 ON PRODUCT INFO CARD

World Radio History

—FROM PAGE 268, SOUND FOR FILM

have included a letter in the prints, going into perhaps too much detail about the preferred methods of projection. (The only difference was that this time we mailed them directly to the theaters, and given the number of returns we received, I still think it's best to put them in the film cans themselves.)

The final part was a check of theaters on opening day, verifying details of the presentation such as fader level, sound format the film played in vs. the format it was advertised in, how loud the trailers were vs. the film's level, etc. We did this at 61 theaters, with the feedback from the managers and projectionists being pretty much as expected: Trailers are too loud, please ship films earlier, trailers are too loud...

If you are observing that I am describing the steps involved in Lucasfilm's Theater Alignment Program, you would be right.

Worrying about theaters is both futile and productive because for each theater that you correct, there are many more

that you'll never get to. (On *Out of Sight*, that number of unchecked theaters in the U.S. was 2,150! A blockbuster like *Godzilla* will be shown on more than 6,000 screens.) I have to say that on the whole, I was pleased with the B-chain alignment of most theaters that I visited. Only one of them (ironically, a top-grossing theater in the Los Angeles area) was completely out of whack. Most of them were in the ballpark, and I was able to spend time tweaking crucial items such as subwoofer and surround levels, plus overall fader settings. (Time was indeed a factor since I could only get into theaters in the early morning or after the last show let out. This made for some long days, since afternoons were reserved for travel.)

Does anyone really notice all of this work? Do they care? If I were to consult with my friend Kevin McDermott of Mandeville, La., the answer would be, "No." He said that the sound quality at the Holiday 10 theater (which he referred to as the CrackerPlex) was excellent, if you eliminate the tobacco chewing sounds of the audience, a problem that Kevin notes was hardly my fault.

Of course, it's no secret in the film sound community that it's a scary world out there in movie theaters, where kids with canola oil on their hands are frequently trusted to project films properly. I subjected myself to that trip not only to line up the theaters that Universal's distribution department said would be the top-grossing engagements (and they were very accurate in their predictions), but also to spread the *Out of Sight* fader level gospel: This film is not abusively loud! (There are two sets of gunshots that are up there, but they come and go very quickly, and no scene has anything resembling *sustained* pain.)

For those of you who are just tuning in, let me recap why films almost never play at the level we mix them. Trailers are compressed and limited while pushing to such abusively loud levels that it is not possible for theaters to project them at the standard fader setting. So, faders are turned down for trailers anywhere between 4 and 10 dB, with my empirical research on this trip indicating a median setting of 6 dB down.

This would not be a problem were it not for the fact that most theaters put one projectionist in charge of anywhere from six to 12 theaters. As a result, they have little time to start a showing with the trailers and come back ten minutes later to raise the fader back to a normal level. Since they get fewer complaints about films and trailers being too low, guess which side they err on?

It's a sad irony that trailers are the most controllable part of the whole equation. The great majority of them are mixed by a handful of people in the U.S., and those people are in turn supervised by the marketing people at the major studios. So it's fewer than a dozen people who are responsible for all this grief! And part of the problem is also that today so many of them are being played back digitally, whereas in the past they were in stereo optical or, preferably in my book, played in mono.

Before I go too overboard in wanting to deport everyone who works on trailers in the U.S., let's not forget that John and Mary Q. Moviegoer believe that films are *still* too loud, even when played back at a trailer-reduced, too-low fader setting. (Mary especially feels this way.) It's a futile, pedantic exercise to try to explain to them that we mix films at a certain level, but that what they are in fact hearing is much lower than we mixed them. This only reinforces their point of view.

Nonetheless, when I say that projectionists have "little time," as opposed to no time, to get back to each screen and raise the fader whatever amount is possible, it's only because I have seen projectionists who *do* take the time. One of them, Paul Rayton at the General Cinema Galaxy theater in Hollywood, told me simply that if he didn't change the fader setting when trailers were over, he would be robbing the feature of drama if he played it too low. Needless to say, hearing this at the end of my trip, I knelt in front of him.

But as a result of the dance that projectionists have to do between loud films, even louder trailers and audiences that complain at both, you find much arbitrary rationalization at fader levels. It's one thing when you have Dolby processors that have historically been set up to play back at 85 at a setting of 7. Cinema processors for the SDDS format have faders calibrated in dBs (which is smart, I think), but there is great variance over what is considered 85. I found it to be anywhere from 0 to 10, and the numbers at which trailers and features were projected varied similarly.

I was able to use this to my advantage when setting up a theater by cheating what the numbers meant. In other words, if a theater usually played trailers and features too low at 0, with 7 representing 85, we would set up the SPL so that 85 would be at 5. The idea, of course, would be that the projectionists would probably do what they usually do, anyway, and this way they would be playing everything 2 dB louder. Yes, it was a risk that the trailers would be a little loud, but what's a boy to do?

I found one multiplex out there that sets its fader level in a unique manner. The projectionist goes into the auditorium with an SPL meter, and the fader will be adjusted so that the average dialog level is around 72, that number deriving from what they believe is the level of dialog in face-to-face conversation. My dialog in *Out of Sight* measured at around 80, with the fader set to a proper 85. When I questioned their methodology, the assistant projectionist haughtily told me that he had been a projectionist for nine years! While I think their numbers are way off, I have to grudgingly give them some credit for

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"Mrs Brown" Image courtesy Ecosse Films.

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actually setting a fader level for each film.

Long gone are the days when you could count on having experienced "operators" (that's what projectionists are called within the industry) in the booth who took pride in what they were doing. Multiplexes were unheard of, so you had a 1:1 ratio of operators and screens. In the early '70s, not only were multiplexes becoming all the rage, but technology allowed for one person to handle multiple screens. First, xenon lamphouses made obsolete the previous carbon arc system that required "rods" to be changed roughly every reel. This permitted "platter" projection systems to come into existence, which is when all of the reels of the feature are spliced together onto a continuous ribbon of film. Thus, once a show is started, it can be run—and almost always is—unattended. (My guess is that there are no more than a dozen first-run houses in the country that still use old-fashioned changeover projection.)

Not only is it common to find one overworked projectionist taking care of ten screens, perhaps *the* most prominent and high-grossing multiplex in the country has one projectionist handling 12 widely spaced theaters! It's no wonder that very few projectionists actually listen to films in their theaters, as Paul does.

But I'm not going to give up the fight, as I thought I could a few weeks ago at one of our premiere screenings. We had examined every theater with a fine-tooth comb, the lamphouses were focused for the image, the film movements were fine-tuned, and the A and B chains were tweaked for the sound. When it came time for the screening itself, I intentionally did not get a walkie to allow me to communicate with the projectionist in case of problem. I was sure it would all be right.

Of course, wouldn't you know it but the last few reels (about 40 minutes) of the film were projected out of focus. The helicopters were circling overhead, and I thought I was home and dry.

Please send your theater horror stories to P.O. Box 24609, New Orleans, LA 70184, fax (504) 488-5139, or via the Internet: swelltone@aol.com. ■

Larry Blake is a sound editor/re-recording mixer who lives in New Orleans for reasons too numerous to mention, although one of them would have to be that for six months of the year there is a ready abundance of crayfish heads to suck.

—FROM PAGE 269, NASH BRIDGES

sound team for *Nash Bridges*. Andrianos' world is a little area on the other side of the wall of the SIU set; there, he watches what's being shot on two LCD monitors, communicates with his boom operator and an assistant, and records the action on a stereo Nagra through a Sonosax mixer, which sit on a portable cart that follows him to the show's many exterior locations, too. A veteran of nearly 25 years in the business, Andrianos has extensive film and TV credits, ranging from documentary series (*Nova* and *The Body Human* among them), to commercials, to series work (including six years on the sound crew for *The Wonder Years*), to features such as *The Unbearable Lightness of Being, Howard the Duck, Jack, James & the Giant Peach* and *Flubber*. He has been nominated for eight Emmys for Best Sound Mixing, and last year, an episode of *Nash Bridges* was nominated for sound at the Cinema Audio Society awards, which are given by sound professionals. Basically, Andrianos is a first-call production sound mixer in the Bay Area.

Originally, Don Johnson wasn't sure where *Nash Bridges* was going to be set. "At first, they were going to shoot in Vancouver or Chicago or San Francisco," An-

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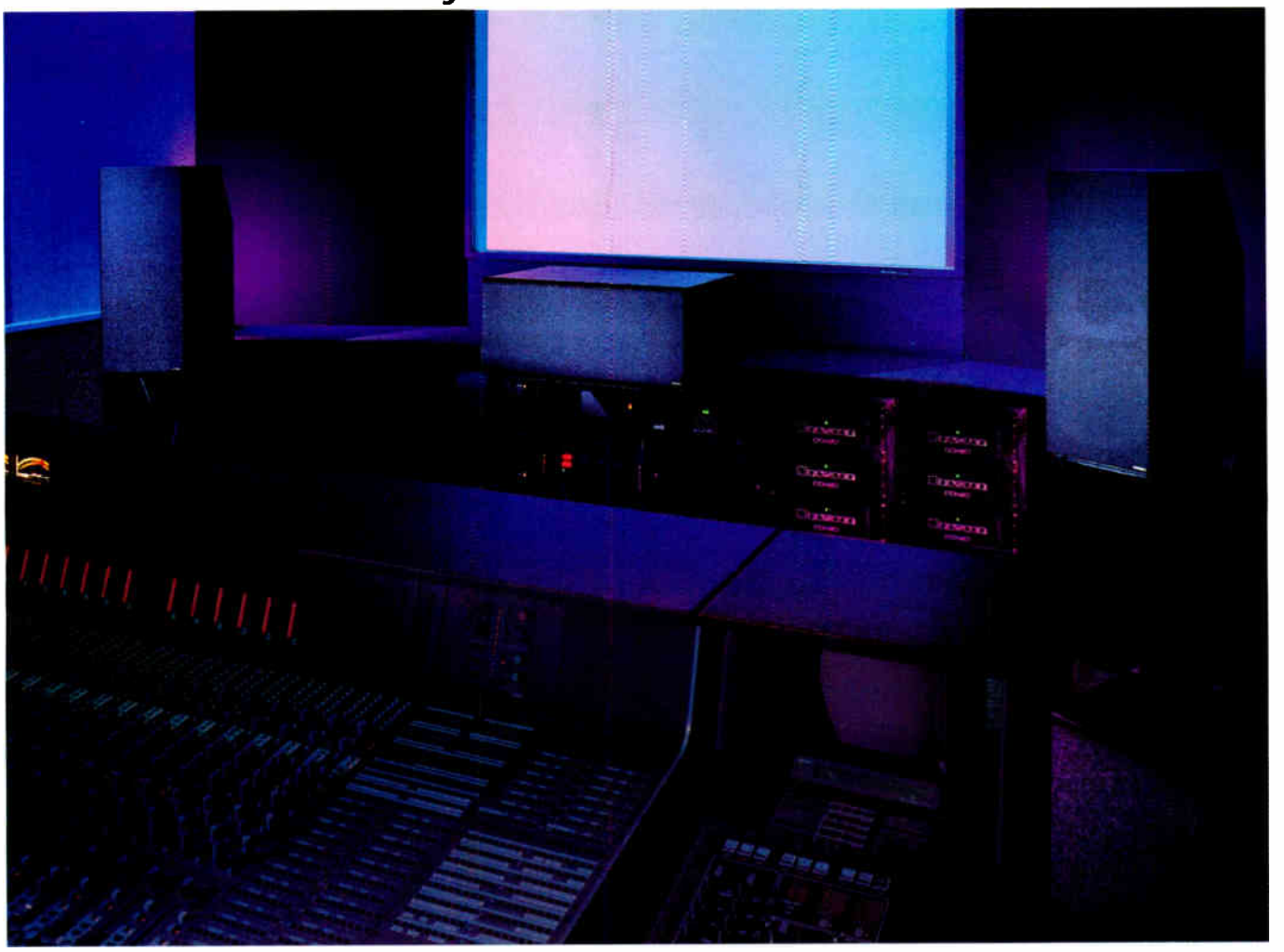

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drianos says. "They were doing test shoots in each place, so they came in and did a three-day shoot here. That's where all my documentary background really came into play, because Don came in and said, 'We want to get in the car and we want to drive and do dialog, all these stunts.' I put the Nagra on my belly and jumped in the car: 'Okay, let's roll.' So all those years working on documentaries—being out there working with real people doing real stuff—really paid off for me. Don and I got along well and, like a lot of people, he fell in love with the city. So that was the beginning for me."

Nash Bridges is a nine-months-a-year job for Andrianos, and with its ever-changing shooting locales, the show is a nonstop challenge for the production crew. Even the main SIU set has changed locations twice in the first three years (moving from a building in Oakland to the boat after the first year), and Andrianos says that during this fourth season, the SIU will move yet again—to a barge that will roam San Francisco Bay. At least a number of the interiors—Nash's and Joe's apartments, etc.—remain in a stable, controllable locale: They're shot on a soundstage built inside a 1940s Great Pan American Clipper airplane hanger on Treasure Island, a former Navy base situated midway in the Bay between the two spans of the S.F.-Oakland Bay Bridge. But much of the time, Andrianos and company are out and about in San Francisco, the East Bay and Marin County.

Make no mistake about it: *Nash Bridges* is Don Johnson's show. He is involved in nearly every aspect of its production, from script approval to the final mix. Although he doesn't actually direct the show, he has a director's power; indeed, in my visit to the set, it was Johnson who seemed to control the flow of shooting for the most part. He is known as a demanding taskmaster—he knows his lines and he expects the same of the other actors, and he expects the crew to be on top of things. "Don likes to work fast, and he doesn't like to do a lot of takes," Andrianos says, "so everyone has to really stay on top of it. He hates doing ADR and does as little as possible. I have a tremendous amount of respect for him. Don is really sharp and has a hell of an ear, absolutely. If there's an actor overlapping [dialog] he hears it. Also, he knows the limitations of what we can and can't do. It's almost like having a second set of ears right on the set."

The production sound on *Nash Bridges* is achieved mostly through a combination of Neumann shotgun mics on fishpoles and strategically planted

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Schoeps mics. Andrianos mixes the various sources on-the-fly: "I have a monitor where I can see both cameras [the show usually runs two cameras at once] and flip between them in the middle of a take. It gives me exact reference in terms of matching perspective with the sound. I'm always looking to get as much as I can with the booms. Next, I'll plant microphones. Then, as a last resort, I'll use radio mics. I have two tracks to work with—I mix down the microphones balancing the dialog against the background and live sound effects. By now I can look at a scene and know how it's going to sound. It comes down to mic placement and the boom operator working the shot." Andrianos' team consists of boom operators Gary Dowling (a 25-year veteran) and Don Lind, supported by cable person Mitchell Boyce.

Before each day's shoot, Andrianos receives a blueprint that lists all the shots that will be done that day, along with the dialog and movement notes. He checks to see the number of actors in each scene and figures out the coverage he needs from the boom and other mic sources. Typically, there might be one or two run-throughs where he can fine-tune his coverage choices (on one rehearsal take I saw, for instance, one of the planted Schoeps mics had been inadvertently buried under papers on a desk), but this is TV and the pace is fast all the time. That calls for quick decisions, properly functioning equipment and, occasionally, the presence of mind to ask for a reshoot of something for sound reasons—a situation that does not make Mr. Johnson happy. There is scrupulous attention paid to scouting locations that have the right combination of interesting natural ambience and enough quiet that dialog can be heard. "I'm looking at signal to noise ratios at these locations," he says. "I've got a sound pressure meter right here on the cart to check things, but I rely on my ears to balance these raw elements of recording." Even so, every once in a while Andrianos finds that a setting is too noisy during shooting, so on the spot he advises everyone that it will have to be picked up as wildlines or ADR. "On a TV schedule, we don't have much time and we will always record wildlines in the same ambience backgrounds as the shot," Andrianos says. And if that doesn't work, it's on to ADR: "Don doesn't like to hear that. It's extra work. But he understands enough about sound to know that's going to happen sometimes.

"More often than not," he continues, "the biggest impedances are environmental noises or bad acoustics in buildings. We sometimes go to great lengths to quiet a location with floor and ceiling treatment. However, planes, trains and automobiles are the worst. Here at SIU there have been times when seals and other boats have been too loud, and then you just have to wait. We've been pretty lucky around town; we've gotten a lot of cooperation from the city and the police department. We get in certain areas, and I want all the streets blocked. The locations department will coordinate this with the SFPD, and I say, 'I want this blocked and that blocked and that blocked.' We roll, do the shot as quickly as we can, and then move on."

Andrianos' portable sound cart has everything he needs for most shoots, he explains: "It has my Sonosax mixer; a monitor control interface which has custom headphone amps and a full duplex intercom to the boom operators; the Nagra tape decks; Neumann and Schoeps microphones; an LCD monitor and a videotape deck if I want to tape a take, say, if the boom operator and I want to check it for some reason. This all

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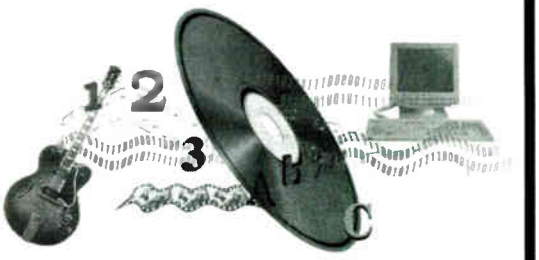

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runs on two 12-volt batteries with a custom power distributor by David Carroll Electronics which continually recharges during the 12- to 14-hour shooting days." David Carroll and Andrianos rebuilt the mixer to Aggie's own specs, and the Neumann shotguns have been hotrodded by Klaus Heine. "I get about 3 to 6 dB more rejection of the background using the Neumanns instead of the Schoeps," he says. "This makes the mics an excellent choice for dialog recording."

And then there's the challenge of the Plymouth Barracuda. "The 'Cuda is a nightmare," Andrianos says with a smile. "Early on they show up with this car. Not only is it 440 cubic inches—this *screaming* 'Cuda—but it's a convertible. And they say, 'We want to just drive it around and have a lot of scenes in the car, with talking.' Now, 90 percent of the time in car scenes, the actors aren't even driving. The car is towed on a trailer with mic cables and you hide the Schoeps here and there or put lavaliers on them. But on *Nash Bridges*, Don Johnson drives the car and does the stunts and the dialog in real time. On this show, they want the car to be free-running, which means the cameras want to be able to look into the car from all different angles—from the side, above, tight or wide. It's one of the things that makes this show different. So that means you can't have a sound guy in there with 'em, and you can't have a guy in the trunk, either, because it's too dangerous; they're going 40 miles an hour.

"So I put Don and Cheech on [Lectrosonics] transmitters and I'm in a chase car, called the Shot Maker, where the cameras are mounted. The car has a camera on an arm that moves around, so from a sound perspective, we can look into the car and come up to their faces, and then pull back and they speed off, revealing the background and the sights and sounds of San Francisco. Don loves the driving scenes and he really is an expert driver. I'm recording Cheech on one track, Don on the other. They rehearse it once, and we start recording. It's worked from the beginning." Besides the wireless mics on Johnson and Marin, Andrianos uses a Neumann shotgun mic mounted on the Shot Maker to get more car sounds.

Andrianos says that the engine of this high-powered performance car (actually there are three of them) was modified slightly to make it quieter for the show, "but we couldn't have done that if the car didn't still give Don what he wants when he's driving it. He wants it to really *go*." The rig that Andrianos carries on the camera car is a scaled-down version of his main production sound cart.

Typically, each episode of Nash Bridges takes about seven working days to shoot, "though there have been a few nine- and ten-day episodes this year mostly due to the rain [the Bay Area was drenched for months by El Niño storms] and a few other factors," Andrianos says. The post work is only slightly more leisurely. When ADR is needed these days, it's recorded at Focussed Audio in San Francisco by Jeff Roth. However, all of the post-production sound work is done in Los Angeles at Sony Studios: Albert Ibbotson is sound supervisor; Sherry Klein is the dialog mixer; Joel Fine mixes the music and effects; Geoffrey Hemwall has been the series' post-production producer. Usually it's four to six weeks between shooting and airing an episode.

Not that Aggie Andrianos has time to watch the show he works on. "You never get a rest," he says. "On a feature film you can get a breathing point because there's more attention to detail on a given scene. The biggest difference is on a TV show you're doing maybe seven to ten pages a day. On a feature, maybe one. The director gets more time, the performers get more time. We never get a rest. We're on this intense adrenalin fly for nine months straight."

As I leave Andrianos this spring day, there is light at the end of the tunnel. There are only four shooting days left and then a break for three months. Both cast and crew are clearly ready for the hiatus. This year, Andrianos elects to spend the summer with his family, eschewing all offers. "I really like this show," he says. "It's a good team we have; people really care about quality, from Don on down. We're all trying really hard to do high-level episodic work here." And now, as you read this, the *Nash Bridges* crew is well into season four, the hundreds of people involved in the show working like a single machine once again. Two more seasons and *Nash Bridges* will hit gold in syndication. Maybe then Andrianos will actually get to see it. ■

—FROM PAGE 271, DON ROGERS

dean of technology and sound directors—to be asked to understudy him was a great honor. Goldwyn was a very small studio, but it was known worldwide for its sound quality because Gordon was so dedicated and made everything so exactly perfect. Everyone came to Gold-

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wyn to have their films done—that is, if they could get in."

A year-and-a-half after Rogers joined Goldwyn, Sawyer retired and left the sound department in Rogers' hands. "Of course, I wasn't well-known like Gordon was," he comments, "So I had to be a real salesman. I had to build relationships and rapport, not only with the people who worked for me, but with outside editors, directors and producers. Goldwyn was a family-owned company—they didn't have the resources of the major studios, and we had to use our money very wisely. But we made it work and kept expanding. During the years from '71 to '92, we built a fabulous facility. We were state-of-the-art constantly, always trying to keep ahead of the other studios, and to have the latest equipment and the best personnel. We weren't a fancy place—our rooms weren't pretty like some of the other facilities—but we had the crews people wanted to work with. During the 23 years that I supervised that facility we received 26 Academy Award nominations for Best Sound, and people that worked in the department ended up receiving 15 Oscars. I don't think there's another department in Hollywood that can live up to that."

Rogers will tell you that he owes his success in the industry to his abilities as a manager, and to his skills at finding and nurturing good people. "I do have a very useful talent," he acknowledges. "Somehow, I can look at a person and get a feeling about what kind of worker they'll be. In the recording business, it's not just intelligence that's important; you have to be an 'up' personality, and you have to be able to take pressure, because everything has to get out in a short period of time. And, most important, you have to be able to communicate really well with the person who is sitting behind you—the director, the producer, the picture editor, the sound effects editor—because in this business nobody makes it on their own.

"That's especially true for mixers. Many people have come to me over the years wanting to be mixers, and I'd always do anything I could to help them. But you can't just push a mixer into a re-recording room, and I'd always advise them to find another mixer who was prominent and who would help them along."

Goldwyn Sound was purchased by Warner Bros. in 1980, and Rogers was preparing to retire in 1992 when Warners made him an offer that he couldn't refuse—they needed someone to take on the job of rebuilding the post-production facilities at the Burbank studios. "It was a tough job," he says, "and it required the collaboration of a lot of people, for which I'm very grateful. The studios were really run-down, and to do all the work that was needed we had to lay off almost 70 percent of the personnel. We had to shut down; there was no way to do the construction piecemeal because of the noise problems. We only kept about 25 percent of the facility operating while we did the work, and it was an unbelievably high-pressure job because of all that lost revenue. I could never have done that project if it hadn't been for the engineering staff. Klaus Wiedermann, the chief engineer, and his staff did a remarkable job."

Rogers finally officially retired from Warner Bros. in June of '96, although he remained a consultant for another year-and-a-half. Today, he's president of a startup company involved in developing electronic cinema called Real Image Technology.

Asked for a bit more of his opinion about the future direction of post-production sound, Rogers makes comparisons to the music recording business.

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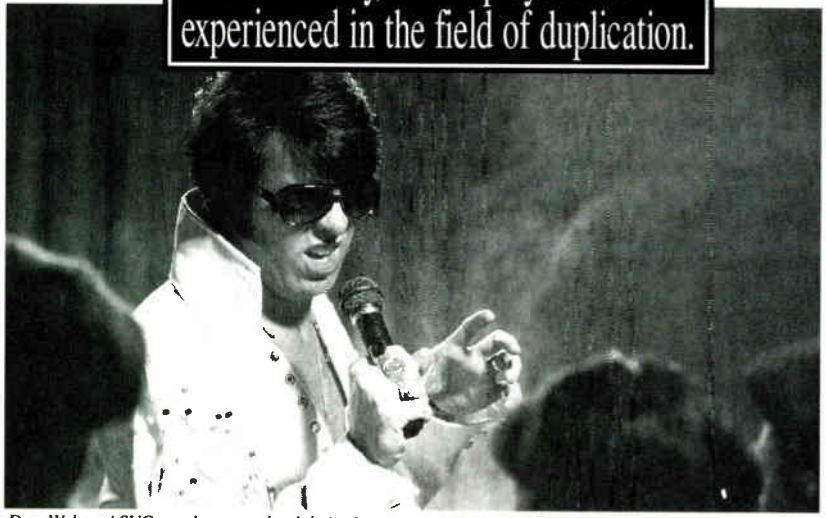

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"The current climate reminds me of 15 or so years ago when the record industry was flourishing," he says, "and they were constantly buying the latest equipment. They were making a lot of money, and they could afford to buy all the latest technology—technology that lasted maybe a year-and-a-half with always something new right around the corner. Everything was changing quickly, but at the time they thought they had the money to afford the obsolescence. Film studios could never afford that—they wanted their equipment to last for 20 years. Now the film studios are faced with the same difficulty: Everybody wants digital consoles, which can cost up to $2 million each. Rates that can be charged have not increased to compensate for the equipment that has to be bought, and the profit margin is going down. Digital boards are in their infancy, and it's a very tough decision; studios have to be very careful to buy a piece of equipment that they'll be able to upgrade in the future. People who are buying them are very hopeful that they will last for many, many years and that something else won't come along soon to make them obsolete.

"Lower profit margins also mean cost-cutting, and with the ease of operation on these automated consoles, I foresee that the traditional three-person mixing team is probably on the way out. It may soon even go to one mixer. The people who will be successful will be the versatile ones who can do almost everything on the mixing board."

It seems that it's much too early to try to sum up Rogers' ongoing career, but he did offer a few words of wisdom on how he's managed to stay so successful for so long. "I'm a lucky person because I had an opportunity to grow with the business," he muses. "And I'm very proud of all the good people who've worked with me over the years—I know that I wouldn't have gotten where I am without them. For me, this business has been all about relationships, about recognizing good talent and making people feel comfortable. Everywhere I've worked, my door was always open to all my personnel—from the lowest on the totem pole to the highest, they were always welcome in my office. And I've told everybody who worked for me over the years to treat everybody equally. If it's an assistant editor or the director, it's all the same; they're all customers, and you've got to treat them all on the same level. It's really true that you never know who your boss is going to be tomorrow!" ■

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BY BLAIR JACKSON

RECORDING NOTES

LYLE LOVETT

A TEXAS COMPENDIUM OF SONG

by Gregory A. DeTogne

Just like the Lone Star State that is his home and inspiration, Lyle Lovett's latest disc, *Step Inside This House* (Curb/MCA), is big and sprawling, a work of immense measure. Recorded at L.A.'s Conway Recording Studios during sessions beginning on January 26 of this year, the double-CD package contains 21 tracks. Taken collectively, the songs guide listeners along a narrative and musical path inhabited by road tramps, women behind slamming doors, the vanished souls of a forgotten way of life and things even the Salvation Army wouldn't take.

Now, if that sounds like the kind of material that would naturally spring forth from Lovett's own wry pen, think again. With songs contributed by the late Townes Van Zandt and Walter Hyatt, as well as Guy Clark and Steve Fromholz (to name a few), the record departs from Lovett's past efforts in that every song but one was written by other singer/songwriters, artists who have defined the nature and scope of the vibrant Texas music scene.

Joining Lovett on this project was longtime associate and co-producer Billy Williams. Together with around a dozen musicians, including regulars like Dean Parks (electric guitar), Leland Sklar (electric bass), Matt Rollings (piano) and Russ Kunkel (drums), the pair have remained true to the original musical intent of each song while still imbuing all of them with Lovett's unique personality.

As with his previous five albums, *Step Inside This House* was recorded very live, in a performance style. With the eclecticism fans have come to expect from Lovett, the disc blends country, blues, dance hall swing and traditional instrumentation into seamless art, all of which was mixed and committed to tape by Nathaniel Kunkel. *Mix* caught up with Lovett near the end of July, just after the album was completed.

Your own talents as a songwriter are formidable. What was behind the decision to fill* Step Inside This House *with songs written by others?

These songs have been a part of my life for many, many years. I even played several of them in the very first set of music I performed anywhere, when I was 18 years old. With the exception of the traditional song "More Pretty Girls Than One," they are songs I learned from singer/songwriters in Texas—people that I actually came to know over the years who influenced my own songwriting.

Is it fair to say you're paying homage to your home state with this record?

Well, I guess that's true in a sense. However, it's really just a matter of getting a chance to play some of my favorite songs. I do have great respect for all of these songwriters, and I think they're all brilliant songs, but I didn't go into the studio with the idea of making an academic study of great Texas singer/songwriters. I didn't have to learn any songs to make this record, because I sit around the house and play them all the time.

Like on all your other albums, you sought to capture the dynamics of a live per-

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GRANT LEE BUFFALO

AN INVITATION TO THE "JUBILEE"

by David John Farinella

A couple of years ago, Grant Lee Phillips and Joey Peters—Grant Lee Buffalo's singer/guitarist and drummer—invited a handful of friends to play with them at Los Angeles' Cafe Largo. Those nights, called The Jubilee Sessions, laid the groundwork for what has become Grant Lee Buffalo's fourth and finest release, the aptly titled *Jubilee* on Warner Bros. Records. Some of those friends appear on the release by design, others were welcome surprises who just happened to be in Los Angeles while the band was recording at A&M Studios.

L to R: Bill Bonk, Grant Lee Phillips, Phil Parlapiano, Joey Peters

Jubilee has a more aggressive sound than the group's first three dises, while retaining all the rootsy but atmospheric feel the band created on its first three releases. The credit for the blend goes to songwriter Phillips for creating such a brilliant batch of songs, as well as producer Paul Fox, the band's first outside producer.

Fox, who has followed the band from their debut release, first heard where Phillips wanted to go with the new release when he listened to the 4-track demos: "My memory of the demos is that they were not really that close to being finished products. I think they were really good snapshots of what the songs were about. But the music really got fleshed out in the recording studio. The type of sound we went for collectively was a much more in-your-face kind of a sound, but at the same

—CONTINUED ON PAGE 290

MOBY WANTS TO DO IT ALL

by David John Farinella

Visitors to Moby's Manhattan loft shouldn't be surprised to hear something other than the electronic music he made his name on leaking from under the door. Sure, he's been called one of the godfathers of dance music, but the deal is that Moby, born Richard Hall, has been playing everything from punk to country over the past 23 years. He started playing classical guitar at age 9, at 12 he was playing in rock 'n' roll cover bands, and then at 15 he found punk rock. It wasn't until he dropped out of college that he discovered a world beyond six strings, working as a club DJ to pay the rent.

Of course, when you're worried about earning enough money to keep a roof over your head, the odds are high that you're not going to run out and buy the most expensive, state-of-the-art gear around. "My first piece of electronic equipment was a Mattel Synsonics drum kit," Moby remembers. "Then I got a Tascam 4-track. I mainly

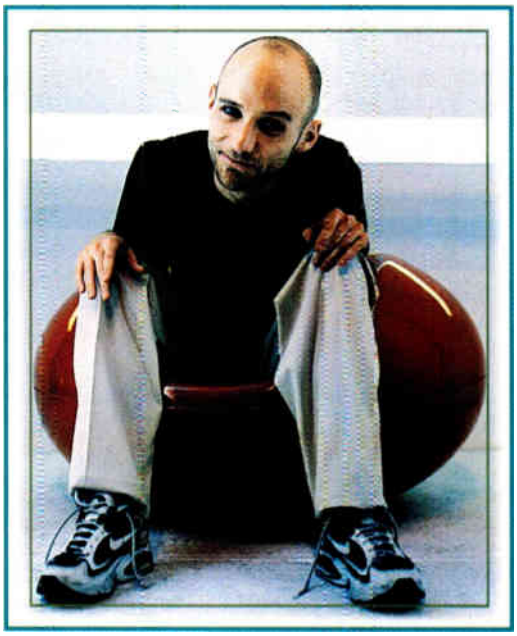
PHOTO: JOSEPH CULTICE

experimented with a lot of live recording stuff," he says, playing with digital delays, live drums and guitars or whatever else he could find. "My first synth was a Casio CZ-101, which I still think is one of the most remarkable synths ever made. My next drum machine was a Roland TR-606." Both the Casio and the Roland are still in use today.

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KING CRIMSON'S "IN THE COURT OF THE CRIMSON KING"

by Blair Jackson

The long-lived, if sporadic, British band King Crimson has been many things to many people through the years. Even Robert Fripp, the group's original guitarist and the lone holdover through the band's many incarnations, has acknowledged as much: "At the beginning of 1969, Crimson were 'underground' and by the end of 1969 had become 'progressive,'" he wrote in his typically literate and exhaustive liner notes for last year's *Epitaph* CD of live cuts by the original KC. "After 1972 and into the 1980s, Crimson became part of 'art rock' and in the 1990s seems to be considered part of a 'prog rock' revival."

In the same notes, Fripp lays out some of the many negative generalizations that have been made through the years about so-called progressive rock, among them: "1) The generation of rock which became known as 'progressive' is characterized by bombast, exaggeration, excess, self-indulgence, pretension and long solos. 2) All prog is appalling—the feeble pseudo-mythical concepts, unintelligible words, fantastic album covers, dopey clothes, bitty and formless music, the rhythm suspect and peculiar which no one can dance to, or would want to unless deranged by drugs—and at its most favorable should be hated by everyone. 3) The musicians were all prats. They probably still are, but now they are fat and bald old prats."

(Fripp can make light of "prog rock" because he moved far beyond the tag so long ago. Today he is still a "progressive" force in music—in the sense that his music is forward-looking and rarely rooted in traditional rock idioms. But he's never been a nostalgia merchant, to put it mildly.)

The original King Crimson was formed near the end of November 1968 and consisted of Fripp, bassist/singer Greg Lake, drummer Michael Giles, reeds/keyboardist Ian McDonald and a non-performing lyricist/light show artist, Peter Sinfield. It was Sinfield who named the band, from a song he wrote with McDonald, "In the Court of the Crimson King." The band debuted in the spring of 1969 and immediately caused a sensation with its extended improvised pieces, high level of musicianship and complicated time signatures virtually unheard of in rock at the time. Musicians all around London flocked to see the new group, which fused rock, jazz and experimental sensibilities in ways that no one had before—including the great British acid band of the time, Pink Floyd. As Fripp put it, "A key to it was surprise. The group came from nowhere. No one in the group had a reputation or was known outside of Bournemouth. Yet within a short time, the live Crimson exerted a wide influence on other groups of its generation. Pete Banks, the first Yes guitarist, was drinking at the bar of the Speakeasy in London on April 9, 1969, our first gig, when Crimson began playing. His drink never left the bar. Two days later the young Bill Bruford [who went on to play with both KC and Yes] walked home to Fulham at 5 in the morning from the Strand Lyceum, raving about the group he'd just seen."

The band was signed by Island Records in the late spring of '69, and in July of that year, after two abortive attempts to make a record with Moody Blues producer Tony Clarke, KC went into Wessex Sound Studios in North London. They cut their debut album, *In the Court of the Crimson King*, in just ten days, producing themselves with the aid of engineer Robin Thompson and the Wessex staff. "We realized we would make mistakes, but decided it was better to make our own mistakes," Fripp said.

Wessex was one of the top London studios of that era, located in what was once a large, high-ceilinged church hall. The huge main room could easily accommodate a large orchestra, and indeed the studio attracted considerable string and brass work for that reason. "It had a wonderful, natural sound," says Geoff Workman, who began as a tape op at Wessex in late '67 but was engineering there by mid-'68. "Plus, when you'd hire out for string players, most of the time you'd get half of the London Symphony in there for your session, so the quality of the playing was extraordinary.

"When I first started engineering at Wessex," Workman continues, "I worked on one of the last Neve tube

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PHOTO DOUG METZLER

Front: Robert Fripp (L), Michael Giles. Rear: Ian McDonald (L), Greg Lake

World Radio History

Cool Spins

The Mix Staff Pick Their Current Favorites

Van Morrison: *The Philosopher's Stone* (Polydor)

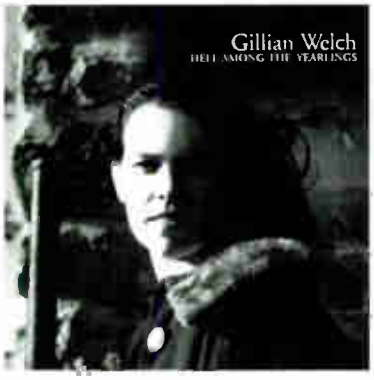
There aren't many artists who could release a double-CD of unreleased, presumably rejected, studio performances and have it be better than almost anything else on the market right now. But Van Morrison is one talented cat—everything he's put out since his Them years has been worth hearing, and much of it has been positively transcendent. Surely he ranks among the greatest R&B singers of our time, not to mention one of music's most affecting poets and mystics. This collection, dubbed *The Unreleased Tapes, Volume One*, is weighted heavily toward the early and mid-'70s—for my money his strongest period as both a songwriter and bandleader—and the quality is amazingly high for "outtakes." Many of the songs on here would have fit neatly on whichever album they were intended for, and the ones that are more *outré* are at least noble experiments. I can't think of any overt failures here, though his funky soul reading of Leadbelly's "Western Plain" may be a stretch. But it's great hearing gems like a very different-sounding 1973 version of "Wonderful Remark," a different take of 1979's "Bright Side of the Road," the gorgeous "Flamingos Fly" from 1974 (recorded in Holland) and strong, previously unknown (at least to me) numbers such as "Not Supposed to Break Down," "Madame Joy," "Drumshamboo Hustle," "Stepping Out Queen, Part 2" and "The Street Only Knew Your Name." Morrison has always had great bands, and that really hits home as you traverse the years through this collection, from 1971 to 1988. As for Morrison—well, he's always been timeless, in his own world, and that's why most of the record doesn't sound the least bit dated. It's just Van Morrison *soul music*.

VAN MORRISON
THE PHILOSOPHER'S STONE

Producer: Van Morrison. Tracking engineers: Brooks Arthur, ML/DB, Bruce, Jim Stern, J. Stronach, Tom A., Gary Landinsky, Mick Glossop, Henry Lewy. Mix engineers: Walter Samuel, Mick Glossop. Studios: CBS Studios (S.F.), The Church (San Anselmo, CA), Caledonia Studios (Fairfax, CA), Wisseloord Studios (Hilversum, Holland), The Plant (Sausalito, CA), Super Bear (France), Townhouse (London), Homestead (Ireland), The Wool Hall (Bath, England). Mastering: Ray Staff/Whitfield Street Mastering (London). *—Blair Jackson*

Gillian Welch: *Hell Among the Yearlings* (Almo Sounds)

The songs of Gillian Welch and collaborator David Rawlings are populated by the same type of characters you find in bluegrass tunes: ghosts, drunks, murderers and mountain women. While decidedly bluegrass-influenced—with arrangements based on guitar and banjo picking, and harmonized vocals—this is darker, more languorous music. It sure doesn't sound like Top 40, but Welch's second release, *Hell Among the Yearlings*, is creating quite a stir. Her first album, *Revival*, included contributions from top-notch roots musicians, but this time out, Welch and Rawlings have stripped it down, handling almost all of the playing themselves—just a pair of acoustic guitars and the occasional banjo. The album relies on the strength of the songs and, particularly, on plaintive, resonant harmonies, to effect its intoxicating charms.



Producer: T Bone Burnett. Engineers: Rick Will, Roger Moutenot, David Rawlings, Gary Paczosa, Mike Piersante. Studios: Sound City (Van Nuys, CA), Sound Emporium (Nashville), Nevada (Nashville), Ocean Way (L.A.), MCA (Nashville). Mas-

—CONTINUED ON PAGE 296

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—FROM PAGE 284, LYLE LOVETT

formance in the studio on the new record.

Yes, that was the point, to record a live performance. I like to record as many pieces of each arrangement at the same time as I can because it allows for spontaneity and interaction between the musicians. That's something I enjoy hearing in music, so that's what I try to bring to my own work.

You recorded this entirely within Conway's Studio C. Did that environment facilitate your putting everyone into one room to capture this live essence?

The way we set it up, we isolated the piano in the same room with the drums and the electric guitar. Then bass and either fiddle or mandolin and dobro were set up in another room with baffles between them. I was in yet another room with my guitar. But Studio C is very open, and the isolation booths are all behind sliding glass doors, so I could see everybody. Visual contact is very easy to make, so you feel like you're all in the same space. I feel that's a vital aspect of recording a live performance. There are other ways of achieving the same end, but I enjoy working like we did in Studio C.

I spoke with Nathaniel Kunkel, your engineer [see sidebar], and he told me that there are very few overdubs on this record.

That's right. We overdubbed Allison Krauss' backing vocals. Otherwise, we basically just ran things down and went for it.

Let's talk about some of the other players for a moment. You gathered many people whom you've known for years, including David Ball and Champ Hood, who together form two-thirds of what used to be Walter Hyatt's Uncle Walt's Band.

The people who were new to recording with me on this record were Sam Bush and Jerry Douglas [mandolin and dobro]. While I've known Sam and Jerry for years—they played in my band on the road last year, and Sam has actually sat in and played with us for several years—this is the first time I've worked with either of them in the studio. Russ Kunkel, Dean Parks and Viktor Krauss [Allison's brother, who played acoustic bass] have been in my band for several years now. I met Matt Rollings when he was 18, and he's played on all my records. Russ and Dean I met through George Massenburg in 1991 when we recorded "Friend of the Devil" for the Grateful Dead's *Deadicated* [tribute] album. I've

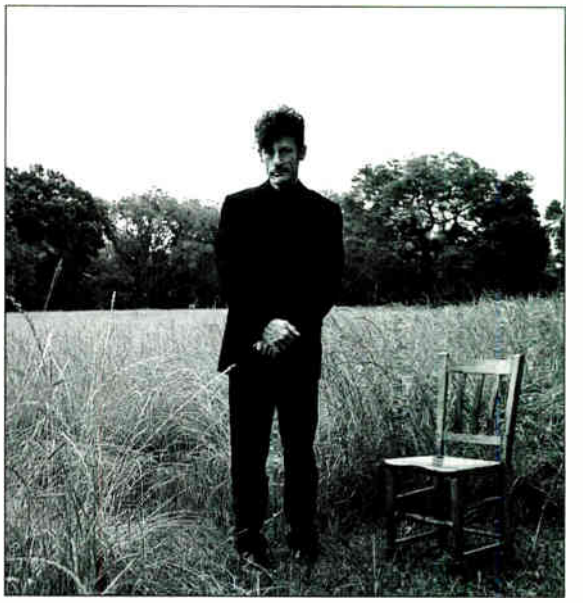
World Radio History

been playing with them since then.

When I first listened to Step Inside This House, ***one of the things that struck me was hearing you work within the confines of melodies and chord changes that I don't typically associate with Lyle Lovett. Somehow, you make them sound like yours anyway. Did you consciously plan how to interpret each song before going into the studio, or was it more spontaneous—part of that studio synergy between musicians you were talking about?***

Every time I approach an arrangement, it's in a fashion that will best communicate what the song is saying. I tried to be faithful to the intent of these songwriters and their songs. But with or without my take on the subject, the songs are so good they would hold up to any interpretation. I was talking to Guy Clark's wife after we recorded one of his songs—the title track—and she told me about another time someone recorded one of Guy's tunes, then came up to Guy afterwards and said, "I hope I didn't mess it up." Guy looked back at him and said, "Man, you can't mess up one of my songs." I thought that was perfect. You can't mess up these songs. They are just too great; it's a privilege just to be able to sing them.

Disc two in this collection starts off with Steve Fromholz's "Texas Trilogy,"



STEP INSIDE THESE TRACKS

NATHANIEL KUNKEL ON ENGINEERING FOR LYLE LOVETT

Nathaniel Kunkel is one of those guys who is perpetually working on his studio tan. The son of drummer Russ Kunkel and a protege of George Massenburg, Kunkel is a born creature of the air-conditioned darkness. He has put up more reels of tape, carved more signal paths and diddled with a greater number of knobs and software programs during his 27 years than some engineers twice his age. "I came to the conclusion when I was younger that this life was so bitchin' I wanted to work all the time," he recalls. "Well, I got my wish. Today there's never an idle moment."

Great blocks of Kunkel's overdriven energy this year were given to recording and mixing Lyle Lovett's Texas-tinged double-CD, *Step Inside This House*. "My job was not so much to tweak out a record with the best sounds," he says, "but to provide an acoustical environment that was always at hand to capture anything the musicians might do."

To that end, Kunkel employed time-honored techniques passed down from his mentor, providing the cleanest signal paths possible with minimal intervention. In practice, that meant he didn't really use Conway Studio C's brand-new, DC-coupled, all-discrete, 72-input SSL 9000J for recording. Rather, input traveled in a straight path directly from the microphones into mic preamps placed right next to the mic stands, and then into the control room at line level.

Once on Kunkel's side of the glass, the tracks were either routed directly to a Sony 3348 tape machine or patched through nothing more than an outboard equalizer or compressor, then committed to tape. Kunkel's mic preamps of choice were GML units and a single box built by Doug Sax, who also mastered the record.

"In keeping with the approach and methodologies I learned from George over the years, I went out of my way to capture everything on tape with the highest resolution possible," Kunkel explains. "My goal was to have no coloration at all. The microphone preamps I use don't really have a sound to them at all. That helps provide me with clarity and space and the option of adding whatever I want later. The last thing I want to do during the process is lock myself into one particular type of sound."

Kunkel relied upon a number of tube mics: A Neumann U67 captured Lovett's vocals, while an AKG C-24 was placed in an M/S configuration for his guitar. Sometimes two M/S-rigged C-24s were used for piano, depending on the sound desired. Doug Sax provided a pair of C-12 tube overheads from Sheffield Labs. "These were my main drum microphones," Kunkel says. "A lot of times Russ, my dad, would just be playing a wooden box or a shaker, so I could move them around according to what was going on." A Sennheiser MD-431, AKG 414s and a FET47 were employed, respectively, on snare, toms and kick drum.

For guitars, Kunkel used Shure SM57s, placed right at the amps. Rounding out his input list were an AKG C-12 for fiddle and a B&K 4011 for Viktor Krauss' upright bass—the mic was mounted on a boom and pointed toward the spot on the instrument right where Krauss' fingers hit the strings.

While Kunkel is a major booster of GML compression and EQ, on certain portions of the tracks—Lovett's vocal and guitar, for example—he used a TC M5000 to provide multiband compression. With the M5000, he found he was able to significantly reduce the amount of EQ he would normally use on a project of this nature, as well as bring down the amount of compression needed to about one-third of its normal level, all within the context of creating a more dynamic and compelling recording.

"Lyle Lovett is certainly not an artist who needs to have the life squeezed out of his records," Kunkel comments. "They shouldn't be a dense wall of sound. But at the same time, you don't want one of Lyle's CDs to go on the radio and fall down when it's played right after one of those incredibly bright, incredibly compressed country records you hear these days.

—CONTINUED ON PAGE 290

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very emotive songs that portray rural Texas life from around 50 years ago. Is there anything autobiographical in those songs?

Yes, I relate to those songs very much because I live in an area which was once a rural farming community and is now a suburb of Houston. In "Texas Trilogy," Fromholz is talking about a place where he grew up in Bosque County, Texas, which is south of Fort Worth. Based upon his own experiences there, he draws a vivid portrait of the end of a way of life. "Trilogy" is a brilliant representation of that.

What about the technical aspects of this record—do you like to get involved in what's happening on the other side of the glass?

I'm certainly not into it to the point Nathaniel Kunkel is, or Billy Williams. I usually describe the outcome I'm looking for, then they gather the proper tools to reach that goal. Over the years, I've acquired a basic knowledge of the equipment, but Nathaniel is on the cutting edge of it all.

How much of a hands-on type are you when it comes to Nathaniel's world? Were you present when the tracks were mixed?

Oh yes, I was there. That's part of the fun for me—to get to actually make the record. It's just like getting to play. Billy, Nathaniel and I communicate well, we work well together. Each one of us does something different in terms of covering the ground we need to traverse. Anytime you work with intelligent, talented people like them, it's inspiring. The sum of what we create together is well beyond what any of us can do as individuals. ■

—FROM PAGE 289, NATHANIEL KUNKEL

The mark of a truly great engineer is to make a record that sounds great everywhere: in the studio, on a high-end home system or coming out of someone's radio from the speaker in the dashboard of a car. How much compression did I use this time? I'll never say, because I have to remain competitive. But one of the things I like about using multiband compression is that I can isolate it to specific areas and achieve the same things I would with a normal compressor, only with less scrunch. I don't have to squeeze the whole thing if all I need to do is control something in the midrange."

Lovett, Kunkel and Williams have developed a working style over the years that keeps things very fluid. The only time anyone had to wait during the sessions was when a new reel was put up.

"In my position, I'm primarily concerned with the creative process," co-producer Williams says of the trio's work ethic. "With Nathaniel around, I don't have to worry about the technical issues that may arise. Every time I say we need to do something, he tells me it's already been taken care of."

The first album Kunkel recorded and mixed with Lovett and Williams was 1995's *I Love Everybody*. He was also at the controls for the Grammy-winning *Road to Ensenada* in 1996. Clearly, it's been a fruitful partnership for all concerned.

—Gregory A. DeTogne

—FROM PAGE 285, GRANT LEE BUFFALO

time I didn't want to lose the atmospheric nature they had established on the earlier records, because that's part of what people associate with Grant Lee Buffalo.

"I really wanted to try to get Grant's voice more present and make the drums much bigger and present," Fox continues, "and then try to fuse the new and the old elements. I think they looked to me for that. I have to give [mixer] Tom Lord-Alge a lot of credit, as well, for bringing that out."

Though Fox is proud of the final product, the early days of the project were a bit more awkward. Because of a previous commitment, the producer found himself double-booked toward the end of the summer of '97. Rather than pushing the project back two months, he asked the band, which also included former Tonic bassist Dan Rothchild for the tracking dates, if they would come in to record the basics over a two-week stretch in July and then come back for overdubs in September.

Both artist and producer agree no steam was lost during the break. "We were listening to these basic tracks coming back, and they just sounded so solid," Philips says. "I think that had a lot to do with delegating that role of producer to an outsider. It meant that the three of us [in the band] could function as a group, and we could really immerse ourselves in those songs. It's as if Paul Fox became the designated driver."

Fox adds, "Thankfully, all that stuff we'd recorded held up really well. There wasn't any desire to recut anything or to change anything; we just picked up where we left off. So I think it worked in the album's favor because we were all fresh on the material again, as opposed to having been in there day after day as you usually are for six weeks or eight weeks.

"Also, it helped out with the availability of some of the people we wanted to be on the record," Fox continues. "This album was one of those records that seemed to be surrounded by good fortune. The right people were available when we wanted to get together with them. People who lived in other places who just happened to be in L.A. dropped in while we were in the studio. I think taking that break really did give everybody a fresh perspective on what we were doing."

Some of those guest musicians include keyboard wizard Jon Brion, lap steel guitar player Greg Leisz, The Wallflowers' keyboardist Rami Jaffee, as well as background vocalists Michael Stipe, E from Eels, Andrew Williams and Robyn Hitchcock. "It was a very natural kind of progression for us because all of us have either worked together before or are friends," explains Fox. "Given that they had expanded their outlook on things by changing the personnel within the band, it kind of freed them to bring in some different instrumentation and different people to come in and participate on the record."

Fox, engineer Jeff Tomei and the band did the tracking at A&M mostly live; the room is famous for its excellent live vibe. In fact, Fox says, the room was perhaps one of the most valuable tools throughout the recording process: "The way the room is set up, I can record the way I want to record, which is really trying to foster as much of a live atmosphere as possible. We tracked some of the songs, like 'Jubilee,' completely live. There's not many places you can pull that off."

Although the room is equipped with an SSL G Series desk, Fox and Tomei brought in 24 channels of Neve 1073 mic pre's and ran everything through them. "Basically the SSL was used as a monitor board," explains Tomei. "I like the combination because the routing is great with the SSL, but I love the sound of Neve. We ran every mic through the Neves and brought them in the inserts of the SSL and routed them to the tape ma-

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chine." They recorded the album on Studer A800 tape machines and used the standard complement of high-end and vintage compressor/limiters, such as LA2As, 1176s, LA3s, dbx 160s and Fairchilds. Tomei also had a range of EQs, from Pultecs to APIs.

The microphone selection included a Neumann U47 for the vocals with a Neve 2254 compressor. For Phillips' guitar tracks, he used a combination of Shure 57 and a Sennheiser 421. Rothchild's bass was recorded both DI and through his rig, with a Sennheiser 421 and a Neumann 47 or a 247. On the drum kit, Tomei used an AKG D-112 on the inside of the kick drum and a FET 47 on the outside, a Shure 57 and a 441 on the snare, 421s on the toms and a pair of AKG C-12s as overheads. In fact, Tomei says he'd try to capture as much of the drum kit as he could with the C-12s, and then use the other mics to fill in where necessary. During the tracking for "Everybody Needs a Little Sanctuary," Tomei went to the extreme of filling in the drum tracks with lavalier mics that he taped to Joey Peters' sticks, where the drummer had taped a pair of shakers.

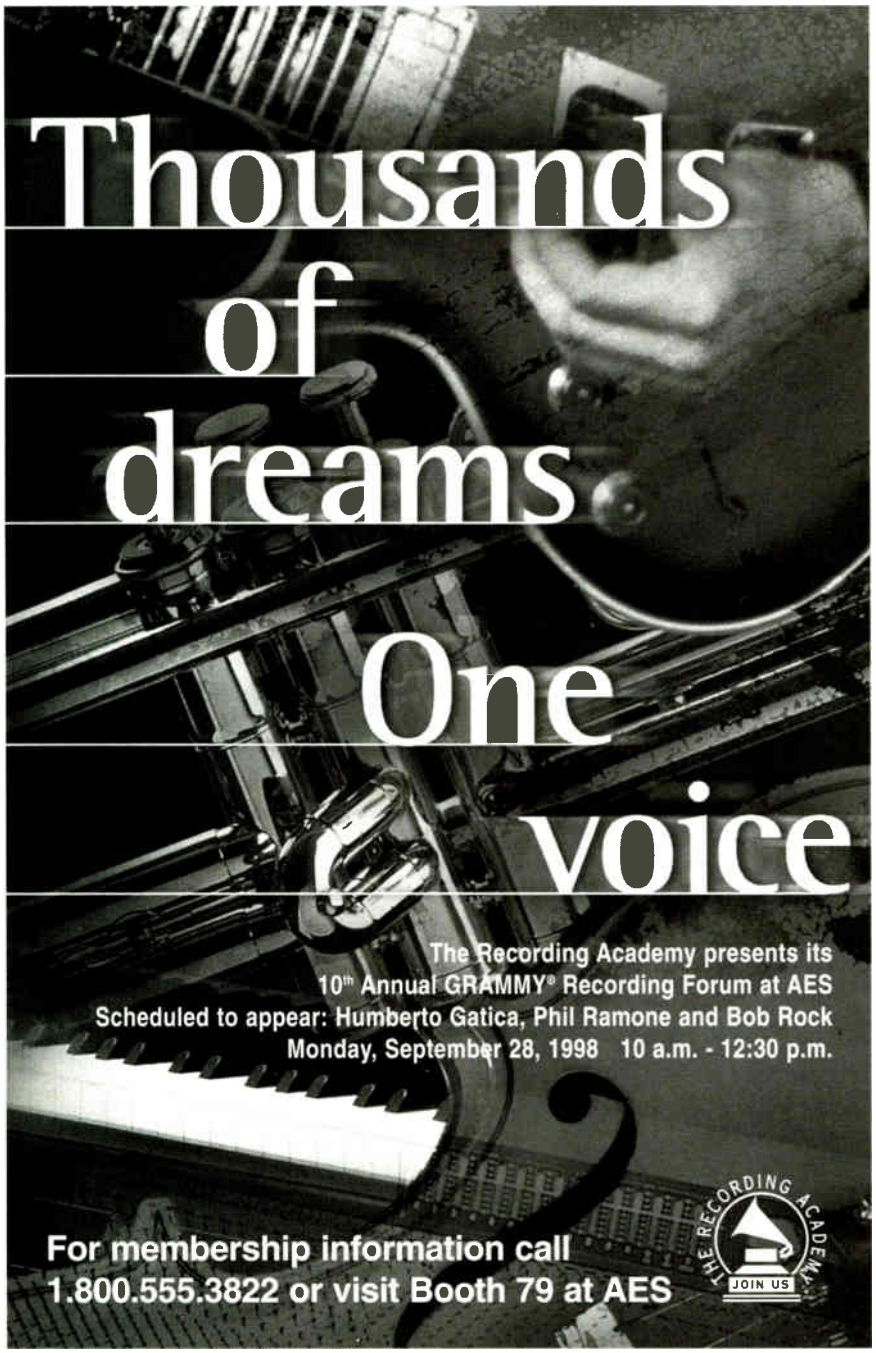
That's only one example of an engineering trick the recording team employed. From the first cut to the last, Tomei, Fox and Phillips were always looking for ways to add those "little obsessions," as the singer says, into the songs. That included everything from running a mix of Peters' kit through a SansAmp for the song "Testimony," to adding tracks from a Mattel Optigan keyboard to "Crooked Dice."

It was on "Crooked Dice," in fact, where Tomei also used a bit of Pro Tools trickery along with some fancy engineering. The Optigan is an old toy keyboard that runs off of small floppy disks. Tomei learned that if you turn the floppy disks over, the track will play backward, which is just the sound Phillips wanted. Surely the folks at Mattel didn't believe their keyboard would be used in a professional setting, although they did add a ¼-inch direct output to the Optigan. For these sessions the team opted instead to mike the unit's 12-inch speaker facing the player. "You get a little bit of the noise going on in the machinery, but it was definitely an interesting sound," says Tomei.

Right after he came up with the groove for the tune, they tracked it into Pro Tools because they needed to slow down the BPM to fit the feel of the song. "The band used that as a click track to play around," Tomei explains. "That was an interesting song because there were totally left-field ideas on everything. There were just three mics on the drum set—an overhead, and one each on the snare drum and the bass drum—but it was a pretty big kit, so it sounded really simple and trashy, everything's heavily compressed. It turned out really well."

The record as a whole benefited from a spirit of experimentation, cooperation and happy accidents that sounded good. Phillips was so excited by the endless possibilities suggested during these recording dates that he's already thinking about the band's next release. "The studio constantly inspires me," he says. "It's usually during that process that I begin thinking about the record to come, which is the most inopportune time. But that's when the inspiration strikes," he says.

That said, however, he's not overlooking *Jubilee*. "I think it's a new milestone for the band and for myself in terms of the recording, in terms of the writing and, most important, in terms of attitude. It was an enjoyable record to make, and the entire year that was spent in transition reminded me of why I do this—for the enjoyment and the fact that I really, really need to do this. All of that kind of hit home, so it's an important record." ■



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—FROM PAGE 285, MOBY

He skated around the music scene, recording snippets of music here and there in his bedroom, for the next five years. In 1989 he inherited a small bit of money, and the race was on: "I went out and bought a Yamaha TX16W sampler, which is absolutely the most irritating sampler ever made," he says. "Then I bought an Alesis MMT-8 sequencer and an HR-16 drum machine. That was my first official foray into the world of MIDI. I've been buying stuff ever since."

He was hooked, he explains, by the vast possibilities of the equipment. "A lot of it was just the ability to have control over such a wide palette of sounds. Also, I'd been playing guitar for such a long time I was really thrilled to experiment musically in other directions. The music I was falling in love with was all made exclusively with electronic equipment."

He also liked the fact that he could work by himself, a philosophy he's carried through to his most current work. In fact, he still engineers the majority of his own sessions, and he steadfastly avoids working outside of his home. "I hate outside studios," he says. "I'll do anything in my power to avoid trying to do anything creative in an outside studio. I'll use them for mixing occasionally, or when I had to record a horn section—I can't do that in my studio. I try to do everything in my studio that's even slightly creative."

That includes the remixing work he's done for such artists as Aerosmith, Metallica, Smashing Pumpkins and Michael Jackson. "The Metallica one was strange, because I did two mixes for them. The first mix I did for them I took all their guitars off and replaced them with guitars I played myself. They weren't too happy about that," he says. "They re-edited it and played their own guitars on top of it. The final version that came out I wasn't too happy with; I felt it was a sort of bastardized version. On the Smashing Pumpkins song, Billy Corgan was very confused by it because it didn't have much relationship to the original song. One of my favorites, though, is a remix of 'Beat It' for Michael Jackson. Of everything I've done, I think that's my favorite. I also did a bunch of remixes for Brian Eno for a song called 'Fractal Zoom,' which I was pretty happy with. That was very intimidating for me because he's been one of my musical heroes for such a long time."

In order to make sure his Manhattan flat could fully accommodate his musical vision, Moby turned to an architect, designing a studio within the living space. "It's soundproofed, it's got about 6,000 pounds of sand under the floor, it's got the floating walls. By my standards it's pretty impressive," he says. He's also stocked it with stacks of keyboards, samplers and recording gear. While he's currently running a Soundcraft 48-channel board, Yamaha's 02Rs are catching his eye and a switch might be in the works. He runs Pro Tools on a nearly vintage Macintosh IIci. "It crashes once every year-and-a-half," he explains. "I'm going to have to replace it because there are a lot of plug-ins that won't run on such an old machine. I'm going to be very sad to see it go, because it's so reliable." For multitrack work he relies on ADATs, although he says he's been looking into hard disk recorders lately. "I think I'd like to move to a nonlinear way of recording," he says. "ADAT is nice because it's cheap and it's easy, but I like the creative possibilities of random-access recording."

On the synth front, Moby relies on a handful of old Roland and Yamaha units, an Oberheim Matrix 1000 and a Waldorf analog. Effects processors (he says there are almost too many to list) include a Yamaha SPX 900 (which he

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uses mainly for one reverb patch), an Eventide DSP-4000 and an old Alesis Quadraverb he uses for delay and for the de-tuning function. The sampler corps are all Akais: the S950, S1000, S3000 and S3200. "I have all the memory in all of them maxed out; I sample as much stuff as possible so I can have this huge palette of samples," he explains. "I leave all of the synths and samplers turned on all the time. They're always sitting there, so whatever sound I want is at my disposal. I'll have 400 or 500 break beats sampled, and 40 different kick drums and 40 different snare drums."

Those samples, he says, often come from decidedly nontraditional sources: "Sometimes I'll sample actual percussion tracks from obscure old blues records or old African percussion records. Sometimes I'll get a really beautiful, pristine string sound that I can use from an old classical CD."

Moby says he embraces the never-ending options provided by new technological developments because they make his job easier, which gives him more time to be creative. Considering that he moves from electronic dance music to quiet instrumental pieces to hard-edged punk rock (all of which can be found on his releases *Everything Is Wrong*, *Animal Rights* and *I Like to Score*), he needs that time to shift gears and change his working methods. The latter release is basically a soundtrack CD featuring his work on the James Bond theme, as well as bits of music that have appeared in *The Saint*, *Scream* and *Double Tap* (for which he wrote the entire score).

So far, he's enjoyed working in so many different musical styles, reveling in his ability to break down the barriers between the different worlds. "It was frustrating in the early to mid-'90s when I felt I was being pigeonholed as just a techno guy," he says, "because I had been playing music for such a long time. I just didn't feel that was reflective of who I was as a musician, and it's nice to have been able to break out of that. Unfortunately, now I've confused a lot of people," he adds with a laugh. "But that's nice, because in the confusing process I've also sort of managed to attract a very open-minded, very smart core group of fans. They're also fairly indulgent, so if I make punk rock songs they put up with that, and if I make electronic stuff they put up with that."

He'll push those fans with a new album, which he's hoping will be released sometime this fall. "I feel like *Animal Rights* was a difficult punk rock record. Having made that, I feel like I got that out of my system. I think it was a very self-indulgent, personal record, and I think it was a very difficult record to listen to. I don't really feel the need to shove that down people's throats again. The record I'm working on now is fairly eclectic. It has some electronic dance stuff on it, some quiet instrumentals, some almost ballad-type songs," he explains. "I like the idea of making a record people can fall in love with and use in their daily life when they're making breakfast, when they're driving to work, when they're getting ready to go to sleep." ■

—FROM PAGE 287, COOL SPINS

tering: Doug Sax, The Mastering Lab (L.A.).
—Barbara Schultz & Adam Beyda

Dana & Karen Kletter: *Dear Enemy* (Hannibal/Rykodisc)

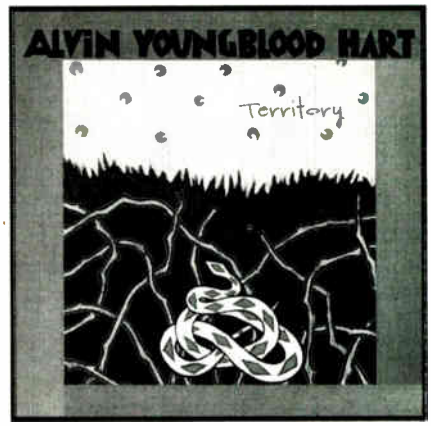
Over a bed of piano, violin and cello glide along the mellifluous, entwining voices of twin sisters Dana and Karen Kletter. *Dear Enemy* is

all-acoustic, moody rock, produced with simple elegance by Joe Boyd (immortalized long ago for his work with English mood king Nick Drake). It's laden with unusual arrangements and dark themes counterposed by truly beautiful melodies and harmonies. Moments of tape hiss attest to the record's analog pedigree—it sounds great.

Producer: Joe Boyd. Engineer: John Wood. Assistant engineer: Mike Snyder. Tracking studio: Sound of Music (Richmond, VA). Mixing studio: Livingston Studios (London). Mastering: Tim Young, Metropolis (London).
—Adam Beyda

Alvin Youngblood Hart: *Territory* (Hannibal/Rykodisc)

I first saw local blues talent Alvin Youngblood Hart play onstage at Yoshi's jazz club in Oak-



land, Calif., with the legendary Howard Armstrong (aka Louie Bluie). With his large build and long dreads Hart appeared like a gentle giant, making his delicate and virtuosic playing as surprising as it was beautiful. On his recent solo release, *Territory*, Hart explores varying blues styles, from the light honky-tonk charm of the original "Tallacatcha" to an exquisitely mournful electric version of Skip James' "Illinois." A little less appealing is his prog rock electric guitar on the instrumental "Ice Rose," but it is quickly redeemed by a sweet French-cafe version of the Dubin/Burke ballad "Dancing With Tears in My Eyes." Hart is a sensitive and versatile musician and a real authentic blues singer with something for anyone who loves roots music.

Producers: Michael Nash and Carey Williams. Engineer: Paul Stubblebine. Second mix engineer: Andre Moran. Studios: Bay View Richmond, CA. (tracking); Hyde Street, San Francisco (mixing); Paul's Gourmet Mastering, San Francisco (mastering). *—Barbara Schultz*

The Grassy Knoll: *III* (Antilles)

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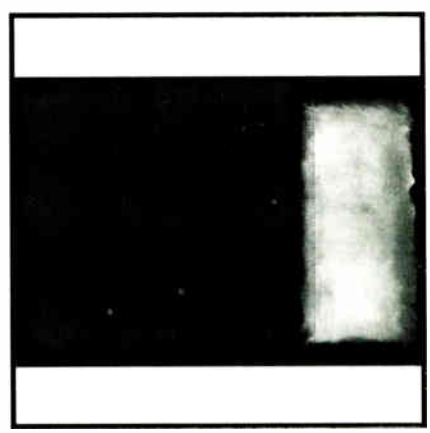

to classify. There are elements of hip hop, trip hop, acid jazz, industrial, trance and almost any other moderne label you want to throw at it. The CD is the brainchild of multi-instrumentalist and programmer/sample maven Bob Green, who has assembled a stellar cast of mostly jazz-ish players—including trumpeter Chris Grady and reeds players Roger Rosenberg and Ellery

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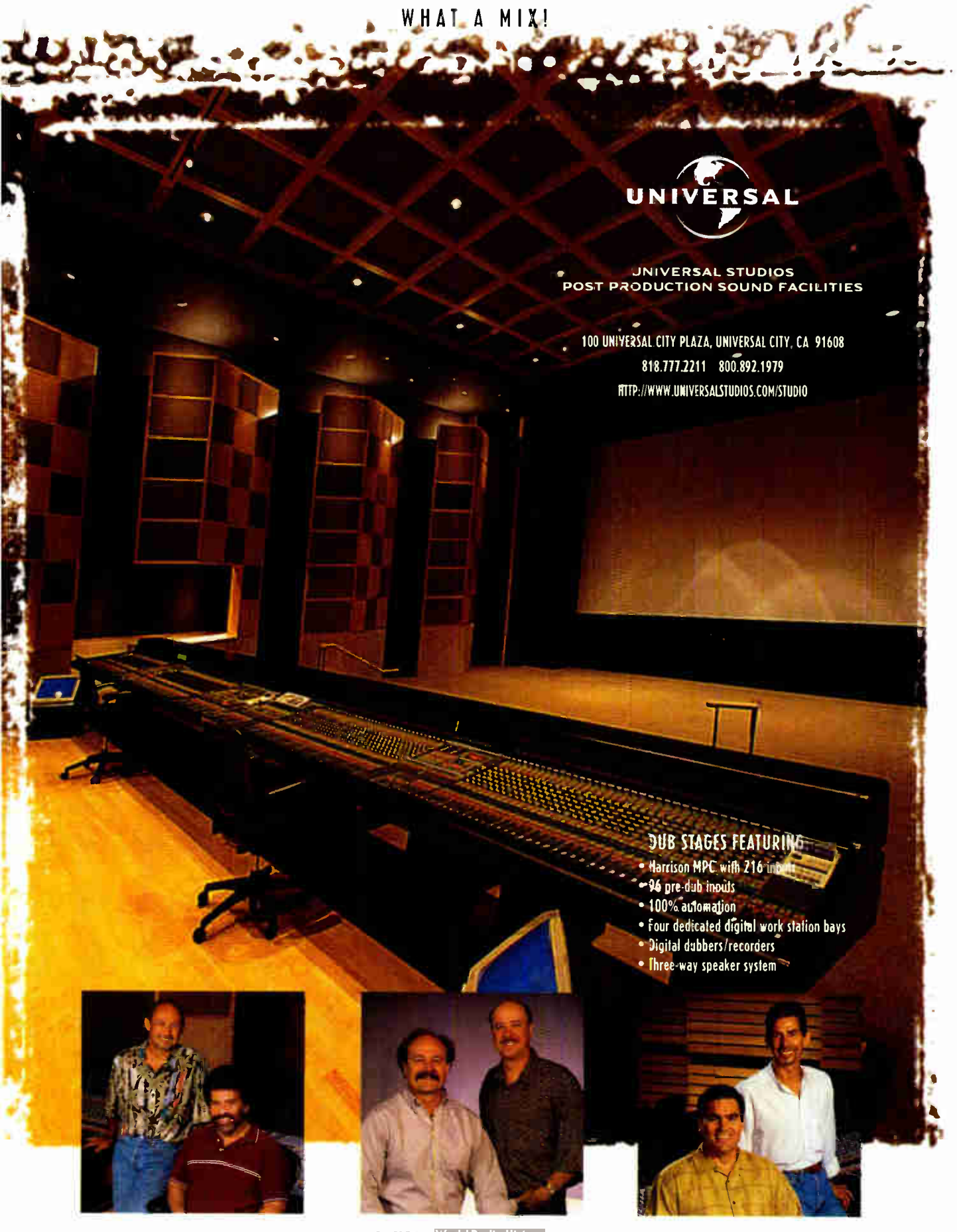

CIRCLE #217 ON PRODUCT INFO CARD

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Eskin—who riff and jam through various sonic landscapes, from funky jams that recall early-'70s Miles Davis to more serene spaces dominated by cello, Mellotron and/or violin. Sonic Youth's Thurston Moore appears on three cuts. Cool textures and interesting sounds abound. Some of it is, frankly, a bit grating to my ears, but it's always at least a very interesting and artistically constructed audio hallucination, not to mention a great headphone record! Plus, you gotta love a band that puts a moody Mark Rothko painting on the cover.

Producer: Bob Green. Engineer/mixer: Nicholas Sansano. Studio: Greene Street Recording (NYC). Mastering: Brian Gardner, Bernie Grundman Mastering (L.A.).

—Blair Jackson

Lisa Germano: *Slide* (4AD)

Lisa Germano has long been into atmospherics, and on *Slide* (her fifth release) she's met her match in producer/engineer Tchad Blake. Out of fairly minimal instrumentation, Blake and Germano have elicited beguiling textures and ambiences (for a great example of what can be done with kit and percussion, check out the song "Tomorrowing"), all in service to Germano's swirling, brooding compositions. Uniting this collection of subdued soundscapes is Germano's breathy, mesmerizing vocal presence. Another in a series of rich, compelling albums from this vital artist.

Producer, engineer and mix engineer: Tchad Blake. Additional engineering: S. Husky Hoskulds and Lisa Germano. Studios: Sunset Sound Factory (L.A.), and home. Mastering: Bob Ludwig, Gateway (Portland, ME).

—Adam Beyda

Randy Scruggs: *Crown of Jewels* (Reprise)

Scruggs is the guitar-pickin' son of the legendary bluegrass banjo ace Earl Scruggs and a longtime session ace himself. For this outing he's assembled an incredible cast of singers and players to help him out; indeed, the guests thoroughly dominate the album. This shows what good taste Scruggs has and also reveals a selfless streak that is admirable in this age of egos run amok. (His playing is exemplary, too.) This tastefully arranged and beautifully recorded album works as a stylistic sampler of different folk and country music forms, from old-timey to country-rock, with lots in between. Since Scruggs is a player, not (mainly) a lead singer, the lead vocals are handled by the likes of Mary Chapin Carpenter (singing a lovely tune she and Scruggs wrote called "It's Only Love"), Travis Tritt, John Prine (a fine version of "City of New Orleans"), the heavenly duo of Emmylou Harris and Iris DeMent, Joan Osborne, Bruce Hornsby and Rosanne Cash. The playing is all first-rate (more all-stars), and the overall mood of the album is one of joyous communion through music.

Producer: Randy Scruggs. Engineers: Steve Marcantonio, Ron Reynolds and Richard Barrow. Mix engineer: Steve Marcantonio. Studios: Scruggs Sound Studio (Nashville), The Sound Kitchen (Nashville, mixing only), Ocean Way (L.A., overdubs), Bruce Hornsby's Hair Pub for Men Studio (Williamsburg, VA, overdubs). Mastering: Denny Purcell, Georgetown Mastering (Nashville).

—Blair Jackson

Disco Biscuits: *Uncivilized Area* (Hydrophonics Records)

Comparing a band to Phish is sort of a useless proposition, since that august Vermont unit plays a million different styles. But mention Phish and the name conjures sprawling guitar-based jams, interesting rhythm and dynamics shifts, danceable grooves and a sort of good-natured and goofy spirit, all elements in abundance here. I've probably listened to this CD half a dozen times and I still have no idea what any of the songs is about, but the high-energy brew and commitment to purposeful jamming are intoxicating and keep me coming back. Like all of the East Coast neo-hippie groups, (from the similarly talented Ominous Seapods to God Street Wine), the Biscuits' music probably works better live in a sweaty dance club than on record, but they managed to communicate their fun vibe in the studio, too. A group to watch.

Producer, engineer, mixer: Rob Hunter. Studio: Groundhog Studios (Holland, PA). Mastering: Gary King, The Sound Lab at Disc Makers (N.J.).

—Blair Jackson

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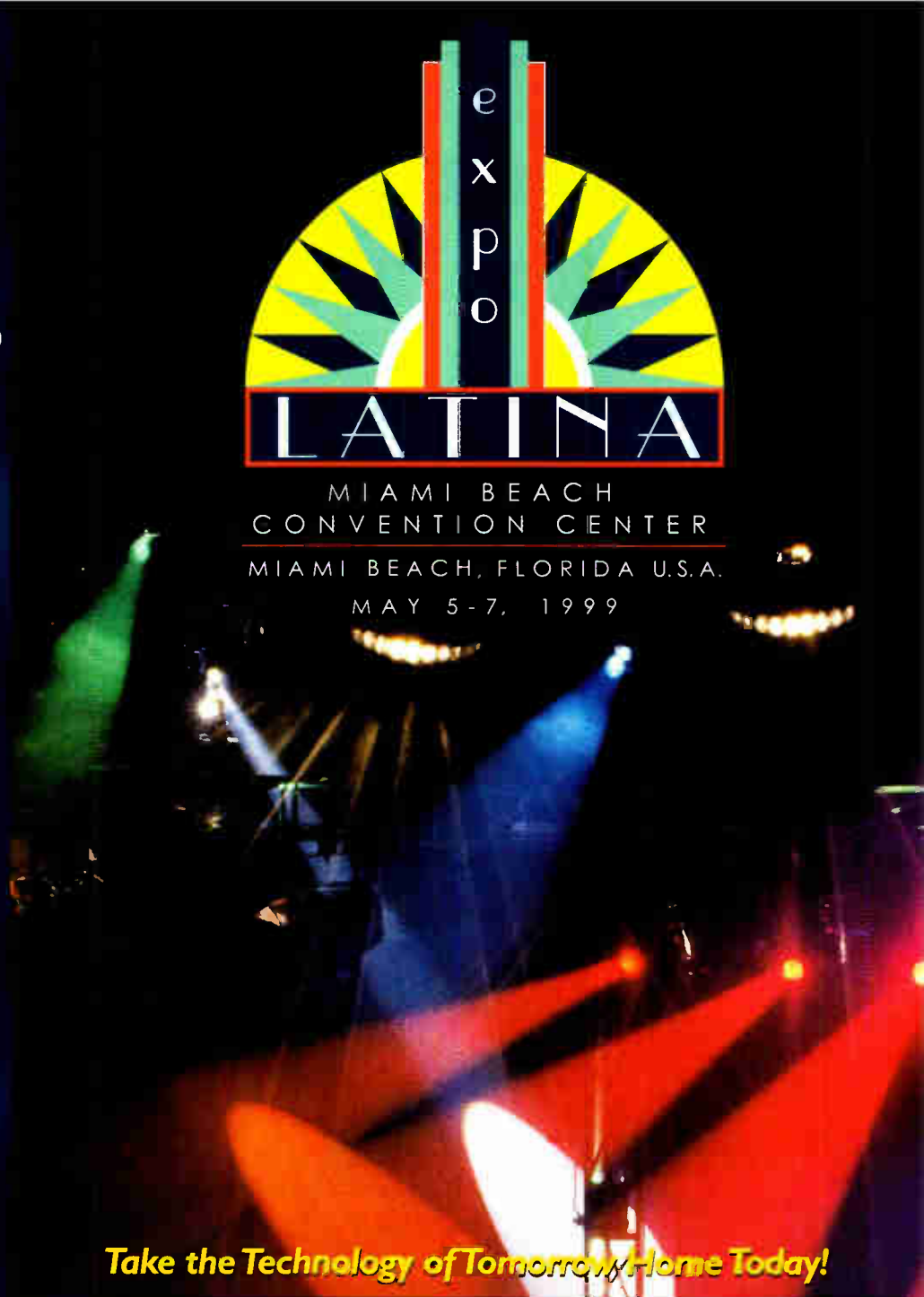

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—FROM PAGE 286, KING CRIMSON

boards. You could fry eggs on this thing, it got so hot. It was an 18 into 4 that had been modified into an 18 into 8. In the beginning we were doing straight to stereo most of the time, then we got a 4-track and then we finally got an Ampex AG440 8-track. *In the Court of the Crimson King*, which had like 30,000 overdubs on it, was all done on that 8-track 1-inch machine. Any one track used to have 20 different instruments on it at different parts of the song. [He's exaggerating, folks.] In those days you made the absolute best of what you possibly could. Outboard gear was almost unheard of. If it wasn't on the console, it's like it almost didn't exist. Wessex had one live [echo] chamber, and I believe at the time we had four of the big EMT plates, but not much else. For instance, on the Ampex AG440, to get anything like a varispeed effect, we used to have to put adhesive tape around the capstan to make the capstan a little larger, so that when the pinch roller clipped in, the machine would run slightly faster. You couldn't do it too much, though, because then you'd squeeze the tape so thin it would no longer fit on the machine. But we did a lot of experimenting in those days, and we always seemed to figure out some novel way to make the records sound interesting and different."

Although King Crimson was known around London as a killer live band, and they had all the material for their first album worked out well before they came into the studio, very little of the tracking was done live. "In the original Crimson, when we used to cut the bed tracks, sometimes it would be just drums and bass to start," Workman says. "The drums used to go straight to stereo, and most of the time the bass would be up there on one of the two tracks, recorded direct; so that was two of the eight tracks. I usually used three mics on the drums—one on the kick drum and two overheads. You could get away with that because Mick Giles tuned his kit so precisely that it had a great overall sound, so you didn't need to fiddle with the individual drum sounds.

"But the thing that really astounded me the most is they used to cut these tracks—Mick Giles and Greg Lake, and if you were lucky, maybe a little smattering of a scratch guitar from Fripp—and you'd have them playing bass and drums on these tracks that were six, seven-odd minutes long. And I'd be thinking, 'How the hell do they know where they are?' I'd have no idea,"

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World Radio History

Workman says with a laugh. "The machines had no counters in those days, so I'd have to guess where we were on the tape, or maybe put a piece of editing tape on and try to see that flying by as it spooled. They'd listen to playbacks and say to me, 'Oh, let's go back to the middle of that first bridge section. I want to check something.' And I'd say, 'You can't be serious! You mean there was a bridge in there?' So eventually we started using a white Chinagraph pencil lightly on the back of the tape—one of the guys in the band would be in the control room and he'd mark each verse and chorus and bridge so I'd know where the hell we were in the song."

Barry Godber's cover art for the first King Crimson album

The songs on *In the Court of the Crimson King* were built up in layers by bouncing tracks and combining multiple instruments on many of the eight available tracks. Workman remembers, "On the first album, on some songs we actually had to mix the song in four- or eight-bar sections because the track lineup would change so drastically—what was a piano all of a sudden became the solo guitar, what was background vocals suddenly became Ian McDonald on a bass clarinet, or something. They were using all sorts of interesting combinations of instruments on different parts of different songs. So it became a matter of being able to punch in and out in a hair's breadth, and in those days, particularly on the AG440, that was no mean feat. The track sheets looked ridiculous. But we'd do whatever we could to keep some control. We'd mix onto one track, say, bass and flute, because when it came to mix, if you wanted a little more flute you could add a little bit more high-mid, high-end [EQ] and that would affect the flute more than the bass. So you'd find yourself putting together instruments that were not necessarily at opposite ends of the spectrum like that example, but which allowed you to in effect mix the one track."

"In the Court of the Crimson King" sounds like one of the simpler songs on the record—it's guitars, bass, drums, Mellotron, other keys, flute and vocals—but, like every other tune on the album, its simplicity is deceptive. For example, just the sweeping choral "aaahs" required nine or more tracks at the start. "If you listen to it, it sounds like the Mormon Tabernacle Choir," Workman marvels. "What we'd do—and this is something I did on records for years, with Queen and The Cars and other groups— is put down three tracks of a root vocal part, then bounce that down to one track. Then we'd use those three same tracks again to do the third above, then bounce that down to one track, do three tracks of, say, the fifth above and bounce that down, so that's nine down to three. Then those three would probably be bounced down to a mono track. With a band like Crimson, you almost had to write yourself a road map beforehand, between the engineer and the guys in the band."

Asked if recording an instrument as notoriously quirky as a Mellotron posed any special problems, Workman replies, "Not really. We used to take them DI because the early models like they used in King Crimson or in the Moody Blues were so noisy. The later ones were smaller and quieter and had interchangeable racks of tapes and various other features. But these first ones were so noisy that if you put them through any kind of amp pre getting to the console, you didn't have a signal-to-noise ratio, you had a noise-to-signal ratio! You'd hear this great '*Shhhhhhh*' all through it. 'Wait, I think there's a little string part in the background of all that noise!'

"One of the things that was interesting about Crimson is that they often used two Mellotrons at the same time; both McDonald and Fripp would play them. The thing about the Mellotron is the tape loop lasts just shy of eight seconds, so if a chord needs to be held down for more than eight seconds, you have to lift your hands off and let the springs pull the tape back so the loop can start again. So on songs that needed more sustained chords we'd use two, with one player holding the chord for seven seconds or so and then the other one coming in to keep it going— we used to call it 'dueling Mellotrons.'"

Workman remembers the album sessions as "a time of great experimentation, of looking for new sounds and new ways to combine sounds. One hates to use this overused term, but they really were sort of avant-gardeish. They were trying to be different, and they were. Fripp, in particular, always wanted to try out new sounds. I remember him saying things like, 'I want to do a guitar overdub on this and I want it sound like a worm crawling out of a hill on a rainy day,' and I'd have to sort of say, 'Oh, you must mean +2 or 3k and a 50 cycle highpass filter or something.' Or he'd say, 'What would happen if I put my amp on the stairs that lead up to the offices, and we put the microphone under these steps?' We were up for anything."

The first Crimson album ended up being a resounding success both in Britain and in America, where both "In the Court of the Crimson King" and the art-metal track "Twentieth Century Schizoid Man" garnered heavy FM radio play. Yes, all those traits of "prog rock" Fripp mentioned above were present, from the long solos and weird key changes to the mystical lyrics that sounded like they were equal parts Dylan, Tolkein and some Eastern mystic. But those were different times, and young people weren't as cynical and jaded as they are today. Crimson showed us worlds we'd never seen before—worlds that were more beautiful and magical than the real one, which was scarred by war and hatred and seemed like it might explode at any moment. King Crimson—and rock music in general—provided joyous escape, as well as food for thought.

The original lineup of King Crimson lasted only till the fall of 1969 and cut just that first LP together. Workman went on to record two more albums with the group—*In the Wake of Poseidon* and *Lizard*—but neither of those records had quite the same combination of freshness and spirit as the first album. Still, each incarnation of King Crimson had something new to offer listeners, and that's why the band is held in such high esteem by so many today. There are still thousands of fans out there salivating over the prospect of the *next* KC tour, whenever it materializes. The dreamy court of the Crimson King of the song now seems like a world and many lifetimes away, but it's still a fascinating and dramatic place to visit. ■

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COAST TO

PHOTO: ED COLVER

Jackie and Hank Sanicola at the new SSL 9000 J Series in Studio B at O'Henry

L.A. GRAPEVINE

by Maureen Droney

Hank and Jackie Sanicola's low-profile O'Henry Sound Studios in Burbank has always kept busy with a mix of record, TV and film projects. This year the decision was made to upgrade Studio B, with a complete renovation and the installation of an SSL 9000 J Series console fitted with the SL9561 multiformat monitoring system. The new studio bauhton-designed room was completed in August after four months of construction that began with taking the control room down to its concrete block walls.

Now, the spacious control room seems larger than ever, with bauhton's trademark clean lines, interesting textures and muted colors augmented with maple, stainless steel and Almute surfaces. Surround sound monitoring is provided in a variety of formats, including 4-channel Dolby Stereo, 5.1 for Dolby Digital, DTS, DTV and DVD, and 7.1 for SDDS feature films.

"When we got serious about building this room," says studio manager Richard Landers, "we spoke to record and scoring mixers, music editors, composers and directors to ensure that we were building a room that would fully accommodate their needs. Also, our years of experience in Studio A, doing a record date one day and a 40-piece scoring session

—CONTINUED ON PAGE 306

NY METRO REPORT

by Gary Eskow

Stopped in recently at Baby Monster Studios on 14th Street. If you're looking to track under posh conditions, keep going. However, the vibe at Baby Monster is comfortable and vintage analog, due in large measure to the tone laid down by Steve Burgh, who owns the place with his wife, Jamie.

Burgh came to the Apple from his home in Trenton, N.J., in 1968 with his band, Jacob's Creek, and quickly made a name for himself as a guitar and bass player with strong folk/rock chops. He played and recorded with the likes of David Bromberg, Phoebe Snow and the late folk artist Steve Goodman. Burgh had success in the mainstream as well, recording with Willie Nelson, Gladys Knight & The Pips and Billy Joel—that's him plunking away on "Just the Way You Are" and other cuts on *The Stranger* LP. He's also worked with such diverse talents as Leonard Cohen, Paul Anka and John Prine.

Burgh began producing in the 1970s; his work in this capacity includes Bromberg's *How Late'll Ya Play Til*, a 1976 Fantasy Records release, and Steve Forbert's *Alive on Arrival* (1977) and *Steve Forbert* (1982), both on the Nemperor/Epic label. Although he was never a tech head, Burgh dug the studio scene and decided, in 1986, to take the

—CONTINUED ON PAGE 310

Tony Bennett (L) and engineer Joel Moss mixed Bennett's new release, The Playground, on the Sony Oxford console at the Hit Factory in New York City. Danny Bennett produced.

World Radio History

COAST

At Nashville Studio Recording Arts, owner Carl Tatz (L) sits at the SSL G Plus with singer Jack Jones during sessions for Jones' forthcoming release on Linn Records.

NASHVILLE SKYLINE

by Dan Daley

The shakeout in Nashville's studio market continues, a slow-motion dance in which some new studios arrive with high expectations (and a belief that they can succeed in the most crowded music market on Earth) and some existing facilities jockey for position in the coming new world order with upgrades and alliances. Others simply throw in the towel.

The Castle Recording Studios bought and installed an SSL G+ console in August. The 4056 came from Sixteenth Avenue Sound, which has decided to shut down after nearly a year of active attempts to sell the two-room facility whole. Castle VP Mike Janas says the studio plans to bring the console up to 72 inputs, some of which will be stereo modules. He added that he expects clients who were fans of the board at Sixteenth Avenue will likely follow it to its new location.

Meanwhile, over at Sixteenth Avenue Sound, company manager Preston Sullivan acknowledged that studio owner Jim Chavers has decided to leave the business and retire. The building is owned by a real estate group. Sullivan says Chavers and the property owners have received several serious

—CONTINUED ON PAGE 314

SESSIONS & STUDIO NEWS

SOUTHERN CALIFORNIA

At their warehouse studio in Santa Monica, Dreamworks artists Artificial Intelligence recorded with producer (and Dust Brother) Mike Simpson and engineer Rob Seifert... Deborah Cox mixed new material with producer DJ Quik and engineer Chris Puram at Skip Saylor Recording (L.A.). Ian Blanch assisted...Tim Palmer mixed the new Howard Benson-produced Sepultura album (on Roadrunner) at Scream Studios (Studio City) with assistant James Saez... At Grandmaster Recorders in Hollywood, Duke Daniels tracked for their new Geffen release with producer Andrew Williams and engineer Brad Cook, assisted by Wade Goeke...Verbena tracked their Capitol debut at Sound City (Van Nuys) with Foo Fighter Dave Grohl producing. Adam Kasper engineered, assisted by Mike Terry. Also in were The Muffs, tracking with producer/engineer Steve Holroyd, co-producer Kim Shattuck and assistant Sam Storey...Frank Rozak and Bob Tucker engineered a project for Jim Brown and the Amerikids charity at Blue Palm Studios (Hollywood), featuring artists such as The Dramatics, Lou Rawls, Bobby Womack and Gerald Lavert...At Studio 56 in Hollywood, Dionne Warwick recorded a remake of her song "All Kinds of People" with producer Rob Shrock for Platinum Records... LeAnn Rimes spent a day at The Village (West L.A.) tracking vocals for a duet with Elton John, due out on his next Rocket/PolyGram release. Peter Collins produced, and Greg Hunt and John Holbrook engineered...

—CONTINUED ON PAGE 316

John Lee Hooker (center) and Ben Harper (L) tracked a new song to be included on Hooker's forthcoming greatest hits collection at San Francisco's Russian Hill Recording, with help from blues harpist Charlie Musselwhite (R). Sam Lehmer engineered, assisted by Dug Nichols.

World Radio History

—FROM PAGE 304, L.A. GRAPEVINE

for feature film or television the next, have led to constant enhancement of our interfacing capabilities, with the results being increased speed and flexibility. Now, in Studio B we've incorporated those ideas and taken them a step further.

"For example, in response to one of our discussions, we've installed a large, motorized video screen with an LCD projector," Landers continues. "And, we have two different center-channel EQ settings—one for screen up and one for screen down. We also spent a lot of time and money on wiring and tielines; we're ready for every sort of format. You can mix directly to the Apogee AD8000 converters. The digital signal can be distributed via the Z Systems router to any of the many panels throughout the control room, iso booth, studio and machine room without leaving the digital domain. We can have up to five 48-track digital machines in this room, and we've got all kinds of tielines—video, digital, sync, word clock, click, timecode, MIDI..."

The 80-input 9k desk is one of only two that are currently fitted with SSL's scoring panel (the other is installed on the Newman Scoring Stage at 20th Century Fox), the extended monitoring feature that allows two sets of recorders, each containing multichannel stems and up to 32 tracks wide, to be discretely assigned and monitored in any of the multichannel surround formats. "It allows us to do music for films," says Landers. "For a big mix, if needed, you have 80 input channels and 80 small faders for a total of 160 inputs. Then with the scoring panel you can still monitor an additional 64 tape returns. It's like a 64x12 router. Also, we're finding that mixing 16-track wide is very common now, and the monitor matrix makes it possible to have split LCR buses; the console can be divided into three sections, each with its own LCR mix that can be recorded simultaneously without the need for separate passes. There are really two main ways to run the console: in the film scoring mode, or, you can be totally in standard 9k record mode and not use any of the film features."

Producer/musician David Was (L) added Hafler TRM8 powered monitors to his L.A. home studio. In the studio with Was is Hafler national sales and marketing manager Rick Gentry.

Complementing the console is a Motionworks machine controller. "Many of its functions and features, as well as the six Lynx synchronizers, can be accessed directly through the SSL computer," Landers says.

"I definitely believe it's beyond most rooms in town in terms of flexibility," he concludes. "Hank and Jackie really wanted everything to be just right, from the textured wall finishes in the lounge to the top-of-the-line technical grounding system and power isolation. We didn't want to be just a studio of the '90s; we wanted to be ready for the future."

In his studio bauhton-designed, Euphonix-equipped home recording space, filmmaker David Lynch worked on the debut release for Mammoth artist Jocelyn Montgomery. Produced by Lynch and engineered by John Neff, the album consists of interpretations of compositions by Hildegard von Bingen, the 12th century German nun whose work has lately achieved more-than-cult status with the advent of her 900th year anniversary.

Von Bingen's work has been oft-performed and recorded in attempts to recreate its original form; this new version, titled *Lux Vivens (Living Light)*, reflects Lynch's fascination with soundscapes, playing Montgomery's haunting vocals against deep drones and moody instrumental tension and release.

About the compositions, Lynch, with characteristic dry enthusiasm, says, "There's lots of inspiration. It starts with the voice, and you get a feel and then you act and react, trying to reinforce that feeling—it's not an intellectual thing at all. We did a lot of experimenting—some strange stuff, and a lot of beautiful accidents—but it was all trying to tune into that initial voice and what supports it. We wanted it to be pure and to feel old, using modern instruments; it had to feel correct and keep a spiritual thing going."

The project was initially recorded to DA-88, then flown into Pro Tools for editing and assembly and mixed to DAT. According to engineer Neff, all of Montgomery's vocals for the album were recorded through a Groove Tubes microphone, "a Model One," he says, "as a matter of fact the second one ever built. The company matched another one for me, so I have two that are sonically the same."

This was Montgomery's first time performing von Bingen's music in a studio, and she sang her parts as if in live performance, all the way through, with no stops and starts and few after-the-fact fixes, working with notes and translations in front of her. As many of her performances of the music have been in churches, she was used to hearing that kind of ambience on her voice. "There were several paths going in my head while I was singing," she says. "The melodies, the lyrics, the translations—so the reverbs and sounds in the headphones were a great help to me."

Reverbs in general were key to the sound of the project. "After all these years that I've been engineering," says Neff, "David introduced me to a new concept—reverb as an actual instrument. We started with the large church program on the Lexicon 480; we also used the TC M2000, an older Sony R7, which is a little noisy but does some

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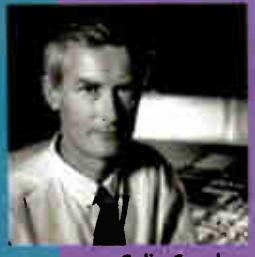

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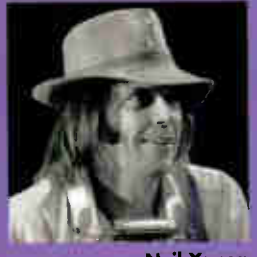

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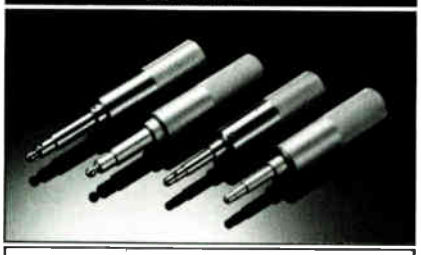

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PHOTO: MAUREEN CRONEY

Randy Jackson (L), Dionne Farris and Allen Abrahamson mixing at Sony Studios

very cool things, and of course the Ultra Harmonizer 4000, which has some dynamite reverbs, including the one that lasts forever. Part way into it, David requested a 'stone canyon.' We started the canyon with a mix of TC 2290 with panning repeats and the M2000, then we began layering reverbs—some would have almost no initial reflections and a lot of afterwash, and some would have a lot of ping-ponging but were very dark. It still wasn't getting to where David wanted. The line I remember most from him is, 'No, I want it to be in a *black* stone canyon.' So we kept going. The R7 has a program called 'Grand Canyon'—we modified that and then the 480 and the Ultra Harmonizer and the M2000 were all used for different elements of the overall float. We really were painting with reverb.

"Recording this project was unusual," he continues. "Music wasn't even written in the days when these songs were composed—and there was no time signature. We basically cut all the songs to a root and fifth drone to define the key and keep the tone center, and the melody then became apparent. Then, after the fact, we'd figure out where the melody pushed it in terms of chordal modes. Today's music usually changes chords after a certain number of bars, but this music would sometimes change note to note. The drones were removed from a lot of the pieces after, and Jocelyn would play a pipe organ-y type thing, and her accordion, or her violin, and then we'd build other tracks around that. It was a beautiful musical challenge."

Meanwhile, over at Sony Studios in Santa Monica, producer/A&R exec Randy Jackson was in mixing Dionne Farris' sophomore Columbia album on the custom Sony/API console with engineer Allen Abrahamson and ace assistant Troy Gonzalez. Farris, whose debut album achieved rave reviews (and who has also had success with songs placed in the films *The Truth About Cats and Dogs*, *Ghosts of Mississippi* and *Love Jones*), says that the second album was much more difficult to do. "The first time, I didn't expect anything," she explains. "The second time, coming up with ideas is tougher, and I have my own expectations to fulfill, because, most of all, I want to be pleased and happy with it—making a record is like my legacy. I've done a lot of living since we made the first record, and there are a lot of new things in my life that I've had time to reflect about. This album is about how those things affect me—possibilities, paranoias, perceptions and the conclusions I came up with. It's also about the line between sanity and insanity and how it can be tough as a woman in this business to get your point across."

Abrahamson, who has worked on various projects with Jackson over the last seven years, tells us that the bulk of the record was recorded with a live band. "We didn't really use any gimmicks cutting," he says. "It was pretty much straight-ahead. Some of the tunes we didn't even cut with a click. Michael Bland is a great drummer; sometimes

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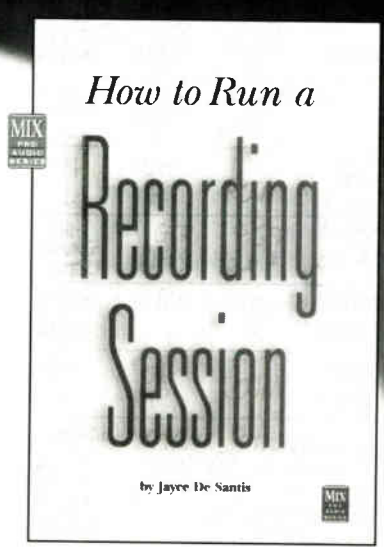

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we shut it off to see what would happen, and it just felt better. Overall, we went for feel more than for technical perfection—we didn't do a lot of punching, and some of the songs were pretty much repairless. We kept a lot of the reference vocals, or parts of them. Dionne really likes performing with a band, and the players were really sharp—some of those vocals just had the moment, and we knew we couldn't replace it."

Asked about new favorite gear, both Abrahamson and Jackson laugh, agreeing that they stick with the classics. "The only really new things we're using are the Dynaudio BM15 speakers," Jackson says. "I've been living with them for a while now, and I really like them. As a matter of fact, Don Gehman and I just did a speaker shootout, and the Dynaudios won. I think their bottom-end response is definitely the best of any box that size, without a subwoofer, that's on the market. And you can turn them up really loud and they still sound good."

Farris' album, *For Truth if not Love*, is scheduled for an early 1999 release. "There's a little something on this record for everyone," Jackson says. "That's not what Dionne intentionally does; that's just who she is. I call her records 'art commerce.' There are a lot of people who force themselves to be commercial, but in her case, it comes naturally, like some kind of built-in Zen balance—she thinks about creating art, but she's just naturally commercial." ■

Got L.A. news? Fax Los Angeles editor Maureen Droney at 818/346-3062 or e-mail msmdk@aol.com.

—*FROM PAGE 304, NY METRO REPORT*

plunge and open Baby Monster Studios. Baby Monster caters to the downtown crowd, including John Zorn and Elliot Sharp.

The day I was there, we listened in as young ska band The Agents mixed an up-tempo number (to be released on their Radical Records debut) in Studio A with engineer Jon Hopkins. This room features a customized Neve 8036 console. A Mackie 24x8 sits in Studio B.

Producers in New York are developing working methods that integrate hard disk recording systems with traditional and digital multitrack machines. Recently over at Quad, producers Johnnie Most and Shephard spent the better part

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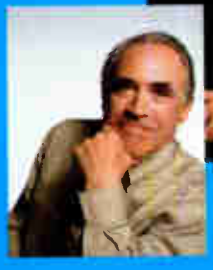

"I'm in sales. I've never been an engineer, probably never will be. It isn't necessary for me to know the product technology inside and out, but it sure would help to know what a decibel is, or peak current, or directivity. Is there an efficient way for me to pick up the basics?"

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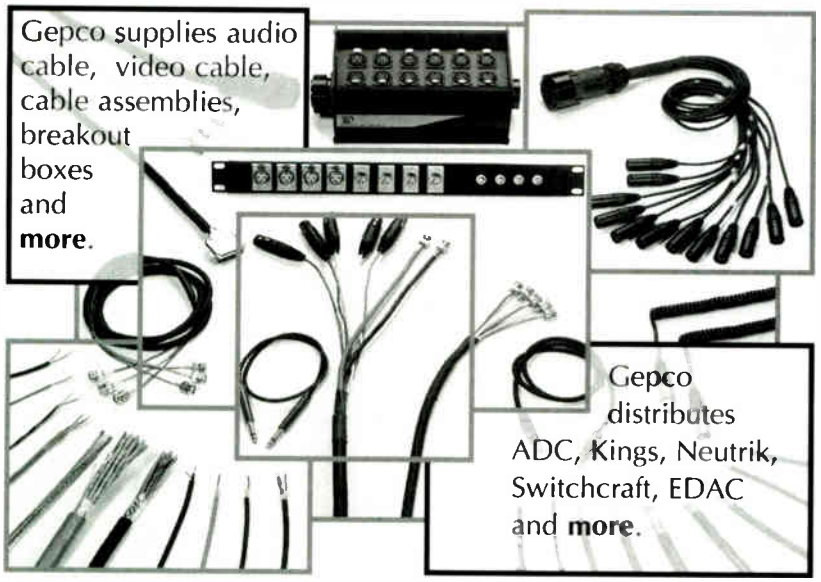

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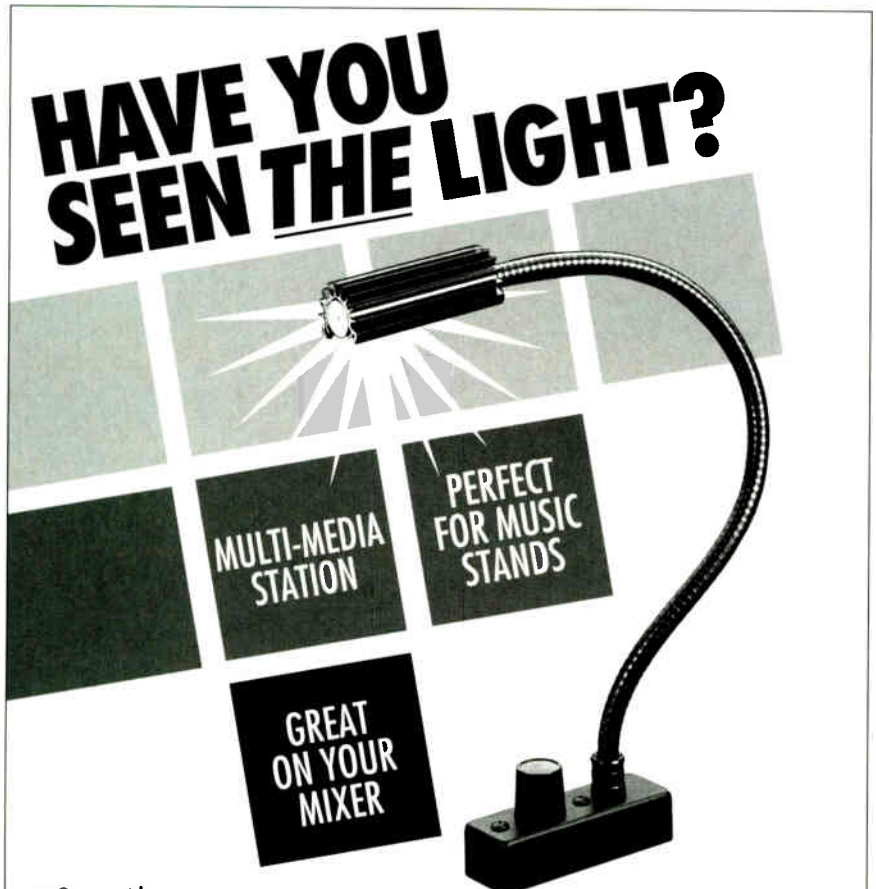

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of a week tracking Columbia artist Sozzi. Pre-production was done at keyboardist/programmer Greg Bieck's Uptown Studio on a Pro Tools 24 system.

Bieck programmed all drum loops and recorded guitars at his place through a Yamaha 02R console, bypassing Pro Tools software in favor of Emagic's Logic Audio sequencer, which gives full access to all Pro Tools tracks within its screen set. "The automation that Logic gives me is fantastic," Bieck says. "Logic accesses Digidesign's DAE [Digital Audio Engine] and runs Pro Tools perfectly."

Interestingly, when Bieck heads off to Quad or Sony, where parts of the Sozzi record were also tracked, he doesn't transfer all material from Pro Tools to a studio multitrack. Rather, he brings his synth rack and drops keyboard-generated parts directly. "The mic pre's on the old Neve board at Sony are so good they really help warm up synth sounds," he says.

Loops created within Pro Tools are dropped to multitrack. From there on, Pro Tools is an online adjunct to the multitrack. Quantizing live drum parts is critical to the lock. "Even the best drummers have imperfections to their playing," Bieck says. "It's what makes live drumming so great. But if you want to lock drum machine loops to a human kick, for example, you've got to be prepared to record four or eight bars of that kick into Pro Tools and align the beats. Logic is great for quantizing audio tracks that way."

Digital audio is a movable feast, with ADATs, DA-88s and hard disk systems interchanging data as projects move between various environments. Bieck has a MOTU Digital Time Piece hard-wired into his patchbay. "It's a great, inexpensive synchronizer, which lets me patch up any format. It takes timecode from the Sony 3348, ADATs and DA-88 machines flawlessly."

At Unique, rapper KRS-One was working on his next album with a number of different producers, including Domingo and Easy Mo Bee. Engineer Matt Hathaway was tapped in part because of his Pro Tools chops. Unique owns three Pro Tools systems, and one was online with a 2-inch machine at all of the KRS-One sessions.

Tracking was done to both 2-inch and Pro Tools, depending on the part. Vocal flies—recording choruses once and placing them throughout the song, for example—were effortlessly handled within Pro Tools, which was also used to double and triple vocal lines. Instru-

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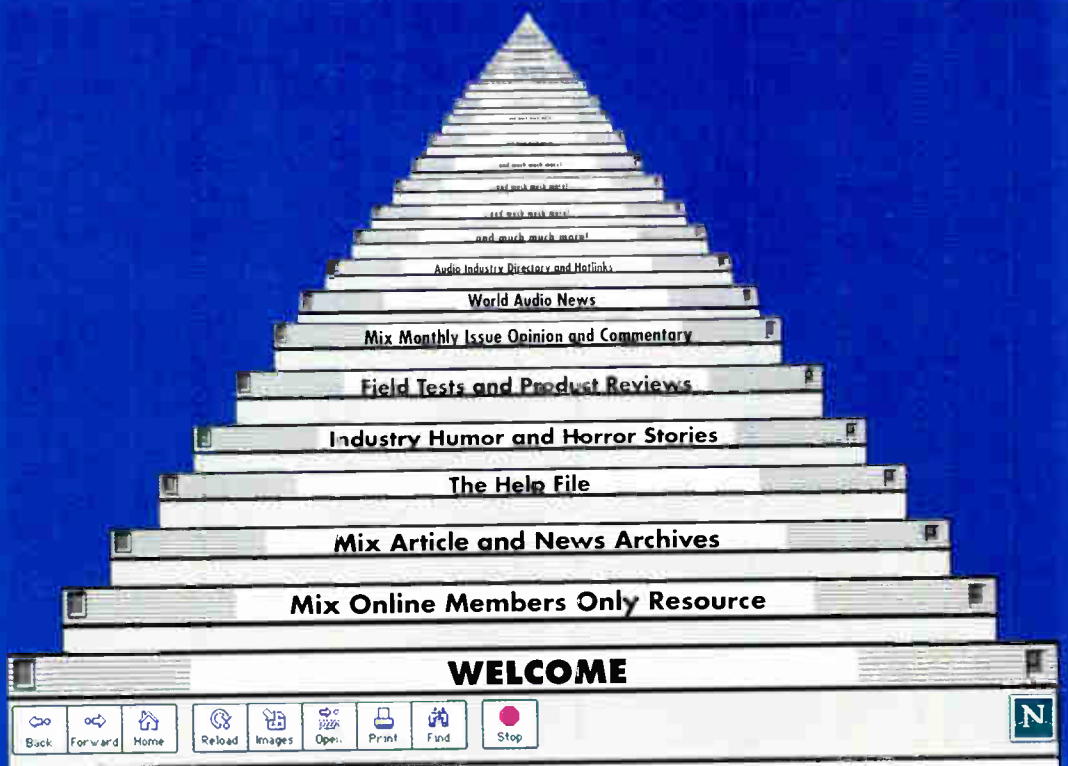

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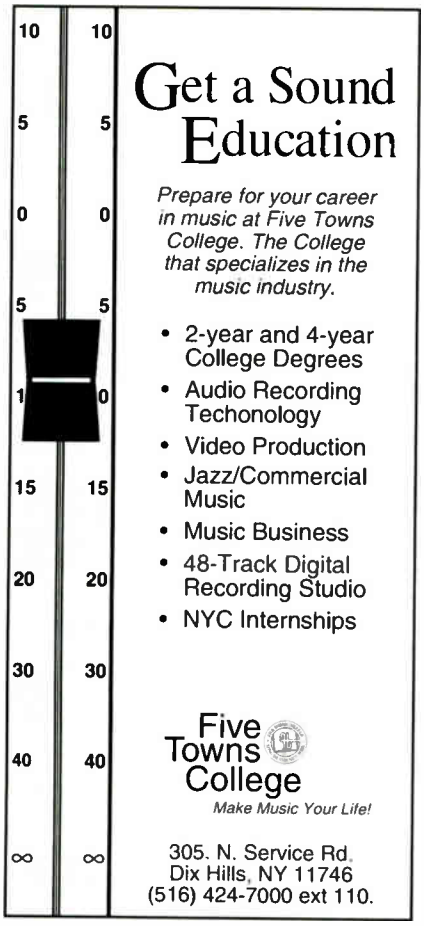

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mental parts might be played throughout a song and tracked to 2-inch.

Digidesign may have bragging rights when it comes to the market penetration Pro Tools has achieved, but other systems have their advocates as well. Latin singer Enrique Iglesias spent some time tracking at Unique last month, and Unique had to come up with an Otari RADAR hard disk system for these sessions, which were booked from Spain via e-mail. Unique's Tony Drootin had a RADAR system shipped up from Nashville and experienced no problems with it over the two weeks that Iglesias was in tracking vocals in three languages—Spanish, Portuguese and English. Four, if you count the language of love...

Mastering engineer **Emily Lazar**, formerly of New York's Masterdisk, has opened her own facility on Astor Place and Broadway. Recent projects include guitarist G.E. Smith's Green Mirror Music release *Herbs, Incense and Oils*, Eric Mingus' *How I Miss My Gun* (Some Records), and *A Christmas to Remember*. This last project includes tracks by The Smithereens, The Alarm and Tara McLean. ■

E-mail your New York news to New York editor Gary Eskow at scribeny@aol.com.

—FROM PAGE 305, NASHVILLE SKYLINE

inquiries regarding the purchase of the property and business together, including interest from a consortia of what he characterized as "producers who are major players in Nashville. That's the way things are going here—producers want their own facilities."

Sullivan adds that several production and music publishing companies continue to operate from the building and use the facility, providing a level of internally generated revenue. Sullivan is already pursuing other ventures. In addition to continuing to run his production and publishing companies, he is directing the business of a new online record company, www.TappedInto.com.

Ocean Way Nashville owners Allen Sides and Gary Belz made a successful bid for the assets of Bosstown Recording, the Atlanta facility owned by R&B singer Bobby Brown that had entered bankruptcy protection earlier this year. Sides confirmed to this reporter that the purchase price was less than $1 million. For that, Sides and Belz received a three-room facility with two SSL consoles, a Soundcraft console, a sizable main studio (60x50x28) and a large collection of vintage and new outboard equipment.

However, Sides and Belz had not made a firm decision at press time about whether to continue to operate the studio or to flip the property and/or the business. Sides says he and Belz have at least three parties interested in purchasing the studio and property, and that he and Belz have commissioned cosmetic work to begin in the studio, repairing carpeting and other touch-ups, which could help increase its resale price. On the other hand, Sides, who has a residence in Georgia as well as in Los Angeles, says, "Atlanta is a good market, for music as well as for post-production. [Bosstown] has a large main recording room with a 28-foot ceiling and a top-notch lighting grid, which would make it perfect for shooting videos. It's a nice location, near the center of town. With an Ocean Way level of maintenance, I think it could work as a studio venture for us. We really like the facility and think it has a lot of potential."

Among a few studio owners in Atlanta, the consensus emerged that they would like to see Ocean Way open up there. The city's studio base is not overbuilt the way Nashville's was when Ocean Way and others arrived here in mid-decade. At least one studio manager in Atlanta says he would view the decision to stay or to flip as a kind of barometer on Atlanta itself. "Having Ocean Way here would probably bring a lot of clients from outside to Atlanta," he says. "I don't want to think about what it says about Atlanta if they decide not to."

Studio III has completed its renovation. Owned by Muscle Shoals businessman Gerald Murray, the former Midtown Tone & Volume main room now has a Euphonix CS2000 console with Otari 24-track analog and Mitsubishi 32-track digital tape machines. The first client into the newly refurbished studio was producer Mike Clute (Diamond Rio, Blackhawk), who had owned the facility in its previous incarnation. The site holds a significant place in Nashville studio history. It was the location of the first major modern studio on Music Row as Bullet Studios in the 1970s. In the mid-1980s it became Digital Recorders, owned by Norbert Putnam, who had earlier owned Quad Recording, the locus of much of Nashville's non-country projects, including Neil Young's *Harvest* record. ■

Send Nashville news to Dan Daley at danwriter@aol.com or fax 615/646-0102.

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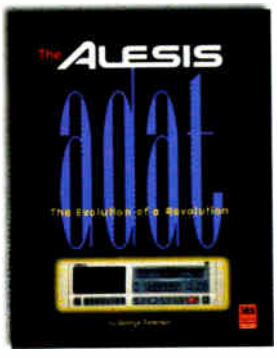

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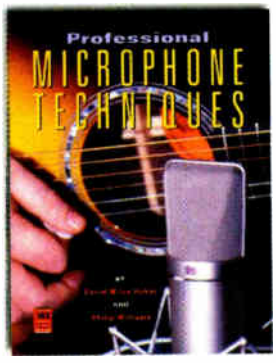

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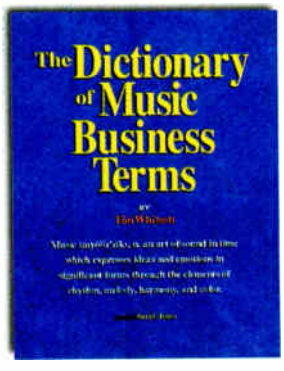

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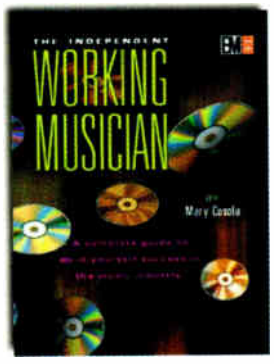

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At Ardent Studios in Memphis, Tenn., Miyako Shinohara (center) tracked in Studio A for her next EMI/Japan release with producer Rass Rice (L) and engineer Pete Matthews.

—FROM PAGE 305, SESSIONS & STUDIO NEWS

NORTHEAST

Gospel artist Desiree Coleman recently tracked several sides at TMF Studios/All American Alchemy (NYC) with producer John Smith, engineer Dolo and assistant Courtney Connell. Singer/songwriter Duncan Sheik was also in, mixing for Atlantic with producer Pete Nashiel and engineer Michael Tudor...Get out your fright wigs: At East Side Sound in New York City, Twisted Sister was in mixing tracks for their new project...At New York City's The Magic Shop, Built To Spill teamed up with producer/engineer Phil Ek for work on their new Warner Bros. album. Interscope artist Ron Sexsmith was in tracking with producer Mitchell Froom and engineer Tchad Blake...Producer Clark Kent remixed tracks for Sony recording artists Korn at Unique Recording (NYC) with engineer Kenny Ortiz. Producer David Gamson produced and engineered tracks for the upcoming Me'shell Ndegeocello album at the studio...At River Sound in New York City, James Farber mixed a Joshua Redman release, and Michael Barbiero mixed a new Cowboy Mouth album for MCA Records...At Newfound Music (NYC), Debbie Friedman recorded and mixed a new album with producer Yaron Gershovsky, engineer Larry Gates and second Tom Filogomo...Bear Tracks Recording (Suffern, NY) had Palace Records artist Daniel Lemma in working on a project with producer/engineer Stan Wallace. Rick Pohronezny assisted...Recent sessions at Tiki Recording (Glen Cove, NY): The Bobbies, The Slamjammers, Celtic Cross and Igor Butman...

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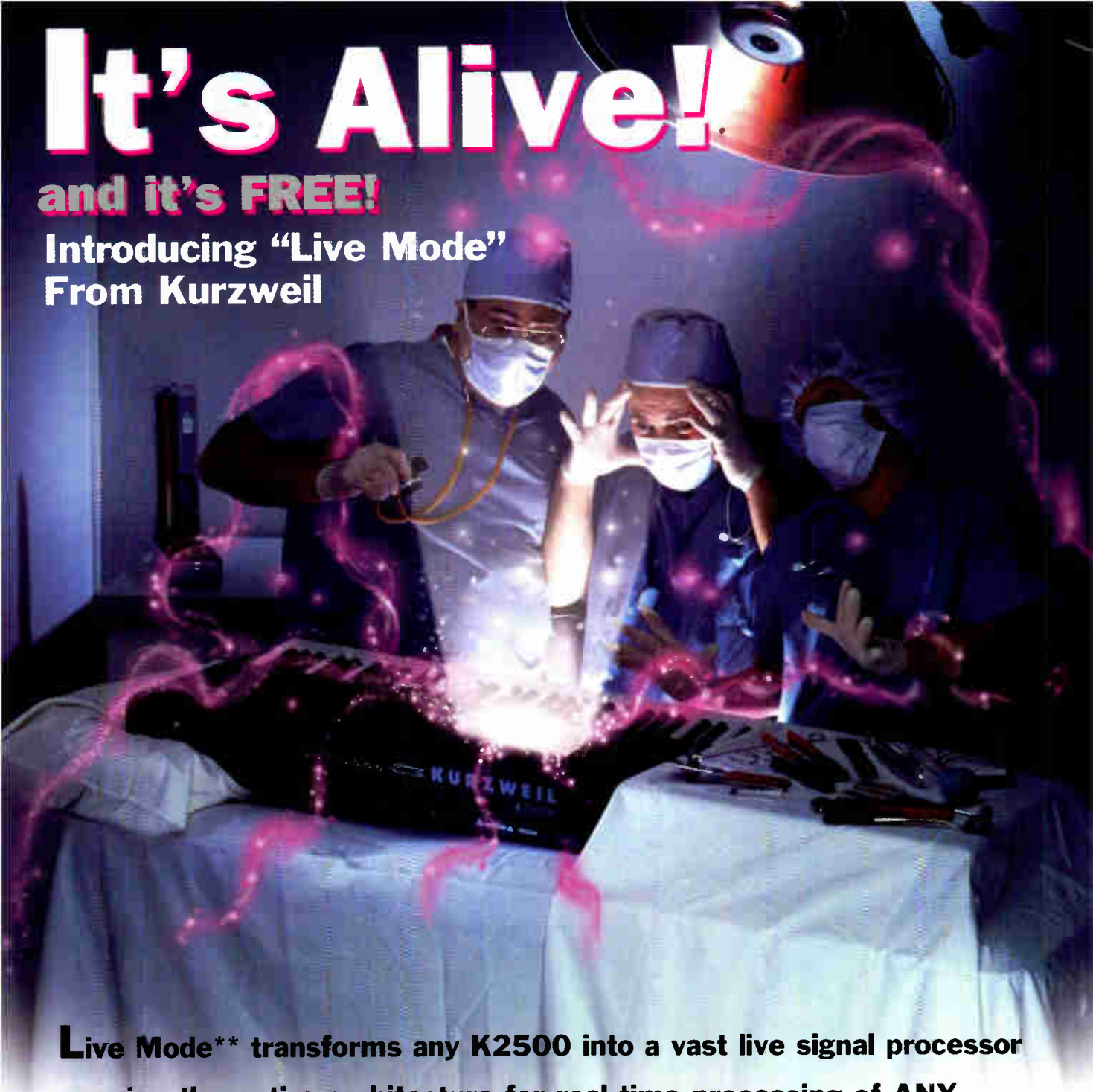

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NORTH CENTRAL

Richard Marx was in at Hinge (Chicago) mixing two new cuts with engineer David Cole for a forthcoming greatest hits package. Matt Prock assisted...At Oarfin Studios in Minneapolis, Jonny Lang tracked for A&M with producer/engineer David Z, and Semisonic mixed a self-produced single for MCA with engineer Brad Kern. David Streeby assisted on both sessions...

SOUTHEAST

Jason Sellers tracked for RCA with producer Walt Aldridge and engineers John Guess and Patrick Murphy at Emerald Sound (Nashville)...At Nashville's Sound Emporium, Don Williams mixed for a self-produced Giant release with co-producer Doug Johnson and engineer Dave Sinko...Lyric Street artists Shedaisy overdubbed at Masterfonics in Nashville with producer Dann Huff, engineer Jeff Balding and assistant Mark Hagen...At Catalyst Recording (Charlotte, NC) My So Called Band tracked a new release for Yesha Records...Danielle Brisebois tracked at New River Studios (Fort Lauderdale, FL) for RCA with producer Milton Davis, engineer Michael Schlesinger and assistant Brad Kinney...Collective Soul began mixing their fourth Atlantic release at Tree Sound (Atlanta) with producer Ed Roland, engineer Bob St. John and assistant Jim Z. Programmer Anthony Resta contributed additional beats and vibes...LaFace artists Outkast mixed a new track with producer/engineer Josh Butler at Atlanta's Patchwerk Studio...At Audio One Studios (Delray Beach, FL), engineer Charles Dye remixed singer/songwriter Billie Myer's *Growing Pains* in 5.1 surround...While on tour in the area, the Spice Girls stopped in at Oceanway Nashville to record a new single with producers Matt Rowe and Richard "Biff" Stannard. Adrian Bushby engineered, assisted by Aaron Swihart...At Ardent Studios in Memphis, the Smalltown Poets tracked in Studio C and mixed in B for the Ardent/Forefront label with producer John Hampton, engineer Skidd Mills and assistant Pete Matthews...

STUDIO NEWS

Musician/composer Mark Isham added Akai S1000, S2000 and S3200 samplers to his L.A.-area personal studio...Motown Records recently installed two White 4700 EQs and a White DSP 5024 processor in the conference/listening room in its executive offices in New York City...NRG Recording's (North Hollywood) new SSL 9000 J-equipped Raven Room is now open for booking...Swinghouse Studios (Hollywood, CA) added an Aphex Model 106 compressor and Model 107 mic preamp...Blue World Music (Austin, TX) added a Pro Tools 24 system and put it to use on recent sessions with Junior Brown, Rick Trevino and Robert Earle Keane. ■

The Xtreme Studios remote truck recorded Garth Brooks' six shows at Seattle's Key Arena in July. The opener was Trisha Yearwood. Selected cuts will be included on a live CD slated for a November release on Capitol. At the truck's SSL 4040 G Plus were (L to R) Yearwood, engineer Steve Smith, assistant Pat Lambert and Brooks.

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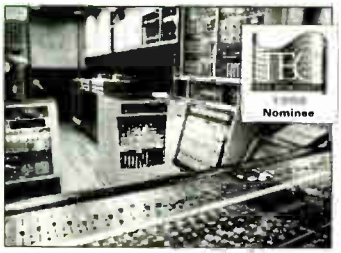

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Three brand-new studios with 56-ch Cadac & 24-ch MCI consoles, 48-tk/96-tk hard disk (Akai) and linear digital (ADAT), plus 2-inch 24/16-tk, all formats. Also, outboard by Avalon, TC, Bellari, Aneus Melcor, ADM, Neve, ART, dbx; monitors by JBL, Altec, UREI, Yamaha (Crown, Audio Techniques amps); Korg Trinity, Kawai EP 308, Weber grand. Downtown, beaches, entertainment, hotels, restaurants. Control rooms A&B linked to mix studios and mix room via fiber optics. Liquid Audio uplink.

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Quad Recording Studios

723 7th Ave.
New York, NY 10019
(212) 730-1035; Fax (212) 730-1083
http://www.quadstudios.com

Quad Recording is excited to announce the opening of its Penthouse studio, beautifully designed as a tracking and mixing room and featuring a 96-input SSL G+ with Ultimation. Opening up a fifth studio is a wonderful way for Quad to celebrate its 20th anniversary. Studios A and III each have an SSL 9000J console, making Quad the only facility in New York with two of them. Studios B and C each have SSL 4000E consoles with G Series computers and Total Recall.

UMC Ultimate music corporation

Ultimate music corporation

40 Lopez Ave.
Cambridge, MA 02141
(617) 576-2855; Fax (617) 576-8094
e-mail: info@U-music.com
http://www.U-music.com

A digital music production/post facility near Boston featuring a Euphonix CS3000, with up to 96 tracks of tape and disc-based multitrack recorders including: Sony 3324, Studer 82, RADAR, ADAT, DA-88, Pro Tools 24 and Avid Audio Vision. All rooms are fitted with world-class outboard gear from Focusrite, Avalon, Manley, API and an extensive collection of new and vintage keyboards. All this set in a relaxed and elegant environment. Call for our brochure or additional information.

The Plant Recording Studios

2200 Bridgeway
Sausolito, CA 94965
(415) 332-6100; Fax (415) 332-5738

The newly remodeled Plant has been a Platinum mill for 25 years. Studio A now has a 28' ceiling on a 1,200-sq.-ft. room with 3 isos featuring an SSL 4064 G Series w/Total Recall. Studio B now has an 18' ceiling and a completely restored 64-channel Neve 8068 w/GML automation. A & B each have Studer A800s, Studer A827 and 24 channels of Pro Tools 4.1.

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e-mail: xnms@xtremestudios.com
http://www.xtremestudios.com

The only SSL G+ in a remote truck. Designed by studio baulton, Steve Smith's mobile recording studio features an LCRS monitoring system with Dynaudio speakers, Meyer HD-1s, Tannoys, and NS-10s, Studer and Sony multitracks, Grace, Millenia, Neve and Avalon mic pre's and an extensive mic collection. Xtreme also offers mastering and multimedia services. Clients include Sony Music, DreamWorks, Disney, Westwood One, MTV, MGM, Fox and Showtime.

SAN RAFAEL STUDIOS
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53 Jordan
San Rafael, CA 94901
(415) 458-8080; Fax (415) 458-8081

San Rafael Studios is a full-service production center for film, DVD, video and audio recording, production rehearsals and graphic arts. Just 25 miles north of SF, our facilities include two soundstages: 40'x50'x24' (acoustically tunable) with a 22'x23'x12' control room and 40'x60' shooting stage, 15'x25' still studio. Production offices, kitchens, wardrobe, showers and on-site apt. 1200amp30/power. Recent clients include: Metallica, Joe Satriani, Greg Allman, Kenny Wayne Shepard and Skywalker Sound. Call for more info.

Lobo Recording

2103 Deer Park Ave.
Deer Park, NY 11729
(516) 242-0266 or (516) 243-2983
Fax (516) 243-3964
e-mail: music@loborecording.com
http://www.loborecording.com

Located 35 minutes east of NYC, Lobo Recording is the place to achieve your creative goals. Recent acquisitions include an SSL 9096J, Neve VR 72, Studer D827 and Yamaha C7 Grand Piano. Other equipment includes Amek Angela IIs, Studer A827s, A80s, ADAT XTs 64 tracks and an extensive list of microphones and outboard gear. Please call for more info

Different Fur Recording

3470 19th St.
San Francisco, CA 94110
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e-mail: dfur@differentfur.com

26 years of recording all styles of music. Custom service in a creative atmosphere featuring Solid State Logic 4056E/G TR and Studer 800 & A80s. Renowned acoustic piano sound. Excellent selection of microphones & outboard gear, Sonic Solutions digital mastering. Clients include such cutting-edge artists as the Kronos Quartet, Primus, George Winston, Harvey Mandel, Robert Cray, Charlie Hunter Quartet, Tuck & Patti and a host of Windham Hill artists. Contact Susan Skaggs, VP/General Manager.

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http://www.sheffield@sheffieldav.com

Sheffield is America's largest SSL recording truck. This is not just a remote truck, it is a complete audio facility. Add to this the best crew in the remote business. Partial credits include The Grammy Awards, MTV Music Awards, Live from the House of Blues and Aerosmith.

Coast Recorders

665 Harrison Street
(2 Blocks from AES)
San Francisco, CA 94107
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Classic expanded 72-input discrete Neve with GML automation; 75+ pieces of modern and vintage outboard gear; large assortment of tube microphones; huge 40x45-foot recording space plus four iso booths. Clients include: Counting Crows, Green Day, Live, Journey, Joe Satriani, Chris Isaak, The Breeders, Tower of Power, Soul Coughing and Faith No More.

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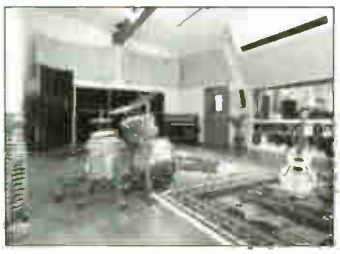

Laughing Tiger Productions

110 A Eost Francisco Blvd.
San Rofael, CA 94901
(415) 485-5765; Fax (415) 485-5742

In the San Francisco Bay, we are the affordable world-class studio, with two 48-track rooms and a full-service mastering suite. Featuring tuned and beautiful rooms, 2" Studer, ADAT and Pro Tools recording formats, plus vintage mics, preamps and instruments. We focus on providing the local community of independent labels, producers and artists with service and quality only available to major labels... until now.

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635 Massachusetts Ave., NW
Washington, DC 20001-3753
(202) 414-2482; Fax (202) 414-3033
e-mail: rgi@npr.org
http://www.npr.org/inside/technical

Located in downtown Washington, DC, Studio 4A offers a spectacular recording environment well-suited to all music genres. Studio 4A, at 2,600 sq. feet, is one of the largest recording facilities on the East Coast. We offer digital and analog multitrack recording, an extensive mic collection, digital editing suites and CD mastering. NPR also offers satellite uplinking, fiber and ISDN capabilities worldwide.

Triad Studios

4572 150th Ave. NE
Redmond, WA 98052
(425)-881-9322; Fax (425) 881-3645
e-mail: info@triadstudios.com
http://www.triadstudios.com

From solo piano to 30-piece strings, we've been recording music for more than 16 years. We have everything you need: custom Neve 5106 48-channel console w/automation, Mitsubishi Westar 52-channel console w/automation, scads of great outboard gear including Joemeek, Lexicon and SSL. 24 tracks of analog 2-inch, Sony PCM 3324, DA-88s and ADATs. Sonic Solutions Digital Audio Editing. On-site, one-off CDs available.

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Located in the heart of Hollywood, GKS Entertainment premieres their new state-of-the-art HDCD SONIC MASTERING STUDIO ONE. GKS is fast-becoming the hottest new place for major & independent label mastering. At the helm is accomplished Senior Mastering Engineer Louis Hemsey, whose radio edits include, MCA artists Blink 182, Tracy Chapman & B.B. King, Sublime, The Murmurs, Semisonic, New Radicals and Dada. Mastering credits include: Melky Sedek, Richard Buckner, Old '97s, DA Congregation, Pretty Boy Floyd and Little Charlie & The Nightcats.

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678 Broadway, 5th Flr.
New York, NY 10012
(212) 260-0905; Fax (212) 358-0041
e-mail: redeye@dorsai.org

The Cutting Room provides a unique alternative to today's high-priced commercial studios. The facilities and staff provide the ideal environment for your creative needs including a large live room with a skylight. Recording options include 48 tracks of analog recording, 32 tracks of Pro Tools, 24 tracks of both ADAT and DA-88 and a full MIDI suite. Recent clients include Bruce Hornsby, Whitney Houston, Groove Theory, SWV, Roy Ayers and George Clinton.

Wildstyle Studios

Wildstyle Studios

27-24 Jackson Ave.
Long Island City, NY 11101
(718) 937-7749; Fax (718) 937-7734

Wildstyle Studios is a full recording facility located in Long Island City, Queens, NY, across the bridge from Midtown Manhattan. A George Augspurger-designed studio featuring a 48-track, automated MCI console, 24-track 2" machine and (3) ADATs locked for 48-tracks with Pro Tools editing and a custom Augspurger monitoring sysytem. We have a full lounge, pool table, video games, etc., and live-in loft for month-to-month lock-outs. Live room dimensions: 28'L x 18'W x17'H.

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Equipment: Sonic Solutions 24-bit 96k, fully expanded with NoNoise. Focusrite Blue Range EQ, Manley Vari-MU compression, TC Electronic M5000/MD2, Apogee 24-bit AD/DA, Dynaudio/REL/Bryston monitoring. Spaciously designed and tuned room.

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MACKIE.

Digital 8 Bus Mixing Console

New

Everything you've been waiting for and more!!! The new digital 8 bus from Mackie features great sound quality, full recording and mixdown capabilities, motorized faders and an array of digital features geared to take you ying into the next century. See for yourself what the entire industry is raving about

FEATURES-

- 48 channels of automated compression, gating, EQ and delay
- Built in 3-way meter display keeps you on top of your mix.
- Built-in meter bridge,
- Ultramix II automation for complete control, hook up an S-VGA monitor and you'll feel like you spent a lot more money.
- All functions can be automated, not just levels and mutes. Store ED, reverb, compression, gating and even Aux send information.
- Fast SCENE automation allows you to change parameter snapshots on every beat.
- Reads Standard MIDI tempo maps, displaying clock info on the built-in position counter.
- Truly the cutting edge of mixing technology.

Panasonic

WR-DA7 Digital Mixing Console

New

Stop dreaming about your digital future, it's here! The Panasonic WR-DA7 digital mixer features 32-bit internal processing combined with 24-bit A/D and D/A converters as well as moving faders, instant recall, surround sound capabilities, and much more. Best of all, it's from Panasonic.

FEATURES-

- 32 Inputs/6 AUX send/returns
- 24-bit converters
- Large backlit LCD screen displays EQ, bus and aux assignments, and dynamic/delay settings.
- 4-band parametric ED
- Choice of Gate/Compressor/Limiter or Expander on each channel
- 5.1 channel surround sound in three modes on the bus outputs
- Dutput MMC
- Dptional MIDI joystick

TASCAM

TMD1000 Digital Mixing Console

New

You want to see what all the digital mixing buzz is about? The NEW TMD100 from Tascam will have you smilin' & automatin' in no time. It features fully automated EQ, levels, muting, panning and more in an attractive digital board with an analog 'feel'. Your digital future never looked, or sounded, so clear.

FEATURES-

- 4 XLR mic inputs, 8 1/4" balanced TRS inputs.
- 20-bit A/D D/A conversion, 64x oversampling on input, 128x on output.
- Store all settings, fully MIDI compatible.
- Dptional **IF-TD1000** adds another 8 channels of TDIF and a 2-channel sample rate converter.
- Dptional **FX-1000** Fx board adds another 4 dynamic processors and another pair of stereo effects.

MIC PREAMPS

Focusrite

Green 3 "Voicebox MKII"

New

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 EQ section optimized for voice, and full Focusrite dynamics. The new MKII now includes a line input for recording and mixdown applications.

FEATURES-

- Same mic pre section as found on the Green Dual Mic Pre includes +48V phantom power, phase reverse, and a 75Hz high-pass filter. Mute control and a true-VU response LED bargraph are also provided
- EQ section includes a mid parametric band with frequency and gain control as well as a gentle bell shape to bring out the character of the voice.
- Dynamics section offers important voice processing functions of compression and de-essing combined with a noise reducing expander
- Single balanced Class A VCA delivers low distortion and a S/N ratio as low as -96dBu

EFFECTS PROCESSING

t.c. electronic
ULTIMATE SOUND MACHINES

Finalizer Plus

New

Improving on the multi-award winning Finalizer platform, The Finalizer Plus delivers an unprecedented level of clarity, warmth and punch to your mix. Inserted between the stereo output of your mixer or workstation and your master recording media, the Finalizer Plus dramatically rounds out your material, creating that "radio ready" sound.

FEATURES–

- Balanced Analog as well as Digital outputs including AES/EBU, S/PDIF, & TOS.
- 24-bit precision A/d & D/A Converters
- 5-band 24-bit stereo Eq
- Enhance - De-essing, stereo adjust or digital radiance
- Real-time gain maximizer
- Variable slope multi-band expander
- Multi-band compressor • Word Clock Sync
- MIDI section useful for controlling sequencer fades or any of the Finalizer's parameters from a remote MIDI controller.

Lexicon

PCM81 Multi-Effects Processor

New

The PCM-81 has everything that made the PCM80 the top choice among studio effects processors, and more. More effects, more algorithms, longer delay and full AES/EBU I/D.

FEATURES–

- 300 Presets include pitch, reverb, ambience, sophisticated modulators, 20 second stereo delays, and dynamic spatialization effects for 2-channel or surround sound applications
- 2 digital processors including Lexicon's Lexchip for the reverb and a second DSP engine for the other effects.
- 24-bit internal processing
- Dynamic patching matrix for maximum effects control.
- PCM card slot

EQUALIZERS

Focusrite

Green 2 "Focus EQ"

New

The Green 2 Focus EQ is suitable for a variety of applications combining a Focusrite equalizer section with a multi-source input section. Use it as a high-quality front end for recording applications or patch it into the send/return loop to upgrade a single channel of console eq, either way, it sounds great.

FEATURES-

- XLR & 1/4" inputs are similar to the Dual Mic Pre but have been adapted to cope with a wider range of levels.
- VU metering via a 10-LED bargraph
- EQ section derived from the Red and Blue range processors for superb audio quality.

COMPRESSORS

JOE MEEK

VC1 Studio Channel

got meek?

The Joe Meek Studio Channel offers three pieces of studio gear in one. It features an excellent transformer coupled mic preamp, a great compressor and an enhancer unit all in a 2U rackmount design. Find out why more and more studio owners can live without one.

FEATURES-

- 48V phantom power, Fully balanced operation
- Mic/Line input switch
- Mono photo-optical compressor
- High pass filter for large diaphragm mics
- Extra XLR input on front makes for easy patching
- Compression In/Out and VU/compression meter switches
- Twin balanced XLR outputs with one DI XLR output for stage use
- Enhancer In/Dut switch and enhance indicator
- Internal power supply 115/230V AC

dbx

Blue Series 160S Stereo Compressor

The dbx 160S combines the best features of all the great dbx compressors in a well-built unit where the craftsmanship is as stunning as the engineering is innovative. This is truly a desirable compressor.

FEATURES-

- 127dB dynamic range • Program dependent "Auto", or fully variable attack and release
- Hard knee/OverEasy switchable.

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HARD DISK RECORDERS

Roland VS1680 Digital Production Studio

New

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

AKAI DR16 16-Track HD Recorder

The Akai DR16 is a digital hard disk recorder with sophisticated non-destructive editing functions for near instant data access. Recording & playback is as straight forward as tape. The DR16HD ships with an internal 2GB drive for 24 minutes per track of record time.

TURN YOUR DR16 INTO A PROOUCTION WORKHORSE WITH THESE POWERFUL EXPANSION OPTIONS!

- ***MT8*** *Mixer controller* • ***DL16*** *Remote control unit* • ***IB801S*** *SCSI Interface board*
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- ***IB805R*** *RS422 Interface board* • ***IB806B*** *Bi-phase interface board*
- ***IB807V*** *VGS monitor interface board* • ***EQ16*** *16-channel digital EQ board* • ***ALX50*** *Remote Cable*

DIGITAL MULTI-TRACK RECORDERS

TASCAM DA-98 Digital Audio Recorder

The DA-98 takes all the advantages offered by the DTRS format and significantly ups the ante for the professional and post-production professional alike. With enhanced A/D and D/A convertors, a comprehensive LCD display and full compatibility with the DA-88 and DA-38, the DA-98 delivers the absolute best in digital multitrack functionality.

FEATURES–

- Confidence monitoring for playback and metering
- Individual input monitor select switch facilitates easier checking of Source/Tape levels
- Switchable reference levels for integration into a variety of recording environments with internal tone generator
- Digital track copy/electronic patch bay functionality
- Comprehensive LCD display for easy system navigation
- Dedicated function/numeric keys make operation easier
- Built-in sync with support for MMC and Sony P2
- D-sub connector (37-pin) for parallel interface with external controller
- Optional RM-98 rack-mount ear for use with Accuride 200 system

DA-88 A 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.

DA-38 The DA-38 was designed for musicians. Using the same Hi-8 format as the highly acclaimed DA-88, the DA-38 is an 8 track modular design that sounds great. It features an extremely fast transport, compatibility with Hi-8 tapes recorded on other machines, rugged construction, ergonomic design and sync compatibility with DA-88s.

ALESIS ADAT XT20 Digital Audio Recorder

New

The New ADAT-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.

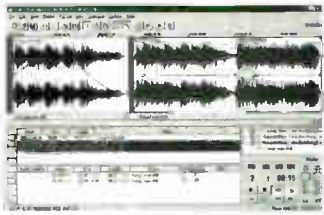
FEATURES–

- 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 or even within a single unit. Track Copy feature makes a digital clone of any track (or group of tracks) and copies it to any other track (or group) on the same recorder.

SOFTWARE

SONIC FOUNDRY CD Architect & CD Factory

CD Architect is the perfect solution for designing professional audio CDs to Red Book spec on Windows NT and Windows 95. Sample audio from compact disks, record from DAT, or digitize material through a sound card. It comes complete with an editor including dozens of effects and tools to process sound files and can optionally operate as a Sound Forge plug-in. CD Factory adds a CD burner, SCSI card and cable for a complete production package.



FEATURES–

- Multi file playlisting
- Master volume faders (-96dB to +20dB)
- Adjustable envelope levels for any region
- Mix or crossfade overlapped regions
- Convert from mono to stereo on the fly
- Multiple levels of undo/redo
- Up to 99 tracks with 99 subindexes per track
- Make glass-masters directly from burned CDs.

STUDIO DAT-RECORDERS

Panasonic SV-3800 & SV-4100

The SV-3800 & SV-4100 feature highly accurate and reliable transport mechanisms with search speeds of up to 400X normal. Both use 20-bit D/A converters to satisfy even the highest professional expectations. The **SV-4100** adds features such as instant start program & cue assignment, enhanced system diagnostics, multiple digital interfaces and more. Panasonic DATs 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

TASCAM DA-30MKII

A great sounding DAT, the DA-30MKII is a standard mastering deck used in post-production houses around the world. Among many other pro features, its DATA/SHUTTLE wheel allows for high-speed cueing, quick program entry and fast locating.

FEATURES–

- Multiple sampling rates (48, 44.1, and 32kHz).
- Extended (4-hour) play at 32kHz.
- Digital I/O featuring both AES/EBU and S/PDIF.
- XLR balanced and RCA unbalanced connections.
- Full function wireless remote.
- Variable speed shuttle wheel.
- SCMS-free recording with selectable ID.
- Parallel port for control I/O from external equipment.

Fostex D-15

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 4D.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.

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- Set-up menu for preference selection. Use this menu for setting ID6, level sync threshold, date & more. Also selects error indicator.
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—FROM PAGE 34, FUTURE DOCS, PART II

past and present, can be available, and a search engine can let users quickly find any FAQs that apply to their situation. The same search engine used for the manual can be used for the FAQ list. For example, the search for "slaving sample rate" can not only point to the various places in the manual where this is discussed, and the place on the site where users can download the software revision that fixes the bug that crashes the machine whenever you select "pull-down"; it can also show all the questions that anyone has asked about the subject. After a certain critical mass is reached, more people will find their questions already answered online than will need to ask new questions.

An interesting phenomenon happens when user manuals, FAQs, software updates and the like go online: The tasks of creating documentation and of technical support start to merge. Tech support people, with their charts and diagrams, find they need to work closely with the people writing the online documents, in order for the information to be correctly integrated and up to date. If it's done right, and the communication flow between departments is good, then each group complements the other, and the site shows the visitor a unified presence. If there are territorial wars being fought between offices, with one team reluctant to take on user queries for fear of stepping on the other's toes, the site will reflect this, and users will get turned off.

One other thing that can help a company's documentation Web site gain acceptance and loyalty is a real man—or woman—behind the curtain. Adam Engst, a longtime commentator on the computer scene and publisher of the online newsletter "TidBits" (www.tidbits.com), wrote a fine article earlier this year about documentation, in which he opined that "All writing should have a voice. Show some attitude and let a personality come through in documentation." The same is true for a Web site. If there's a "real" person back there, it makes the experience friendlier, more engaging and actually much more valuable, because the user thinks that someone cares.

A lot of people who describe the Internet cite Gertrude Stein's quote about Oakland (or was it Cleveland?): "There's no *there* there." While that's intrinsically true in an abstract sense, a more serious, and avoidable, problem of many Internet sites is that there's no *who* there. A lot of Internet sites are like an old house that's been turned into a museum: lots of rooms and doors and secret staircases, and plenty of things to look at, but nobody home, nobody to talk to. The whole place is on automatic pilot; documents get uploaded and are just left lying around. But having a human being back there—even if it's a bunch of different people all pretending to be the same person—answering questions, signing welcome messages and just providing a sense of human presence, makes us feel much more comfortable and makes us want to keep reading and exploring.

A lot of Internet sites are like an old house that's been turned into a museum: lots of rooms and doors and secret staircases, and plenty of things to look at, but nobody home.

This need for a coherent identity also means that "groupware"—tools that let many people work simultaneously on a document—has to be used with great caution in creating user manuals. The tendency for writers working in that kind of environment is to place all the emphasis on making the documents easily upgradeable, avoiding mistakes and staying out of each other's way. It often makes for a formula-ized document that is no fun at all to read, and will defeat its own purpose by turning off the reader.

Finally, aside from all the discussion about media, bandwidth, delivery systems and ancillary advantages, there is still one crucial issue that needs to be addressed: No matter how they are distributed, user manuals and documentation have to be written and organized properly.

An example: I recently was working on a project (a user manual, as it happens, so this becomes a "meta-example"), and I was using a program I was not very familiar with. I wanted to find out how I could create a multipage table with a header that was repeated on each page. The program isn't bad, but it's unbelievably counter-intuitive, a fact its creators have more or less acknowledged by shipping it with a huge online help file and a five-pound manual. So I looked up "tables" in the various indices and found 60 sub-listings, including dozens of pages on rulings, shadings, cell sizes, styles and how to paint my headers gray. But I saw nothing on how to *create* a header. I looked under "rows," "columns," "page breaks"—nothing. I looked under "headers"—and I found "heading rows, table." Glory! I went to that page and found this sentence: "You can even add heading or footer rows." That was all it said.

Fortunately, as I poked around the program, I discovered an obscure drop-down sub-menu that included the item "add heading," and so I got my headers. If I were ever forced—and it would have to be at gunpoint—to use this program again, I don't really know whether I would be able to find that menu again.

If a manual is written and organized and indexed badly, no amount of snazzy dressing and new media will help it. If it can't be used, then the product it's describing can't be used to its fullest capabilities, and that's a waste of our money and time, and of the manufacturer's money and talent.

Yes, do explore and exploit the new formats. Do take advantage of everything that is now ours: CD-ROMs, Web sites, DVDs and the more amazing media that are to come. But let's not forget the people who have to use what you come up with. If you don't keep focused on the user as the most important criterion for how to approach the new media, then there isn't much point in doing any of this.

• • •

Let your opinion be heard...come to the Mix Online Web site (www.mixonline.com) and join in the discussion on Future Docs in "Talkback." ■

Insider Audio columnist Paul Lehrman has written manuals for Roland, Kurzweil, AKG, UREI, Passport Designs and a few others he can't remember. He's still trying to get it right.

World Radio History

THE FUN FACTOR

—FROM PAGE 74, MIXING FOR SURROUND

Nicely: Bit rate reduction is necessary, and I'm glad it's available. The ability to put six channels of information in a small space makes it possible to broadcast 5.1 and opens up options on DVDs, Laserdiscs and CDs. Six tracks of linear PCM will definitely sound better than bit rate reduction, and there will be consumers who want that kind of fidelity for music recordings. But for home theater and broadcast, the currently available bit rate reduction techniques are just fine.

Ramone: It's not really an issue to me. On the one hand, the pipeline will always be small; on the other, we keep increasing the hi-fi side because that is what our goals are. It's an ongoing study, and it is still in its infancy, but if we keep saying we are never going to accept any data compression, we are not going to grow. When I think about the limitations of an LP, what we have today is already quite impressive. But the standard we need is one disc that does it all: It plays on a standard stereo system, it plays in a DVD player, and it may or may not have picture on it.

Rodgers: AC3 is fine, but if you could have better fidelity, you would certainly want to use it. I'm hoping that the DVD-Audio specification will take this to a new level. Theoretically, the most desirable concept would be to have 96kHz/24-bit in 5.1 channels. Then we would really be talking.

Scheiner: I'm concerned. I'm not satisfied with the home product. When you are working in the studio, you get to hear it in its real fidelity. They've got to figure something out so that we can get that same fidelity at home.

Most of the recording industry is not currently set up to accommodate 5.1-channel mixing. Do you see the recording industry and the record industry both embracing 5.1 as the norm? How rapidly? Who will pay for the transition?

Margouleff: Surround is destined to be the medium of choice. The two codecs that are currently on-stream are DTS and Dolby AC3. All of the studios that deal with TV and film are already set up to do 5.1 mixing. Consoles such as the Yamaha 02R [Version 2] and others have 5.1 busing. In the end the artist will pay for it all—it's never been any other way. Fortunately, it will cost no more than stereo, once the cost of the new equipment is paid for. It's time to embrace the new technology!

Nicely: Entertainment technology has exploded in the last five years, but the music industry hasn't done anything new since the CD. There are a lot of multichannel systems already in homes around the world, and it's just a matter of time until the record companies realize the that DVD is an incredible delivery platform. Once that happens, the studios will follow suit, but it's hard to say how long it will take. As far as who will pay, we'll probably continue to see some market seeding as we have seen with DTS for remixes. Beyond that, I suppose it will be a point of negotiation between the artist and record company. For new product, there's no reason why a project could not be mixed for 5.1 and stereo simultaneously with little or no additional costs.

Ramone: I see a change coming where the studio playback systems are going to have to resemble somewhat the living room situation. Unless it is a disastrous control room, it will probably just need to be refurbished a little bit and monitors added. The record companies will not spend the extra money at this time, but it does not have to cost a studio a lot more if they have DA-88s or they can rent them.

Rodgers: Almost every studio I go to, everybody is talking about 5.1. But since I'm not going into those studios to do surround projects, it's really tough for me to tell how well the studios are really set up to do it. But if the industry demands it, particularly if the artists demand it, it will come about.

Scheiner: I think we will eventually see surround mixing across the board. We are going to see 5.1 systems in every car in the country in the next five years. The car will be the perfect listening arena, and I know people who are going to the automobile manufacturers and talking to them about it. So they are going to have to come up with product for it. But it's not going to be a big deal for the studios. I'm doing 5.1 mixing in a room designed for stereo, and the only thing I've had to add is speakers. The people I know are all doing it in existing rooms, not using the main speakers. They bring in a complete 5.1-channel near-field monitoring system. The biggest problem can be trying to reconfigure a console for 5.1, because you don't always have the busing capability. I did *Gaucho* on a vintage Neve, and it worked but it was tough. We had to reconfigure a lot of stuff. ■

Philip De Lancie is Mix*'s Media & Mastering editor.*

—FROM PAGE 156, DIGI'S NEXT GENERATION

lar, requiring little more than substituting CTL for the Command key, ALT for Option, etc. A few snags to Pro Tools NT remain: PCs running older Pro Tools|24 hardware have a 32-track limit (although Pro Tools|24 MIX and MIXplus cards running Windows NT provide the same 64-track functionality as on the Mac), and ProControl or QuickTime video play support won't arrive until next year. However, the NT software adds nice touches, such as right-button-click scrubbing, HUI support, a clever Find File routine and near-real-time AudioSuite plug-ins. At press time, all Digi and Focusrite plug-ins were NT-compatible; more should be announced soon.

Digidesign has taken a huge step forward with the Pro Tools|24 MIX system and Pro Tools PC software, offering an integrated cross-platform solution—not only for 100,000 existing Digi workstation users, but also for a vast market of PC users seeking alternatives. One thing is for sure: The DAW world should be most interesting in the months to come.

Digidesign, 3401 Hillview Avenue, Palo Alto, CA 94304; 650/842-7900; fax 650/842-7999. Web site: www.digidesign.com. ■

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—FROM PAGE 81, MARINA BOSI

Then I became the chair of the San Francisco section, and was asked to chair the S.F. Convention in 1994. After that I was asked to be part of the board of governors and take over the vice presidency of the West Coast. One task led to another until I was elected president of the society [for 1998-99, beginning this month]. I started from ground zero and built up. My position as vice president gave me a good understanding of all the nuts and bolts involved with the AES, and I'm aware of other things very important to the society, such as standards.

Obviously standards committees are important to you. Do they help to provide a way of gathering together and learning about alternatives?

That's a good question. I don't know why, but I got involved in standards while working at Dolby. What attracted me to this type of work was the experience of comparing notes with other engineers around the world. Dealing with other people gave me a new perspective; having a chance to discuss this technical matter with top engineers around the world was very interesting to me. Also, if you have enough support, being able to participate and promote your technology in standards is really very powerful in terms of getting your thoughts and developments known in the rest of the world.

What are the challenges facing companies developing low-bit systems?

There are many. Historically, the development of low-bit-rate coding belongs to the telecommunications industry. Audio quality that everyone can enjoy is really what it's all about. If you have pipelines that are too small to [offer] good-quality digital audio, then you're obliged to do something about it. But things are changing; we have more and more space available. Therefore, there is a need for us to understand the acoustic needs; what can we provide musicians, recording engineers and producers in order to make the sound experience more and more exciting? We're involved more and more with people that will develop new concepts, where these ideas were not possible five or even three years ago.

What, in a practical sense, are the effects of parallel and sequential coding—taking an encoded bit stream, decoding it and then re-encoding it?

That's a very touchy subject. I was involved with the ITU-R [Standardization Committee looking at low-bit-rate audio coding] when they were [evaluating] audio coding schemes for application in broadcasting. We're looking at a whole chain, from contribution to the different delivery stages, which means the signal can be encoded and decoded a number of times. What happens is that you need to increase the data rate. If you are planning to encode and decode your signal a number of times, there is *no* way that you can get away with a low data rate, because the artifacts are going to be pretty nasty.

So if you can, it's better to stay within the digital domain and just decode the minimum number of times. Which is why standardization in a closed system, like a broadcast facility, might make more sense, but out in the open world, it's more difficult?

Right.

What is your primary focus as the president-elect of the AES?

My experience is that the Society—at a regional and international level—is where people can convene and learn new things; they can exchange and generate new ideas. I would like to make this [process] easy and accessible for everyone. I'd like to be able to educate people on what the new technology is, and how we're going to be able to best use it; to focus attention on how important audio is in our everyday life. The AES is a leader in audio, and there are many challenges in order to keep this position.

So your main challenge is to offer enhanced education so that everyone's smarter and better informed.

Absolutely.

How might you achieve this? Are you looking at an increased emphasis on workshops at conventions? Or maybe an interactive Web site?

Yes, all of this. The media available today are very powerful. The Internet is one that comes to mind. Our conventions can play a big role in that [education process]. During the upcoming [San Francisco] Convention we're going to have a workshop on The Internet 2, which is a slightly different approach than we're all used to, with a much higher bandwidth. We need to know what will be available at some point, and how to use it for conveying the best possible audio. ■

Mel Lambert currently serves as International Marketing Director for Otari Corporation. Formerly, he ran Media&Marketing, a consulting service for pro audio firms and facilities.

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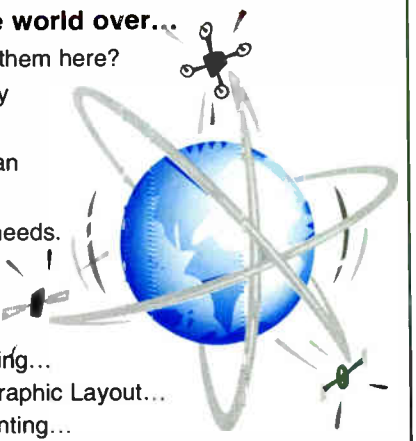
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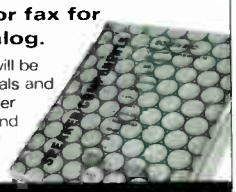

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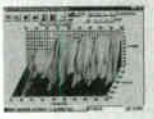

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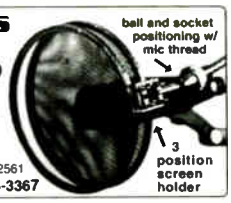

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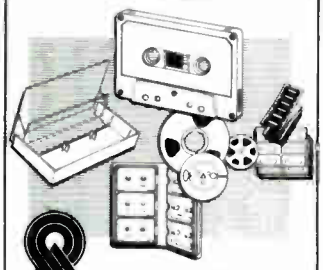

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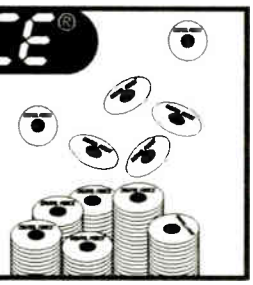

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World Radio History

—FROM PAGE 24, TRIDENT

I turned into the lot, got out and went into the office, where a young woman greeted me with a form that released them from any responsibility for anything under any conditions. She said the form for the other pilots was much smaller. What the hell? Though you may die a thousand deaths, you only live once. I swallowed. I signed. I sat down. I had to.

After half an hour or so, the front door opened—the same door I had come in—and time folded back onto itself in a way that sent a cold chill down my spine all the way to the coffee in my cup. Before me stood the quintessential stereotypical combat pilot. It was instantly clear that nobody had dared to tell him 'Nam was in the past, nor that scotch leaves stains, Hanalei spliffs *don't* look enough like cigarettes to leave them sticking out of your pocket, or that you can buy coffee with little plastic covers on the cup so you don't shake the contents out before you can drink it. I glanced over to the woman who had originally scared the hell out of me with the release forms but who now, by comparison, felt like my lifelong friend and confidant. She understood and did that slow, microscopic, left-right, lowered-head sweep that says "don't..." I didn't.

I didn't ask, I didn't talk. I also didn't stand, or, now that I think about it, breathe. Pilot said nothing, walked directly up to me and *then* said with some effort, "Let's go." These were obviously the first words he had spoken that day. I looked up and found myself looking directly into the leather face and silvered Captain's Ray-Bans of the twisted cinder of skill that I had just signed up with. He looked hauntingly like a cross between Jeff Baxter in the Doobie days, and Dennis Hopper in *Easy Rider*. He wore camouflage. For the first time ever, I could actually *relate* to those silly people on Hollywood Boulevard who lock their car doors when I pull up next to them at a light on the Harley.

Well, I finally stood up. He turned his back to me and walked out the door. A quick glance to my new Spirit Guide returned a small head-nod toward that door, so I followed. We walked up to the chopper, and he said, "Back or front? Most like the back. It's a little less scary." What could I do? I told him front, of course. I was, after all, a pilot myself. He nodded and pulled himself into the pilot's seat. I walked around and did it the same way in the co-pilot position. He did a pretend preflight, looked at me, and said, "Rotary?" I answered, "No, fixed wing." He thought for a second, and then responded with, "I'll fly you for free if you can tell me when we leave the ground."

What a deal! This thing is *all* glass. I can see the skids on the ground right under my feet. "You got it," I say back, not taking my eyes off the skids for a second. "You lose," he says. What? I look down even harder, and the skids are still on the ground. I have felt *no* liftoff, but...the shadows are wrong, and getting more wrong. We are about 15 feet above the tarmac, pulling away in a *backward* peel. Nice trick. I felt nothing. Okay, so this guy can fly.

Life imitating Art imitating Life. A convoluted hybrid of music and reality that can never be separated into its original components. Music underscoring the beauty and majesty of this planet.

"Where do you want to go?" Oh, what the hell do I know about where to go? "Where do *you* want to go?" "Okay. Music?" "Uh, yeah. Whatcha got?" "I got the right music..."

We pitched starboard, leveled out at 15 feet, and tore out over an endless plain, straight into the rising sun. Pink Floyd joined us with...*The Dark Side of the Moon*. Ahhh. It was all starting to come together now. As the music built in its own smoky, Quaalude way, cows loomed at the horizon. I looked over at the pilot, but as near as I could tell, he was asleep, so I didn't bother him. *Dark Side* got bigger. So did the cows.

Just as we got over (actually, into) the cows, Floyd exploded, cows scattered, and the Earth ended. Big Time. The plain was history, and our cruising altitude went from 15 feet to 3,100 feet in a little under one second. Floyd knew. As the bottom dropped away, the viscous swimming fullness of the music held and supported us and then gently eased us into the depths of the red clay canyon, which looked remarkably like...the dark side of the moon.

We flew under and through waterfalls, between green cliffs and over fractal black sand shores. We flew to a grassy shear drop, where he—this is literal; it actually happened—*mowed the grass with the rotor blade tips* so we could see the local mountain goats hiding within! Floyd played along, perfectly. They were there, with me again as they had been for so many flights decades before.

This, my friends, was truly a profound experience. One of those that changes you forever. Life imitating Art imitating Life. A convoluted hybrid of music and reality that can never be separated into its original components. Music underscoring the beauty and majesty of this planet while the fear of death welds it into my memory for all time. And realizing that this feeling is known by others—why else would the pilot have planned, practiced and timed this to transform a big bad guy like me into a humble, teary-eyed, silent observer of the grandeur of it all? Why else would Floyd have recorded this? It was perfection. Loud, expensive, scary fossil-fuel technology aside, it was organic beauty beyond my ability to fully absorb.

And why tell you about it here, in *Mix*? Because the *music* held it together, both wrapping me in familiarity while establishing the exact pace at which the wonders before me would unfold. Like a parent holding the hand of his child on his first walk into the world, the music provided the protection and set the pace. There was nothing to do but experience it.

The power of music. Music is a statement that the creator makes, showing the listener that he *understands*. He calls on *your* past, a common past, to evoke emotional reaction. You experience life as you hear the music, and so it becomes a living part of that experience—forever. What amazing stuff is music. How deeply woven it is into the fabric of our lives. Amazing. Just amazing.

P.S. The helicopter place, as did most others, went away shortly after this ride, as accidents forced tighter controls and insurance rates became unbearable. But it comes back every time I hear Floyd. ■

If you sat Shakespeare down in front of a typewriter long enough, he would eventually write a monkey sound.

World Radio History

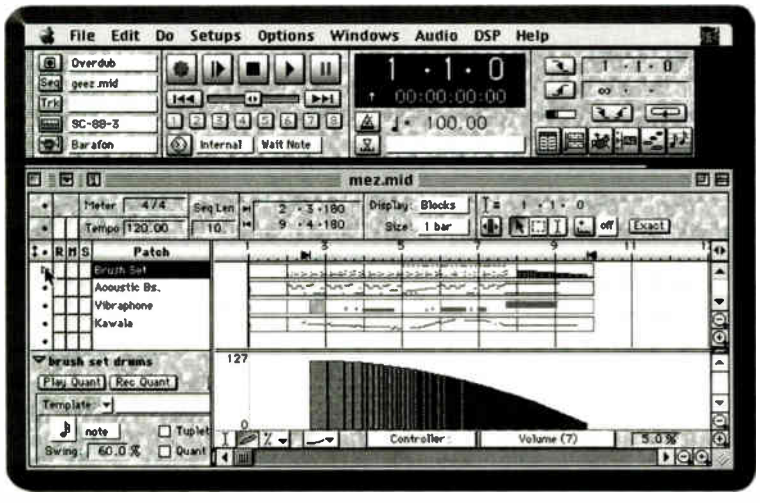
OPCODE STUDIO VISION PRO

TIPS AND TRICKS FROM KMFDM'S SASCHA KONIETZKO

I've been a Studio Vision user since its first release and have always been pleased with its straightforward approach and ease of use. With the new features added in Version 4.0, such as support for Digidesign's Pro Tools 24, Studio Vision Pro plays an even more important role in my production process. Check out some of these tips, and don't be afraid to experiment!

NORMALIZATION ABUSE

If you're looking for some aggressive sounds, check out Studio Vision's normalizing function. While normalization is often used for bringing tracks recorded at low levels up to par, certain instruments such as piano, bass and drums can benefit aesthetically from repeated processing. This technique results in a very distorted tone that easily cuts through even the densest mixes. Remember to watch the levels on your mixer, because over-normalizing can create substantial volume increases.



A typical Studio Vision Pro configuration

CONTINUOUS CONTROLLER TIPS

A lot of my current work involves automated filter sweeps and other effects that require recording of multiple continuous MIDI controllers into Studio Vision. The easiest way I've found to handle this is to record each controller on its own track initially. This allows you to enter the strip chart display quickly by double-clicking the track in the main overview, make any necessary edits and combine these tracks into one using the Combine Tracks command. Just select the tracks to be merged and press Command-U on the Mac keyboard. Your new single track will occupy less space and be easier to copy and move.

For many projects I'll often use 4-, 8- or 16-bar controller "sweeps." To save time and effort, I've created and saved a large collection of these individual tracks as standard MIDI files. When a project calls for such a sweep, I simply open up the file and copy it into any available track. All I have to do at this point is assign the appropriate controller number to the parameter I wish to modulate on the receiving synthesizer.

PREMADE TRACKS

The technique outlined above can also be used to save time in other areas of Studio Vision. For instance, if you frequently use a "four on the floor" kick drum track for writing or mixing, save it to a file. The next time you need it, all you have to do is open it up and change its tempo. This technique is also valuable if you're working in both Studio Vision and Digidesign Pro Tools software. By saving standard MIDI files at various tempos from SVP, you can import them into Pro Tools and enable grid mode for bar line-style editing. This also makes it much easier to find identical locations and synchronize events among the two applications.

TIME STRETCH MANIA

If you're on a quest for unique sounds, try the Adjust Audio Tempo feature. I might take a bass drum sound, for instance, stretch it 200% and then compress it by 50%. This returns the file to its original size but gives it a kind of digital grit that's difficult to acquire through other means.

ASSIGNABLE KEY COMMANDS

With Version 4.0, Opcode has added fully assignable key-commands. This feature can save a tremendous amount of time in a session if used to its fullest: In my setup, function keys F11, 12 and 13 are set to switch between the square selector tool, the I-beam and the pointer. The F6 key brings up the audio crossfades window, F7 is pitch-shifting, and F8 brings up the Adjust Audio Tempo feature. Having these features so easily accessible leads me down creative paths that I might not have explored otherwise.

AUDIO FADES THAT SAVE GUITAR TRACKS

To remove any pops or clicks from audio tracks, especially distorted guitars with lots of edits, I'll often use the Fade in, Fade Out commands in the Fade/Crossfade window. Select the offending audio area and start by applying a 2ms fade-in. If this fails, repeatedly raise the fade-in time until the file plays smoothly. ■

BY SASCHA KONIETZKO

Sascha Konietzko is a founding member of the band KMFDM.

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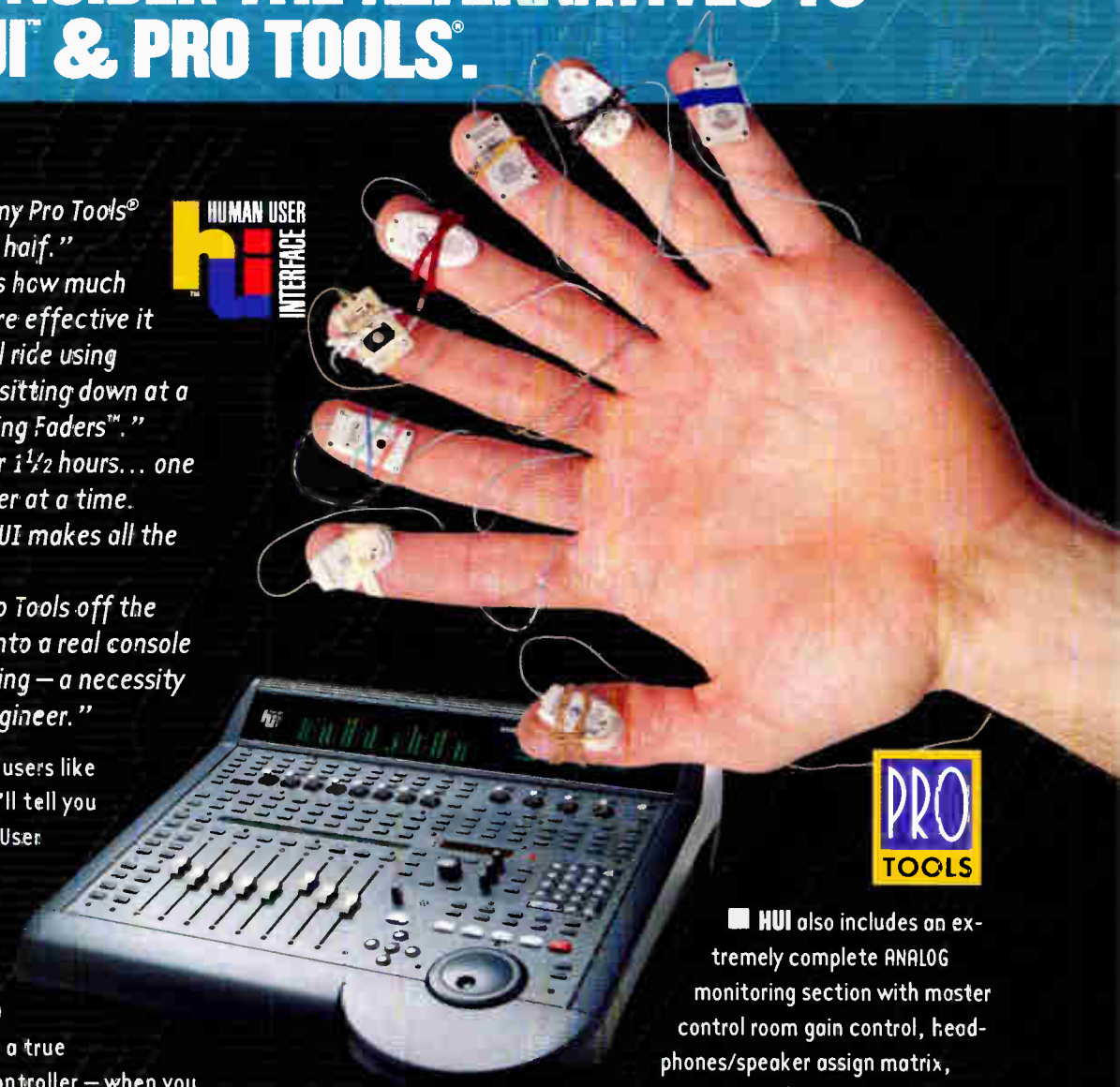

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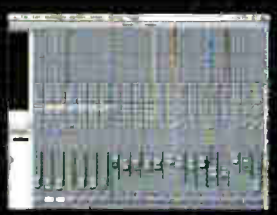

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