The Mix Interview: John Fogerty · Producers Bobby Guy & Ernie Lake · Rodney Crowell's Cicadas

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A universal truth about all small near-field monitors is that they are not capable of accurately reproducing the bottom octave. Unfortunately, even near-field monitors utilizing active low frequency equalization compromise between increased low frequency extension and distortion caused by group delay.

In recent years there has been a trend toward extending low frequency response in monitoring applications. The Tannoy PS115 Active Subwoofer has been carefully engineered to provide the required extension without sacrificing quality. In fact, it improves it.

The PS115 relies on a 15" long throw transducer carefully designed to maximize the low frequency extension to -3dB at 33Hz, while maintaining the ability to deliver high SPL (114dB peak) and the dynamics required for today's complex music mixes. Employing the very latest in electronic filter design, the large 15" transducer can be integrated into your favorite near- or mid-field monitor from 50Hz to 130Hz depending on your system/rooms particular requirements.

The PS115 takes advantage of a state-of-the-art high pass network that bandpasses your near-field monitor at 80Hz substantially reducing cone excursion on the smaller satellite bass units. This results in a cleaner, tighter mid-band due to the decrease in group delay. In fact, the cone travel on the average near-field monitor is reduced by two to three hundred percent.

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AUDIO

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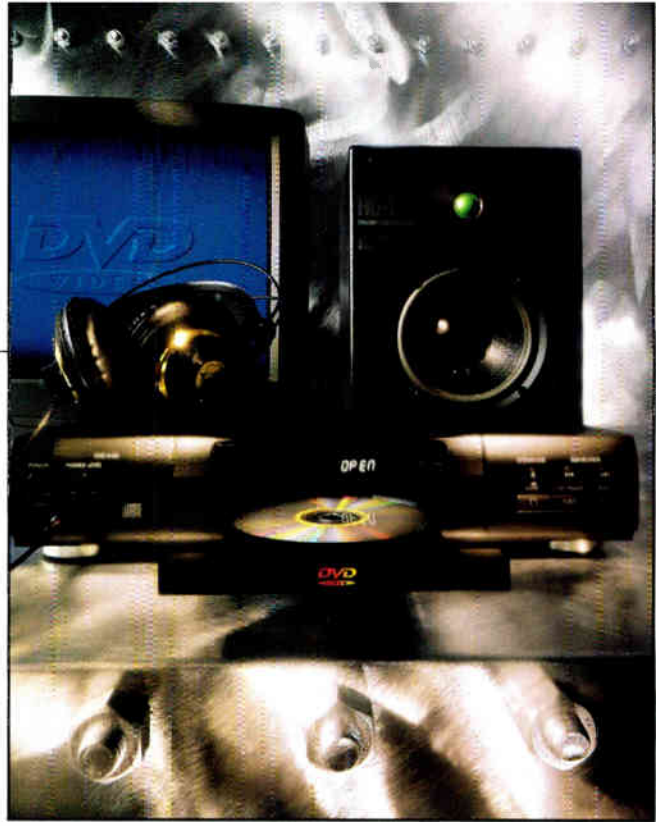

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PRODUCTS

LIVE SOUND

PHOTO: STEVE JENNINGS

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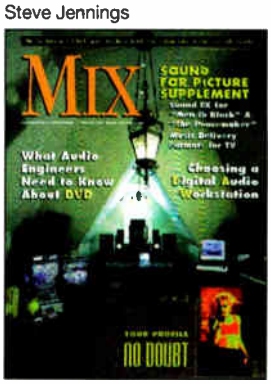
DEPARTMENTS

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

MIX 1977 - 1997

Cover: Built into the attic of a 100-year-old Queen Anne Victorian on Milwaukee's bohemian East Side, Independent Sound is a personal studio owned and operated by musician/composer Peter Buffett, who is renowned for his commercial and soundtrack work, as well as numerous albums of instrumental music. The studio, designed by Buffett and Vince Gaudes, is based around a Synclavier 9600 and 16-track Post Pro system. The console is a Euphonix CS2000, and outboard equipment includes gear from TC Electronic, Digi-Tech, Eventide, Roland and others. Buffett's new Hollywood Records album, recorded at the studio, is called *Spirit Dance*. **Photo:** Eric Oxendorf **Inset:** Steve Jennings



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A/B the sound with and without sidechain processing. No patching required.

OverEasy®-- the choice of top professionals for soft-knee compression.

12-segment gain reduction meter allows precision monitoring of compression.

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Link both channels the best way with True RMS Power Summing— a very musical way to achieve stereo compression.

Flexible expander/gate works over a 70 dB range.

Monitor sidechain processing when setting up the unit.

Prevents low-frequency energy from punching holes in the sound.

Get that classic dbx sound by selecting program dependent attack and release times. or (see #18)

Monitor either input or output signals.

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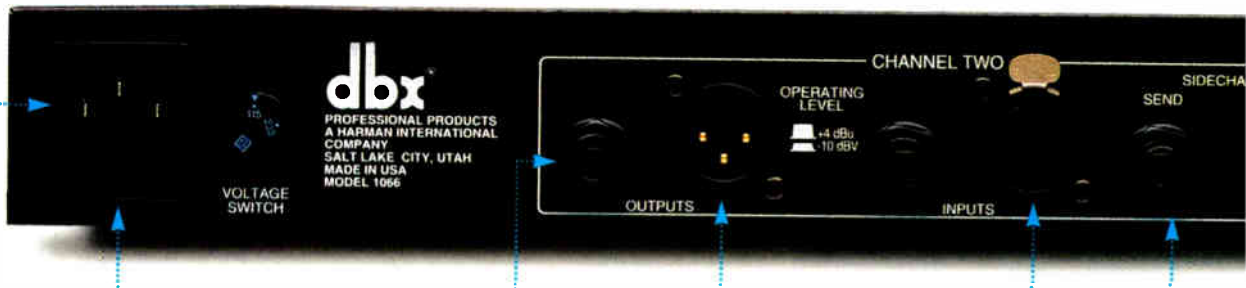

Internal power supply with easily replaceable power cord.

Easily accessible fuse — you'll probably never need to find out how easy.

Connect the unit hassle free using either unbalanced or balanced 1/4" TRS or balanced XLR connectors.

Ensure signal path integrity with gold plated locking Neutrik® XLR connectors.

Add processing to detector path for frequency-conscious compression/gating/special effects.

THAT WILL TURN THE WORLD ON ITS EAR.

Over/Under LED's let you know at a glance if you're expanding/gating.

3-segment OverEasy® indicator lets you know when that classic dbx compression starts happenin'.

Fully adjustable attack and release controls offer maximum flexibility. or see #7)

Peak-reading meter allows easy setting of optimum input and output levels.

Vary the Ratio to select anywhere from gentle downward expansion to gating.

Detented controls and soft-touch knobs assure precision adjustments.

Adjusts from mild compression to ∞:1 limiting.

Add make-up gain or match levels over a 40 dB range.

Newly developed PeakStopPlus™ circuit intelligently tames signal peaks.

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Heavy-duty steel chassis will take years of road use and abuse.

Servo-balanced outputs drive up to +22dBu

Convert semi-pro -10dBV signals to the dbx 1066's professional +4dBu internal level.

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AGAIN

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Now, after over twenty years of pleasing the most finely tuned ears in the business, dbx has done it again with the new 1066. The dbx 1066 will, of course be the standard against which all compressor/limiter/gates are judged. State of the art technology VCA's, meticulous component selection, and scrupulous testing procedures are just a few reasons the new dbx 1066 is the latest in a long line of pedigreed signal processors.

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CURRENT

THIS JUST IN!

As *Mix* went to press, we learned that the Harman Music Group has acquired Amek. At this time, details of the acquisition's impact on Amek sales and distribution were unavailable. Stay tuned for more information next month.

AES TURNS 50!

This month marks the 103rd convention of the Audio Engineering Society, taking place from September 26-29 at the Jacob Javits Convention Center in New York City. The show's theme is "The AES Goes Gold," highlighting the society's 50 years of service to the professional audio industry; the focus is on the ever-expanding disciplines that the AES is involved in, from standards and new technology to Internet audio and DVD. In keeping with the convention theme, Grammy Award-winning producer George Massenburg will deliver the keynote address, "Returning to Reality: 50 Years of Professional Audio." "We've come a long way and have made great progress in 50 years," says Massenburg, "but with the growing complexity of the music business and recording technology in particular, we may be losing sight of the goal—reproducing music that survives because the strength, and the transparency, of the technology allows the beauty of the art to come through."

Convention chairman Russ Hamm says this year's event is designed to be more "attendee-friendly" than ever: "The first step has been to make it a lot easier just to get in the door," he says, noting that convention goers can now register online, using the secure server on the AES Web site (at www.aes.org) to pay by credit card. By registering in advance, Hamm says, show attendees will not only be able to take advantage of the advanced registration rate, but will avoid long lines at the convention. In addition, for the first time the AES Board of Governors has agreed to offer a single workshop admission price: $35 for members, $50 for non-members. Sixteen workshops and more than 140 technical papers are scheduled, including "The Audio Implications of DVD," chaired by producer/AES keynote speaker George Massenburg and David Kawakami of Sony; "Tales from the Truck: Remote Recording," led by Ham Brosious; "Guerrilla Acoustics," hosted by RPG's Troy Jensen; "Multichannel Audio," chaired jointly by John Eargle and Mick Sawaguchi; and "The Future of Music on the Internet," which will include a special address by Thomas Dolby Robertson. Other workshop topics include audio server setup and operation, forensic audio and grounding.

The AES will host the 9th Annual Grammy Recording Forum, presented by the National Academy of Recording Arts and Sciences, on Saturday, September 27 from 2-5 p.m. The panel features top professionals in the art of recording engineering, and addresses trends in mixing, monitoring, storage media, future delivery systems, studio production techniques and inside stories from superstar sessions. Audience members are encouraged to engage in candid dialog with these engineers and producers. Panelists include Chuck Ainley, Sylvia Massey, Elliott Scheiner and Bruce Swedien.

In addition, AES technical tour chair Sid Feldman has arranged a series of exciting tours of leading New York City-area studio landmarks. These seven tours will offer an opportunity to experience both historical and state-of-the art pro audio success stories. Destinations include Europadisk Ltd., The Hit Factory and BMG recording studios, Edison National Historic Site, WQHT/WRKS Radio, a private tour of the Metropolitan Museum of Art's musical instruments collection, and a tour of a state-of-the-art Broadway sound installation.

For more information about AES events, visit www.aes.org or call 212/661-8528 or 800/541-7299.

PANEL DISCUSSION FOCUSES ON ANALOG RESURGENCE

An industry forum entitled "Analog Reality Check: Assessing Current Trends and Future Concerns," will take place in New York City on September 27, coinciding with the Audio Engineering Society convention. The forum, sponsored by Studer, Quantegy, BASF, JRF Magnetic Services and ATR Service Company, will be hosted by noted mastering engineer Bob Ludwig and recording engineer/producer Allen Sides, along with representatives from the sponsoring companies. A 40-minute panel discussion will address the renewed popularity in recent years of analog recording and mastering, particularly among producers of pop and rock albums. Issues surrounding this trend will be ad-

LES PAUL, TOM DOWD TO HEAD TEC AWARDS PRESENTATIONS

The Mix Foundation announced the presenters for the 1997 Technical Excellence and Creativity Awards, set for the second night of the AES convention, Saturday, September 27, at the Marriott Marquis in New York City. Special presenters include Tom Dowd, who will present a Hall of Fame Award to Al Schmitt; and Les Paul, who will present the Les Paul Award to Stevie Wonder. Other confirmed presenters include producer Humberto Gatica, Rosie O'Donnell bandleader John McDaniel, Conan O'Brien bandleader Max Weinberg, bassist T.M. Stevens, audio engineers James Nichols and Sandy Palmer Grassi and *Mix* magazine columnist Stephen St.Croix.

In addition, eight professional audio companies have been added as sponsors of the TEC Awards, bringing the total number of sponsors to 36. New Silver sponsors are Chung King Studios, Electro-Voice, Mackie Designs and Ocean Way Recording. New Bronze sponsors are BASF/EMTEC, Disc Makers, Sony Music Studios and Stewart Electronics.

A limited number of TEC Awards tickets are still available. For more information, call Karen Dunn at 510/939-6149. ■

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INDUSTRY NOTES

Apogee Electronics Corp. (Santa Monica, CA) named **Richard Wilson** as digital media products director; he will be handling all aspects of sales...**Rane Corp.** of Mukilteo, WA, appointed **Dean Standing** as director of sales, and **Ellen Allhands** as director of customer service...Bedford, MA-based **Lexicon Inc.** moved to new facilities and added staff. The new 44,000-sq.-ft. facility is located at 3 Oak Park in Bedford. Lexicon named **Fred Lapitino** senior products manager, professional products and established a new desktop products group headed by **Bob Reardon**, who has been appointed to the position of director of product management, desktop products. The company also welcomed back company veteran **Frank Sarcia** as the company's international sales manager, Asia/South America, and brought onboard **Scott Ray** as western U.S. sales manager...**Jon Bosaw** is the new director of sales and marketing for **U.S. Waves** (Knoxville, TN). The company is headquartered in Israel with offices in the U.S. and Great Britain...**Yorkville Sound** (Pickering, ON) announced the following promotions to its management team: **Steve Long**, president; **Ron Tizzard**, VP of sales and marketing; **Brian Weafer**, VP of purchasing and material control, Canadian office; and **Bud Mayer**, vice president/general manager, U.S. office...**Sascom Marketing Group** (Oakville, ON) was appointed exclusive North American distributor for all **Stage Tec** products and for **OmniSound Corp.**'s OPS-1 Panning System....**Rob Reid** was promoted to media and artist relations at **Applied Research and Technology** (Rochester, NY)...Skanderborg, Denmark-based **Dynaudio Acoustics** announced a new distribution agreement with **Audio Exchange International** (AXI) of Rockland, MA. New staff were added to the distribution team: **Barry Fox** as marketing manager, **Bruce Bartone** was named product manager and **Kevin Witt**, special product manager...**Sennheiser** moved to a larger facility. It will retain the same phone and fax numbers; the new address is One Enterprise Drive, Old Lyme, CT 06371. The new location will serve as the central distribution and service point for Neumann and D.A.S. products....**John McKee** joined **EDR Corp.** (Cleveland, OH) as executive vice president...**Fiber Options** (Bohemia, NY) appointed **Marcus M. Annicelli** to the position of director of manufacturing...Polish company **ED2** was chosen by **Penny & Giles** (Gwent, UK) as its Polish distributor for the Audio Multiprocessor System...**Robin Barry** was appointed public relations manager at **Koss Corp.** (Milwaukee, WI)...**Liquid Audio** of Redwood City, CA announced a distribution agreement with **MediaSpec**, a European supplier of digital media technology...**EVI Audio** (Buchanan, MI) news: Salt Lake City-based **TK Group** was named as EVI Audio Manufacturer's Representative of 1997. Vega Wireless, a division of EVI, named Burbank, CA-based **Western Audio** as manufacturer's representative of the year for 1997, and Detroit, MI-based **RP Sales** was named rep of the year by the Electro-Voice division...**Garwood Communications Ltd.** announced that both its UK and U.S. operations moved to larger premises. Garwood's new UK address is 65 Maygrove Road, London NW6 2EH; 44/171/328-1211; fax 44/171/328-2300; their new U.S. address is 305 River Road, Tullytown, PA 19007; 215/949-3200; fax 215/949-8500... **Leitch Technology Corporation** (Toronto, ON) promoted **Frederick L. Godard** to president and COO. **Bob Lehtonen** will retain his position as CEO but is resigning as president. **Charles E. Goodwyn** was promoted to vice president, finance and CFO, and **Greg W. Weot** was brought onboard as district sales manager for Florida and the Commonwealth of Puerto Rico. ■

—FROM PAGE 10, CURRENT

dressed, including future availability of necessary resources and technology.

The forum, tentatively scheduled for the New York Hilton, is open to all members of the recording community by invitation only. Invitations are available from the five sponsor companies, in advance and at their booths during the AES convention.

UPCOMING SHOWS

Online Developers IV: "Building the Bandwidth" happens September 17-19 at the Grand Hyatt in San Francisco. Call 800/488-4345 or 212/780-6060 for details.

The NAB Radio Show takes place September 17-20 in New Orleans and will showcase nearly 150 exhibitors. For registration information, visit www.nab.org or call NAB's fax-on-demand service at 301/216-1847.

Parsons Audio in Wellesley, Mass., will hold its sixth annual Festival/Conference/Expo on October 14 and 15, featuring panel discussions, workshops and manufacturer exhibits. Visit www.paudio.com or call 617/431-8708 for information.

The 139th conference of the Society of Motion Picture and Television Engineers returns to New York City, November 21-24. For program details and registration information, phone 914/761-1100 or visit www.smpte.org.

NEW WEB SITES

The Adzen catalog is now on the Web: www.azdencorp.com.

D.W. Fearn has a home page at www.dwfearn.com.

Check out Korg's site at www.korg.com.

F7 Sound and Vision's Web debut: www.zipmall.com/f7sound.

New York music company The Knitting Factory offers Liquid Audio-format music for download and purchase. Visit www.knittingfactory.com.

KRK Loudspeakers announces a company page at www.krksys.com.

Stewart Digital Audio announces its Web site: www.stewartdigital.com.

Microphone enthusiasts: Your Virtual Microphone Museum is at http://soli.inav.net/~jebraun/mikes.htm.

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Get Something More Than Just Great Sound from Neumann

SPECIAL REBATES AND NEW TLM 193 STEREO SET FROM NEUMANN

$200 Rebate
PLUS A FREE CARRYING CASE
When you purchase a TLM 193 Stereo Set:
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- Two Shockmounts
- Two Windscreens
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Engineers, producers, and performers all across the world demand Neumann microphones for the same simple reason: they are the best sounding mics available anywhere. Right now, however, we offer an additional compelling reason to buy Neumann. Purchase a new Stereo Set of TLM 193 Large-Diaphragm Condenser Microphones (see rebate tag) by September 30th, 1997, and we will send you a $200 rebate plus an elegant and sturdy carrying case to hold both mics and accessories. Or, purchase a single TLM 193 in the same time period and we will send you a $100 rebate.

With a frequency response of 20Hz to 20kHz, dynamic range of 130dB, self noise of 10dB-A, and maximum SPL of 140dB, the TLM 193 offers superlative performance. For a limited time, you can own a Neumann—the choice of those who can hear the difference—for a truly exceptional price.

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Offers valid through September 30th, 1997 only. To receive your rebate and carrying case, simply send us your dated receipt along with the microphone warranty card(s).

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More professionals channel their creativity through

When you page through this magazine, you're going to see a multitude of ads for compact mixers. Some of the mixers look a lot like our CR1604-VLZ™. Heck, even some of the ads for other 16-channel mixers look a lot like Mackie ads[1].

Pretty soon, you may start to wonder how much difference there really is between all the various mixer makes and models.

Naturally, we're going to tell you that there's a VAST difference between the CR1604-VLZ™ and other 16-channel mixers[2].

[1] Dense, fine print type. Lots of lines and arrows pointing to features. Textured backgrounds.

[2] There ARE vast differences too numerous to mention without resorting to dense, fine print...with textured backgrounds.

But luckily, you don't have to take our word for it. One of the best, unbiased benchmarks of mixer performance is who uses it. And that's where the CR1604-VLZ™ blows the competition in the weeds. We're the overwhelming choice of professionals who can afford any mixer they want. And who have taken the time to listen to every mixer on the market.

Send for our thick, color tabloid brochure[1] and we'll include a comprehensive list of distinguished CR1604-VLZ™ users. It includes familiar names like the Tonight Show, The Late Show and Saturday Night Live bands, The Presidents of the United States of America, Ronnie Montrose, Microsoft®,

A short Grant Reeves bio: Music for Sony, U.S. Navy, Anheiser Busch, Apple, Fujitsu, Hewlett-Packard, Hitachi Data Systems, NASA, Siemens, UNISYS, United Way, Airborne Express, LSI Logic, McKesson Health Systems, Pyramid, Las Vegas Chamber of Commerce, Austin Chamber of Commerce, Applied Materials, Weyerhauser, KIRO-TV, KICU-TV, KMPG Peat Marwick, among others. Six Gold Tellys, Joeys and other industry awards. For more information, log onto www.GrantReeves.com.

[3] Mention in this ad is intended only to denote useage or ownership as reported to Mackie Designs. Mention is in no way intended to represent a specific or implied endorsement by the individuals, groups, programs or production companies listed.

CR1604-VLZs than through any other 16-channel mixer.

sound design wizard Frank Serafine, Jet Propulsion Labs and all four national TV networks[3].

■ The list also includes a lot of folks you may not have heard of... a huge group of pros who make their living creating music for ads, documentaries, corporate videos and multimedia. Real live, bonafied electronic musicians like Grant Reeves, shown below with his CR1604-VLZ™, sequencer and air guitar.

■ Bottom line, part one: Everything you track and mix down goes through your mixer. It needs the low noise floor, maximum mix headroom, pristine microphone preamps, and musical, natural EQ for which Mackie is renowned.

■ Bottom line, part two: You spend more session time in front of your mixer than you do with any other single component in your studio. You want a console that's intuitive, flexible and easy to use... for thousands upon thousands of hours. Ask somebody who owns a Mackie CR1604-VLZ™ and one of the first things they'll probably mention are the "little things," the myriad small details that make the mixer a joy to work with.

■ Then visit your nearest Mackie Dealer and start channeling your creative impulses through a real CR1604-VLZ™.

One of the six industry awards won by the CR1604-VLZ.

No way were we going to get this ad past Greg Mackie without at least SOME informative fine print. First, the CR1604-VLZ basics: 16 x 4 x 2 configuration with 16 mic and 16 line inputs ■ 16 inserts & 8 direct outs ■ 6 aux sends per channel ■ 2 master aux sends & 4 aux returns ■ 4-band EQ with wide sweepable midrange ■ AFL/ PFL solo ■ Large emitter geometry discret mic preamps. There's more! Here's a list of CR1604-VLZ features and components NOT found on other comparably-priced 16-channel mixers. ■ Unique multi-way rotating input/output pod ■ In-place stereo solo ■ Constant- loudness pan pots ■ UnityPlus gain structure for easy level setting, low noise and high headroom ■ Negative gain mix amp architecture to handle 16 simultaneous HOT inputs without distortion ■ Wideband sweepable midrange EQ ■ Sharp, 18dB/octave low cut filters on every channel ■ RUDE solo light ■ Control Room/Phone source matrix ■ Effects To Monitors on Aux Returns 1 & 2 ■ True logarithmic-taper 60mm faders ■ Balanced inputs & outputs (except headphone, tape in/outs, and direct outs) ■ Comprehensive, easy-to-read manual.

Below: a few of the 400+ folks and one incontinent Chihuahua (not shown) who work at Mackie Designs in Woodinville, WA, 20 miles northeast of Seattle.

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THE SETUP

I am from Baltimore. Now, it's not the worst place in the world...at least I don't *think* it is. No, wait. Maybe it is. The wondrous Frank Zappa came from Maryland. But I guess that is offset by Jean-Louis Dreyfus also coming from Maryland.

If you leave this city in any southerly direction, you dive straight into pure essence of "Ballmer"—a unique, highly purified, marble-step, let's-go-downey-ocean-hon culture that can only be described as Baltimore and can only be explained by...well, maybe there is no explanation. The rest of the world calls Baltimore the world's biggest little town. Baltimore calls itself Charm City and has the Orioles. Yeah. That pretty much covers it. Ballmer's contribution to the world of art is screen painting. The residents paint pictures on their window screens. This is no joke—it is not polite to laugh at the idiosyncrasies of distant and bizarre cultures.

Well, time to move on. Like many cities, the more affluent areas are to the northeast, north and northwest. The suburbs there are more spacious, greener and certainly much more expensive. I went to one of the most affluent of these burbs to see one of this year's cartoons, *Batman and Robin* (remember how far ahead I write this column—coming events in my now are old news in your now). I didn't expect a plot, I just wanted a good ride, lots of saturated colors and a little Poison Ivy.

I picked the best Sony Gigaplex there was in this affluent area and actually called ahead to make sure it was showing in their premier theater. I did all this to have the highest odds of a reasonable-sounding theater. So? It sucked! Once again, as I do every year when I try to go to a movie, I am reminded of why I don't go to movies.

Come on, Sony! Don't just buy all the theaters you can find, stick your name on them and simply leave them in the decrepit states you found them in! Fix them! Find managers with brains! Better yet, find managers with ears. Or send some over.

BY STEPHEN ST.CROIX

—CONTINUED ON PAGE 214

ILLUSTRATION: MELINDA BECK

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AUDIO ON THE INTERNET

INEVITABILITY OR OXYMORON?

Thanks to my parents' discriminating taste in literature, I spent a large part of my childhood studying cartoons in *The New Yorker*. A lot of them were over my head, but that was actually part of their appeal. Finding out why a joke was funny that I didn't get at first was one of my favorite ways of learning about the world. One cartoon that I did understand, however, showed two guys in a basement with a printing press and several crates of dollar bills stacked around them. "Sure it's a lot of money," says one of them, "but let's not forget one thing: It's all counterfeit."

I think about this cartoon when anyone starts gushing about how the Internet is the future of audio. "Sure there are a lot of ways to do it, and some are pretty interesting," the voice in the back of my mind says. "But let's not forget one thing: They all suck."

There are millions of hours and dollars being spent on the Internet, and one of the things that seems to have the most kick for the folks who are really into it is how it can handle audio. Entire magazines are talking about how online delivery systems are going to revolutionize the music industry: We're going to buy records from Web sites, download new releases onto our hard disks and attend live concerts through our modems. Independent musicians will have the same opportunities as major record labels, whose stranglehold on the marketing and distribution process will finally forever be broken.

BY PAUL D. LEHRMAN

So how do we in the audio biz gear up for this brave new world? Well, I'd start out with great big yawn. Yes, I agree the Internet is changing the ways people look for information, and there are some interesting marketing and distribution opportunities there for artists and purveyors of entertainment. But it's going to require a major change in the way the world is wired, and the way *people* are wired, before we have to face the prospect of scrapping our current ways of bringing music to audiences.

First of all, let's look at the delivery systems people use to access the Internet. The vast majority of homes are still hooked up with twisted-pair copper, just the way

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they were 75 years ago (although in those days, you needed *three* conductors for a phone line). The amount of stuff you can push through 18-gauge unshielded copper is limited by the immutable laws of physics. There have been remarkable strides—in one of the first articles I ever wrote about telecomputing, some 12 years ago, I quoted a source who solemnly said, "1,200 baud represents the limit of what a telephone line can handle"—but I think now we really are at the end of that line.

"But soon," say the pundits, "the copper will be replaced by something much faster." Maybe Sprint and MCI can handle a few gigabytes of data per second on their latest trunk lines, but I'm not holding my breath for those little suckers to come snaking their way up my block. Cable? A few companies are testing the waters by passing up the opportunity to add yet another cubic-zirconia-shilling channel to make room for a fast downlink to customers (they still need phone lines for data *from* the customer), but they're going to get a hell of a rude awakening when they realize they're now in the Internet Service Provider business, and the stuff they're pumping down their lines actually *matters* to people. As bad as customer service is on most ISPs, can you imagine what would happen if the cable companies took over? Imagine Netscape has started scrambling your e-mail, but the only thing you can get out of your service provider is, "We'll send someone around to look at it in a week or so." No, thanks.

It will require a major change in the way the world and *people* are wired before we have to scrap our current ways of bringing music to audiences.

The local telephone companies aren't going to spend billions digging up every sidewalk in every town to bring their fiber into your bedroom—not when the wireless services to whom the FCC just gave away huge amounts of spectrum are trying to sell you the same services, only their hardware investment has been just about zilch.

But now we have such fabulous compression schemes that we don't even need all that bandwidth, right? Compression technology has gotten a lot cleverer in the past couple of years, but audio, unlike graphics and video, doesn't have a whole lot of redundant information (you don't see "the next 4,862 samples are at $45F6" unless you're dealing with pure square waves), and so there's a limit to how far that can take us. Not long ago this magazine ran a column of Stephen St.Croix's in which some over-zealous spell-checker changed "lossy compression" to "*lousy* compression"—a lot of us recognized unintentional truth when we saw it. The newest "lossless" schemes save 50% or less of your bandwidth, and are not real-time. MiniDisc, the sound of which some people still

—CONTINUED ON PAGE 215

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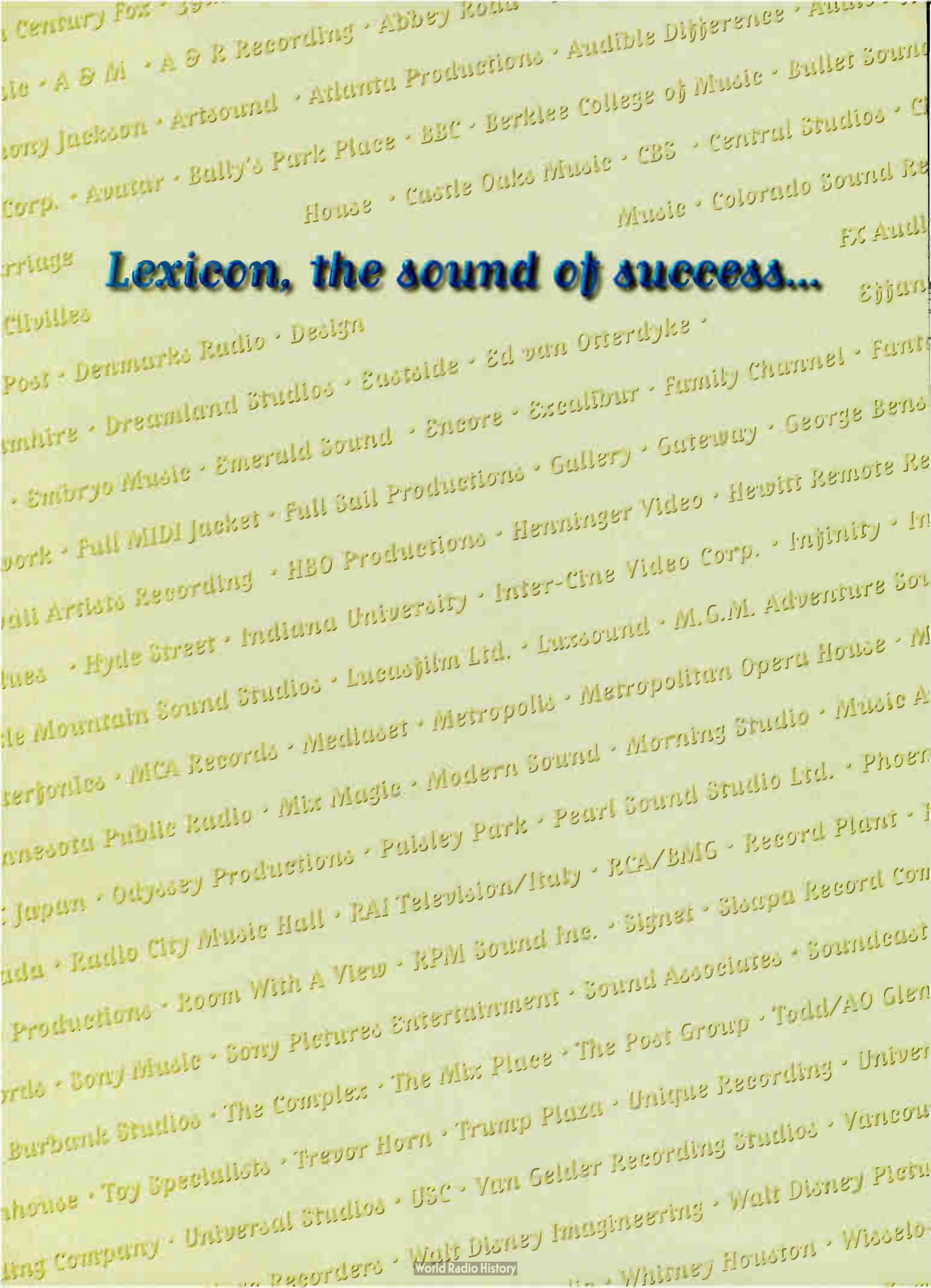
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JOHN FOGERTY

SWAMP THING

I remember the first time I heard Creedence Clearwater Revival in the late '60s, when I was growing up in Memphis. My next door neighbor was a DJ at the primary AM Top 40 station, and on weekends we could hear his carport radio blaring out the hits through the hedges that separated our yards. One late summer afternoon in '68, I heard this raw, swampy, psychedelic version of Dale Hawkins' classic "Suzie Q" that sounded like it must have been recorded by some great local band, fronted by one of the most distinctively soulful singers I'd ever heard. When the jock mentioned the band's name and said they were from San Francisco, I couldn't believe it, and he stated that he couldn't either, adding that it just sounded too "Memphis."

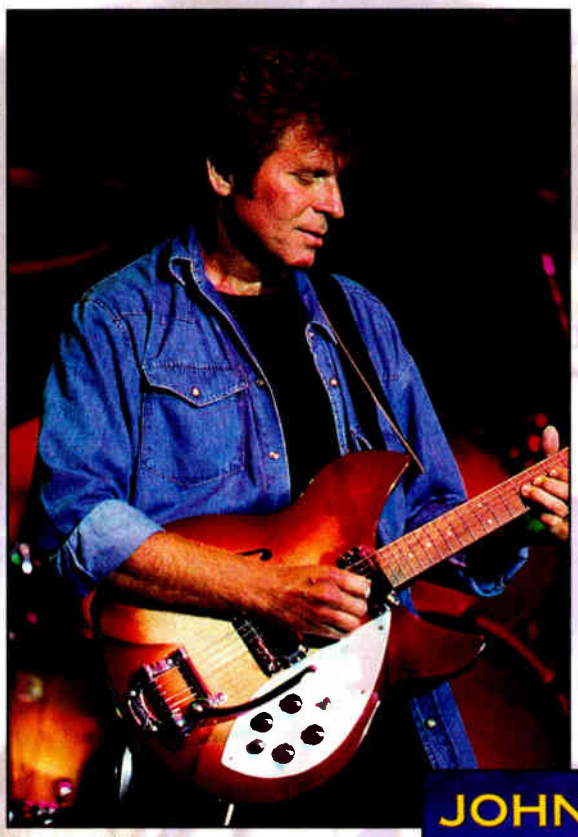


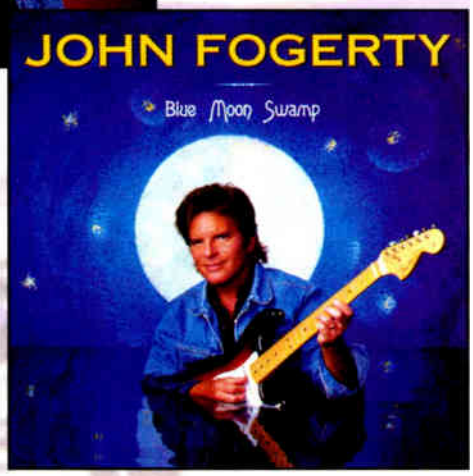
PHOTO: STEVE JENNINGS

Over the next few years, I became a bona fide fan of Creedence Clearwater and the vision of lead singer/songwriter John Fogerty, who I was sure must have cut his teeth in some past life in the South.

Between the years of 1968 and 1972, Creedence released seven albums; six went Top Ten, and two spent a total of 13 weeks at top of the album charts. During that time, they landed 14 Top 40 hits, five of which made it to the Number 2 position. The group disbanded in October of 1972, and Fogerty embarked on a solo career that, while decidedly less prolific than his Creedence days, has continued to deliver the high quality of song smarts and passionate, soulful singing he is known for.

In 1985, Fogerty released his Warner Bros. debut, *Centerfield*, which went Platinum and generated the hits "Old Man Down the Road" and "Rock and Roll Girls." The follow-up album, *Eye of the Zombie*, marked a rather heavy-handed departure from Fogerty's previous work, and album sales were less than impressive. Nevertheless, it did have one stand-out track called "Change in the Weather."

Ten years later, Fogerty is back in great form with probably the best solo album of his career, titled *Blue Moon Swamp*. Throughout the album, which took four-and-a-half years to make, Fogerty rocks harder and delivers the best vocal performances and guitar playing of his career. *Mix* corralled Fogerty, in the middle of pre-touring preparations, to talk about his artistry as a player, writer and producer.



You came from the Bay Area, at a time when the Grateful Dead and Jefferson Airplane were taking off into the free-form stratosphere, and you were playing essentially a style of music that drew much from the South. What was the lure?

I don't actually know. Rock 'n' roll in its early beginnings was very, very Southern. The first ten inductees at the Rock and Roll Hall of Fame were from the South. Rock 'n' roll is about Southern. Going back before rock 'n' roll, when I was listening to R&B and Muddy Waters, Lightnin' Hopkins and Howlin' Wolf and those people, it was there, too. I was taking it all in without realizing what I was being fed, you might say.

When I became a teenager, I caught the hooks the same way. I gravitated to movies that were Southern in nature. The movie *The Defiant Ones* was very Southern. Another old movie that was a fa-

BY RICK CLARK

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vorite of mine was called *Swamp Fever*, believe it or not. I think I hooked into all of that stuff because of the music first. Then I just started paying attention. ***There is so much primal mystery in the South.***

Yeah, and that suits the music. It suits my music—you know how I'm always going [he makes ghost sounds] "Ooooooooh spooky" in my songs, like "Run Through the Jungle," "Tombstone Shadow" and "Born on the Bayou"? It is not a mystery like the mysteries of Sir Arthur Conan Doyle or something. It is even more mysterious than that. It is all in the essence.

Around 1989 or 1990, I took several trips to Mississippi. Many people might be surprised to know that I had never been to the state before. I was very purposeful around this time, without really knowing quite why, sort of like the scene in *Close Encounters of the Third Kind*, when the fella is making the tower on the table out of mash potatoes, and he is humming this tune and going nuts, and he doesn't know why.

After the *Eye of the Zombie* tour of 1986, I felt that I hadn't hit the mark of the place I was supposed to go. I was searching for a deeper musical place. I felt like I had actually been closer to the right place when I was 23 years old. I knew something was missing, and that is all I had. I had the question

One of my pet peeves is with the noodlers who are loaded with technique. They are going so fast that sometimes they don't even realize what they are playing.

and the sense that something had been missed. From that, I started to do things that would help me get deeper. It was a long evolution, and I really only got there during the making of this album. I wasn't there when I started recording *Blue Moon Swamp* in 1992. **Blue Moon Swamp *has a nice, raw, natural, roomy sound. It recalls the spirit of inspired older rock records, but with a sonic immediacy more akin to newer rock recordings.***

I'm a big fan of room sounds. One of the great things about older records is the room sound. We did a lot of experimenting. Every voice and instrument on that record is by choice. It is not that we got lazy and just left something that way. It was actually thought out.

I tried out all of my amps and all of my guitars and mics, to get the room to do that special thing. It sounds like an accident, like somebody's great live record from a stage, where they just happened to have the exact right ambience from the hall or whatever, but it's one of those one in a million things for it to be an accident, but when you track it down [to achieve that effect], that means that you put a lot of perspiration into it.

One place where you can really hear the room being used is the song "Rattlesnake Highway." I used a '67 Strat through a 100-watt Marshall Plexi, circa '68. There was a certain place where we could put it and we used

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three mics, one right on the amp and two more in specific places.

We did this at a place in North Hollywood called The Lighthouse. I lived there for four and a half years. I probably could've built three of those places for what it cost me, but that's life, looking back through the rear view mirror. [Laughs]

I must say that the engineer, John Lowson, really helped a lot. He was into it like me. Anything to make it cool, he was really into it.

One of the things I've always enjoyed about your guitar style is how you convey energy and attitude through economy. You trust the integrity of a basic riff and just "work" it. When you're repeating a figure, I think the repetition during a lead break allows the song's pocket to breathe. You are not only allowing people to engage with what you're playing, but also allowing them to flow with the groove and savor the interaction between the notes played and the space between them.

That's right. That is why you search so hard to find a good riff. Something that is terrible played over and over is not going to be very interesting. I always cite The Beatles' "Day Tripper" as a classic thing on the guitar. It's something that you want to hear again and build a song around. It is kind of the way I operate, too.

A guy who's not really in my field, but really "got it," because he did it so well, was Albert King. He knew that same thing. He was awesome, and his tone was so great. He would play a line, and the next thing after it, if it wasn't the same line, it was at least a variation on the theme that made sense. When you get into a great guitar line, then say it again. Maybe you might do it slightly different, but say it again. In other words, you knew what you were doing, and show people, "Yeah, I meant to do that."

One of my pet peeves is with the guys who are the noodlers and are loaded with technique. They are going so fast that sometimes they don't even realize what they are playing. In other words, they might play something that will make you go, "Wow, that was great," and then they will turn off left and do something immediately that will make you go, "I wonder if that guy knew how cool that thing he played was back there about five seconds ago, because he should do that again." [Laughs]

It is often a form of impatient playing that fails to trust the moment.

Exactly. I think with rock 'n' roll, there is such a thing as having too much technique. [Laughs] That's fine. Some of my idols are people who have technique up the yin-yang. I love Chet Atkins, but he's not rock 'n' roll. When I was a young guy, his style was so complicated to me. I could never approach it. I would go, "Someday I want to grow up and do that." Today, I am about where he was 40 years ago. [Laughs]

It's probably odd to some people that I would find a lot of inspiration there, because I'm a rocker and Chet is definitely not. He has certainly shown the polished side, the ethic of getting your stuff down and making delightful records with it. Rock is not his thing. Rock is about noise and attitude. Chet is more about grace and elegance.

Steve Cropper is one of my all-time favorite guitarists. He keeps getting called a rhythm guitar player, but I think that is either putting a big fish in a small pond, or it's just changing the words for the fish. [Laughs] I mean the line, "Play it, Steve!" came from behind one of his lead lines. He is just another guy, like Albert King, who understands rhythm and economy.

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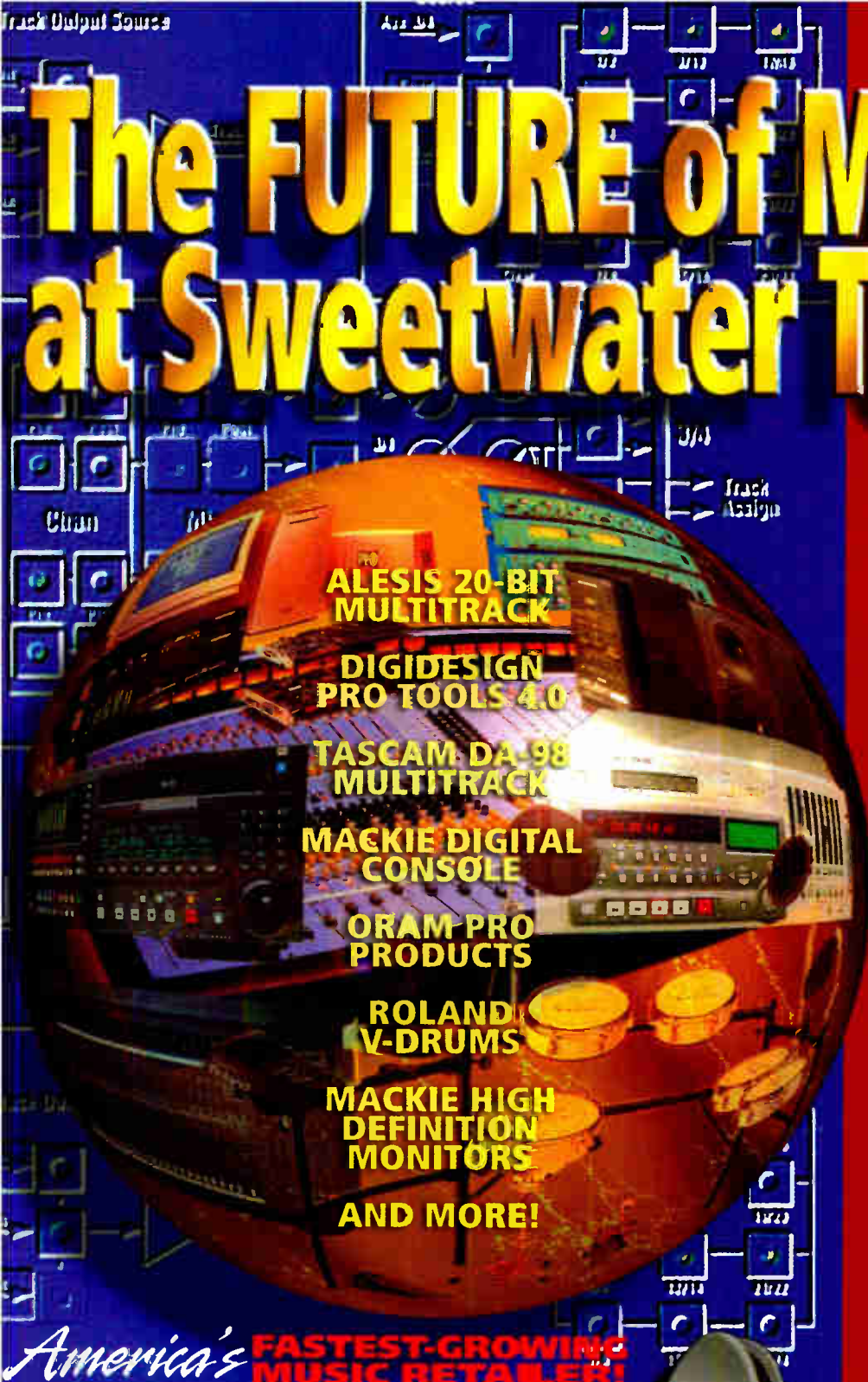

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Pop Staples is another amazing artist. I used to listen to the religious hour on Sunday evenings. Back in the old days, radio stations didn't play their music with just one format for 24 hours. So these things would be broken up into talk shows and women shows and all kinds of stuff. On Sundays, they had a gospel show that ran for two or three hours. I would certainly remember Pops' guitar and the Staple Singers. That's really why I would tune in, to hear that harmony sound and his guitar style.

There is a song on your new album called "A Hundred and Ten in the Shade" that reminds me a lot of Pops, particularly his recent version of J.B. Lenior's "Down in Mississippi," which Ry Cooder produced.

Yeah, rather than try and hide from my mentors, or my influences, I would rather say, when you spot them, point them out and name the people who are responsible. Yeah, I'm just a kind of American sponge of all the things that came before. Pops, and the gospel sound in general, is a big influence on me. So if you get any of that feel in my records, I am very proud.

That track sounds like a timeless classic; it evokes a typically relentless Southern summer day. It is almost like you can feel the heat and hear the flies buzzin'.

Rather than try and hide from my mentors, or my influences, I would rather say, when you spot them, point them out and name the people who are responsible.

At the time I wrote the song, and then when the actual record was finished, I went, "This is way above me." [Laughs] That's how I felt. "This is way better than me. I better make sure that I do this one right."

"One Hundred and Ten in the Shade" first came to me in a blast one afternoon, sitting by the side of a dirt road. I knew I had this song, and I could hear how it was supposed to go. There are those moments where, I don't know how to say it, but you feel privileged. These are the best moments any songwriter or musician can have. It is even better than the stuff you do live or making records. It's when the right note appears and the song becomes complete in your mind. It's only in your mind. I knew the song was special, and knew that it had to sound as old as the dirt.

The track basically comes from 1992, but I didn't have the background vocals on it. The name the Fairfield Four came up, and through mutual consent we came up with the arrangement and they came over to the studio on a Saturday afternoon and it was right, even before it started. Now when I hear it, I go, "Man this is just spooky. It is great." I still get goosebumps when I think of this track.

It transcends flavor of the month stuff. It sounds like it was always written.

[Laughs] Maybe it was. Maybe I got it from somebody else.

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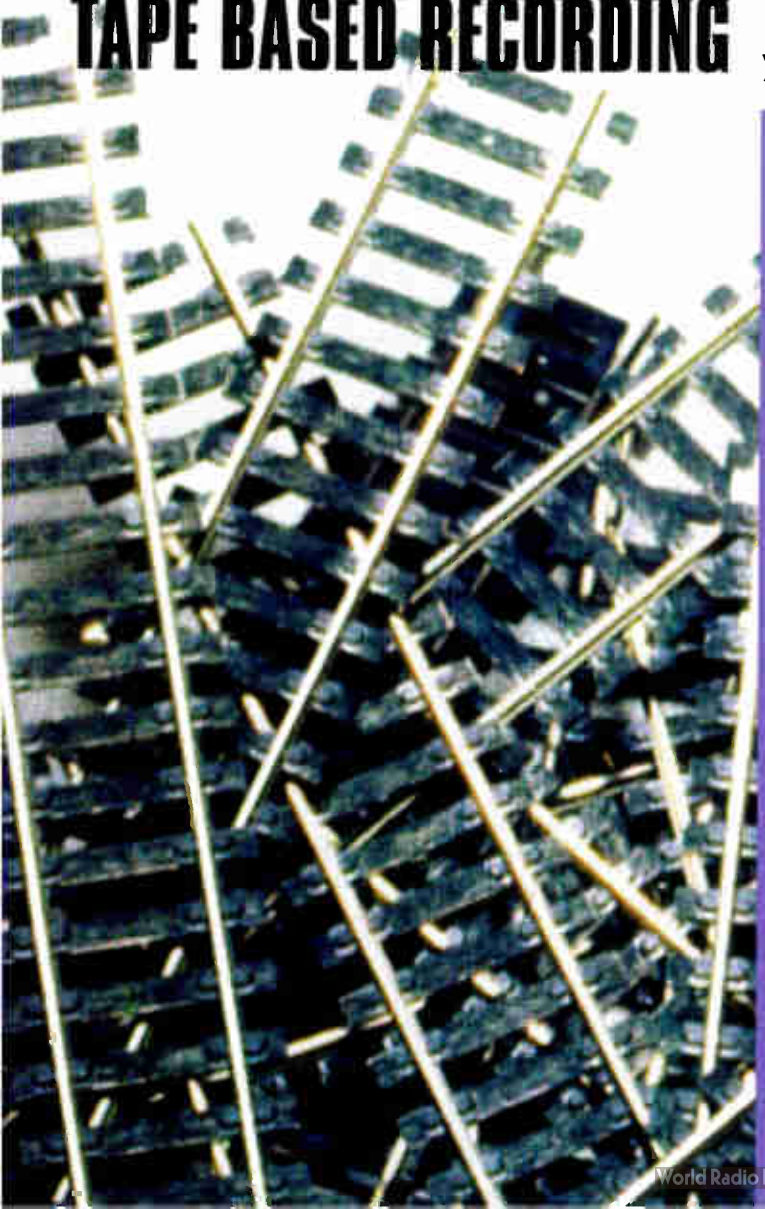
Audition a DTR-8S today and compare our sonics to the best that's out there, then compare the price. With the DTR-8S, we're certain you'll find you're on the right track.



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- High Quality A/D and D/A Converters
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Are there other songs you have written over the years that also made you go, "Where did this come from?"

"Proud Mary." That's the first time that happened. I was sitting in my little apartment, so I was totally removed from context. I was playing with the chord changes that make up the intro, and I had this little book of song titles that I had started. I still have the book, and I'm still adding to it. The very first one in the book is "Proud Mary."

At the time, I had no idea what "Proud Mary" was. I thought that maybe she was a real person. Sometime, weeks or months later, I was fooling with the chord changes and started singing about the river. I realized, "Well, maybe if I make it about the boat." Then I thought, "Gee, that's sort of dumb, isn't it?" Then I started thinking, "What do I call the boat?" Well it sound-

John Lowson

SWEATING THE DETAILS

MAKING "BLUE MOON SWAMP"

by John Lowson

I started working with John at the very end of August '92 and ended in January '97. We recorded at The Lighthouse in North Hollywood. We used a Studer 820, recording with 499 at +9. Then, two-and-a-half years into the project, we decided to go with the Sony 48-track multitrack. It was a great machine to do comps on, and we really liked having the extra tracks. I basically had drums on the 24-track, as well as the bass and guitar. I would make a slave mix for 48 track. From there, I made additional analog work tapes for certain instruments, bass being one of them. I went back over to the analog format from the 48-track for bass and acoustic guitar, and certain lead guitars.

John was most concerned about the drums, so we spent the most time on them. The first two or three years, the whole process was trying to get great drum tracks. Initially, we were tracking everything with one drummer. We started trying to edit in the feel or fills that John wanted, and that's where we started to get involved in a tremendous amount of editing. There were sections of "Blue Boy" where, in the outros, John created fills out of several takes of existing tracks. We would take a tom hit from one place and two snare hits from somewhere else and create fills.

I had five mic sounds on the kick drum, and I had as many as 200 or 300 kick drum sounds for samples. On "Walking in a Hurricane," I combined all five of those sounds and I literally inserted a different sample in every kick. There were some double kicks that required a softer hit on the first one. All of those are actually combinations of the samples. The snare drum, as well, is a combination

—CONTINUED ON PAGE 217

Want your mixes to deliver the punch and clarity of the industry heavyweights?

Now they can... thanks to the Wizard Finalizer, TC's new concept in dynamics signal processing. Inserted between the stereo output of your mixer or workstation and your master recording media, the Finalizer dramatically increases the level without sacrificing fidelity or stereo imaging.

Now even your demos will sound like a CD, because you can simultaneously:

Convert:	20 bit precision A/D & D/A converters
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Expand:	Variable Slope Multiband Expander
Squeeze:	Multiband Compressor
Trim:	Variable Ceiling Limiter prevents overloads
Fade:	Manual or Auto Fade Tool
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The Finalizer creates that extra energy boost that you can otherwise only get from a professional mastering house. With it's powerful multiband processing it will make your mixes sound punchier, louder, crisper, warmer, spectrally balanced, more **"in your face"**... it's your choice!

Don't take our word for it! Take *theirs:*

"TC Electronic has come up with a winner by packing tremendous flexibility into this unit. The Finalizer contains all the latest thinking in dynamics control and it is easy to use."

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"The Finalizer is capable of producing first-rate professional results. There's a lot of 'bang for the buck' in this single rackspace mastering tool."

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ed like you could call a boat "Proud Mary," like the "U.S.S. Invincible," or something. It kind of sounded like that, so that's what I did.

When the "rolling, rolling on the river" part came to me, I thought, "Oh my God!" I'm a big fan of Stephen Foster and old Disney family movies from the '50s. It just felt like I had landed in Tin Pan Alley. [Laughs] It was like, "This is way better than me." It was like the first really good song that I ever wrote.

There is another song that wasn't a big hit or anything, called "Change in the Weather," that was on my *Zombie* album. I went out to my car to try to find some inspiration. I was playing a cassette of the music, and I didn't know what it was about. I looked through that same little book, and I saw a couple of things about weather, and at the time, I think I thought that title was in there, but you know what? Two years later I went through that whole book, and there are thousands of titles, but "Change in the Weather" was not in there. I thought it was.

I stepped out of my car. I had the little cassette, and I was walking down the sidewalk, and something in me went [he starts singing] "change in the weather," and I went "Wow!"

That's my favorite track on that album. [Laughs] Yeah, I would have to say so, too. We don't need to get into that, Rick. I don't think I was in top form there.

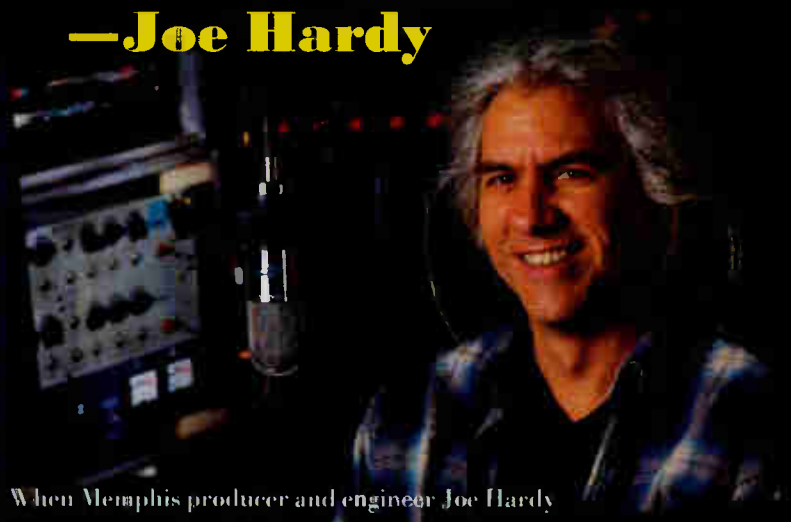
Sometimes in the process of following the artistic journey, it is those seemingly awkward side steps that end up being essential in re-informing you to what your truth is really all about.

Well, you're saying that very graciously. [Laughs] Yeah, I learned two big lessons there. One was, don't let yourself go on such a downer. Keep things fresh and fun and inviting to where a person wants to hear this thing over and over. Even I didn't want to hear *Zombie* after a while. The second thing really was, don't get overwhelmed by the musicians you are with. That really happened on *Zombie*. The guys I hired were studio hot shots who ran right by me. They were technical whiz-bangs, and I started letting their influence and taste prevail, because I was in such awe of their abilities. I learned a big lesson, which was, "John, you really have something to offer. Keep it the way that you want it. Don't let it go somewhere

—CONTINUED ON PAGE 217

"An indispensable tool for digital recording..."

—Joe Hardy



When Memphis producer and engineer Joe Hardy (ZZ Top, The Jeff Healey Band, The Radiators, etc.) is working to capture an artist's unique sound, he relies on the Peavey PVM™ T9000 condenser tube microphone. With its self-polarized condenser capsule and vacuum tube preamp, the PVM T9000 mic gives him the mellow warmth that can only come from a tube.

The uniform cardioid polar pattern makes it perfect for studio vocals, and because it easily handles SPLs up to 137 dB, Joe can count on it when high SPL instrument applications are required.

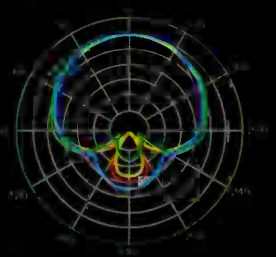
The PVM T9000 also includes a 10 dB attenuator and 80 Hz low-cut filter switches to control the variables that could hex an otherwise good session.

To complete the package, the system comes with shockmount/heat-sink, special cable and power supply.

The PVM T9000 tube microphone from Peavey Audio Media Research. Trusted by the best!

PEAVEY
Audio Media Research

PVM™ T9000



There's lots of hype these days about PCI digital audio recording systems. Companies spend a ton of money on advertising, claiming future support by a myriad of different software companies. What are we supposed to do? We need instant solutions! Our projects are due now not "soon".

Emagic, known for it's integrated professional MIDI, Digital audio and Scoring software has created a cross-platform, PCI busmaster digital audio recording card with 8 discrete outputs for less then $800: Audiowerk8. Since the product's launch last Spring, thousands of users worldwide have attested to the incredible ease of installation and use and the warmest analog to digital conversion in the business. The Audiowerk8 works on both Windows and MacOS computers just like Logic Audio, the sequencing software it was designed to work with from the start.

Version 3.0 of this award winning music production tool now offers a rich compliment of real-time DSP effects such as Equalizers, Filters, Reverbs, Chorus, Flangers and Delays with up to 8 inserts and sends per track, depending on your CPU.

The combination of Logic Audio 3.0 and Audiowerk8, allows the completion of professional production jobs on a very tight budget.

There's a whole slew of new features such as: punch in on the fly, cycle recording, contiguous synchronization of audio to MTC and much more. You can even use 2 Audiowerk8 cards and get a total of 24 physical audio tracks and 16 outputs.

Rather than calling a dozen companies to get a technical issue resolved, make a single call to a single source and get back to work. Compatibility and support problems become a thing of the past.

So what's the deal? Logic Audio & Audiowerk8, true integration, guaranteed compatibility, professional results. See your dealer or give us a call. The choice is simple. One company, one complete solution.

What's the deal?

Emagic Inc
Tel +916 477 1051
Fax +916 477 1052

Emagic Web Site
http://www.emagic.de

emagic
Technology with Soul.

Multichannel Digital Audio Workstation

As digital technology has spread throughout the audio world, so random-access systems have appeared for almost every audio application, from PCMCIA-based portables for location recording to completely automated systems for overnight music broadcast. And as far as digital audio workstations (DAWs) for multichannel recording and editing are concerned, the potential purchaser is positively spoilt for choice.

Choosing the most appropriate DAW may seem a daunting task, so a useful starting point is to find out what is available for what cost. There are well over 100 DAWs currently on the market, but it would be meaningless to the reader for them all to be listed in a couple of lines. *Mix* invited a representative sample of manufacturers to provide some basic details, along with the highlights of their systems and costs.

by Yasmin Hashmi and Stella Plumbridge

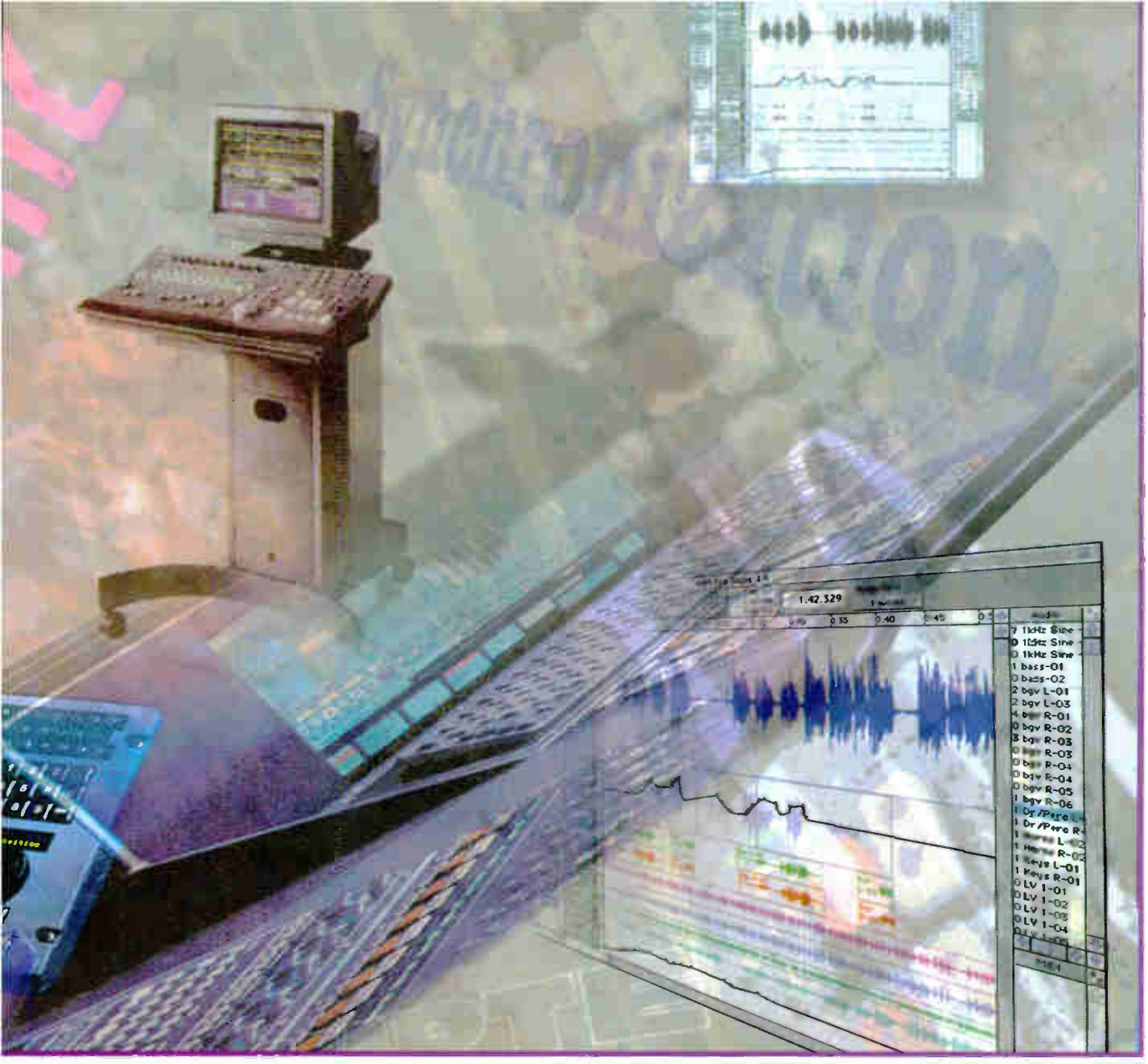


ILLUSTRATION: KAY MARSHALL

DETERMINING YOUR NEEDS

A natural tendency is to look for the cheapest price. But, given the number of variables involved in configuring a system for a particular application, calculating a realistic cost may prove less than straightforward. A number of questions need to be answered. For example, if you are considering a card and software solution for your existing PC platform, you will need to find out whether your CPU and storage have the required specifications and capacity, or whether they need to be upgraded or even replaced. Packages that rely solely or partially on the host processor will usually require the latest models, and it should be remembered that whichever platform is used, the number of continuous channels supported, as well as the overall performance of the system, will be highly dependent on the specifications of the hardware you use, including your disk drive(s).

What type of synchronization capabilities and I/O will you need? Will you be satisfied with the integrated mixing capabilities or will you need to mix externally, and how will you get material in and out? Is a stand-alone workstation an option for you? Are you interested in transforming an existing computer into a workstation, or purchasing a computer with digital audio applications in mind? Even if your computer has built-in audio capabilities, appropriate cards must be added if you require professional I/O and sync interfaces. What kind of display will you need? Will mouse-driven operation suffice, or will you eventually require more hands-on control?

SYSTEM PROFILES

Although the system profiles included here will not tell you everything you need to know about a particular system, they do give a general picture of the wide range of choice available in terms of system requirements, operational control, main software features, and

synchronization and mixing capabilities. However, as system configuration requirements will vary, the prices, listed either for entry-level or typical full-blown configurations, serve only as a rough guide.

Unless stated otherwise, systems listed include provisions for sampling rates up to 48 kHz, up to 16-bit word lengths, and timings displayed in SMPTE timecode and absolute time. Please note that, unless stated otherwise, price bands represent cost of the system, minus PC. Also, in the interest of space, we've left out workstations that are purely software-based, such as Opcode's Studio Vision Pro and Macromedia's Deck II; and stand-alone modular multitrack recorders, such as Fostex's Foundation and TimeLine's MMR-8. Both types of systems have their own benefits and should also be considered in your decision-making.

Most of the profiles below do not cover the important issues of archiving, machine control, file transfer, customer support or future development plans. Those interested in more detailed listings are referred to the new 6th edition of *The Tapeless Audio Directory*, an international buyer's guide to DAWs, disk-based recorders and automation systems. *TTAD*, available through the Mix Bookshelf, uses the same terminology throughout and covers not only all existing systems, but those soon to be launched. Listings include comprehensive technical and operational specifications, future development plans, typical configurations and costs and suppliers details. More information on *TTAD* can be found at the end of this article.

LESS THAN $5,000

CreamWare TripleDAT, TDAT16 and Masterport

Designed for multitracking, signal processing and CD mastering, the TripleDAT package relies on a minimum Pentium 90 platform with 16 MB RAM and 1GB drive to support up to 256 stereo tracks. The system supports real-time effects and Red Book CD writing, syncs to MTC, MIDI clock and word clock, and displays in bars and samples. Mixing includes segment- and track-based volume and pan, real-time effects, and aux channel with volume pan and effects. The TDAT16 is aimed at digital multitracking, ADAT and digital mixer environments, requires a Pentium 200 platform and Windows MM compatible MIDI interface, and provides 16 channels of ADAT I/O with optional analog I/O. MasterPort is a 4-I/O audio board for Windows, designed as an entry-level TripleDAT system supporting 16 stereo tracks. Cost: $1,798. $2,198 for TDAT16 audio board including TripleDAT V2.5 software. $998 for MasterPort. Phone 800/899-1939; visit www.creamware.com.

Digidesign Audiomedia III

Digidesign's Audiomedia III card with Session software combine to provide real-time, nondestructive editing, with four tracks of simultaneous recording using both analog and digital inputs, plus 6-band parametric EQ, provision for 2 effects sends and 4 returns, MIDI and digital video sync and support of multiple sample rates. They can be also purchased separately; because Wave Driver software is also provided with the AM III card, it is compatible with a variety of software options from Digidesign and Digidesign development partners. Hardware requirements for the Session system are a Pentium computer with 75 MHz or greater and one free PCI slot, or DOS 6.0 or greater

Soundscape Version 2.0

With over **3,500** systems in use worldwide in just 3 years, you could say we've got some experience in **hard disk recording**

NEW V2.0 features:

- Powerful 32bit editing software
- 12 playback tracks per unit (expandable to 192 physical tracks)
- Custom digital mixer featuring 16 internal busses
- "Audio Toolbox" (chorus, flanger, delay, compressor, limiter, phase shifter)*
- High quality Reverb from Wave Mechanics Inc.*
- ADAT/TDIF Digital I/O
- 256 virtual tracks
- Up to 192 physical outputs
- Punch in, Punch out
- Upgrade for all existing users

* Optional software plug-in if required

Logic emagic

The SSAC-1 accelerator card for Soundscape Hard Disk Recorders adds TDIF digital I/O and the enhanced processing power required for **Version 2.0 software**. The **SS8IO-1** connects via TDIF and adds 8 XLR in's, 8 XLR out's, 20Bit converters, ADAT Optical I/O, SuperWord Clock in/out and peak level metering.

internet:http://www.soundscape-digital.com

INTERNATIONAL SALES ENQUIRIES:
Tel: +44 1222 450120 Fax: +44 1222 450130

U.S. SALES: Soundscape Digital Technology Inc.
Tel: (805) 658 73.5 Fax: (805) 658 6395

CANADA SALES: Gerr Audio Distribution.
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SOUNDSCAPE DIGITAL TECHNOLOGY

• Off-line editing • On-line editing • Auto Conform • Track Laying & Dubbing • ADR • Multi-Track Recording • Stereo Editing • Re-Mixing • ADAT/DA88 Editor • MIDI • Pre-Mastering

with either Windows 3.1 or Windows 95. Price is $795 for AM III, $199 for Session. Phone 415/842-7900; visit www.digidesign.com.

Digigram Xtrack

Aimed at radio editing, multimedia editing, post-production, dubbing, CD mastering and home studio production, Xtrack supports up to 32 internal playback channels via 2 or 8 inputs, and 2 outputs. It requires a Pentium 133 platform with 24 MB RAM and 1.2GB drive, and relies on ISA or PCI bus Digigram PCX cards. The PCXpocket provides 2-channel I/O in a PC card type II format for laptops, and a separate sync card is available. It will also operate with all MPC WAVE-compliant packages and PCX-specific hardware. It syncs to RS422, LTC, video and AES/EBU. It supports level adjustment, time stretching, noise reduction, pitch shifting and EQ and can transparently mix MPEG compressed and linear data on a single track. Cost: from $2,820 for a studio system, from $2,500 for portable PCXpocket systems. Phone 703/875-9100; visit www.digigram.com.

Digital Audio Labs V8

The V8 is aimed at multitrack recording, mixing, ADAT editing, production and audio post for video. This modular hardware package supports 16 disk tracks plus 16 inputs and ADAT sync; it requires a Pentium platform with recommended 48 MB RAM, any size 7200 rpm or faster drive, and any appropriate third-party recording/editing software or DSP plug-in. The internal bus supports 24-bit word lengths, and the system sends and receives LTC, VITC and word clock, and sends MTC. It supports virtually any mixer configuration, including faders, panners, mute-solo, aux sends and receives, and internal buses, and most mixer functions and DSP effects can be automated. Cost: from around $2,500. More than 100 inputs and outputs can be added, with up to 16 active at any time. Phone 612/559-9098; visit www.digitalaudio.com.

EMagic LOGIC Audio and Audiowerk8

Geared for both the home studio and professional music production, EMagic's LOGIC Audio and Audiowerk8 card combine to provide recording, mixing, real-time and file-based DSP, MIDI sequencing, scoring and systems management. A configurable 24x8 mixing arrangement features 8 buses, plus 8 possible inserts per fader for adding host-based DSP. All fader and plug-in movements are automatable through MIDI editing. Minimum system requirements are either Mac 25MHz 68040 with 32 MB of RAM, or Pentium 133 with 32 MB of RAM; the system relies on the host PC for real-time DSP. Two cards can be combined to double the outputs; future expansion daughterboards will provide ADAT optical and S/PDIF I/O options. The Audiowerk8 card lists for $799; Logic Audio Mac is $799, Logic Audio Windows is $699. Phone 916/477-1051; visit www.emagic.de.

Ensoniq Digital Systems PARIS

Designed for musicians, project studios, multimedia producers, broadcast and post-production facilities, this package is available for Mac or Windows 95/NT platforms and can play back a minimum of 16 real-time tracks for each EDS-1000 PCI card installed, and up to 128 tracks of nondestructively mixed 24-bit digital audio. It relies primarily on proprietary processing, and includes the Control 16 dedicated control surface with 17 faders, EQ, aux and pan control, jog wheel, monitor level knob, and dedicated buttons. The software supports eight 16-channel submixes, signal routing, EQ, real-time effects processing and MIDI data, with automation of all mixer controls. The system syncs to MTC, external word, 256 Fs clock, LTC and VITC, and also displays in samples and bars/beats. Cost: from $2,895, excluding PC. Various analog and digital I/O and sync options are available. Phone 610/647-3930; visit www.paris.ensoniq.com.

Event Electronics Layla by Echo

Layla, designed as a cost-effective solution for various applications, is a 20-bit multitrack recording, editing and mixing system based around a PCI card interface (featuring Motorola 56301 DSP power) combined with a rackmount breakout box. The system includes multitrack recording and editing software; the hardware is also compatible with many PC and Mac audio recording/editing packages. The rack box has eight balanced analog ins and ten balanced outs, with 20-bit converters. The OmniBus™ audio assignment architecture allows configuration of outputs as monitor mixes, aux sends and discrete channel outs. S/PDIF I/O is also included. Layla requires at least a 486DX4 (Pentium highly recommended) running Windows 95, with at least 8 MB of RAM; a PCI bus slot is also required.

Night & Day

Putting together a complete professional studio used to be complicated and expensive. Until now.

PARIS™ is everything you need to record, edit and mix 24-bit digital audio in an easy to use and affordable package.

PARIS integrates massive DSP power, expandable interface options, a dedicated control surface, and fast, intuitive software into a complete 128 track recording studio.

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PARIS features:

- Plays 128 Tracks
- 24-Bit System
- Dedicated Control Surface
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Retail is around $999. A PowerPC version is in the works. Phone 805/566-7771; visit www.event1.com.

Korg Soundlink DRS 1212 I/O with Deck II

This package, aimed at home-based digital recording, supports up to 30 tracks of audio through a total of 12 inputs and outputs comprising stereo analog, ADAT optical and S/PDIF I/O. It requires a 603e or above Power Mac with PCI slots or compatible and 24 MB RAM, relying on the host processor. It includes the third-party Macromedia Deck 2.6 software. Twenty-bit word lengths are also supported. The system syncs to MIDI clock and word clock, and also displays in measures/beats and samples. Mixing functions include level, pan, EQ and effects, with fader and pan automation. Adobe Premiere format third-party effects are also supported, and the system is compatible with Cubase VST 3.5, Emagic Logic Audio and MOTU Digital Performer. Cost: $1,250. Phone 516/333-9100; visit www.korg.com.

Metalithic Digital Wings for Audio

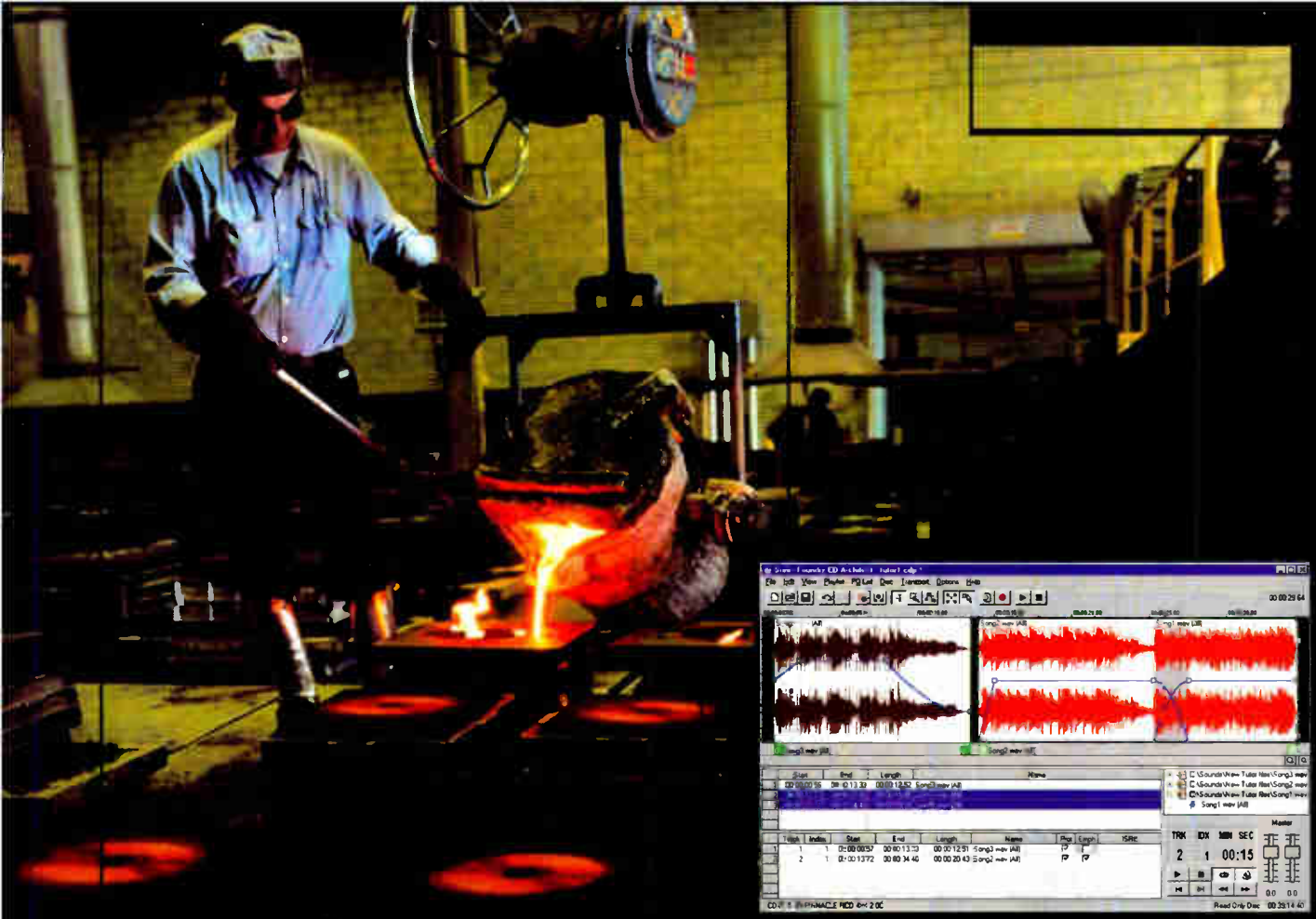
Designed by musicians for musicians, this package is based on Metalithic's patented Reconfigurable Computing Technology, delivering 128 tracks of Windows 95-compatible recording for less than $1,000. Audio is saved as .WAV files, and DWA can be configured as MIDI master or slave. Standard analog I/O includes one stereo line input, one balanced mic or stereo line level input, and one stereo line out. DWA's Way Cool Edit feature offers various DSP options, including Intuitive EQ, dynamic and time processing, noise reduction and analysis tools. An intuitive color-coded interface makes for ease of operation. The system runs on Windows 95, 32 MB of RAM and a Pentium processor or better. Cost: $799. Phone 415/332-2690; visit www.metalithic.com.

Soundscape Digital Technology SSHDR-1 Version 2.0

The SSHDR-1, geared toward audio post for video, professional recording studios, broadcast and film, supports from 12 to 196 channels through 196 analog outputs plus TDIF and ADAT. All audio processing is handled by the SSHDR-1 rack unit, and the user interface comprises any 386/486 platform with 8 MB RAM and Windows 95. Third-party MIDI controllers and plug-ins are supported, and optional software for CD mastering and hardware for video capture is available. Twenty- and 24-bit word lengths are imminent; the system syncs to MTC with full chase lock, word clock, super clock and LTC/VITC via sync converter to MTC, and also displays in measures/beats. The mixer is fully customizable and features 16 buses, parametric EQ, sends, meters, routing and real-time effects plug-ins. Cost: $4,200 for SSHDR-1 12-track system with 2-in/4-out analog and S/PDIF, and 8-in/out TDIF. $11,635 for 24 tracks with 20-in/24-out plus 16-in/out ADAT/TDIF. Phone 805/658-7375; visit www.soundscape-digital.com.

Spectral Prisma

Designed for broadcast production and post-production, this 8-channel package relies on proprietary processing and DSP, and requires a Pentium-based Windows platform with recommended 32 MB RAM and 1GB internal drive. Three software interfaces are available for broadcast, multitrack production and post-production, and any MIDI hardware controller can be used in ad-



Build Audio CDs by the Book

Design professional audio CDs to Red Book spec with Sonic Foundry's new CD Architect. Tracks in the PQ List can be assembled with regions from single or multiple sound files. Full PQ code editing allows even the most sophisticated mixes and crossfades between tracks. Used as either a stand-alone editor, or as a Sound Forge 4.0 plug-in - CD Architect is ideal for building audio CDs on Windows 95 and Windows NT.

- Supports 99 tracks per disc (99 sub-indices per track)
- Allows single or multi-file playlisting
- Verifies PQ list for Red Book compatibility
- Fully supports PQ-code editing including track and index positions and pause times
- Includes dozens of audio processes, tools and effects with multiple levels of undo/redo
- Provides independent-channel master volume faders and adjustable envelope controls
- Burns disk-at-once premasters suitable for creating glass masters
- Generates printable cue sheets
- Previews multiple tracks or ranges of audio before extraction
- Auto-detects the full range of CD-ROM drives, CD-recorders, and auto-loaders it supports

CD Architect includes native versions for Windows 95, Windows NT-compatible (x86, Pentium, Alpha systems) on a single CD-ROM.

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SONIC FOUNDRY®

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Power-Mac platform, with 16 MB RAM and minimum 200MB internal drive. The software supports spotting, auto-conform, recording, loop-recording, editing and premixing; the system syncs to MTC, LTC, word clock, AES/EBU clock and video reference (house sync), and also displays in feet/frames. Mixing functions include level automation. Cost: depends on application. Phone 213/874-3411.

Micro Technology Unlimited Krystal MicroSound
Aimed at audio post for video, CD PQ code editing and mastering, multitrack mastering and editing, this Windows 95/NT workstation with recommended Pentium or Pentium Pro 133MHz and 32 MB RAM uses proprietary DSP processing and supports IDE or SCSI drives. Twenty- and 24-bit support are also imminent. It syncs to MTC, LTC, VITC, word clock and video blackburst, and also displays in samples. The MicroEditor software provides a trackless, unrestricted assembly environment with overlapped segments automatically mixing. Up to 22 stereo segments can be dynamically mixed and played live, and a static submix of denser areas is performed, although every segment (up to 256 stereo) is independently editable at any time. Starts around $6,590. Phone 919/870-0344; visit www.mtu.com.

Merging Technologies Pyramix Virtual Studio
Aimed at broadcast networked production, CD mastering and audio post for video, the system allows linear multichannel record and playback over industry-standard networks and supports 16 channels via the proprietary Kefren DSP card. It requires a minimum Pentium 120 platform with a full-length ISA slot, 24 MB RAM, Windows 95/NT and minimum 800MB internal drive. Optional MIDI controllers are available. Twenty-, 24- and 32-bit word lengths and up to 96kHz sampling are supported; it syncs to LTC, VITC, digital clock, word clock, and also displays in samples. The 10x2 internal mixer supports 8 live inputs, 8 disk inputs, insert point per channel, 3 aux buses with internal or external DSP, mix bus inserts, real-time dither from 24- to 8-bit with noise shaping, and moving-fader desk automation. Cost: $7,595. Phone 847/272-0500; visit www.merging.com.

Orban Audicy
Aimed at broadcast audio for radio and TV, this proprietary system is designed for multi-user, deadline-oriented production environments. It supports 24 tracks assignable to 10 channels, and includes a custom console with dedicated controls for mixing, editing, transport and effects such as time compression, Orban EQ, Optimod compression and Lexicon reverb. Universal sample rate conversion is available on input. Audicy syncs to AES/EBU, S/PDIF, NTSC or PAL video, and word clock, can chase or generate LTC, and frame formats may be mixed within a production. It supports real-time mixing of up to 10 tracks with or without effects processing, as well as stereo submix return; external inputs may be bounced for infinite layering, and tracks bounced to themselves to change dynamics. Cost: $19,950 for a complete turnkey system, including DSP engine, 17-minute RAM Control module, 2GB hard drive, balanced analog I/O, monitor and warranty. Phone 510/351-3500; visit www.orban.com.

Studio Audio & Video SADiE
SADiE, aimed at CD premastering, radio production, post for TV and film, comprises a Pentium-based platform, a dedicated jog/editing unit and a stackable, motorized 8-fader unit. Eighteen, 20- and 24-bit word lengths and up to 96kHz sampling are also supported;

THE YORKSHIREMAN

"...there's this guy in Yorkshire, England who has a thing about sound. Obsession, that's the word. He makes processors. Gets *real* excited about finding what he calls *perfection.*

He doesn't know when to stop, he just keeps on pushing. Stops when *HE'S* done - and not before. And folks like that 'over-engineered' business. Take his Noise Gate, the DS201. I guess most of my CDs have music that's been through them. They've been around for years. Studios, touring companies ...everybody uses them. If you've not used a DS201, or the DL241 Compressor, then *you've not lived my friend!* Another thing. He figured that if you put tubes back into the latest stuff, his *'perfect'* stuff that is, it would be neat. Imagine: his friends must have said to him "You're mad, why spend your life getting perfect, then put that old radio gear in it?" He says something like "Great sound comes from the soul, not the lab. Clean may be right, but I think folks might like to try a little warmth the old-fashioned way. That might be their kind of perfect." I'm telling you, that 1960s Series he put together is just the finest sounding set of outboards *I have ever heard.*

Here's the latest. He sits up there in the hills saying "Digital is a good idea, but it's not quite there yet. Sounds all compressed to me." People think he's gone real crazy now. After all, they are all going digital. *But he's right!* And he *knows* 'cos his analogue stuff has better specs..

But he had a trick up his sleeve all along. He was designing this 24-bit digital preamplifier with the widest dynamic range ever. And he's put them old tubes of his in the box with it! The 1962 is the damnedest thing I've heard.

The guy's name's Drawmer. Ivor Drawmer..."

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the system syncs to MTC, LTC, VITC and AES reference audio clock, and also displays in CD frames, milliseconds or samples. The system relies on proprietary processing and supports real-time crossfades on all streams. The mixer is fully configurable with routable I/O, includes dynamics and EQ and clip-based automation. Background loading/archiving and multiple file formats are supported. A variety of complete turnkey systems, costing about $11,000, are available to meet specific application requirements. Phone 615/327-1140; visit www.sadieus.com.

Augan OMX 24

WaveFrame 408 V6.2

Aimed at dialog, ADR, Foley, effects and music recording and editing for television and feature films, this system supports 8 to 24 channels with real-time crossfades, expandable in blocks of 8. It relies on proprietary processing and is supplied with a Pentium 133 or 200MHz platform, 16 MB RAM, PCI video, SCSI controller and 1.6GB system hard drive, with an optional hardware controller. The 408 supports editing and adjusting sync while playing, cue sheet printing, P2 machine control, EDL auto assembly and direct recording of ADR and Foley. Twenty-four-bit word lengths and 44.056 and 47.952kHz sampling are also supported; it syncs to MTC, LTC, VITC and word clock, and also displays in feet/frames. The 10x4 digital mixer includes 3-band parametric EQ and a monitor mixer that can be automated via MIDI. Mixing may be expanded by adding Peavey MediaMatrix cards for up to 100 channels. Cost: $10,000 for an 8-track system with eight I/Os. Phone 510/528-8054; visit www.waveframe.com.

MORE THAN $25,000

Augan Instruments OMX 24

The OMX 24, aimed at post-production for film and video, radio production, program automation and classical music recording, is a proprietary MO-based system supporting from 4 to 96 channels. It includes the RC3 remote for basic editing, with optional RC2 for film applications or the professional RC24. The standard software supports full editing and synchronization facilities. Special modules for 16 internal tracks, cart replacement and EQ are available. Twenty-four-bit word lengths are also supported. The system syncs to LTC, VITC, biphase, AES-EBU, word clock and external clock, and also displays in feet/frames and samples. Submixing to 2 tracks and full waveform editing are supported. Cost: around $29,000 for complete OMX 24-bit system with RC24 4-in/8-out digital/analog and MO drives. Contact Sascom for details of U.S. pricing: Phone 905/825-5373; visit www.sascom.com.

AMS Neve AudioFile

Aimed at audio post for video, the AudioFile system is available in 8-, 16- or

Last year the VS-880
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24-channel configurations, uses proprietary transputer hardware and has a proprietary tactile control surface with color TFT screen. All editing functions, including crossfades and time compression/expansion, are adjustable in real time, and an automated dialog replacement utility and full machine control are standard. The system also supports 24-bit word lengths and NTSC variants of 44.1 and 48 kHz, syncs to LTC, VITC, word clock, video sync, and also displays in feet/frames. AudioFile can be integrated within the Logic range of digital mixing consoles, offering from 32 to more than 200 inputs. Features include 4-band fully parametric EQ, dynamics and surround panning available to every channel. All mix controls have total dynamic and snapshot automation, with motorized faders and rotary knobs. Cost: dependent on system configuration. Phone 212/949-2324; visit www.ams-neve.com.

Digital Audio Research Sound-Station Gold, Sigma Plus, Delta Plus, Sabre Plus and OMR8

Geared toward audio post for video and film, all of these proprietary systems except the OMR8 are available in 8- or 16-channel versions and have a custom controller with a single page display touch screen. (The OMR8 is a modular 8-track recorder.) All of the systems can be networked and have file compatibility with nonlinear video systems. Twenty-four-bit word lengths are also supported. The systems sync to LTC and word clock and display in feet/frames. SoundStation Gold includes a motorized fader surface supporting track and segment-based automation of faders and pan. Cost: around $15,000 for OMR with 8 analog I/O, 2.6GB MO or 4GB removable hard drive. Around $29,000 for an 8-channel Sabre Plus including 6.5 hours of storage, LTC, RS422 and analog and digital I/O. Phone 44/1372/742848; visit www.dar.uk.com.

Fairlight MFX3

Aimed at audio post for TV, motion pictures, broadcast and music, this proprietary system can be configured from 4 to 24 digital and analog inputs, and includes a dedicated console and proprietary graphics system with real-time waveform scrolling and multilayered object-based editing. The software is available as building blocks and supports functions such as multitrack editing and recording, ADR with GPO control, Red Book SCSI CD writing, Sony 9-pin machine control, EQ, timestretch, OMF support, Web networking and dub chart printing. Up to 24-bit word lengths are also supported. The MFX3 syncs to LTC, video reference, AES/EBU and word clock, and also displays in feet/frames. Mixing includes segment-based level and 4-band parametric EQ, segment and track-based pan and track-based level. Cost: $33,150 for a full-featured system with 4-in/8-out analog and digital. Phone 310/287-1400; visit www.fairlightesp.com.au.

Sonic Solutions SonicStudio

SonicStudio is a family of PCI-based Macintosh digital audio workstations customized for specific applications, including CD mastering, audio for video post, radio broadcast, sound for picture, high-definition audio and DVD premastering and authoring. SonicStudio processors can be combined to provide up to 96 channels of I/O and 144 channels of playback simultaneously in a single system. High-density SonicStudio provides 96kHz/24-bit operation with up to 4 channels of simultaneous record or playback. Various system options and configurations offer features such as PQ editing, DDP playback and loadback, automated mixing, sample-accurate editing, QuickTime/.AIFF/CMX support, and broadcast options such as time-of-

—CONTINUED ON PAGE 226

Now includes 6 effects processors, 3 applications and full Sound Designer II and NuBus integration*

Bring Outboard Power to Your Desktop With Waves MultiRack

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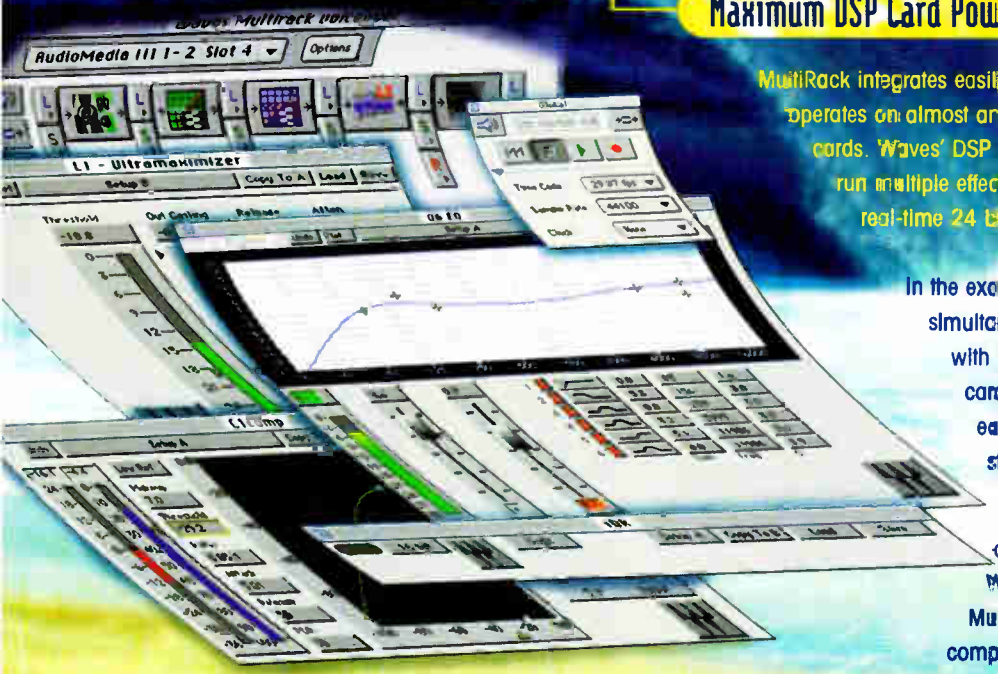
Now you can use Waves Plug-Ins anywhere in real time. Simply plug MultiRack directly into the send & receive of your mixer and you can re-route any track through any effects processor, with a click of the mouse. Hit Save and a racks worth of award-winning processors will come back up next session, just the way you left them.



Maximum DSP Card Power

MultiRack integrates easily into any studio and operates on almost any Mac with supported DSP cards. Waves' DSP Resource Management lets you run multiple effects on a single DSP chip with true real-time 24 bit through-put and very low latency.

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WAVES

Find out how to bring the flexibility, value and sonic excellence of the MultiRack Bundle to your desktop. Call us or visit www.multirack.net.

*The current MultiRack bundle includes: the L1 Ultramaximizer, PAZ Psychoacoustic Analyzer, Q10 ParaGraphic EQ, S1 Stereo Imager, C1 Compressor/Gate, TrueVerb (Native only), DLA StereoDelay, IDR, WaveConvert (Mac), and TrackPac Pro, plus the Native versions of the bundle.

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Understanding DVD

WHAT AUDIO ENGINEERS NEED TO KNOW

by Gary Hall

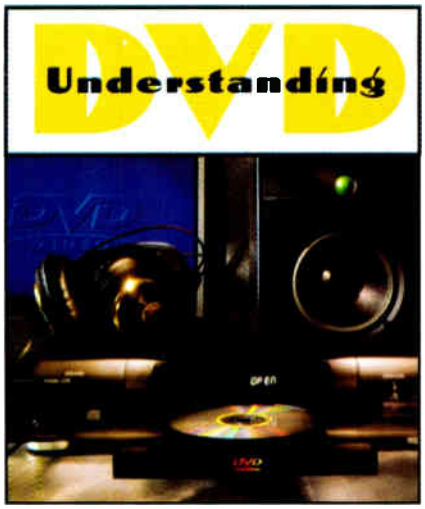
It's round, it's shiny, it's packed to the gills with digital information, and it'll deliver audio with greater fidelity than consumers have ever heard before. Is this *déja vu* or what? But it's not the early '80s, and it's not Compact Disc we're talking about. It's DVD, CD's ultra-high-density cousin. With DVD Video players in the stores and an increasing stock of feature films available in DVD format, it's high time for audio engineers to get familiar with this new medium.

DOCTOR, WHAT IS IT?

Depending on who you talk to, DVD stands for Digital Video Disc, Digital Versatile Disc or nothing at all. Similarly, it's possible to view DVD as the next home video format, the successor to CD-ROM, the ultimate digital audio medium or all of the above. It can get confusing, to say the very least.

Any way you look at it, DVD at its basic level is a direct descendant of the Compact Disc, a now-venerable format. For several years it's been apparent that the accumulated experience in CD technology and manufacturing could be used to produce discs of the same size and shape that could hold several times the data of standard CD, simply by tightening tolerances to squeeze data pits closer together. Further multiplications of data capacity could be had by using double-sided and multilayer technology. Playback devices would require new heads using shorter-wavelength lasers and refined focusing mechanisms, but otherwise would be nearly identical to CD transports.

PHOTO: BILL SCHWOB



As in the case of the original CD, implementation has had to wait for agreements on standards between various manufacturers. And as in the case of CD, successful roll-out of an impressive new information technology hinges on an initial mass-market application. In the case of CD, the application was music. In the case of DVD, the driving force behind its launch is home video entertainment. In both cases, the applications of the medium go far beyond the first application.

The final DVD specification that has emerged provides for 4.7 gigabytes of information on a single-sided, single-layer disc. This compares with 640 *mega*bytes for the original CD, an increase of more than seven times, on a disc of virtually identical size and shape.

SIDES AND LAYERS

The DVD specification provides for discs with two sides, just like vinyl records. The manufacture of double-sided DVD is fairly straightforward and allows the same disc to carry double the information. On present DVD players, the disc must be flipped over, however, to access the second side.

Technologically more interesting, DVDs can be made with two *layers* of information on each side of the disc. Though one layer lies in front of the other, the separate layers can be read by changing the focus of the laser pickup, just as we can look through a rain-splattered window pane and focus on the landscape beyond.

Dual-layer DVD (known as DVD-9 in the specification) requires new bonding technologies, and so far the manufacturing yields are low, with consequent high prices for delivered discs. As a result, there are very few double-layer discs on the market. This situation is changing, and we can expect to see more dual-layer titles appearing in the latter portion of 1997.

DVD VIDEO

DVD's basic specification describes a data storage medium, DVD ROM, without defining the content. The DVD Video discs appearing in stores in major markets consist of a DVD ROM whose information conforms to an *application layer* on top of the baseline DVD-ROM, known as DVD Video.

The DVD Video specification defines the information the disc can carry in great detail, including media definitions for audio, video and graphic overlays together with navigation information to let the viewer operate the disc using onscreen graphic menus that are customized for each title.

DVD Video provides for a very rich feature set, as shown in the accompanying table. These include as many as eight alternate soundtracks, Dolby Digital surround, user-selectable subtitles in up to 32 different languages, menu-driven interactivity, and even complete alternate video streams (called "angles"). As we will see later, however, these features come at a significant price; few, if any, discs on the market could be said to exploit them completely.

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'Our recent decison to upgrade from an AMEK Mozart to an AMEK GALILEO has been a wonderful choice for us. Visiting Producers and Engineers are amazed by the powerful, user-friendly automation, and how much better-sounding the console is than competing brands, if there are any.'

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'I bought an AMEK REMBRANDT because I just knew that once I powered it up I would hear just what I expected: some of the sweetest-sounding Eq on the face of this planet.'

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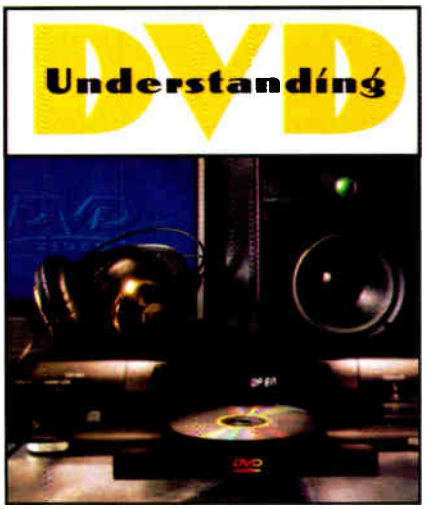


MPEG DATA COMPRESSION

DVD's multi-gigabyte capacity is head and shoulders above that of any other mass-distribution medium, but it's still not enough to deliver high-resolution digital video without the use of data compression. The good news here is that data compression for video has developed tremendously, to the point that video compressed by a factor of dozens-to-one can "look better than laserdisc" (this is what reviewers say, not just me) and can even be compared with a D-1 master.

The video standard for DVD is defined as a subset of the MPEG-2 specification, tailored for the capacity and data transfer rates of DVD. (See table.) Lower-resolution MPEG-1 is also an option, with potential benefits for long-play time.

AUDIO FOR DVD

The specifications for DVD Video make provision for an audio-only version (DVD Audio). At this writing, a DVD Audio-only specification is still not approved and complete for a variety of reasons that come down to two phrases: "embarrassment of riches," and "market mandate." (Approval of the DVD Audio specification is expected this fall.)

DVD's enormous data capacity can be used for audio in a variety of ways: to improve fidelity, to add more channels, to increase play time, or all of the above in different measure. With multiple competing technologies for high-resolution audio and high-fidelity surround, agreement on a set of standards has been difficult to reach.

At the same time, the market justification for a new audio-only format has been less clear than that for video. Though audiophiles and engineers are sometimes critical of the sound quality of audio CDs, the fact is that the great bulk of consumers seem to be entirely happy with the way their players sound. On the other hand, the feeling has been that home video was due for a revolution in quality and features equivalent to what the CD has done for audio.

The good news for audio producers and engineers is the DVD Video specification provides a very rich set of options for audio. There is really no reason to hold off bringing music out on DVD, with or without video.

THE ETERNAL "GOOD-GRAMMAR/ GOOD-TASTE" DICHOTOMY

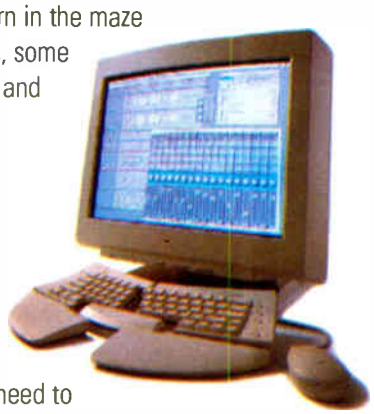
As shown in Table C, audio can be included on a DVD disc in any of a number of forms, including both compressed and uncompressed audio. On most video-oriented titles, audio is compressed in order to make as much space as possible available for video and to deliver surround sound and/or alternate language tracks.

DVD Video also supports very high-fidelity Linear PCM, at sample rates up to 96 kHz and resolution as high as 24 bits, by far the highest fidelity ever made available in a digital audio format for consumer use. As you might expect, the audio D/As on most players don't come close to matching these upper-limit specs, but higher-

This Way.

1997 Nominee

Today's Digital Audio Workstation is an indispensible tool for Post Production, CD Premastering, and Music Production. With each new twist and turn in the maze of technological possibilities, some systems lead, others follow, and many fall by the wayside.



Through it all, one system has consistently emerged as the technology leader – delivering an impressive list of achievements that have taken our users where they need to be to stay ahead of the competition.

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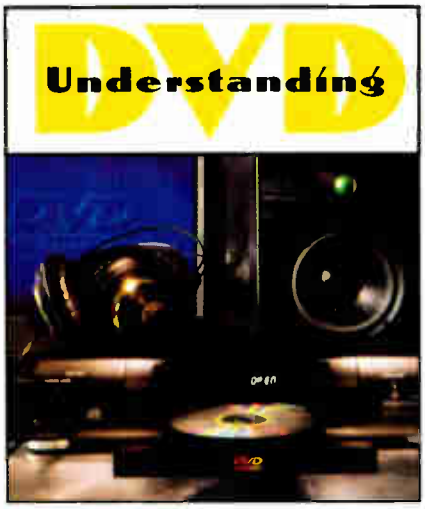


Understanding

end players are starting to emerge that support these audio resolutions.

The audio part of the DVD Video spec, then, can support super-fidelity stereo audio as well as multichannel surround. The catch is that, for practical use, one is forced to make a choice. The DVD Video specification has a provision for multichannel PCM audio, but at this time there are no players on the market that can reproduce more than two channels of PCM audio, though all players (NTSC mar-

TABLES

A. DVD feature Set

Data capacity (Gigabytes)	4.70 single-layer, single-sided 8.54 dual-layer, single-sided 9.40 single-layer, double-sided 17.08 dual-layer, double-sided
Data transfer rate	10.08 megabits-per-second
Audio/Video play time	Variable, depends on data rate and layer/side configuration
Selectable audio streams	Up to 8, stereo or multichannel
Selectable subtitle streams	Up to 32
Selectable video streams (angles)	Up to 9
Interactivity	Menu-based, with still or motion background. Limited user-memory, volatile

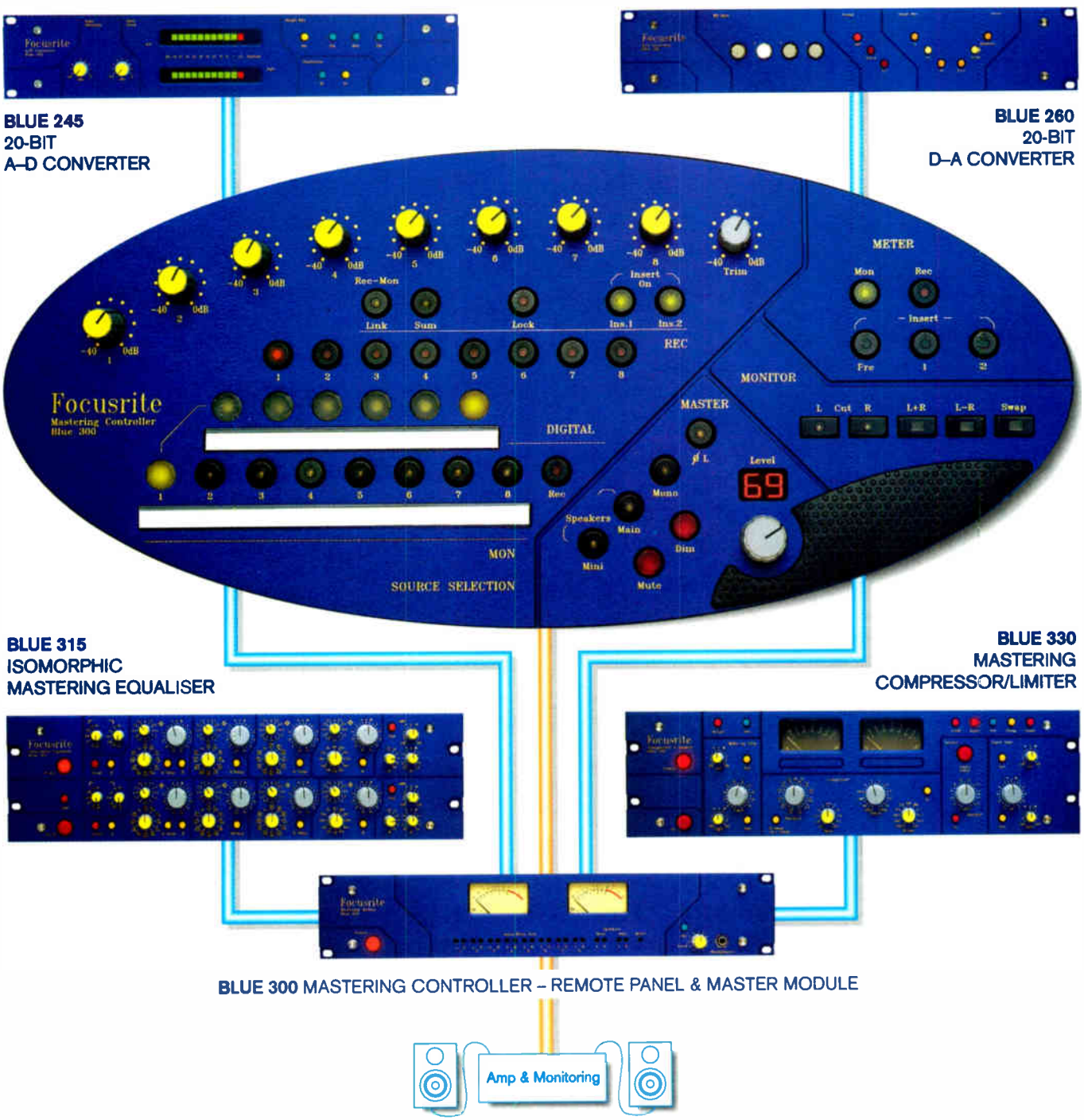
B. Video definitions (NTSC/525-line video markets)

Video Resolution (NTSC)	720 x 480 for MPEG-2 352 x 240 for MPEG-1
Aspect Ratio	4:3 (standard TV) or 16:9 (wide-screen)
MPEG bit-rate	9.80 mpbs maximum constant bit-rate, variable bit-rate approx. 4.5 mpbs average (for feature-lenght play/9.8 mps peak

C. Audio definitions for DVD Video format (NTSC markets)

Audio formats supported	Linear PCM, stereo or multichannel, Dolby Digital (AC-3) surround, MPEG-1 audio
PCM resolution	16- to 24-bit
PCM sample rate	48 or 96 kHz
Dolby Digital bit rate	64 to 448 kilobits-per-second

MASTER-PLAN:



BLUE 300 MASTERING CONTROLLER – REMOTE PANEL & MASTER MODULE

With the introduction of the Blue 300 Mastering Controller, the Focusrite Mastering System is complete, providing all the functioning you need outside your Digital Audio Workstation. Recent improvements to the Blue 315 six band equaliser and Blue 315 Compressor with look-ahead limiter are complemented by the latest version 20-bit AD and DA convertors, Blue 245 and Blue 260. To find out how it all fits together in your mastering room, contact us for a comprehensive brochure.

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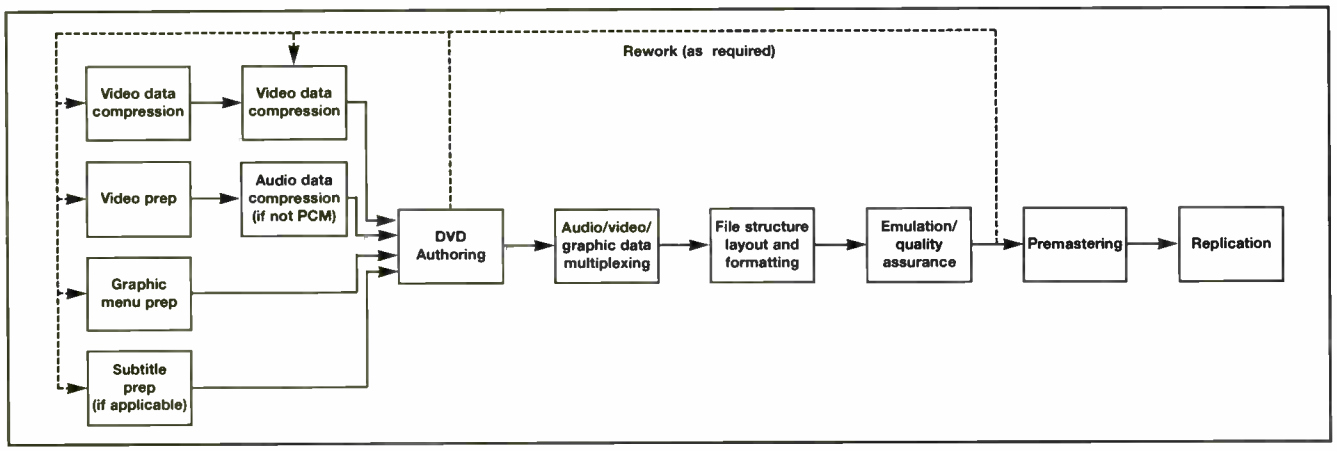
Figure 1: Flow diagram of DVD Video production



kets at least) support Dolby Digital (AC-3) surround.

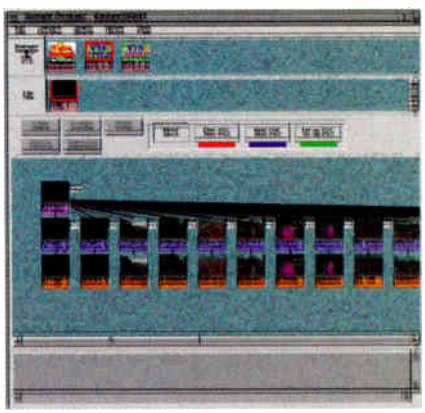
For a music- or audio-oriented title, then, a fundamental production choice is whether to wow the audience with new experiences of audio in surround, accepting something less than ultimate fidelity owing to data compression, or to go for an ultimate audiophile experience but only in stereo.

DVD's alternate soundtrack capability makes another choice possible—do both! It's perfectly feasible to include both AC-3 surround audio along with high-resolution PCM and allow the viewer to select the desired track.

TRADEOFFS: CAPACITY AND BANDWIDTH

Nothing in life comes completely for free, and this goes for DVD audio as well. The DVD disc's capacity is large, as we've already described, and its ability to transfer data is about that of an 8x CD-ROM drive, at 10.1 megabits-per-second (mps). A 6-channel surround track compressed with Dolby Digital consumes between 384 and 640 *kilo*bits-per-second (kps). Linear PCM stereo at 16 bits and 48kHz sam-

Figure 2: Screen shot from Scenarist



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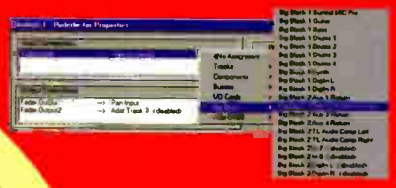

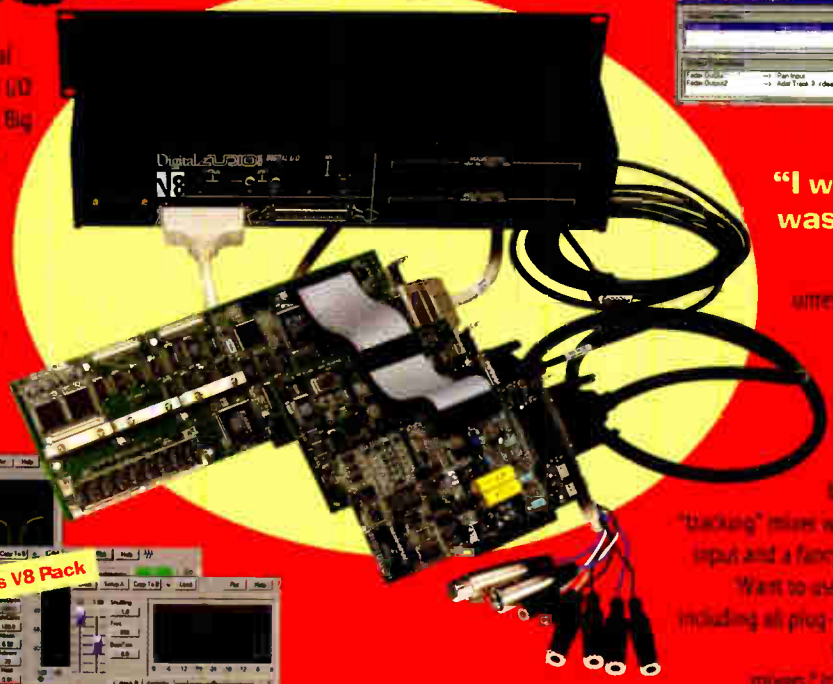

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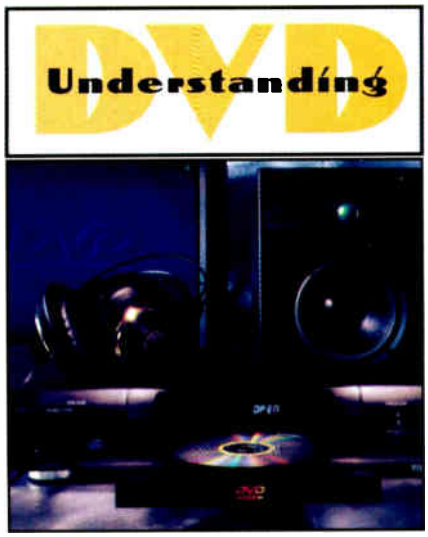

ple rate adds up to 1.5 mps, or more than twice the bandwidth of AC-3 surround. The nature of DVD is that any transfer bandwidth used for audio makes less bandwidth available for video, affecting video quality and play time.

If one elects to use DVD's super-fidelity PCM options, the transfer rates rise quickly. A 96kHz sample rate will *double* the required transfer rate to 3 mps. Use of 24-bit resolution will up that to 4.5 mps. If you do this *and* add "bonus" surround tracks, fully half of the transfer bandwidth is already consumed. Perfectly legal, but one needs to be aware of the effects on video.

Note that the base sample rate for audio in DVD Video is 48 kHz, in contrast to the audio CD standard of 44.1 kHz. This rate was chosen to fit with the practices of digital video, where 48k rules.

A side effect of choosing 48 kHz as the baseline standard for audio sample rate is that if one wishes to repurpose audio from Compact Disc to DVD Video, that audio will need to be sample rate converted *or* recaptured from analog.

PICTURES AT AN EXHIBITION

For audio producers who want to use DVD Video (rather than wait for an audio-only spec), it's important to note that in DVD Video there must *always* be a picture to go along with the sound. The listener is not necessarily required to look at the picture, but there always, always, must be *something* there.

Though it isn't possible to put audio on a DVD Video disc without putting a picture on it, that picture can be very, very simple. A single still picture will do, as will a simple "slide show" of album covers or other stills (or for that matter, a black screen!) Still pictures in DVD Video are read into memory and held, and so take up almost no room on the disc while being very easy to generate. So if you have a dream of an incredible surround sound or ultra-fi stereo experience, go right ahead.

Of course, music video, live concert footage, or "image" video are naturals for DVD Video. One is free to combine picture and sound as desired so long as the constraints of disc space and transfer rate are observed.

Note as well that the multi-angle, multi-audio, and interactive aspects of DVD offer some possibilities to combine visual and audio entertainments in new ways. Just to suggest a couple, one might provide a fixed audio track, but randomize the visual presentation so that the viewer never sees exactly the same visual accompaniment. Or, for karaoke, with its stylized visual content, one could use the same footage to accompany different songs!

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Understanding DVD

DVD PRODUCTION PROCESS AND TOOLS

But enough about the format, how can we make these things anyway? As when the audio CD was introduced, whole new categories of equipment and new methodologies must be developed for transferring content to the new medium.

With DVD, this process is well under way, but is by no means finished. Eventually, things will change, but for the time being, DVD preparation is a relatively specialized process that requires a substantial capital investment and a significant learning curve. As in the early days of audio CD, the major content holders are investing heavily in in-house facilities, while specialized service bureaus are springing up to supplement the big studios and serve the needs of smaller producers.

DVD production today is computer-based almost from beginning to end. Wherever they originate, video, audio and graphics are transferred to high-capacity hard disks and processed in a series of steps that format the data as required by the specification in order to deliver the desired combination of video, audio, subtitles, navigational features and so on.

A key characteristic of DVD production is that very large chunks of data (multiple gigabytes) are processed and moved repeatedly to create the final product. Even with today's big disk drives and fast computers, this becomes a fairly lengthy process. Add to this the requirements of a complex new format, the learning curves of clients and production staff, and the somewhat nascent state of the available tools and you have a process that is far from trivial.

Figure 1 illustrates the flow of DVD production. Most DVD content today is video-focused and originates on film or videotape. Film content is digitized and transferred to high-resolution digital videotape (D-1, D-5, Digital Betacam, DCT or D-2), or else an existing transfer is used.

If stereo, audio is most often delivered as digital audio tracks on the video master (8mm multitrack with timecode and timecode DAT are favored for transporting surround audio or alternate language tracks). Hard disks or other digital formats can also be used to supply audio, of course, so long as appropriate provisions are made for synchronization, as described later.

Audio prep becomes a significant issue whenever audio and video assets are brought together for the first time. In DVD, particular problems can arise when marrying multiple language soundtracks to a common picture. In the case of existing feature films, the various language dubs are likely to have been prepared in different times

—CONTINUED ON PAGE 218

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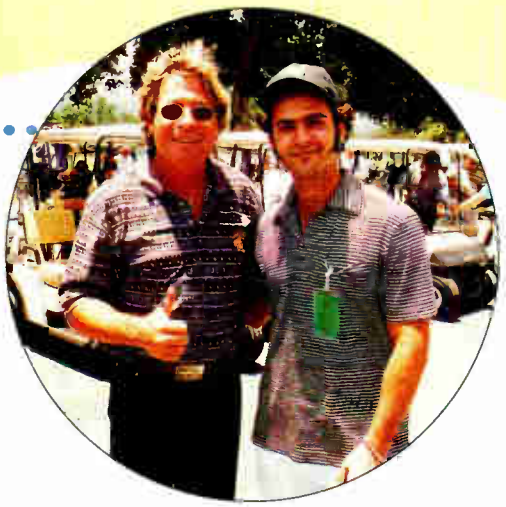
THE SECOND ANNUAL

Mix L.A. Open

Photos and story by Maureen Droney



Artists John Denver and Dweezil Zappa

Mix L.A. Open staff (L-R): Dilys Jones of House Ear Institute, Mix sales assistant Mari Stancati, tournament director Terry Lowe, TEC Awards' Karen Dunn, Mix Foundation general manager Hillel Resner, Mix promotions manager Christen Pocock and Mix publisher Jeffrey Turner

First-place team of Scott Thurston, Paul Barrere, Kenny Gradney and Ed Cherney accept their trophies from Mix's Jeff Turner (left), Mix Foundation's Hillel Resner and tournament director Terry Lowe (right).

Second-place trophies were awarded to Fairlight's (L-R) Gary Ward, John Lancken, Tamara Rogers and Paul Huntsman.

It was fair weather on the fairway as the tournament competitors in the Second Annual Mix L.A. Open teed off in sight of the Rose Bowl. The event presented by the Mix Foundation for excellence in Audio, was held for the first time at Pasadena's Brookside Country Club on Monday June 16. It's a challenging course, and rivalry was high on the links as 36 foursomes putted, birdied, cell-phoned and bogeyed their way through 18 holes.

Registration at 10 a.m. allowed time for a warm-up bucket of balls on the driving range and a meet-and-greet-barbecue at 11:30. At 1:00 golf carts rendezvoused at their assigned starting holes and (most) players got serious.

"We're thrilled with the growth of the tournament," said tournament director and *Mix* Western advertising director Terry Lowe. "Last year we had 65 participants; this year we had 144, and our sponsors have grown from four to 13. It really is an all-around great day—an opportunity for everyone to get out, relax, have fun and see in person the people they're always on the phone with."

Winners of the first-place trophy were the members of the foursome put together by engineer/producer Ed Cherney, with a nine under par 63 scored by Cherney, Little Feat's guitarist Paul Barrere and bassist Kenny Gradney, and Scott Thurston, keyboardist for Tom Petty. Cherney insists that part of the winning strategy is to include a high ratio of musicians on your team—think about it when you're putting next year's foursomes together.

Second place went to Fairlight's A Team, made up of (they had three!) John Lancken,

The Record Plant's Amy Burr and Rose Mann with TEC Awards executive director Karen Dunn.

The 144 golfers rev up their golf carts as they prepare to hit the links.

Peggy Blaze of Euphonix warms up at the driving range before the tournament.

Gary Meyer of A&M (left) was presented a driver for Longest Drive by A-T's Buzz Goodwin.

Engineer Ed Cherney, the tournament's honorary chairman, cuts his surprise birthday cake at the awards dinner.

Third-place team from A&M Studios comprised Chad Bamford, Bob Borbonus, Ron Carroll and Gary Meyer.

Tamara Rogers, Paul Huntsman, and Gary Ward, and third place medals were awarded to the awesome foursome playing for A&M Studios: Bob Borbonus, Gary Meyer, Chad Bamford and Ron Carroll.

Other awards included: a Taylormade titanium bubbleburner presented by Buzz Goodwin of Audio-Technica to Gary Meyer of A&M for Longest Drive, a Taylormade bubbleburner pitching wedge to Eric Johnson of Emtec/BASF for Closest to the Pin awarded by Stuart Feldman of Tape Specialty Inc., and a Ping putter for Longest Putt, presented to Drew Kallen of Diamond Audio by Chris Fischera of Group One.

Proceeds from the Mix L.A. Open go to Hearing Is Priceless, the outreach program at Los Angeles' House Ear Institute, and other programs of the Mix Foundation for Excellence in Audio. Special thanks to all our sponsors, and also to Sara Elliott and A-1 Audio for contributing the sound system for the awards ceremony.

Work on those back swings and we'll see you next year—but remember to sign up early for 1998; 1997's tournament was sold out and had a long waiting list. ■

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Closest to the Pin was won by Eric Johnson of Comtec (right), here being given a pitching wedge by Stuart Feldman of Tape Specialty.

Alesis team of (L-R) Mike Grout, Rick Wilson, Jeff Klopmeyer and Kent Ormiston.

The team from Group One included (L-R): Phil Kelly, Chris Fischera, Jack Kelly and Luke Furr.

The Ocean Way team (L-R): Lee De Carlo, Peter Maurer and Russ Kunkel.

Quantegy's team included (L-R) Tom Salisbury, Bob Pellino and Bruce Thorkelson.

Audio-Technica's Buzz Goodwin, Mix Foundation's Hillel Resner, A-T president Kazuo Matsushita, A-T's studio consultant Lisa Roy and John Denver.

The team from Spatializer (L-R): Matt Abbott, Anu Kirk, Michael Bolcerak, Kristen Garrigus and Mark Markunas.

Golfing for Sony Pro Audio were (L-R) Steve Burdick, Gary Rosen, Galen Walkes and musician Dweezil Zappa.

BASF (now Emtec) was represented by (L-R) Kim McKenzie, Doug Bernhardt and Comtec's Eric Johnson.

One of the four teams fielded by Audio-Technica included from L to R, Craig Stelmasek of Carvin Corp., Joel Singer of A-T, Mike Edwards of A-T and Jerry Hogerson of Star Enterprises.

Drew Kallen of Diamond Audio (right) won the Longest Putt contest and was presented with a putter by Group One's Chris Fischera.

The Tape Specialty team (L-R): Fred Jones, Bob James, Stuart Feldman and Jason Brice.

Teeing off for Euphonix were (L-R) Dave Christenson, Peggy Blaze, John Carey and Andy Wild.

BOBBY GUY AND ERNIE LAKE

SOUL SOLUTION

Bobby Guy and Ernie Lake, aka Soul Solution, are still riding high on the success of Toni Braxton's "Un-Break My Heart," which the dynamic duo wrote and produced. Their remix of the track, premiered at last year's Billboard Music Awards, catapulting the single to Number One on Billboard's Hot Dance Music (Club Play) and Maxi-Single charts. The guys then followed up with a remix of the Whitney Houston track, "Step by Step," from the *Preacher's Wife* soundtrack.

Partners since 1990, Guy and Lake have been favorites within the dance music community since their first release, "Love, Peace & Happiness," for ffrr/London. They then did the producing/remix work on the Jellybean Benitez hit "The Lover That You Are," which charted at Number One for Pulse Records. This collaboration led to a string of penned and produced hits for Benitez, including "Can't Stop Love," "Won't Give Up My Music" and "Find a Way." *Mix* recently caught up with Guy and Lake at their 24-track Manhattan recording studio.

Can you guys describe the remix session for Toni Braxton? How did it come about?

Guy: It was a phone call from Hash Corelli of Arista Records.

Did you get to work with Toni at all?

Lake: Actually not for the remix, but for the American Music Awards, we spent a couple of days with her in Chicago.

Did the record company send you an ADAT and you worked the magic from there?

Guy: We were doing some sample edits in New York before we left; we were doing most of it as edits, then we did overdubs on top of it. When we were in Chicago recording, we were using the AMS [AudioFile] editor. We brought up a file of data, opened up the play list again, got it straight, [synched] it up, threw it over to the AMS and then we did our overdubs.

Ernie Lake, left, and Bobby Guy

Do you use other hard disk recording media such as Pro Tools? Do you prefer working with hard disk when synching for a remix?

Lake: To tell you the truth, we don't have a Pro Tools system. We have been working with Sound Designer since forever [Laughs]. We got used to it fast. We [haven't even upgraded it], because we have so many other options within our place. We have a 2-inch 24-track, a Mac with Studio Vision and tons of virtual tracks. We have enough.

Guy: We really should upgrade Sound Designer, but at this point it is comfortable for us. To learn any new programs is hard when you are working. You have to stop what you are doing; you could lose a week. It's not worth the time.

Do you get any requests from clients who might want you to work in a particular media because they've worked on it?

Lake: That's very rare. Basically, it's all in-house stuff that we do. We don't work much with other producers. We basically do all the stuff ourselves here. Bobby and I do everything.

Is that going to be the case with the Whitney Houston remix also?

Guy: Yeah, pretty much the same thing. [We'll start] from scratch. [sample] the vocal and create a new track. We'll do all the engineering and mixing.

You both have received some pretty extensive musical training. Do you feel that that is what actually has helped you guys along in terms of your remixing?

Guy: In a way, yes, it has.

Lake: I think it has helped us also—in some cases, on what direction we want to go. But in the case of remixes, it will only take you so far. You need to be out in the clubs and checking out and listening to what is going on and getting a feel

BY CHRISTOPHER PATTON

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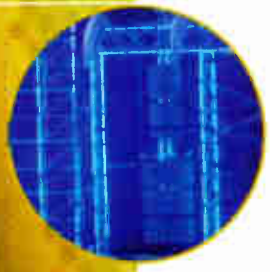

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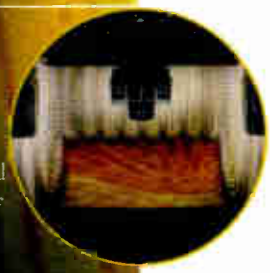

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for what is happening, what people want to hear. But as far as being producers, working on different projects in different styles of music, [musical training] is invaluable. It helps in the musical end of things; especially in writing with the artists it really has helped us and is going to help us more in the future.

Bobby, you played multi-keyboard setups in local bands when you were just out of high school. Do you remember what kind of gear you were using back then? And can you describe how the advances of technology have helped the multi-keyboardist today?

Guy: First rig that I ever went out with was a Roland SH-101, a Fender Rhodes and a Farfisa organ. That was my first system. We still got it! When I went to college, I got a [Hammond] CX 3 organ, then I was using a Hohner Clavinet, a [Rhodes] Suitcase 77, and somebody had a Yamaha [synth], the precursor to the one Keith Emerson was using. That was my shit. Then eventually I got a B3 and my first MIDI setup: a Roland Juno 60 MIDI'd up to a Korg Poly 61 via an MD-8 analog-to-MIDI interface. Now I will always be broke. I've been bit by the [technology] bug. That is why we have so many toys; we can't help it. It's a fetish.

Do you feel at times that it's difficult to keep track of or to keep up with the latest technology?

Lake: It's what we do around here. We're always reading about the shit and are always trying to stay on top of what's happening and what everybody is using. We probably spend as much of our time doing [product research] as we are doing remixes. We're even on the Internet, checking things out. We're wired, totally wired.

Ernie, you said that you started production and engineering so that you could have something to fall back on if you did not get anywhere as an artist. Was that your primary goal initially, to be a recording artist?

Lake: My primary goal was to be a professional drummer, a rock star! I realized after ten years that I was really interested in the studio thing. It really intrigued me. I started out doing quite a bit of session work, and whenever I was in the studio, it was a turn-on for me. Later on, I decided I didn't want to go on the road anymore with a band, quit the group I was in and got together with Bobby.

If you look at it realistically, can one really be successful in today's market just being a musician?

Lake: Probably not. It would be really tough. You'd have to have all your bases covered, from songwriting, production and the right connections.

What was your first music deal as a duo?

Lake: It was with Sleeping Bag Records. We were hired as writer/producers for one song but wound up doing a whole album.

Did you make any money that first time around?

Lake: Actually, I think we had a pretty good budget for that album.

Guy: I think we had around $10,000—a huge budget for back in the early '80s!

The reason I asked was because so many new audio producers/engineers become disillusioned at the low pay scale when starting out.

Lake: Let me tell you something: For five years we made no money!

Guy: What separated us from most producers at that time, is that we had our own place. Though we had a lot of overhead, we were able to control expenses. Having our own place also gave us a quality edge. People were

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starting to understand the advantages of owning their own project studio. While our competitors were just getting tooled up, we were already established. People were asking us, "How do you build a home studio?"

Any anecdotes about building your own studio?

Guy: Look, we don't have a room with a half-a-million-dollar console or other state-of-the-art equipment. But our studio is functional, professional, and we know how to use the equipment to our advantage. Be able to use whatever you got to its maximum.

You guys recently worked with Patti LaBelle on her hit, "The Right Kind of Lover." What did that project require?

Guy: MCA had hired these guys to do a remix, and they didn't know what the hell they were doing [Laughs]. So they hired us, we mixed the track, the original guys got the credit! It was a learning experience.

You guys had mentioned in your bio that the gay community in New York were instrumental in your success. Could you elaborate?

Guy: It's about support. Many gay people have really enjoyed the work that we've produced. And when the gay community likes something, it will stand behind it and talk about it. It really knows how to create a buzz. You can see the response on the dance floor; when the queens get into it whenever your record comes on, then the straight people say, "Aha, this must be really happening."

Lake: They have definitely put us on the map as far as the whole underground dance scene is concerned.

You produced Jellybean Benitez's hit, "The Lover That You Are." Jellybean is a formidable producer in his own right. Why did he choose Soul Solution?

Guy: He saw dollar signs, baby! [Laughs]

Lake: We were good, and we were cheap! Seriously, we had just opened our studio, and he needed a studio to work in. He had heard some of our stuff and hired us to produce the record. He gave us a demo with piano and vocals with a little drum beat. We got together with David Morales and cut the song. It went up to Number One on the dance charts for his independent label.

What do you consider yourselves: artists, producers or remixers?

Lake: Yeah.

Guy: All of the above. Whatever the client wants.

Lake: Our goal is to create an entertainment company here. We want to be involved in everything. Sort of what Babyface and L.A. Reid are doing right now. We like to be involved in songwriting and production and would like to eventually own our own label.

Guy: We're really building on that now; we're taking advantage of our successes. We're signing artists, prospecting a few projects, etc.

What is the Soul Solution sound?

Guy: It's a combination of our musical roots, what's happening in the clubs and what the DJs like. You have to make the DJs happy; they're the ones who have to drop a needle on it. It might not be what you as a producer would like to hear. And, of course you would want to keep your integrity, but at the same time you must be willing to conform to make music the DJ would want to play. Let's face it, you get about two or three seconds of scrutiny, and the decision is made. A DJ will drop a needle on the record and know in a matter of moments whether the record

—CONTINUED ON PAGE 228

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CONEY ISLAND

MIDWEST ANALOG ALTERNATIVE

Last summer, famed indie label Alternative Tentacles gave Madison, Wisc., band Pachinko an advance to record their latest full-length. The group took the money and went to Coney Island...not the Brooklyn amusement park, but the local studio run by New York transplant Wendy Schneider. Schneider opened Coney Island (named in homage to fond girlhood memories) a couple of years ago in the basement of her house as an analog alternative to the plethora of home digital studios. But coming to have her own place happened more by circumstance than design.

In New York, Schneider worked for several years at an A/V production company, mixing narration and music for video soundtracks. In 1990 she moved to Madison to attend the University of Wisconsin, but before long she ended up mixing at regional clubs for a friend's seven-piece ska band. "That catapulted me into the arena of working with musicians," she says, "which I had never done before. Within probably the first year or so that I began doing live sound, someone told me about [renowned Madison studio] Smart, so I went and showed them my reel from New York. They didn't care much about video post-production but said that if I wanted to I could sit in on some sessions and help out. At that time Smart was just a few people, way before it was remodeled by the Russ Berger Design Group and all that."

As she continued working with musicians live and in the studio, Schneider realized she'd found her niche. She started her own band, Bugatti Type 35, and soon after happened on a good deal for a Tascam MSR-16 16-track deck. "Everyone who's doing music has little fantasies of what they want," Schneider says, "and I really liked the idea of being able to engineer for people that I knew, at a reasonable price."

With the help of Smart chief engineer Mike Zirkel, Schneider found other good deals on used equipment and began piecing together a studio. She bought an old British-made Hill console from a local music store for $150; it's a 24x4x2 that is (in fine midwest pedigree) purported to be Cheap Trick's old live mixing board. She has a Dukane compressor, found in a thrift store for $30. Her rack also includes an MXR flanger/doubler, an MXR delay, a couple of dbx 166 compressor/gates, an Ashly quad gate unit, a pair of Ashly SE50 compressors, a Chandler delay and a Yamaha REC 50 tabletop reverb unit. Mics include a bunch of 57s and 58s, a D-12 and a D-112, two Audio-Technica 4031s and a Neumann U67, on extended loan from her old boss in New York, Chris Drury. She tracks with a Logex 8x12 mixer, monitors through NS-10s and mixes through the Hill to an ATR-60 2-track or Panasonic 3700 DAT.

If Schneider's present setup seems distinctly lo-fi compared to her former places of employ ("Smart's got a collection of mics that would put me and my future family through college," she quips), she explains that her ends are very different as well: Coney Island is an option, for instance, for bands who don't have the financial support of a large label. "I don't work for labels necessarily," she says. "I like to have direct contact with musicians, and I like being able to take my time without the pressure of having to get the studio paid. It's definitely not going to make me rich, but it's very enjoyable."

The studio comprises a small control room and an L-shaped tracking room. "Ninety-five percent of my projects are done all live, with the exception of vocals," Schneider says. "For the most part I tell bands just to set up and make themselves comfortable first, then I'll mike and put up baffles according to what I think it needs. Bands who come in here are used to playing in basements live, so it's really the most comfortable [way] for them."

Coney Island's business is all word of mouth; in addition to a lot of Madison bands, Schneider has recorded Chicago's Blue Meanies and Underworn from Columbus, Ohio. She adds that working on the Pachinko album was particularly enjoyable: "They're such a powerful band, noisewise, it was a real fun and challenging project to do here. The record kind of sounds like your speakers have blown up, and that was the intention—my Hill console distorts like no other console; it has an amazing, brutal sound, and that is really obvious on a lot of the Pachinko record." ■

BY ADAM BEYDA

Adam Beyda is an associate editor at Mix.

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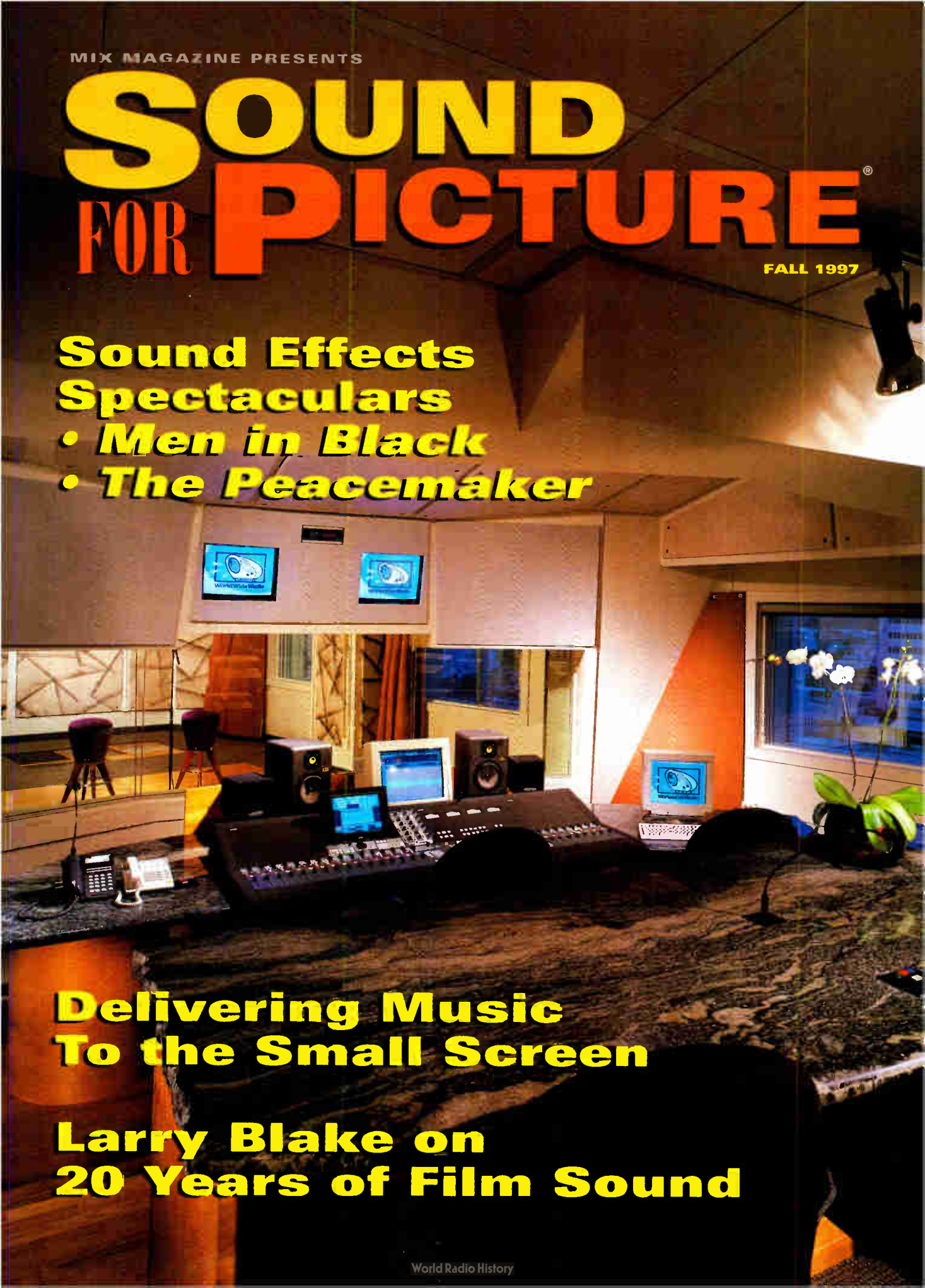

Sound Effects Spectaculars

- *Men in Black*
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Larry Blake on 20 Years of Film Sound

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SOUND FOR PICTURE®

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Cover photo: Benny Chan

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On the Cover

WORLD WIDE WADIO

Radio. That long-neglected stepchild of the audio world, except as it relates to airplay and Top 40 hits. But how many engineers in the recording industry were sold on a career by a song that "popped" out of their transistor radio? How many maintenance techs built their first home radio kit in their parents' garage? Dialog, music and effects—the same elements that drive the glamor field of film sound and the 3-inch-speaker world of television—are all you have in radio. Sound creates picture.

World Wide Wadio, formerly known as Paul & Walt Worldwide, opened in March 1996 in a 10,000-square-foot penthouse space on Sunset Boulevard near Cahuenga in Hollywood. Panoramic views, visible out of the more than 60 large windows, sweep from downtown L.A. to the Pacific Ocean. While the facility was constructed to accommodate mixing to picture, and the team has done specialty projects to video, the emphasis is on radio production, as proven by the more than 600 awards that line the walls.

"We do audio, and we have set up the facility to handle audio post to picture," says Paul Fey, co-founder of Paul & Walt and now president and executive producer/director of World Wide Wadio. "A number of our clients have requested that we handle their TV spots as well, and we have and will on a specialty basis, but we don't particularly want to enter that business. As it stands we are one of only a half-dozen companies doing radio production on this level, and we do very well. You can expect to see us handle some high-end television accounts in the next six months, but it will be more on a production end and not in a business sense."

The recording space at World Wide Wadio

The World Wide Wadio rooms were initially designed by Waterland Design Group for a recording school. When that venture failed, World Wide Wadio picked up the space and finished the design in-house. The 11th-floor facility contains two main mix/production rooms (each outfitted with Fairlight F.A.M.E. digital production consoles, with integrated MFX3 workstations), two pre-production rooms (one high-end offline room and one music search room) and a Foley pit for custom sound design. Shown on the cover is Studio A. Monitoring throughout the facility is through KRK systems.

"We looked at all the integrated production packages out in the market and felt the F.A.M.E. was the strongest overall system," says award-winning engineer/producer Stewart Sloke. "It's the most up-to-date, most powerful package out there and by far has the best user interface. The automation is dynamic and recalls everything from a session, and it's just incredibly fast. Well-suited for the world of radio and TV."

Within the industry, World Wide Wadio is known for its fresh, humorous approach to radio production—"little movies for your ears," as Fey is fond of saying. Clients range from promos for every major network to ads for all the major beer and car manufacturers, Coca-Cola, McDonald's, you name it. The staff of 15, which Fey calls his all-star team, includes well-known writers/producers such as Brent Hahn and engineers Sloke, Lukas Bower and the recently hired Gina Gutierrez. "We have the best engineers and the best radio rooms on the planet," boasts Fey. "Directors, writers, producers support staff—all are top-notch, and they all bring this incredible depth of experience. Yet we still find new approaches every day." ■

LIVING WITH THE MEN IN BLACK

A Year in the Life of a Supervising Sound Editor

Skip Lievsay at the final mix

PHOTO BARRY SONNENFELD

Lievsay has served as supervising sound editor for all of the Coen Brothers' features, most of Spike Lee's features, as well as all of Martin Scorsese's post-*King of Comedy* output. He has also worked with Jonathan Demme in that capacity on *Silence of the Lambs* and *Swimming to Cambodia* and on *MIB* director Barry Sonnenfeld's recent smash *Get Shorty*. He is a re-recording mixer on *Men in Black* as well, as was the case on *Fargo*.

BY SKIP LIEVSAY AS TOLD TO ERIC RUDOLPH IN MID-APRIL 1997

Skip Lievsay seems improbably relaxed as he sits in Studio L of New York's prestigious film sound facility Sound One. For almost a year, Lievsay has been keeping a casual diary of the progress of his work as supervising sound editor of the summer hit film *Men in Black*, which stars Tommy Lee Jones and Will Smith. Part of the explanation for the relaxed state may be the fact that Lievsay is now working on the music and effects versions for foreign release, the domestic mix having already been completed.

PHOTO MELINDA SUE GORDON/COLUMBIA TRISTAR

PHOTO: MELINDA SUE GORDON/COLUMBIA TRISTAR

Here, then, are the diary entries, with comments attached from post-production.

February 22, 1996 *My producer [Graham Place] called: can we make voices for on-camera aliens for on-set playback, to which the actors will lip sync? Good idea, but will it work? To that end we recorded Jackson Maclowe, a performance artist, to make alien vocalizations.*

Barry Sonnenfeld wanted really precise lip-synching for the aliens, and the idea was raised of doing on-set playback of their lines, like music playback on a music video. We had also been told that the alien voices should not sound like any previous movie alien vocalizations because Steven Spielberg was the executive producer of *MIB* and is very particular about that sort of thing. Barry wanted something really different and credible for the alien vocalizations.

We hired two other performance artists to create some non-English vocalizations for the dozen alien creatures in the film. I thought it was an interesting way to go, but I learned quickly that Barry tends not to like the first thing you show him. We went back and made some changes a couple of times, but he was still not happy, and everyone got kind of exasperated, so we decided to abandon the playback lip-sync concept.

October 7 *I am referred to some people who may be able to do really different alien voices.*

The picture editor, Jim Miller, had heard from Richard Anderson [noted supervising sound editor] of some academics who were capable of constructing entire alien languages, setting up the whole vocabulary. We explored that approach and decided to try a man named Van Ling. In fact, he's not an academic, but instead runs a digital production company named Banned From Ranch Entertainment and has done alien languages before. Van passed the test and was hired to do the alien voices. I happily got out of the vocalization business and turned all that joy over to him. Van and sound designer Chuck Michael ended up spending six months putting the voices together, doing many different versions, dealing with Barry directly. Van tells me that the voices provided by the puppeteers during filming (for example, the worm guys) dovetailed nicely with his post-production work for scenes like Mikey in the diner. We concentrated on making sound effects only from that point on. Eugene Gearty is the sound effects editor I work with; he's credited, appropriately on *MIB*, as sound effects designer.

November 5 *I spoke with a handful of top L.A. effects re-recording mixers about the possibility of their coming out to New York to mix* MIB.

I was concerned that there had never been a show like this mixed in New York—a real Hollywood/Spielberg type of movie with a highly complex soundtrack. The closest thing to that type of picture done in New

York was *Apollo 13*, and three of their mixers were from L.A., where the FX had been premixed! I wanted to hire an L.A. effects mixer with some real chops in this arena, someone to whom we could turn and say, "How do you do that?" But the date kept sliding, and everyone, as I had suspected, was already booked on the other big summer films. So I had to be the effects mixer, by default.

Gary Rydstrom [sound designer and effects re-recording mixer of such films as *Jurassic Park* and *Terminator 2*] is a good friend of mine, and this spring he was doing *The Lost World*, the sound of which has a lot in common with *MIB*. My main concerns were, one, how much to marry stuff together during predubs to isolate potential pitfalls (I ended up going pretty wide), and, two, how to deal with constantly changing CGI. The answer to the latter was to sweeten the premixes. We opted for an offline method in which Eugene cut sweeteners at C5 and shipped them to the stage, whereas for *The Lost World* Gary works online with his Synclavier on the stage.

November 13 *Dale Strumpell sent me the* Dragonslayer *effects library to use for the monster alien roars. Blake Leyh compiled metal effects from* The Abyss *to use for the shot of the alien's saucer crashing into the unisphere.*

While Van Ling was doing the alien language, I started working on creating their roaring, which ended up being a combination of real lions, tigers and bears, with elephants, horses and pigs as sweeteners for dramatic emphasis and close-ups.

The overall philosophy for the sound was to have it be organic—everything was supposed to have a natural or mechanical foundation. The alien sounds, therefore, should be made up of easily identifiable components.

Barry again insisted on precise lip-synching, which of course added to the difficulty but made the creatures sound more believable.

Likewise, the MIB weapons needed a lot of revving-up-to-firing-temperature sounds, lots of little servos and whines. And after they're fired, there had to be an equally busy wind-down. Most of the weapon sounds were organic (or should I say "pre-existing"), but we also used some FM-synthesized sounds from the Synclavier.

For the ship, we devised a lot of retro '60s sci-fi sounds that we all really liked. We used fighter planes taking off from aircraft carriers, and there is the space shuttle taking off which had a nice flapping air sound. We also used a lot of subs for the alien ships; we were very keen on them, as was everyone involved. We made some scenes as loud as we felt comfortable with by using calibrated peak meters as our guide. That was a bit of an edict from the studio: to make it loud and exciting for the kids, and I agree with that approach for this film.

December 9 *Hamilton Sterling to begin recording vehicles in California to use for the car sounds.*

We had several crews recording vehicles out in the desert. For example, we recorded some fast hot rods to use for the sound of the MIB Ford LTD. We gradually added other exotic sounds to the car to lead up to where the LTD physically transforms into a jet-powered vehicle.

I remembered seeing these ads in the back of *Popular Mechanics* for kit planes that used tiny jet-type engines. Someone got in touch with amateur jet plane clubs, and they found this guy who had this small demonstrator jet engine that he hauled around behind a truck to these gatherings of model plane enthusiasts.

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The Alien roaring ended up being a combination of real lions, tigers and bears, with elephants, horses and pigs as sweeteners for dramatic emphasis and close-ups. The overall philosophy for the sound was to have it be organic.

—Skip Lievsay

We tried it, and it was perfect; they dragged it around out in the desert behind a truck, and the jet engine was so loud you couldn't hear the sound of the truck that was hauling it. We did all the LTD "jet car" scenes with this, including a lot of dynamic moves. It would've been hard to put these sounds together otherwise. Having this movable jet engine was great because we wanted to do all the vehicle sounds in perspective; if the car onscreen made a hairpin turn, the jet engine was dragged out in the desert, re-creating that same move. It worked out very well.

Following Dale's lead on *Dragonslayer*, we also did a lot of stereo Foley sounds in the field rather than do them on a stage. We did echo-y running footsteps, radical stuff that is easier to integrate into the mix than regular stage-produced Foley.

January 3, 1997 *Barry screened a mixdown of temp elements at home in East Hampton. He is disappointed and says the sound is not big enough—it needs more bass, more elements.*

There had always been a plan to do a big studio preview using a stereo temp track. Everything we had been preparing for that preview we mixed onto an S-VHS HiFi videotape for Barry's approval.

Barry hated it and said we'd have to go back to the drawing board, and at that point we'd been working on it for over three months.

I suggested to Barry that it was a monitoring issue, but we were unable to impress that on him. Finally, we convinced him that he had to come in and go through this with us bit by bit on our mixing stage at C5.

January 28 *More accurate screening in mix room with Barry. Most FX are okayed and ready for the final mix; many notes for improvements.*

We went through the material for two days with Barry, and his complaints turned out to be all about simply making things more prominent and *louder*, with a few exceptions, and about the subwoofers, which we hadn't printed at that point, so he hadn't heard them at all on the S-VHS in the Hamptons. Once Barry heard all of our tracks in the mix room, he understood what we were doing, and we got very specific directions on all the big sounds. So that was a great success.

I saw this situation with the S-VHS material we'd sent to Barry as analogous to having a "civilian" audience test-screen an effects-driven movie. Before the film starts, you tell the audience quite precisely that the visual effects are temporary, like, "There's going to be a computer graphic of the tornado in these particular places, and some of the effects are temporary, maybe even straight from video."

And after the screening, you do the focus group and the audience members say, "The effects looked really cheesy and it was dark and grainy and awful-looking." And you say to yourself, "But we told them it was going to..." And of course it doesn't matter what you told them; they saw a movie and it didn't look right! Directors themselves sometimes have the same problems. You tell them that their S-VHS and home stereo, as good as they may be, are not the same as being in a well-equipped mix suite or theater. The lesson was that you can't send someone a tape to play at home for this type of a project. You need to put it up in the studio so they can hear the way it will really sound.

After the successful review in the mix room with Barry, the idea of spending a week preparing a big mixed temp track for a studio preview to get a few extra points in the preview polls didn't seem like a good idea to Barry, who decided he'd rather stay in the Hamptons and work on the editing. So we were able to spend all of our time preparing for the final dub.

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February 26 *Recording JFK backgrounds for the MIB headquarters.*

Barry wanted the lobby of the Men in Black headquarters, where the various alien crafts take off and land, to sound like a very busy airport, with a P.A. saying, "transport to so and so ready to leave." We did some of it with group walla in addition to some canned airport sounds, but we also went to the main air-control station in the New York area and recorded a lot of really good lingo. We also mixed in some material recorded at a satellite control center. It wasn't really important what it was, it just needed to sound busy; there were a lot of people on-screen.

March 5 *Begin FX predubs.*

I feel that the dub for the headquarters scenes got squashed down and became a bit muddy, due to the sheer number of FX elements, on top of which you had dialog and music. Sometimes I was clever enough to weed out most of the extraneous elements so it was not muddy, and sometime I wasn't, and it ended up as mush. It is natural for a film like this to have music and sound effects fighting each other.

One of the key things we wanted was to have a lot of dynamic range, and we ended up with some tracks that relied heavily on subwoofers. We also tried to remove as many extraneous sounds as possible, which of course would add to our overall dynamic range and give us a really high-impact kind of mix. It was nice that we had the time and money to review the dub and do remixing to unclutter the problem areas.

Another key in our approach to this film was that we agreed at the start that it was crucial to identify and deal with all the missed opportunities in the film. That is a very uncommon thing to do, and it became one of our main goals. Barry feels strongly that the sound mix is editing, and that it is just as important as picture editing.

March 24 Dialog and ADR predubs begin.

April 14 Final mix begins.

May 14 Print mastering.

July 2 In theaters. ■

New York-based Eric Rudolph is a frequent contributor to Mix.

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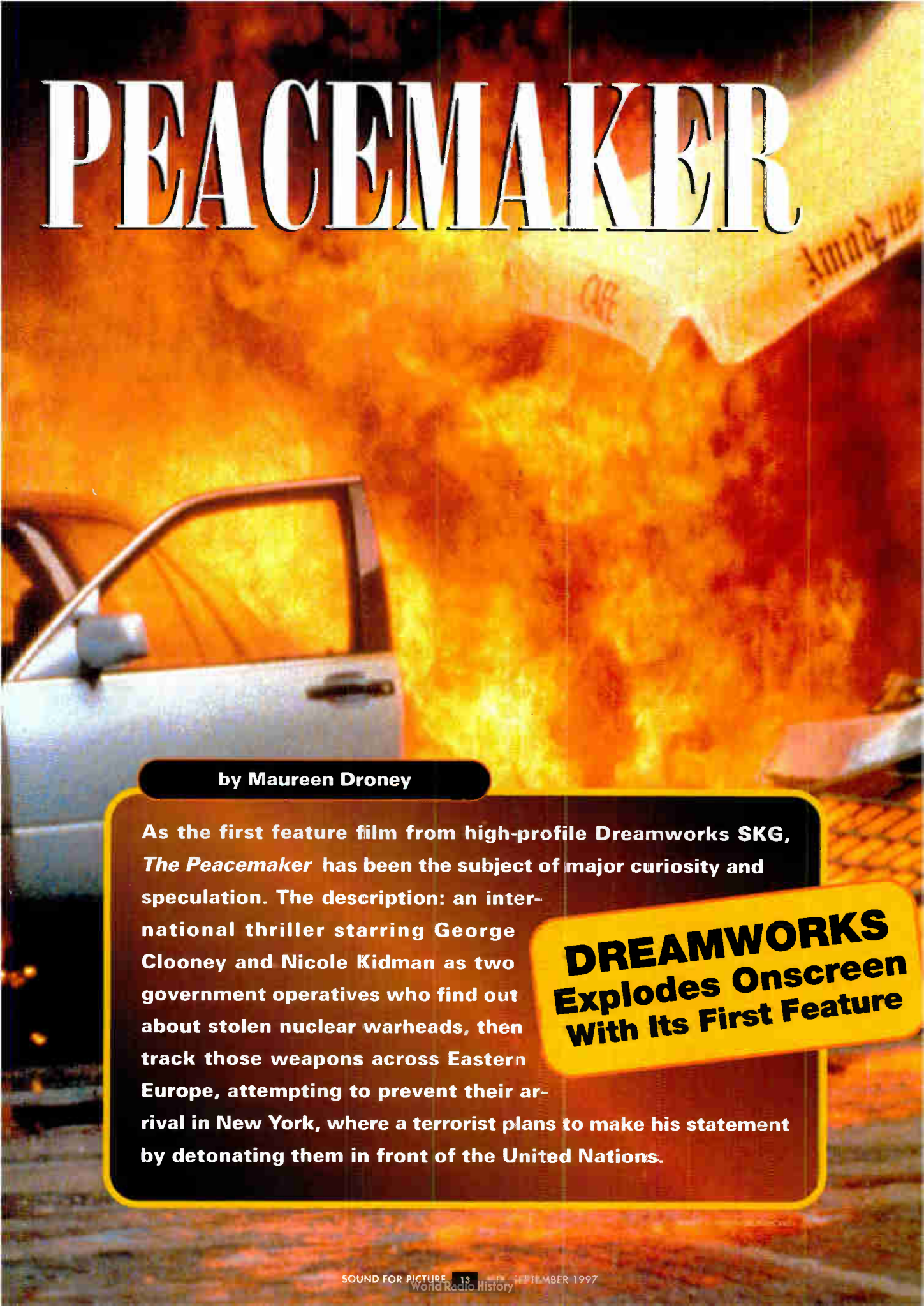
PEACEMAKER



by Maureen Droney

DREAMWORKS Explodes Onscreen With Its First Feature

As the first feature film from high-profile Dreamworks SKG, *The Peacemaker* has been the subject of major curiosity and speculation. The description: an international thriller starring George Clooney and Nicole Kidman as two government operatives who find out about stolen nuclear warheads, then track those weapons across Eastern Europe, attempting to prevent their arrival in New York, where a terrorist plans to make his statement by detonating them in front of the United Nations.

We're talking large here—wide scope with a reality backdrop. Action, romance, tension, chase scenes, car crashes: technical challenges include international shooting in Slovakia and Macedonia. Add in more than the usual amount of moving camera shots from director Mimi Leder (*E.R.*) for the production sound mixer to cope with, complex ADR with ethnic voices and, get this, a nuclear explosion.

The Peacemaker is a "smart" film. Although it's loaded with dynamics and effects, it's also, unlike most recent blockbusters, plot-driven—the kind of film that challenges a sound crew in a multitude of areas. With so many sonic

PHOTOS: MAUREEN DRONEY

Top, co-supervising sound editors Paul Huntsman, left, and Victor Iorillo at the Fairlight. At left, the sound editing crew from Warner Bros. Post-Production in Burbank. Below, re-recording mixers Anna Behlmer and Andy Nelson at the Otari Premiere in Stage One.

peaks and dips, the post-production team, under the auspices of co-supervising sound editors J. Paul Huntsman and Victor Iorillo, had their work cut out for them. Huntsman and Iorillo, who worked together previously on *The Glimmer Man* and *Murder at 1600*, did the bulk of the project at Warner Bros. Studios, where Huntsman is a resident sound supervisor and where they could take full advantage of the recently redesigned post-production department that includes a large installation of Fairlight workstations. Dubbing was done at Todd-AO West's Stage One, where *Mix* dropped in for a visit and a chat about how the team realized its goals for the soundtrack.

"You always want your track to stand out from the rest," says Iorillo. "And to achieve that, it helps to have as much new material as possible." But in some cases, tracking down that new material can be harder than recording it. For example, the distinctive sound of French Aerospeciale helicopters is heard in one of the key scenes. After determining that there were none available on the West Coast, a trip was made to the vehicle's distributor in Dallas. With rotor time clocking in at $1,700 an hour, the recording crew was careful to spend a day planning out their shots with the pilot before he took to the air. New material for the demolition derby in the middle of the film, when a Mercedes and three BMWs battle it out, also required extensive preplanning. One of the two tracks at Willow Springs Raceway was rented for an afternoon to record engine and skid noises from a brand-new Mercedes S500 (with a new set of tires in the budget). Along with the recording crew and the stunt driver, the *Peacemaker* team brought along their own mechanic—it turns out you have to disable the safety features of today's Mercedes to get them to *do* all that screeching and skidding.

Iorillo points out that, as difficult as it can be to create those action sequences, it can be even harder to construct an unforgettable quiet moment. "The big, loud stuff isn't easy," he says, "but it is easier—it tends to take care of itself. It's more difficult to get fine detail and subtlety through. There's a scene we just finished that's a good example. It's a bombed-out courtyard in Sarajevo, and there's nothing louder than a kid on a swing, but as the

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The mix crew and support team at Todd-AO West Stage One in Santa Monica

PHOTO: MAUREEN DROMEY

shot comes in on a wall, you realize you're looking at the Olympic symbol. It's a very emotional moment, made up of one layer after another. The background guy did a great job, the Foley people did incredible work, as well as the effects guys. You listen to the whole thing, and you're actually in that space—a bicycle goes by, the kid on the swing—it all focuses in, and you're coming down and down and then the shot takes you. It's a marvelous moment."

Quiet is needed in big action pictures to allow the audience time to breathe, but *The Peacemaker* definitely starts off on a high. The first two reels center around trains as the warheads are offloaded from one train to another while both are speeding through the Russian countryside. "Logistically, the whole idea of putting two trains lockstepped together on parallel tracks was pretty amazing," recalls Iorillo. For one thing, the trains needed to sound completely different from each other. The steam train's an old rickety thing. It's that Russian contradiction—this old steam train carrying the technologically advanced missile. So we had to create that difference between the steam train and the stealthy, diesel/electric train. We used a monorail's rubber wheels for the diesel, along with very tonal rail noises that moaned. So when you see the two trains from a high angle looking down, they're as different as can be. It also helped to use slight differences in positioning; the steam train was center-left, and the other center-right. When they play together, you really feel it."

Those train scenes also provide an example of how music and sound effects can work together. "We worked very hard to achieve distinction between the trains," says Huntsman. "The picture is cutting back and forth from interior to interior to exterior; each train has to have its own character to know where you are. The music could blur that distinction, or it could support it. We were lucky on this picture to be working with composer Hans Zimmer; he asked for copies of the sound effects for the key sequences, and he also requested a meeting with us, which is somewhat unique. He wanted to know in advance what we were doing—with the trains, the demolition derby and at the end, which is a gigantic footrace through the streets of New York. In his words, 'If I don't have the sound effects, I tend to write them, because when I see something happening on the screen I want to play it.' That kind of interaction with a composer is rare. They're very busy, and in general it's a strange liaison between music and sound effects. That's difficult, because with effects, we're trapped by picture. If there's a big train chuffing out of a station, there's a certain rhythm, and visually you have to make things happen. If the composer writes a train piece and it's got chuffing that conflicts with ours, we can't recut everything. I'd love to have more opportunities to work closely with composers from the start, even to spot the film together, so we can avoid those cases with the cymbal crash on top of a car crash."

Technically, the audio post-production for *The Peacemaker* was somewhat unique in its use of Fairlight MFX 3s: Everything except ADR and the music (which came in on Pro Tools) was recorded to and edited on the platform. Huntsman has been a proponent of the units since his tenure as a supervising sound editor at Todd-AO. "We went out on a limb with them at the time, and a lot of people questioned our judgment," he recalls. "There were other machines under consideration, with the decisions entirely based on input from the editors. Very late in the process, Fairlight came in and said, 'Give us a shot at this.' The deal was, we'd send some people over to demo the units, but they'd have to come back 100 percent enthusiastic—absolutely hands-down that this is the machine—before we would reverse what we already had going on. And they came back saying, 'The Fairlight is the machine we want.'"

Normally, auto-assembly is accomplished on the MFX 3s from edit decision lists supplied from Avid or Lightworks-cut sources with CMX-based lists. Because *The Peacemaker* was cut on film with original source timecode on the dailies, it was possible to read the EDLs off of the balance stripe of the film. "Production sound is recorded to quarter-inch," explains Huntsman, "and when the dailies are struck from that quarter-inch, the timecode is carried over onto the balance stripe. A PC-assisted system reads that timecode, sees any discontinuities as an edit and tells you the beginning and end of each segment. The user-bit portion then tells you what sound roll number that piece of audio came from. It's an interesting way to go, because if the production mixer is diligent about entering the sound roll number onto the user-bit portion of the timecode, the EDLs are flawless—they tell you exactly what sound roll it's on. There's never an input error."

The Fairlights use their PC-assisted program to auto-assemble, running on software designed by Gary Lewis at Todd-AO. Whole takes are loaded in and delivered to the editors on a magneto-optical disc. MOs also provided the main storage and backup for the entire film.

"In our current setup at Warner Bros., the Foley is a particularly slick example of what we've got going in terms of throughput working digitally," says Huntsman. "You can walk off the stage with an MO recorded directly to the

Fairlight, containing the raw material that's just been recorded on one side. That gets loaded onto the drive for editing, and then the MO is turned over and the edited material is put on the other side. Using MOs makes everything very straightforward. The half-dozen editors get through with their projects, and they hand their drives to the assistants, who then organize the material for the dubbing stage. So one drive will have reels of dialog cut by four different editors. This system keeps things simple and manages the drive issues very cleanly, because drives are expensive and you have to maximize your use of them."

Huntsman and Iorillo also found the Fairlight/MO system convenient for working with temp mixes. "Very often with today's schedules, the film's editorial process is continuous," explains Huntsman. "We're mixing one version and they're cutting another; we end up conforming film predubs, cutting fixes for them on the system, putting predubs back up on the recorders and punching in to fix them. For a temp dub, we may be shooting Foley at the same time as the temp is going. This way, if the director wants something in the temp that we were going to put in the final, I can bring it over to the stage on MO, and five minutes later it's in the movie. It's also a useful system for altering temp mixes. We conform the stems on Fairlight, cut whatever fixes we need, and when we go back to the dubbing stage, everything is playing off one or two files. It just folds back together, so unless there's a tremendous amount of new material, it's really an easy mix."

Huntsman and Iorillo constantly compliment the crew of *The Peacemaker*, giving most of the credit for the project to their team of editors and to Academy Award-nominated re-recording mixers Andy Nelson (four nominations, for *Gorillas in the Mist*, *Schindler's List*, *Braveheart* and *Evita*) and Anna Behlmer (two nominations, for *Braveheart* and *Evita*). "One philosophy we really strive for is to let our editors bring something to the party," says Huntsman. "We give them a reel to work on, as opposed to an element. Rather than saying to someone, 'You're in charge of gunshots for this movie,' or, 'You're the computer-beep editor,' I tell them, 'Reel 6 is yours. It's going to have your name on it.' We give them the latitude and, hopefully, the resources to do their job. For this film, we had five effects editors, one Foley and two dialog editors. Then we have our two assistants, the organizational core: Jeanine Payne and Robb Wilson."

With technology advancing so quickly, lines between job descriptions are blurring. "Producers ask me all the time if I'm a sound designer," muses Huntsman. "I think there are people who can legitimately call themselves that, but I also think any good sound editor is in some form a sound designer, because the choices you make create something that didn't exist before. You're always making decisions on what plays in terms of drama and quality; it all knits together to create that one moment in time.

"For better or worse," he concludes, "I've found over the length of my career that people rarely understand what we actually do in post-production sound. You record all sorts of material trying to cover the action on a scene, you delve into your library, and then you may take 30 different pieces of audio and neatly edit and finesse them together to make one moment. Then you'll play it for someone and they say, 'That's great, how did you record it in sync?' Because they just can't comprehend what goes into the illusion—they think you must have found a way to record it in sync. So there you go. And even though it sometimes makes the job more difficult, maybe in the long run it's better that people don't really understand how we do it." ■

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

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ELVIS MEETS NIXON

The King's Band Reunites In Nashville To Score Showtime Original Feature

BY DAN DALEY • It was the only time Elvis Presley ever left Graceland by himself. The year was 1969, and the aging King wanted to offer his pro bono services to President Nixon as (ironically) a deputy drug enforcement agent in a public awareness capacity. According to published accounts, Presley left his Memphis estate armed only with a credit card—no retinue, no bodyguards, no entourage—and flew to Washington, D.C. It didn't take long, however, for Presley to get lonely, so he flew to California, picked up a friend and doubled back to D.C., where he finally did meet with Nixon.

PHOTO: MARNI GROSSMAN/SHOWTIME

A few of the original session cats from the heyday of the King, clockwise from top: the Jordanaires, James Burton, Jerry Scheff and Boots Randolph. Opposite page: Elvis poses with President Nixon in a still from the Showtime original feature.
Photos by Allan Arkush

Cable network Showtime has produced an original feature film based on the incident, entitled, appropriately enough, *The Day Elvis Met Nixon*. When music producer/supervisor Spencer Proffer wanted to capture the Elvis period sounds—from his early years for flashbacks and for his late-'60s Vegas incarnation—he gathered as many of Elvis' original bandmembers as he could locate and brought them in to Seventeen Grand Studios in Nashville, the city where many of Elvis' recordings were made.

Proffer picked the studio because of its Nashville location, its Neve VR-60 Legend console and the fact that Seventeen Grand had done work on five major feature films in 1996. These included soundtrack work for *Twister* (a new Allison Krause cut for the film); *Tin Cup*, the Kevin Costner vehicle for which Nashville producer Emory Gordy did a new George Jones track; *Beavis & Butthead Do America*, for which producer Isaac Hayes did the theme and opening song productions; scoring for the forthcoming *Men Seeking Women*, featuring *Saturday Night Live*'s Will Farrow; and songs by the Cox Family and new Asylum duo Thrasher/Shriver for the recent release *Travelers*.

"We were cutting sound to picture, so I was going for what I call a 'scorce'—a score that also sounds like it's the source material of the movie, not something added on as an afterthought," explains Proffer, former head of A&R for United Artists Records who has done music production and supervision for more than 50 feature films in addition to record production for Quiet Riot, Tina Turner, Eddie Money and Little River Band. "The musical score becomes the blueprint for the movie in many ways. And this sounds so much more authentic than just licensing masters of Elvis recordings. It gets us closer to his essence."

The musicians included guitarist James Burton, drummer Ron Tutt and bassist Jerry Scheff, all of whom recorded and played live with Elvis. To add another period touch, vocal group The Jordanaires were enlisted for background vocals. Session engineer and studio co-owner Jake Nicely set up the musicians in the studio, attempting to re-create the intimacy and interplay that characterized Nashville sessions of the time, with close miking on all instruments and amplifiers, but with equal mix emphasis on the Neumann U87 (figure-8 pattern) that was being used as a room microphone.

PHOTO: ALLAN ARKUSH

Recording was done to a Studer D-827 48-track digital machine, which was the master deck, with a ¾-inch video slaved to it via a Zeta-3 synchronizer. "We're cutting all of the score and the music cues live to picture," Nicely explains. "There are no overdubs; we just keep doing takes till we get ones we like."

It was microphone choices and placement, as well as the choice of the players, that gave the recordings their vintage sound, says Nicely: "That and letting the picture follow the music." Scheff's acoustic bass parts were miked with an AKG C12VR; the kick drum had an AKG D112 inside and a Soundelux FET placed about a foot out in front to capture the thud; Burton's guitar was plugged directly into his Fender Twin Reverb—no effects, no rack. Because there would be no overdubs, there was no attempt at separation or acoustical isolation.

Vocals on the three scored songs—"Blue Christmas," "Rip It Up" and "Good Rockin' Tonight"—were by Ronnie McDowell, who was Priscilla Presley's choice to handle the Elvis vocals in the feature film she produced with Dick Clark. Nicely miked him with a vintage Neumann M269 tube mic, adding a bit of tape slap and a touch of an EMT 240 stereo plate. Mixdowns to a Tascam DA-88 were shipped to post facility Digital Sound & Picture in Los Angeles for layback.

"Cutting to picture was really the key to making this work and getting the right vibe," says Proffer. "We tried to make it as close to the way the original recordings were done as feasible. We had a lot of spontaneity from the players." They were also allowed to do extended vamps on the cues in anticipation of both a theatrical release of the film and for a soundtrack release on Rhino Records, which Proffer says will mark the first time a cable company has ever put out a CD of one of its original productions.

Director Alan Arkush likens the mood of this feature, which portrays Elvis in serious and comedic ways, to his other directing projects, such as the television series *Moonlighting* and music videos for another Elvis (Costello). "The challenge was to create a believable Elvis," he says, "and one of the ways to have that happen was by having the music be as authentic as possible. That's why we chose unknowns to play the roles of Elvis and Nixon—so the actors wouldn't get in the way of the characterizations. In many ways, the score and the tracks of this movie really propel it."

The musical high point of the film, though, may well be the moment in which Elvis and Nixon sang a duet of "My Way." (Unfortunately, the real-life version was not recorded for posterity.) "Elvis was just a big, old country boy, and he was very funny when he wanted to be," says Arkush. "And I can just picture what it was like when that moment went down." ■

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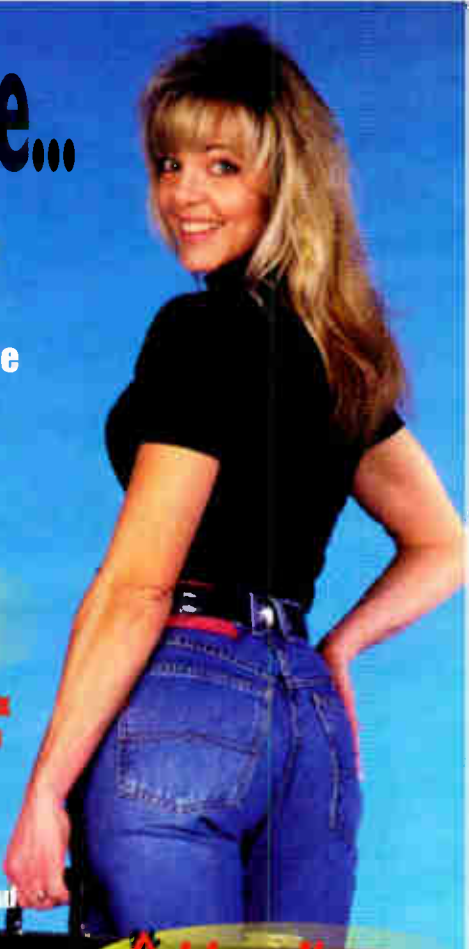

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BY TOM KENNY

POST SCRIPT

SOUND FOR FILM

FILM SOUND SINCE MAY 25, 1977

by Larry Blake

The only time of the year when I indulge myself in watching my favorite sport, basketball, is during the NBA playoffs. (Yeah, yeah, I can hear you other b-ball fans bragging about only watching the NCAA playoffs.) I don't find myself in front of the TV looking at Michael and The Mailman more often partly because I fear I'd end up wasting way too much time, and partly because I generally can't stand the announcers. If they're not injecting some false sense of importance to the proceedings, they're quoting some idiotic statistical cliché for the umpteenth time: "No team has ever come back from a 0-3 deficit...Utah hasn't lost a home game since...Jordan hasn't lost a game on his grandmother's birthday since he was coached by Dean Smith at North Carolina..." Well, it usually doesn't get that bad.

Regardless, I don't think I should be casting too many stones at announcing booths, because I'm sure that there's an equally large number of clichés to be found in my writings on film sound. Near the top of the list is certainly the effect that *Star Wars* had on film sound when it blasted into theaters in May 1977.

Inspired by *Mix*'s 20th birthday, this column takes a look back at this and some of the other notable events and non-events of the past 20 years of film sound.

•Yes, *Star Wars*. Perhaps the easiest and most original approach to talking about *Star Wars* is to say what it *wasn't*. It wasn't the first Dolby Stereo film; that title belongs to *Lisztomania* in 35mm Dolby Stereo and to *Logan's Run* for 70mm Dolby Stereo. But, of course, we're not playing Championship Calendar here, and not even the most fanatical of film sound fans (such as yours truly) can think of much that was innovative in the tracks of those films.

Star Wars was also not the first film to invent the concept of sound design, which is to say the act of creating sound effects by manipulating other sounds. (Talk about an oversimplification!) That process was discovered in the very early days of film sound, the best-known example being (warning: cliché coming) Murray Spivack's work for *King Kong*.

But there's much more to Ben Burtt's work on *Star Wars* than the elephant roars of the TIE fighters or the sound of 16mm projectors and TV tubes disguised as light sabers. It's impossible to think of the *Star Wars* films without the emotion and comedy that his sound effects put into R2-D2 and Chewbacca.

•Dolby Stereo. Although the full effect of *Star Wars* was truly felt only in the 70mm presentation, the biggest benefit the film sound industry derived from Dolby Stereo was the growth of matrixed 35mm Dolby Stereo optical. This brought the world of stereo sound to all films, no matter if it was a compromise when compared to the 35mm 4-track mag format that, like its 70mm 6-track cousin, was very expensive and cumbersome.

The success of Dolby Stereo in theaters was more than matched by its acceptance in post-production. Where stereo mixing was once the province of only a few barns in Los Angeles and London, Dolby Stereo made it accessible to anyone who could meet their specifications. By functioning as the clearing house for the technical side of film, Dolby Labs has done an invaluable service to the industry.

•The growth of independent sound editorial companies. When Dolby Stereo hit it big in the early '80s, there was very little top-quality sound editorial work being

—CONTINUED ON PAGE SEP 26

FACILITY SPOTLIGHT

AUDIO RECORDING UNLIMITED

SWEET POST CHICAGO

by Tom Kenny

ARU, Chicago: (L to R front) Bob Bennett, Mark Zeboski; (back) Rich Chojnowski, Mike King and Don Arbuckle.

Soon after Murray Allen left Chicago's Universal Recording for the new-media environs of Electronic Arts, a client walked in to Mike King's relatively new facility and said, "I guess you're now the old man in town." At first, King says, "I thought, Jeez! Then I thought, they're pretty good footsteps to follow."

King, who just turned 60, has now been in the commercial audio post-production business for nearly 40 years, starting out with Dick Orkin at KYW radio in Cleveland. He came to Chicago's WCFL with Orkin in the late '60s, helping to produce the wacky *Chickenman* series. Stints at Joy Recording, Universal and Chicago Recording Company followed before King decided to open his own facility, Audio Recording Unlimited, in 1988.

At the time, Chicago was considered one of the first "workstation towns," with a few people having experimented on the Synclavier and Tim Butler of CRC, most notably, becoming an early adopter of the AMS AudioFile. (Don Arbuckle, who has been at ARU since the beginning, was also an early DAW tester, opting for the Lexicon Opus a year after the facility opened.) But when King opened up a two-room facility in the landmark Wrigley Building, he was decidedly analog.

"Once upon a time, you bought a console, a couple of 2-tracks and a 24-track, and you were in the audio business," King recalls. "For 15 years, you wouldn't have to replace anything. So when we moved in here, I stayed with analog 24-tracks. Now, you constantly have to be changing and making your facility look like it's on the edge of technology. Soon after opening, I got my first workstation, which was a [SSL] ScreenSound, and I kept it for six months. I would stay here late in the evening

—CONTINUED ON PAGE SFP 34

FACILITY SPOTLIGHT

BEACHWOOD STUDIOS

ROCK 'N' POST IN CLEVELAND

by David John Farinella

Location, location, location is the classic real estate mantra that now applies equally to Cleveland's Beachwood Studios. Sure they are the top post house in the city, but do you think that folks like Bruce Springsteen, Jon Bon Jovi, Bob Dylan and George Clinton came all the way to Cleveland just to work there? Chances are slim, but when you share the same ZIP code with the Rock and Roll Hall of Fame and you've got a huge scoring stage that doubles as a rehearsal spot, you're golden. It's a pretty glamorous gig. But those rock 'n' roll drive-bys aren't the reason Beachwood has gone from one audio post-production room to three, added a number of video post suites and become the facility of choice in the Cleveland area.

Before they became the rock 'n' roll pit stop of the '90s, Beachwood Studios was a pure audio post-production house. Their doors opened in the late '70s as The Recording Connection. In the mid-'80s the EDR Corporation, currently the nation's 15th largest contract

—CONTINUED ON PAGE SFP 32

—FROM PAGE SFP 24, SOUND FOR FILM

done on movie studio lots. The exodus of sound editors that began in the '60s resulted in many of the top people founding sound editorial companies at the same time that directors started to put more emphasis on modern stereo sound jobs. Companies such as Weddington Productions and Soundelux in Los Angeles, C5 in New York, and Zoetrope, Lucasfilm and the Saul Zaentz Film Center in the San Francisco Bay Area (the latter three also having their own re-recording facilities) have been responsible for a large number of the best soundtracks of recent years.

On the re-recording-only side, independent Hollywood facilities Todd-AO and Samuel Goldwyn Studios (which later became Warner Hollywood Studios) each took virtually half of the early notable Dolby Stereo mixes (*Close Encounters of the Third Kind, The Last Waltz, The Empire Strikes Back, Raging Bull,* and *Raiders of the Lost Ark*).

It took the major studios almost ten years to start to get back on the sound editorial track. (The only exception was Paramount, which, perhaps ironically, has long since divested itself of its in-house re-recording department.)

•Production sound...has changed very little. Yes, there have been incremental improvements in microphones and in console and wireless technology. And there have been even larger leaps in recording media (DAT and Dolby SR on location, and the potential of Deva, which is still new as of this column). Yes, a 1997 film set asks much more of the production mixer than was even imagined 20 years ago. Timecode slates, multichannel recording, video assist, multiple feeds to the director (and sometimes even to the actors) are all but diversions from the real job at hand: getting a good dialog recording.

The only issue that matters is the quality of the voice as heard in the final film, speaking of the whole enchilada, including production recordings and ADR. In this regard there has been a step down in the past two decades and, although I am criticizing production and post-production personnel equally, most of the blame must go to directors for what they are willing to accept.

I think the beauty in the challenge of creating great-sounding dialog tracks is that, when all is said and mixed, technology is not that big a factor. And while Dolby SR or 20-bit digital give the production mixer a big advantage, they don't de-throne mic position from its *numero uno* slot of importance.

•Improvements in theater sound systems. I remember very clearly when JBL was demonstrating their new direct-radiator speakers at the Academy's Samuel Goldwyn Theater in 1981. Little did anyone realize how fast that style of speaker would take over commercial theaters and mixing rooms.

The cause was more than aided and abetted by its incorporation into the design of the Lucasfilm THX System, which was introduced in 1983. Although THX did not by any stretch of the imagination come up with the speaker design, or even the idea of mounting them in a baffle wall, the success of the program was instrumental in codifying the changes that were taking place in theaters.

Having undergone a decade of B-Chain upgrades, movie theaters in 1993 were finally ready for...

•Digital release formats. While the introductions of Cinema Digital Sound in 1990 and Dolby Digital in 1992 were necessary first steps, the debut of *Jurassic Park* in DTS in June 1993 changed the rules of digital sound in theaters. Before DTS, the widest distribution of non-matrixed discrete sound (be it analog or digital, 35mm or 70mm, 4-, 6- or 8-track) was approximately 300 70mm prints, and that at a surcharge of more than $3 million to the distributor.

In rewriting the rules, DTS has made 1,000-theater digital releases commonplace. *Jurassic*'s younger brother, *The Lost World,* was seen in a record 3,000 6-track digital theaters in the U.S. *only.* The other formats, Dolby Digital and Sony Dynamic Digital Sound, have also been installed in a large number of theaters, Dolby being very strong overseas, and SDDS in important theaters in L.A. and N.Y.

Each of the formats has its relative merits, adherents and compromises, and as a result, the strong competition has kept everyone honest while raising the bar.

•Sound editing on digital audio workstations. I am not quite objective when I call DAWs my *favorite* improvement of the past 20 years, because they make my day-to-day life so much easier. They help us post-production types work with much greater speed and efficiency than would ever be possible with the labor-intensive, expensive process of cutting on sprocketed mag film.

The obvious and overused analogy is writing on a word processor vs. writing on a typewriter. It doesn't matter that Shakespeare wrote with a quill or that Harper Lee probably wrote *To Kill a Mockingbird* on an old Royal manual, I would sooner shove bamboo shoots under my fingernails than go back to a typewriter.

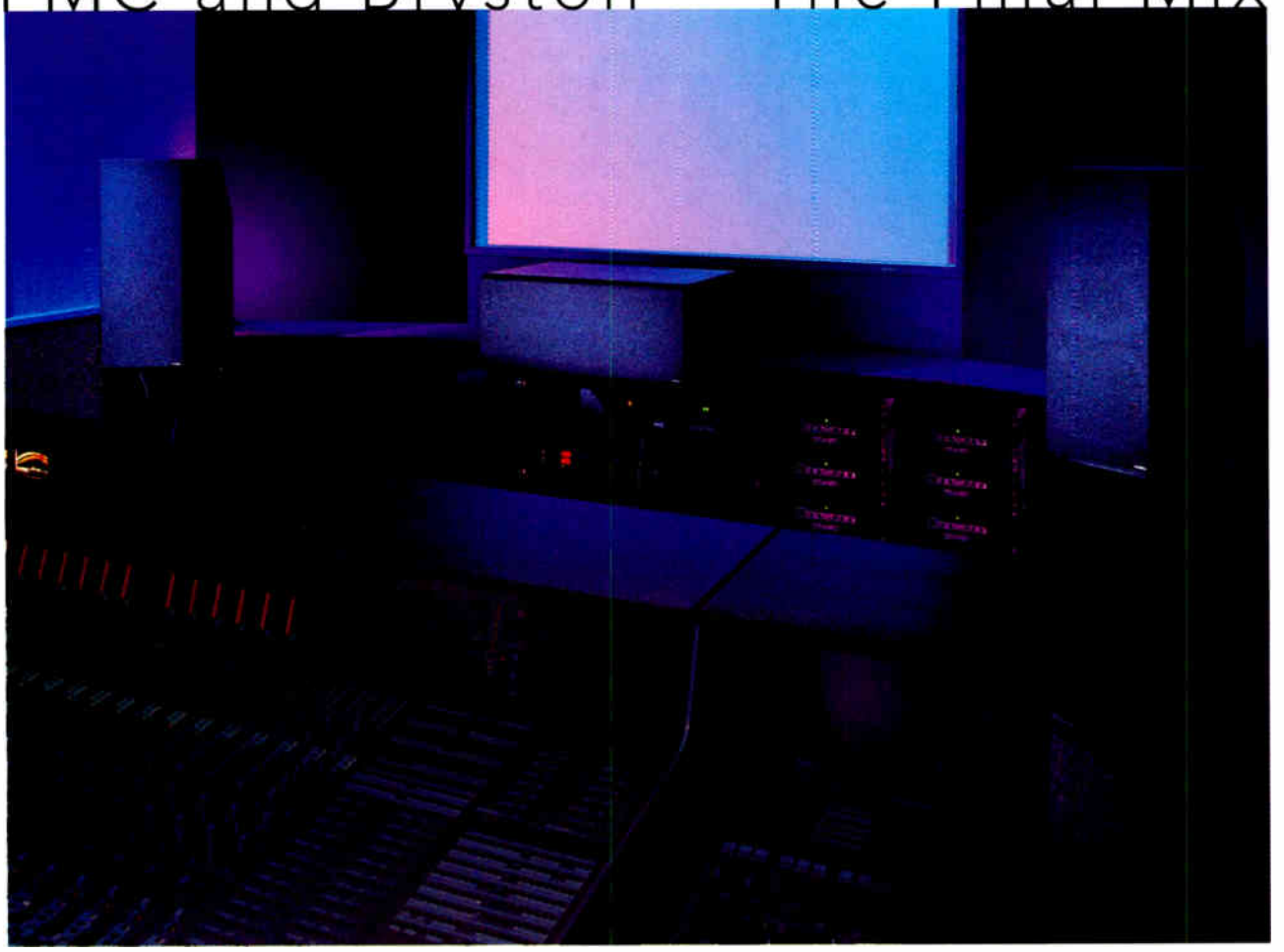
Ditto for film sound: While I will always cite *Apocalypse Now* as my candidate for favorite sound job of the past 20 (not to mention 70) years, there's no doubt in my mind that it would have been better in some respects had workstations existed in a practical form back in 1978.

•Nonlinear picture editing. I have always viewed film sound as a relay race: production sound handing off to sound editorial, who then gives the baton to the re-recording mixers for the final leg to the finish line. Picture editorial is like two separate races: The most obvious one is to cut the picture and see it through to negative cutting and film answer printing. The second one, which is often treated like a bratty kid brother, is to assist the sound editorial team in getting *their* work done.

Insofar as the second race is concerned, nonlinear picture editing is a one step forward, one step backward proposition. While we could never begrudge our picture editorial brothers and sisters the same sense of liberation that we feel about our workstations, there are still many kinks to be worked out. Some of them—work tracks being out of sync, indecipherable picture change sheets, timecode and EDLs from Mars—involve getting back to square one in the good old days of

—CONTINUED ON PAGE SFP 34

PMC and Bryston — The Final Mix



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MUSIC DELIVERY FORMATS FOR TELEVISION

by Gary Woods

When I did my first TV music sessions in the early '70s, I was struck by the fact that the music was recorded essentially the same way it had been for 40 to 50 years. The format, still in use in many places, is called "mag full coat," which is clear motion picture film covered with magnetic recording emulsion. The tape is wide, the emulsion is thick, and the speed is relatively fast (a little faster than 15 ips). The medium is enhanced further when you add noise reduction systems like Dolby A or SR to the recording process, producing a wide dynamic and tonal range with low distortion. Mag full coat is a mono recording medium, but there are also 2-, 3- and 4-track versions. Of these, the 3-track or "3 Stripe" version was the most popular, because it was used in many different areas of motion picture sound production. When recording music, strings and woodwinds were normally put on one track, brass on a second and percussion on a third.

Left: Ed Kalnins
Right: Ken Harrison

As people started recording music for motion pictures and television in places other than motion picture studios, it became important to find a format that required a lot less space and investment. That format was ½-inch 4-track, with three tracks used for music and the fourth for either a sync tone or, later, SMPTE code. The machines usually ran at 15 ips, although sometimes 30, and depending on what the production company wanted, some kind of noise reduction may have been added. This ½-inch, 4-track format also lasted for a remarkably long time, and most studios still have a machine around over by the DX-7, which is on top of the Rhodes, next to the Hammond B3.

Then came DAT, then the Tascam DA-88, which became the de facto standard for delivering music for television. In fact, it received a Technical Emmy from the Television Academy. The track configurations vary by production company, but the DA-88 owned video post. Then, hard disk recording systems started becoming commonplace, and some composers began delivering shows on removable hard drive. *Mix* talked with four composers to find out how they approach a project and how they deliver music to a final mix.

ED KALNINS

Ed Kalnins works both as a composer and "synthestrator," a term he coined for the job of taking someone else's notes and MIDI sequences and making a score. He primarily does TV movies and had just finished *Breaking the Surface*, the Greg Louganis story, and was working on *Out of Nowhere*, starring Lisa Hartman. Both were composed by Richard Bellis.

Before starting on a show, Kalnins requests from the production company certain specifications that he would like to have for a video dub. These include two sets of ¾-inch video cassettes, and three sets of ½-inch VHS Hi-Fi video cassettes, with timecode burned-in. He asks for dialog on Track 1 Left, with reshaped timecode, identical to the burned-in visible code, on both Track 2 Right and the address track. He also requests that the type of code and the speed at which it was laid in be stated, as well as the date the dub was made.

Spotting (deciding where music is going to go) is usually done with the producer, where he takes notes that include Starts & Stops and Content (e.g., scary, funny). He then breaks down the cues into a final list. It is also at that point that he determines exactly where on the final tape the cue will lay. If, for instance, 1M1 is going to transition into 1M2, he knows that they're going to have to crossfade, and that they'll have to be on separate tracks.

Because Kalnins composes and works for other composers, he has established a variety of ways to get the music down on tape. Some composers are strictly "paper and pencil" people, while others work exclusively with sequencers, preferring to send him Mark of the Unicorn Performer files or Standard MIDI Files. At his studio, he has the Kurzweil K2500, Roland S-760, E-mu Proteus, and many other modules. He uses a Spirit mixer and Digidesign Pro Tools, which he uses to record live players, with Digital Performer.

Kalnins now delivers cues on DA-88 almost exclusively, though there are some studios that still want timecode DATs. He typically sends four stereo pairs to the dub stage, broken down as Tracks 1-4 being the A reel and Tracks 5-8 the B reel. This configuration gives them the ability to do a Main A Mix, with separated elements, crossfading into a Main B Mix with separated elements. He also likes to separate all the source cuts (music where the source is seen on camera) onto a separate channel so when they get to the dub they can futz that and leave it futzed without interfering with the rest of the score. If there are no crossfades, then Kalnins can leave separate elements of the score on individual tracks, allowing the mixer the opportunity to bring them up or down.

KEN HARRISON

Ken Harrison is currently doing music for the Aaron Spelling show *Savannah*. Last February he began work on *Stargate*, a series based on the motion picture of the same name. MGM has committed to 44 episodes and will be shooting and posting in Vancouver, which is close to Harrison's home in Bellingham, Wash.

Like Kalnins, Harrison receives the shows on ¾-inch video, with the audio on Track 1 Left and the drop-frame timecode

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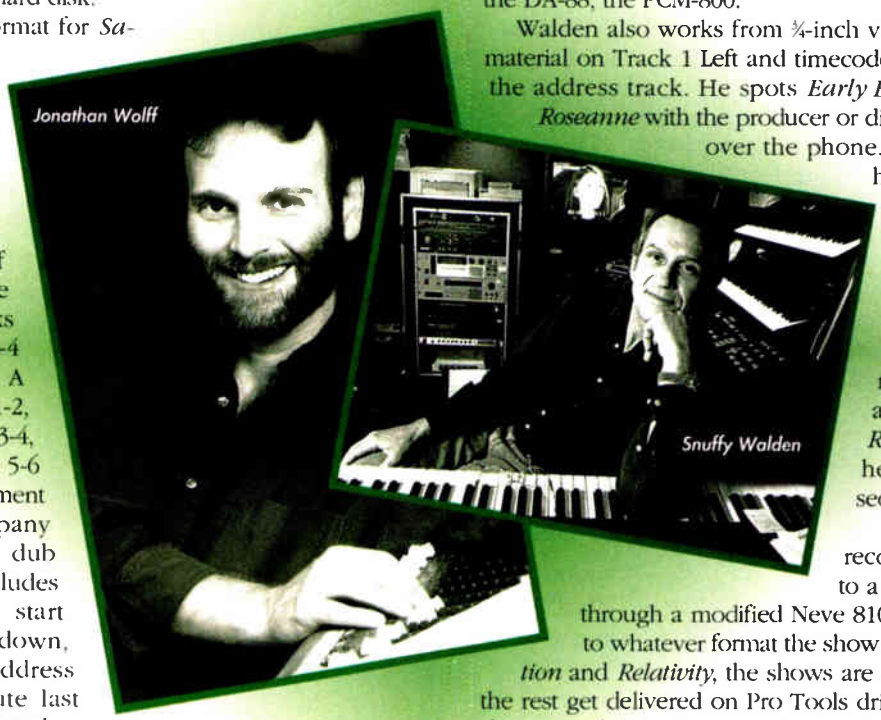
on Track 2 Right. He spots *Savannah* with the producers in Los Angeles, though on rare occasions it's been done over the phone, which he says has worked just fine. He is looking into installing an ISDN line so he can lock video machines between Vancouver and his studio in Bellingham.

To write the score, Harrison uses two-stave manuscript paper, which has only the lead lines and chord changes. The embellished score then gets played into Digital Performer running on a Macintosh Quadra 650. For *Savannah*, he uses a live guitar and sax, recorded with an AKG C-414 B-ULS microphone to a DA-88. For mixing, he uses a 24-input Trident console and various outboard effects such as a Lexicon PCM 70, Zoom reverbs and dbx compressors. Soon, he says, he'll be investing in a Pro Tools system so that he can record the live players directly to hard disk.

The delivery format for *Savannah* is DA-88, and the track configuration is similar to Kalnins', with Tracks 1-2 used for the bed, 3-4 for guitar, and 5-6 for sax. If there's a crossfade required, the tracks get divided up 1-4 and 5-8, with the A reel bed going on 1-2, solo instrument on 3-4, and B Reel bed on 5-6 and the solo instrument on 7-8. To accompany the tapes to the dub stage, Harrison includes the cue number, start mark, track breakdown, and the SMPTE address where the absolute last sound of music is heard.



JONATHAN WOLFF

Jonathan Wolff has been on a roll lately, scoring (at the time of this interview) *Seinfeld, Caroline in the City, Boston Common, Dave's World, Townies, Married...With Children, Unhappily Ever After* and *Malcolm and Eddie.*

Like the others, Wolff gets the shows on ¼-inch with dialog on Track 1 Left and drop-frame timecode on the address track. He writes the songs using pencil and paper, with all the other music written using Opcode Vision and Digidesign's Sample Cell II.

Live players get recorded directly into Pro Tools using a 4.3-gigabyte StreamLogic (Micropolis) Microdisk LT removable AV drive. He places the mixed cues in stereo pairs in the Pro Tools session, where each has separate output assignments to allow the post-production mixer instant access to alternate or overlapping cues. Because Pro Tools is hard disk-based, Wolff does not have to concern himself with overlapping, or B reel tracks. What would be the B reel is just the next cue, which gets assigned a start point just like all the other cues. This also means that if for some reason the people mixing the show don't like the start point of the "B reel," it is easy to adjust the start without disrupting the first cue or transferring it to another tape as you would with a DA-88. For dubbing notes, Wolff sends to the mixer the start address, output assignment, type of cue (underscore, source, alternate cue), cue title/number, and any other notes that might help.

Wolff also mentioned that he has been recording a lot to CD-R lately, cutting a few every day at his studio for use as playback on the soundstage or as demos for the producers. He generally provides them with at least three start points for each piece of music, so the director can have the actors begin the scene from several different points.

SNUFFY WALDEN

Snuffy Walden has worked on *Early Edition, Ellen, The Drew Carey Show, Ink, Relativity* and *Roseanne.* His working style varies depending on the project, and he delivers scores on both Pro Tools removable hard drive and the Sony version of the DA-88, the PCM-800.

Walden also works from ¼-inch video with the program material on Track 1 Left and timecode on Track 2 Right and the address track. He spots *Early Edition, Relativity* and *Roseanne* with the producer or director; the rest he spots over the phone. To create the scores, he sketches using Performer locked to picture, then commits everything to paper. After that, he resequences the score, adding live players as needed. This is true for all the shows except *Roseanne*, for which he went directly to the sequencer.

The live performers are recorded for all the shows to a Sony 24-track machine through a modified Neve 8108 console, then mixed to whatever format the show requires. For *Early Edition* and *Relativity*, the shows are delivered on PCM-800; the rest get delivered on Pro Tools drives. The two PCM-800 shows are delivered in a 4-stripe configuration, with tracks 1-2 used for the bed and Tracks 3-4 for any solo elements. A variation of this configuration is that he occasionally records the band to 1-2 and the rhythm to 3-4. *Ellen, Drew Carey* and *Roseanne* all get delivered with 2-track stereo, and *Ink* is delivered with two or three stereo pairs, with the bed on 1-2 and the solo elements on 3-4, and 5-6, if needed. To assist the mixer for the dub, Walden sends along a Music Log with starts, stops and timings for *Early Edition* and *Relativity*; for all the other shows he sends a Cue Log.

When starting on this article, it seemed that it was predominantly people doing dramatic underscore who were using DA-88s, while those who did sitcoms used hard disk systems. But now, because post-production people are seeing the advantage of the hard disk systems, it's a safe bet we'll see a steady movement toward hard disk mixes. Already music for a lot of lower-budget motion pictures is being mixed in this way, so it's only a matter of time before most post-production exchange occurs on the hard disk. The advantages of being able to move things around and edit them on the stage is very persuasive. My personal favorite recording medium for motion pictures is still mag fullcoat with Dolby SR, but what do I know, I was an extra in *Jurassic Park.* ■

Gary Woods is a composer and writer based in the Los Angeles area.

James Taylor, on recording *Hourglass* using the Yamaha 02R Digital Mixer:

"The 02R allowed us to choose our most comfortable place for making the music and to stay digital the whole way and to do it at a very high level. We were really very happy."

James Taylor (R) Frank Filipetti (L) at the Yamaha 02R during the recording of *Hourglass*

When James Taylor and producer/engineer Frank Filipetti set out to record James' new CD, their determination to capture the strongest musical performance was paramount. "I think it's often the case in the recording studio that you sacrifice some sort of comfort level and vibe for sound quality," reflects Taylor. For this project, "we were willing to go in the other direction to make the performance the priority and not necessarily the technology. But, in fact, it turned out we didn't have to sacrifice anything to do that." A summer home on Martha's Vineyard, MA, provided the environment.

The Yamaha 02R digital recording console provided the all the mixing power and sonic performance needed to make what was to become James Taylor's next hit album, *Hourglass*. Filipetti adds, "Being able to listen to playbacks as aurally satisfying as they were, allowed all of us to relax and just enjoy what I consider to be one of the most fulfilling recording sessions I've ever been on." To hear great performances and the sound of the Yamaha 02R digital recording console, pick up a copy of James Taylor's *Hourglass* on Columbia Records, available at music stores everywhere. To receive your copy of *Hourglass Session Notes* and learn more about the Yamaha 02R, 03D and ProMix 01 digital mixers, call 800-937-7171 x648.

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—FROM PAGE SFP 25, BEACHWOOD STUDIOS

producer of audio and video programs, stepped in and bought the facility. Since then, they've added an entirely new building, which houses the video production and duplication business, and they've added more audio post rooms. Nowadays, Beachwood boasts three audio suites, two nonlinear Avid rooms, two linear tape-based suites, a digital compositing suite and a 40x60-foot soundstage.

Beachwood's crown jewel is Audio A, which is decked out with a Euphonix CS2000, a 56-input console that features snapshot recall automation and 24 channels of Dynamix. This is currently linked to the PostPro SD multitrack digital hard disk recording and editing system, but the room also contains a Studer A827 24-track analog machine, a Sony PCM-7030 timecode DAT machine and a Sony APR-5002 2-track analog machine. Samplers and keyboards in the room include a Synclavier PolyPro sound design and sound effect production system, an Emulator IV, Roland JV-1080, Korg M1R, a Roland A-80 master keyboard MIDI controller, not to mention 7-foot and 9-foot Yamaha concert grand pianos and a Hammond C-3 organ with the 145 Leslie cabinet. Monitoring is through a pair of Tannoy 215 DMT large monitors, as well as your standard Genelec 1031S and Yamaha NS-10 near-field speakers.

Beachwood also has two more pure post audio rooms—Audio B and C— to keep pace with the business they've been getting from such agencies as Wyse Advertising, J.P.A. and Marcus Advertising. Their work can be heard on spots for Burger King, Office Depot, Sherwin-Williams, the Cleveland Cavaliers and on the opening audio trailer for the OmniMax theaters. Both Audio B and Audio C are identically outfitted: a Yamaha 02R console, the PostPro DAW, a Fostex D-30 time code DAT machine and a Sony APR5000 2-track analog machine. They are also using two different digital effects processors: an Ensoniq DP4+ and a Yamaha SPX-90 and an Ensoniq TS-12 keyboard.

According to Beachwood's vice president/audio creative director John Cesario, the growth to three rooms has freed up the entire facility. "The A and B rooms were semi-music and post-production rooms, and I geared Audio A into music/post-production and Audio B into post-production. But when I'm doing a lot of music work in Audio A, that really only gives us one post-production suite and we couldn't handle all the work, so that's when we added Audio C."

He's quick to point out that there is not a huge quality jump from the A to B to C rooms. "As far as post audio, [Studio B and C] have got all sorts of samplers and MIDI gear. The only major differences are size and the Euphonix console. But the 02R, as far as recall and application, is wonderful. In that price range [$125 per hour for multitrack recording], it is an incredible console for post-production work. Qualitywise, it's nowhere near the Euphonix, but it is very efficient and really user-friendly." And just in case there are not enough audio tracks in one room, they have networked each room together for easier expansion.

While the expansion to another audio post room was a "no brainer" according to Cesario, Beachwood is attempting to decide whether or not to dump PostPro as their digital audio workstation of choice. "We're looking at adding another workstation in all the rooms," he says. "Possibly going to Pro Tools in all three rooms only because N.E.D. and PostPro have been defunct for a number of years now. We're looking at a number of DAW systems, and I'm not decided on which one to do yet, only because I'm not so sure I should dump the PostPros yet. I had thought a lot about it, but then at NAB this year this company called Demas, which is the servicing agent for PostPro, has taken on the responsibility and the commitments for software updates and changing the hardware."

Just as they are expanding their space and upgrading their equipment, Beachwood is evolving for the next generation. Not only can they handle and produce surround work—something that wasn't crucial for some time, because the Cleveland area didn't have the ability to broadcast anything other than stereo until recently—they've also been perfecting their virtual studio set up. Cesario recalls a recent session where the Cleveland Clinic needed a doctor who was in Italy at the time, so they set up a Digital Patch Fiber Optic 3D2 patch. In another instance they were contacted by DDB in England to record legendary blues guitarist and Cleveland resident Robert Junior Lockwood for a Budweiser spot. "I know the buzz term lately has been virtual studio," Cesario says, "but we've been doing that for a long time." ■

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

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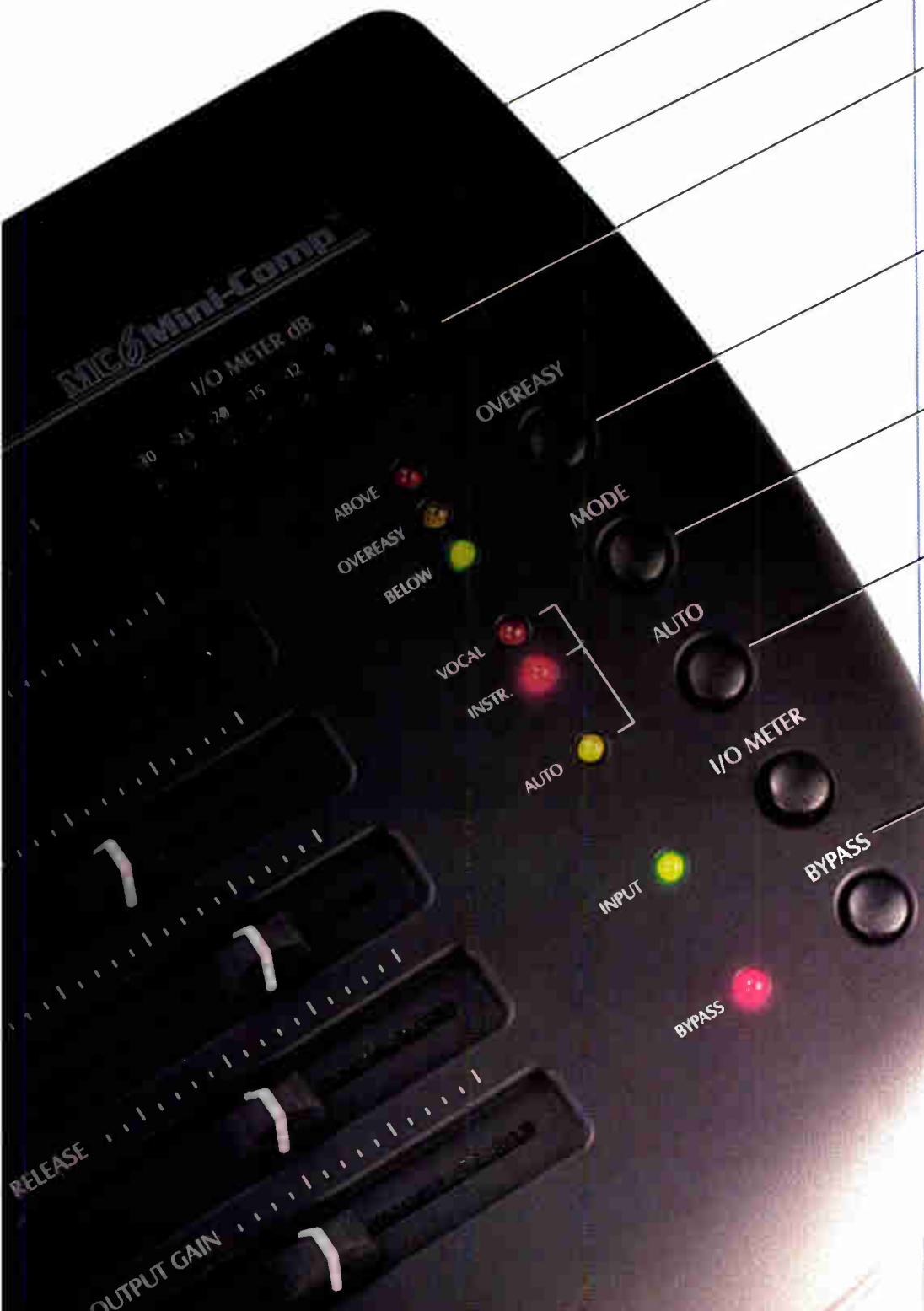

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—FROM PAGE SFP 26, SOUND FOR FILM

editing on film, when certain attention to craft was expected. The rest of them concern the icing on the cake: not having to reprint production tracks and having already-cut dialog follow picture changes with a minimum of fuss.

•Console technology. Although some facilities are using fully automated, digitally controlled analog consoles, this is one area that has seen the least amount of industrywide change since things settled in the early '80s. At that point, most studios changed boards, and although almost all of them now have had moving-fader automation retrofitted, most stopped there many years ago.

In spite of this, there has been a steady increase in the cost of mixing films, with many of the stages equipped with 20-year-old MagnaTech film recorders and 15-year-old consoles charging more than $1,000 an hour. Of course, one hastens to add that these are top mixers, and I'd much rather have one of them behind a Mackie than a kid behind a $750,000 digital console. Nevertheless, it's sorta strange considering that the much-less-profitable world of high-end music recording changes expensive consoles with much greater frequency. Can someone explain this to me, or has my brain gone soggy from sucking too many crayfish heads?

By the turn of the century, though, I think that most re-recording stages will have converted to all-digital, all-automated consoles, if only because workstations and digital dubbers will be speaking fluently to each other by that point, and mixers will be tempted to remove the final manual link in the chain. Considering how complicated mixes are these days, with 200 tracks showing up at many final mixes, it won't be one day too soon.

•The growth of home theater. When my friend Kevin McDermott, who's less technical than your two-year-old, talks of getting a 5.1-channel system in his house in Mandeville, La., I know that the landscape of watching movies at home has truly changed.

As with the digital sound formats, the benefits have been clear: There are so many ways for the general public—not to mention the producers and directors themselves!—to hear high-quality sound that the apparent need for it has increased accordingly. I am still surprised, though, that relatively few films will do home-video-specific print masters, both for restricted-dynamic-range (videocassette and broadcast) and extended-range (laserdisc and DVD) purposes.

Granted, there is a down side to all of this. Home theater fanatics who regularly turn up their subwoofers and surrounds at home expect the same to be done at the theater. This is further exacerbated by the laserdisc review magazines that judge sound mixes according to the surround content. We all know less is more, right?

Please tell me what notable events I omitted, or gave too much importance, at PO Box 24609, New Orleans, LA 70184, fax 504/488-5139, or via the Internet: swelltone@aol.com. ■

Larry Blake is a sound editor/re-recording mixer who lives in New Orleans for reasons too numerous to mention, although one of them would have to be his mother's stuffed crab.

—FROM PAGE SFP 25, AUDIO RECORDING

and learn what clips and jams work. You're dealing with an old cutter here. And when you can't touch it—like a film editor—it's hard to understand how it works. It was a tough learning curve, but now I can't imagine doing it any other way."

Business through the early '90s was very good, with national radio and television accounts for the likes of McDonald's, Reebok, Gatorade ("Be Like Mike"), Chevy, Budweiser, Miller, Southwest Airlines and the Chicago White Sox. The split has become about 60/40, with a slight emphasis on the radio side. Engineers Rich Chojnowski, Mark Zeboski and Bob Bennett came aboard as the facility grew to four rooms and took over another floor (a fifth room is scheduled to open later this year). King now mixes on an SSL Scenaria; a Fairlight MFX 3 Plus and Yamaha 02R console replaced one of the Opuses (an Opus remains in the third room, soon to be replaced: "When you consider the machine had been running eight years, that's a tribute to Lexicon," King says. "They just quit supporting it. They had it all. They really had it all."), and Zeboski recently revamped the original Studio A with the addition of Fairlight's new FAME console.

"Both the Scenaria and the FAME have the ability to load a project in the

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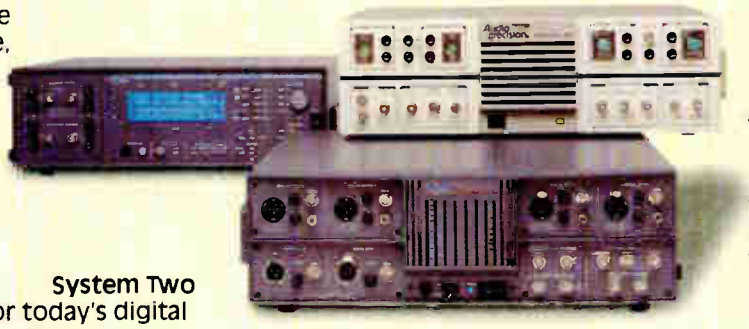

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machine, and it stores every piece of information needed to make that spot work—limiters, filters, EQ, whatever," King says. "I have three jobs this week that were done in the last year, and I don't have to set anything on the console. The digital workstation, with the editing and manipulating of pieces of data, is wonderful; I don't want to slight that. But I tell you, until you get a console that is fully automated with instant recall, this is what pushes it over the top.

"With the FAME, you get 24 tracks right off the machine and it's running," he continues. "You can get that off the Scenaria, but it's a bit convoluted, and ScreenSound is still five- to six-year-old technology. Mark, Don and I went to AES in Los Angeles specifically to look at FAME, and we were dazzled by it. It's like the guy who wrote the software for it did this kind of work once upon a time. They understood what an editor needs to make life simple. The other thing is that it's in the $180,000 range vs. the $350,000 for the Scenaria, and it's every bit the same piece of gear."

Zeboski, a UMass Lowell graduate who came over to ARU from Streeterville about four years ago, was up and running on the FAME the day it was installed. Previously, he had been the floating engineer (ARU hires one more engineer than they have rooms so that in cases of vacation and whatnot, a room is never down), then he worked in King's old room, which had a Sony 3000 console and a ScreenSound system, then they told him he could upgrade. And they wanted his input.

"I was looking to go back to a scrub situation," Zeboski says, "and I really like the scrub on the MFX editor. I also needed more tracks, because eight tracks get eaten up real quick, especially if someone brings splits of a music session and they're all stereo. And it's full dynamic automation, which is just fantastic. If I just want to tweak my pan-pot, everything follows. I love it."

The FAME was installed on a Monday, and on Tuesday, Zeboski jumped right into a spot for Spring Air Mattress that required 500 different tags. Because you can load and name at the same time, Zeboski would put marks on the timeline as the talent was reading the 20 versions for Detroit, 35 for the L.A. office, etc.

"Each clip would be an area," he explains, "but within that clip, I was making locate points for each version—Go To marks. Each time she said a store, I would put a Go To so I would know where my next mark was. Once I got into a rhythm, I would go to the first clip, copy it down, then back up to where I copied the original one, undo the edit, jump to the next one and redo the edit. It was cookie-cutter, big-time, and it's not typical of what we do here, but it was phenomenally fast. The scrub for me just seems to work so much faster than a pen or a mouse.

"The other thing about the MFX interface is that you're not going through pages to get functions. Your edit buttons are right there on the keyboard, and they're all straightforward. If you want to cut off the head of a clip, you go 'Edit, Cut Head,' and it's two keystrokes. It's just so much faster."

Facilitywide, ARU has made a commitment to speed and service. It is, after all, the advertising world. The recent installation of the Sonic Science CD search, retrieval and playback system, connected to all rooms, allows access to, say, dog barks from all the standard libraries plus the company's in-house library, recorded directly into the workstations. And Sonic Science has shown a prototype of AudioBase, which will allow access to any file "published" in the last year or so, even if the project file has been dumped. Monitoring throughout the facility is via UREI 809s, though King has put a Bag End near-field system into his room, with NHT loudspeakers.

Engineers seem to stay at ARU, perhaps because of the liberal benefits package (includes lunch!), perhaps because they are involved in the decision-making, perhaps because the family vibe is appealing in the here-today-gone-tomorrow world of commercial advertising. Betty Rake, operations manager, has been there since the beginning and now brings in new business. And Susan King, co-owner, keeps the books and serves as financial planner, as she has since 1988.

"At the time we opened, we were like the only boutique-y place in town," King says. "We were up here in the tower of the Wrigley Building. All of the studios have windows to the outside so you can look out on Lake Michigan. It's a light, open, airy place—very California-looking compared to what most Chicago places were. But the reality of it is that if you have enough money, you can get about any piece of technology. The thing is the talent. I can't say enough about every person here. It's a wonderful team shop." ■

Tom Kenny is Mix*'s managing editor.*

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EUPHONIX CS3000 SERIES

DIGITALLY CONTROLLED ANALOG PRODUCTION CONSOLES

As readers may recall from my 1994 review of the CS2000, I favor assignable designs that enable all control panel settings to be scanned, memorized and recalled to the accuracy of a video sub-frame, and the ability to command processing functions from a central working position. If the system is modular and available in a variety of expandable I/O and control-surface topologies—as I discovered in my April 1996 assessment of various 2000 configurations—then the console can be offered in a number of serving suggestions for music, broadcast, post, film dubbing and other applications.

The CS3000 takes the 2000's digitally controlled assignable concept (which is still being offered for users who don't need moving faders) and adds a new control-surface layout, an enhanced MixView 3.0 automation package and other useful features. The basic CS3000 comprises a user controller and companion Audio Tower, which houses the banks of digitally controlled switching, mixing and signal processing circuit elements; the interconnect is via a simple 33-foot serial link. All switch, rotary and fader controls are scanned, memorized and instantly reset as either static SnapShots or Total Automation dynamic mix data against timecode. Dynamic automation includes all major mixing controls—motorized faders, mutes, equalizers, stereo pans, compressor/limiters and aux send levels.

The most obvious change from the previous generation is a complete facelift for the control surface. The CS3000 features P&G-equipped moving-fader automation on all lower-path sources, plus flexible bus routing from the upper and lower banks. (Moving-fader automation is also available as an option on upper faders.) Knobs are now aluminum and color-coded, making it easier to locate the correct control under low lighting levels. A new FaderLink feature allows control from a group master fader over many more aspects of the console than traditional fader grouping. FaderLink also allows any parameter of the channel to be dynamically automated from the moving fader.

The CS3000's integrated machine control includes a timecode generator/reader that is capable of operating the board in either master or slave mode. The CS3000 can control up to three ATRs/VTRs via RS-422 serial protocols, a TimeLine Lynx network, and three MIDI Machine Control-capable decks or workstations. All timecode rates and formats are supported, together with MTC and external video sync.

In addition to setting up the board to provide access to all 24 buses from the upper section (track routing) and stereo bus from the lower (tape-machine/monitor returns), the 3000 boasts split busing, with access to 12 dedicated buses from the upper and lower faders. For post/film applications, in particular, the 12 buses could be used during predubs/prelay to provide access from every fader to recorder/submix inputs. Then, during the final mix, these buses might be split up as six stereo mix stems—for example, music, effects, dialog, Foley and M&E. Groups of four buses can also be used as an LCRS mix stem.

The control surface has also received a completely revised Lexan overlay design, which makes it far easier to find your way around the control and switches. Two different I/O control modules are available with different front panel designations. These show either 24 buses (labeled 1-24 and 25-48, with multiple outputs per bus) from the upper faders or 12 buses from every fader. A simple, yet very useful touch.

Other cosmetics include leather-covered palm rests and meter bridge top caps, plus optional ClearR electronic channel labeling strips for both upper and lower fader sources. Metering functions have also been improved, with the provision of dual-LED meter scales to indicate normal, expanded, digital-peak or RMS/VU modes, togeth-

BY MEL LAMBERT


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er with a master meter module equipped with three dedicated VU meters (left, right and mono, or L, C and R) and a very useful LED phase correlation display.

Within the companion Audio Tower, a new circuit has been implemented in the analog I/O blocks and control sections, resulting, Euphonix says, in an improved audio performance and enhanced routing options. While I didn't get the opportunity to measure the new board, I must confess to never having a problem with sonic performance of the CS3000's predecessors; in that respect, I cannot fault the current generation—it is quiet, silky and very clean-sounding.

The majority of system functions are controlled from the central Digital Studio Control module, which was first offered on the CS2000. The DSC provides easy and intuitive access/control for each of the individual, fully assignable channel and master functions. It also incorporates a full-color, active-matrix display screen that can be used to display normal system functions, or a graphic display of EQ, dynamics and auxiliary parameters, plus banks of software-defined function keys. A set of 12 rotary knobs are used as assignable controllers for a variety of functions; controls are mapped to the screen display.

New MixView 3.0 software supports moving faders and dynamic EQ automation and HyperSurround (more later), with up to 999 titled Mix Passes (and flexible undo), plus the ability to perform offline editing of automation data. Also new is an essentially beefed-up MIDI interface that enables integration and automated control of external signal processors and MIDI-capable workstations. All normal mix functions are provided; if you are familiar with, let's say, Flying Faders, then MixView is a breeze.

Standard central facilities include a pair of assignable moving faders; two automated stereo mix bus faders with insert points; three stereo monitor outputs (linkable to discrete four/six); centralized routing; 16 function keys with eight-character alphanumeric displays; comprehensive file and session management system; internal 1.6GB hard disk, plus Jaz removable media for backup and data exchange; a SCSI interface; and a 3.5-inch floppy drive.

The optional MX464 Master Facilities Expansion adds 64 external monitor inputs, configurable as any combination of mono, 2- or 4-channel returns that can be named and selected from DSC assignable keys. Also available via the MX464: eight stereo speaker outputs (usually set up for four sets of stereo CR monitors, Foldback A and B); 8-stereo-output Feed Matrix; three talkback mic inputs; and 16 General Purpose Interface relays (GPIs).

If your application runs to more than 24 buses, or you need more than the standard eight aux buses (mono or stereo) provided per module, the optional Audio Cube allows additional multiformat or aux bus outputs—in increments of four, to a maximum of 48—to be sourced from any channel strip. Although a standard CS3000 will handle complex mixing with hard assign, an Audio Cube adds dedicated surround sound mix buses configurable for 5.1, 7.1 and beyond. An add-on Dynamics and Filter Package enables a flexible compressor/limiter, de-esser, expander, noise gate and similar functions to be made available on a per-channel basis.

VARIETY OF SYSTEM CONFIGURATIONS

As with its predecessors, the new CS3000 is highly modular and available in a number of frame sizes, depending on the number of I/Os you need, and the intended application(s); in many cases, it's possible for a facility to reconfigure the 3000's mainframe to accommodate changing session requirements. Building blocks are in the I/O Control Module, which provides control for four dual-path channels.

The basic CS3000D/P/B-2-40 comprises two frame sections and 40 faders—an input bank of 16 dual-channel signal paths to the left (four Control modules), a central DSC, plus eight more dual-signal path modules to the right (two Control modules). Modules can be moved to any position required. Larger systems accommodate either three or four frame sections, the maximum capable of handling

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a total of 104 simultaneous mono/stereo inputs. And for film/post applications, the CS3000 can be supplied in two- or three-person configurations. User prices range from $177,800 for a basic CS3000D/P/B-2-40 music/post/broadcast console, on up to approximately $500,000 for a large-format CS3000F-4-104, capable of handling complex mix-to-picture and film dubbing.

The two signal paths per channel module are each equipped with a 4-band EQ section and up to six mono/stereo input sources that can be assigned via the central DSC panel: two mic/line inputs (with independent gain control, phantom power, pad and phase reversal), plus four line-level inputs. The two EQs accessible per module can be used on two mono sources—one for the upper and one for the lower—or for a stereo input source to either the upper or lower. (Of course, then you're left with no EQ on the other fader. This should pose few problems if the sources are, for example, pre-mixed/pre-equalized stems or submixes being blended into a final stereo or multichannel surround mix.)

For TV and post sessions, the CS3000P packs a remarkable amount of power into a small amount of space. The 12 group/multitrack buses can be set up to be accessible from every fader, in addition to the main pair of stereo buses. In this way, a mix can be split into multiple stereo or LCRS stems via the bus outputs and returned to a master mix via the lower sections. Alternatively, during track layup, all fader sources can be used to access multitrack outputs.

Other standard channel features include up to three programmable insert points per module; four dynamically automated aux send controls accessible from a total of eight buses; stereo PFL and AFL, plus Kill Solo with Solo Safe; two programmable post-fader outputs; and two main stereo mix buses. DCA Group Mastering is also available from any fader.

HYPERSURROUND SOFTWARE

With a growing emphasis being placed on surround-sound and multichannel mixing for DVD and related 5.1-compatible formats, the CS3000 offers a powerful arsenal of routing/panning capabilities. The 3000's monitor section can handle simple hard-assign LCRS balances, while for more demanding surround/multistem monitoring, users might opt for the full-on PicMix monitor matrix, which incorporates calibrated monitor feeds and inserts for surround-sound encoders/decoders.

A setup screen allows multiformat buses—up to 48—available to the system from an optional Audio Cube to be divided between aux sends and surround-sound mix stems. The format for each panner, or stem, of the surround sound buses can then be selected from a list of standard formats, including mono, stereo, 3-channel, LCRS, 5.1 and 7.1 split-surround, plus custom configurations with up to 16 buses. For example, 16 available buses could be configured as four LCRS stems, or two 5.1 split surround and one LCRS stem, or two SDDS 7.1 split surround stems.

The really neat thing, however, is that these mix stems are available simultaneously; in this way separate dialog and M&E 5.1 stems for a DTS or Dolby Digital production can be created, let's say, at the same time as a totally separate LCRS balance. The applications are virtually limitless and, I would hazard, unmatched in a console within this price range.

The new HyperSurround software, which can be accessed from the DSC, also includes assignable left/right pan, front/back pan, front/back divergence, rear pan, rear divergence and a series of focus controls. An optional trackball panner (TrackPanner) simplifies precise positioning within multiformat buses if heavy spatial localization is desired.

To do full justice to HyperSurround would take more space than is available here (pardon the pun). In essence, the Focus function allows the localization of a sound cue to be either narrow or diffuse. One example comes to mind. Suppose you need to pan a sound source across, let's say, five front-channel buses for a film-format SDDS mix. While the left/right and front/back controls handle the sweep or movement of a sound, and divergence narrows or spreads its apparent location, the Focus control enables the "sharpness" of a pan to be altered. Now the sound can be targeted at a single loudspeaker location for, let's say, hard effects, or—as might be the case of a moving multi-element sound effect—to be more diffuse across the sound field, with no real precise source. The end result is a smooth and seamless transition, without the moving sound effects appearing to jump from

CS3000 SERIES SYSTEM PACKAGES

CS3000D: Supplied with 24 buses from the upper fader.

CS3000M: Designed for music applications, with 24 buses fed from the upper fader for 24/48-track sessions. Also includes dynamics on every channel, and in the main stereo bus inserts, plus an additional 12 assignable sends per channel.

CS3000P: For audio post applications requiring 12 buses per fader.

CS3000F: For film-dubbing applications, with various possibilities depending on the number of required stems.

CS3000B: For broadcasters with 12 mono mix-minus buses fed from every fader.

CS3000 Bus Options: Every system supplied with two main stereo mix buses with inserts and master faders located in the Master Control Module.

System Options:
- The Audio Cube, which provides a choice of up to 48 multiformat surround mix buses, or up to 48 aux sends, or up to 48 mix-minus feeds per fader.
- Dynamics/filter package, which provides up to two dynamics per channel and in main mix buses; plus up to two sets of digitally controlled filters per channel.
- CleaR displays, which provide eight-character I/O displays per fader.
- MX464 master expander with extended monitoring and 16 automatable GPI relays.
- TrackPanner module.
- PicMix monitor matrix, with up to 48x8 routing, plus joystick panner.

Richard Dodd

Photo: Peyton Hoge Studio: Vital Recordings

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speaker to speaker.

Under the planned MixView Version 3.1, all pan, divergence and focus controls will be dynamically automated against timecode. All in all, HyperSurround and its companion display screens provide a very powerful creative tool for film/post and multimedia applications. (I also understand a fader-flip function is promised under V3.1 software.)

For film re-recording sessions, the 12 group/multitrack buses can be made accessible from every fader; the addition of an Audio Cube provides every fader with multiformat buses, in addition to the dozen standard buses, that can enable up to eight independent 5.1 split surround stems, with full spatial panning from every fader.

SONIC PERFORMANCE: EQ AND DYNAMICS

As with the CS2000, every channel strip on the 3000 features a pair of 4-band digital control equalizers that can be dynamically automated or reset from a snapshot recall. All EQ automation moves are stored with fader, aux, send, stereo pan, snapshot and mute automation data in a Mix File. EQ control is via a bank of assignable controls and color screen located in the center of the console. Real-time frequency response curves can be displayed to show band interaction.

The low-mid sweeps from 41.2 Hz to 1.3 kHz; the high-mid from 659 Hz to 21.5 kHz—both with adjustable Q/bandwidth from 0.32 to 11.6. Completing the section are a lowpass shelving filter from 1.32 kHz to 21.1 kHz, and a highpass shelving filter from 20.6 Hz to 330 Hz. Up to 15 dB of adjustment is available per section. The two independent equalizers in each channel can be locked for stereo control or placed in series on a mono signal to create complex EQ characteristics.

I was impressed with the EQ section's flexibility and the ease with which profiles can be generated, stored and recalled as necessary, and even copied across multiple signal sources (stereo returns, for example, or a multichannel predub). And the CS3000's EQ sounds extremely musical; it has a warmth and definite spatial quality that often means you reach for far less savage curves than you might on a conventional board.

Used in conjunction with 3000's central assignable controls and color display, the digital control dynamics/filter processors are a major achievement—and a very powerful sonic tool. A great-looking graphical interface provides real-time display and control of system functions. Dynamics and filters can be added, eight at a time, up to a maximum of two per channel; they can be assigned to any input pre/post-EQ, or into the mix buses.

Dynamics functions include compressor, limiter, expander, gate and ducker, with various combinations. Variable knee control, frequency-dependent keys, and fast gate attack times with extended hold functions are also possible. Individual compressor, gate or filter elements can also be switched out. The filter section provides a variable 12dB/octave slope and, to augment the module's EQ, can be set to lowpass, highpass, bandpass or notch, switchable from the dynamics side chain to the primary signal path.

All in all, the dynamics/filter processor is very flexible and easy to use. Euphonix's unique graphical display shows the gain curve, as well as a visual representation of attack and release times by means of GainBall, a red icon that moves along the gain curve to illustrate the amount of gain reduction and the effects of the time constants.

For film and post applications in particular, the CS3000's ability to access up to a total of 48 multiformat buses plus 12 hard-assign buses from both the upper and lower faders adds unprecedented flexibility. These mix buses and accompanying pan functions can be arrayed to handle simultaneous mono, stereo, LCR, LCRS, Dolby Digital, DTS, HDTV, SDDS and custom formats. The bottom line is simple: The CS3000's multiformat panning enables identical imaging to be simultaneously maintained between different playback formats.

The combination of great-sounding, digitally controlled electronics, plus very powerful MixView automation of moving faders, EQ and optional dynamics functions, is a world-beater. Factor in the flexibility of HyperSurround, and we have an extensible console that can be used in a variety of multiformat sessions encountered on a day-to-day basis by post and film-dubbing houses, in addition to music studios being called upon to handle 5.1-channel mixes.

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CIRCLE AD NUMBER ON PRODUCT INFO CARD

New Audio Products For Film/Video Sound

SIGMA PCI CARD FOR DVD MPEG-2 PLAYBACK

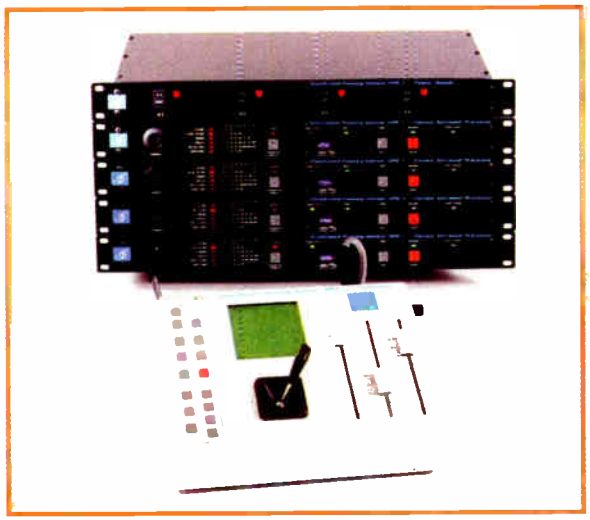
Sigma Designs (Fremont, CA) announces its REALmagic Hollywood DVD MPEG-2 playback card, a PCI-bus card that turns a 133MHz PC into a full-featured DVD player. Comprising a hardware card and Sigma Design's DVD-Station (DVD navigation and control software), REALmagic Hollywood plays DVD video, CD audio, video CD, CD-ROM and DVD-ROM formats and is compatible with all VGA graphics cards. The system also supports 5-channel Dolby Digital AC-3 surround playback and plays wide-screen, letterbox and pan-scan aspect ratios. Video may be viewed on the computer's monitor and simultaneously displayed on television. Retail begins at less than $500.

Circle 301 on Product Info Card

O'GARA PERSONAL SATELLITE TELEPHONE

The Compact-M Personal Satellite Telephone from The O'Gara Company (Fairfield Park, OH) is available for direct purchase at a new low price of $4,000. The laptop-sized satellite telephone transmitter/receiver operates from most 12V DC power sources. SmartCard technology ensures that only authorized users may operate the equipment, and multiple rechargeable TeleCards provide control and accountability. A remote antenna is optional.

Circle 302 on Product Info Card



OMNISOUND PANNING SYSTEM

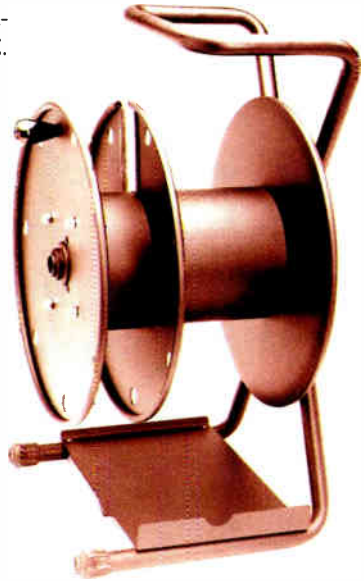
The OPS-1 OmniSound Panning System from OmniSound Corporation (San Rafael, CA) is a SMPTE-automated audio signal panner for audio post-production. The unit pans up to 16 sources simultaneously in any of the current surround formats, including L/R stereo, LCR, Dolby Stereo, Dolby Digital, DTS, AC-3, SDDS, 70mm, OmniMax, IMAX and IMAX PSE. Multiple formats can be mixed simultaneously; formats can be converted at the push of a button. All spatialization data can be archived to 3.5-inch floppy disks or to external MIDI devices. The OPS-1 remote controller features a joystick and three 100mm faders; a backlit LCD shows SMPTE timecode, surround format, joystick/ fader and pan positions.

Circle 303 on Product Info Card

HANNAY CABLE REEL

Designed for broadcast and pro audio applications is Hannay Reels' (Westerlo, NY) AVX-100 cable reel, which includes a tray to hold a stage box. A slotted divider-disc design allows connected pigtails to be safely stored alongside snake cable; other features include a carry handle and an adjustable friction brake.

Circle 304 on Product Info Card



AMS NEVE AUDIOFILE PROLOG

The AMS Neve (New York, NY) AudioFile Prolog is a low-priced, 16-bit digital audio editing system (usable with 24-bit AudioFiles), which may be integrated within a Logic console. Offering up to 24 virtual tracks, the system may be configured with up to eight inputs and 16 outputs. Options include analog, AES/EBU, MADI and TDIF I/O, and sample rate conversion. A 2.1GB hard disk is standard, providing six audio track hours of recording; removable media are available.

Circle 305 on Product Info Card

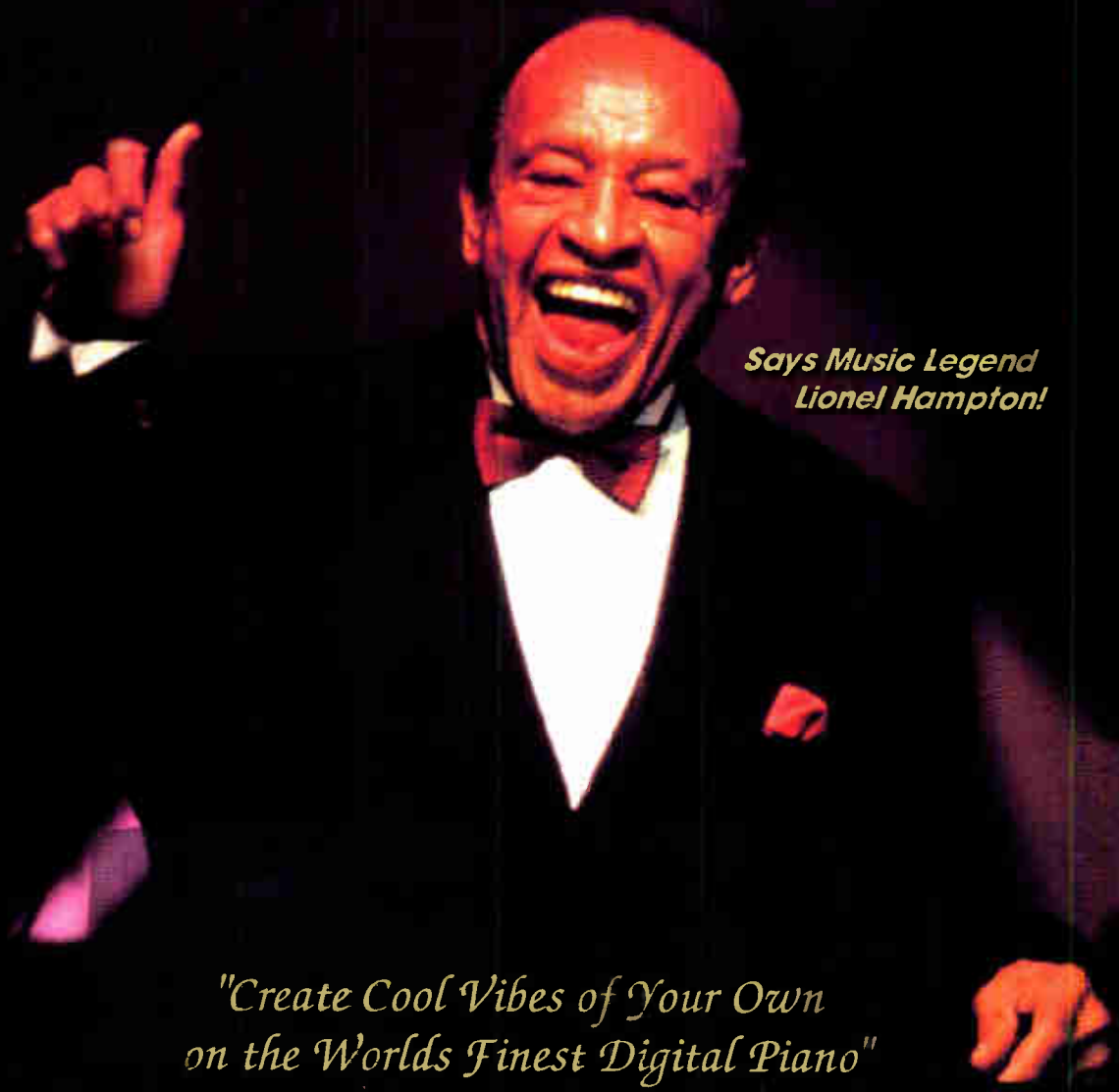
MIDIMAN SYNCMAN PRO

The Syncman Pro from MIDIman (Arcadia, CA) combines the features of the MIDIman Syncman, Syncman Plus and SMPTE TimeWindows products in a one-rackspace chassis. All types of MIDI sync are supported, including SMPTE to MTC, Direct Lock (for Performer), SMPTE to Song-Pointer and the new Spot-Lock™ video sync function. Tempo maps can be created manually or automatically from MIDI notes or audio "taps." Other features include jam sync, flywheeling, SMPTE read/write/regenerate, and a built-in 0.6-inch-high SMPTE locator display. Syncman Pro can record and play back up to 768 MIDI Foley "hits" and auto punches.

Circle 306 on Product Info Card

"Kurzweil Has Great Vibes"

and hundreds of other Hot sounds!



Says Music Legend Lionel Hampton!

"Create Cool Vibes of Your Own on the Worlds Finest Digital Piano"

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Mark 12

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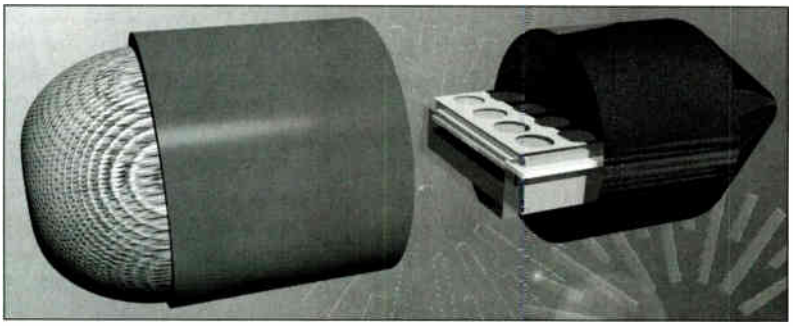
Young Chang (Piano) Canda Corp., 395 Cochrane Drive, Markham, Ontario L3R 9R5 Tel: 905-513-6240

CIRCLE AD NUMBER ON PRODUCT INFO CARD

BRÜEL & KJAER DPA 4060 SERIES

MINIATURE MICROPHONES



The Brüel & Kjaer DPA 4060 miniature microphone is one of those rare audio products that can change the way one thinks about microphone capabilities, technique and the microphone's relationship to the entire audio chain. The DPA 4060 is a condenser mic with a 5.4mm gold diaphragm and a backplate permanently prepolarized at 400 volts. This is made possible by a proprietary process that B&K uses to make Teflon perfectly smooth under extreme conditions. Twin vents for sweat and moisture protection enable the microphone to work perfectly in extreme humidity. The DPA 4060 retails at $400.

There are three versions available, each exhibiting different dynamic characteristics. The first and most versatile is the DPA 4060, which can handle 135 dB SPL before clipping. One percent harmonic distortion appears at 123 dB, and the self noise of the capsule is 23 dBa. This yields a dynamic range with 1% harmonic distortion of 100 dB and 12 more dB before clipping. The frequency response (with equalization grid removed) is flat ±2 dB from 20 to 20k Hz.

The 4060 is supplied with two equalization grids—one short and one long—for different body placement applications. Equalization is accomplished acoustically, not electronically, minimizing phase shift. The short grid effects a soft 3dB boost from 8 to 20 kHz, suitable for wig-mounted installation. The long protection grid places a 10dB boost centered at 12 kHz, a curve designed for standard torso body placement and featuring enough high-frequency punch to cut through a lightweight garment.

The 4060 requires an operational voltage of 7 to 9 VDC and powers nicely from most bodypacks without modification, and via a simple r/c network it can be powered from 48-volt phantom or T-power. The 4060's high 20 mV/Pa sensitivity matches its output level nicely to the input stage of most transmitter body packs; the stiff front-end voltage makes the entire transmit/compander/receive chain work very efficiently. The input stage of the transmitter may need adjustment to support this higher-than-normal input voltage. If the gain is too high, another model, the DPA 4061, yields 6 mV/Pa. In extreme SPL conditions—140 to 155 dB—the model DPA 4062 produces 1 mV/Pa.

My own personal test for any microphone is a grand piano; I like the 9-foot Steinway Hamburg D and the 10-foot Baldwin SD-10. The piano's eight-octave range allows for a performance evaluation across that many frequencies in a single test. I use a closed lid with the mics placed directly over the hammers. I have the player perform single tones, octal shifts, arpeggios, and glissandos, then percussive attacks in all ranges to check transient response. The DPA 4060 passed all my piano tests, and I have since used it live onstage,

BY GARY F. BALDASSARI

which is one of the primary uses for which the DPA 4060 Series was designed. So, we've assembled here the results of five more field tests, conducted on-location in live performance/theatrical and broadcast situations, by a variety of top engineers.

IN THE FIELD

Pearlie Hammers is a music and television sound mixer whose career spans three decades. This multiple Emmy Award winner has mixed for Dire Straits, Chick Corea and many others. Hammers writes:

"I was introduced to Brüel & Kjaer microphones in 1990 while working in Copenhagen. I heard about the DPA 4060s and anxiously awaited my chance to use them. Being one of the first television mixers in the U.S. to use the full line of B&Ks on sports broadcasts, I immediately decided to use the DPA 4060 for an ESPN show, 'Up Close.' The show consisted of three days of interviews with top NFL quarterbacks held at the ESPN Sports Club at the Walt Disney World Resort in Orlando, Fla.

"After a site survey by John deRussy and his Orlando crew, I was informed that we faced a series of acoustical problems inside the club. It is a cavernous room, with highly reflective surfaces, and [the job would require] sound reinforcement for a live audience. My past experience with studio B&Ks —flat down to 10 Hz—has taught me to roll the bottom off at 100 Hz for television. This is not necessary with the DPA 4060 due to its prefiltered bottom end. I used very little EQ—a slight boost between 3 and 4 kHz for vocal punch. Every visitor to my mix booth commented on the rich, warm quality of the voices in the mix. Our control room monitors were Tannoy System 600s. Inside the club, P.A. mixer John deRussy had convinced ESPN management to carpet one potentially bad spot on the stage.

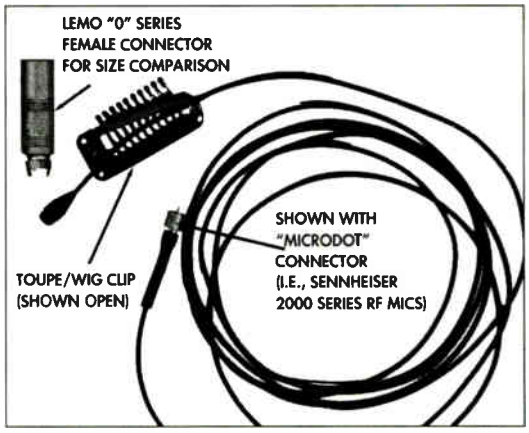
This acoustically damped a plaguing ring. From that point, he used a Sabine feedback eliminator, a parametric equalizer and a ⅓-octave analyzer to make the JBL house system sound rock-solid. The result was more than enough gain before feedback, using the omni DPA 4060.

"P.A. mix feedback problems during a live television broadcast can drive a TV mixer to heavy doses of alcohol, but the prototype DPA 4060 was excellent in terms of room/P.A. rejection. With two DPA 4060s on both talent and guest and in close proximity to each other, normal over-mixing technique goes out the window and a good simple mix emerges. Typical gain riding due to talent movement was not necessary."

Mike Ward of Masque Sound and Recording used a DPA 4060 at Super Bowl XXXI in January 1997. Ward writes: "My use of the DPA 4060 for Masque Sound and Recording has been in the industrial/corporate sector of show business. I have placed it along with my regular podium mic as an invisible backup and found the quality to be superior enough to be used as the primary podium mic, both for P.A. and recording purposes. The sound of the DPA 4060 is great. When used in conjunction with any other microphone, the sonic comparison is best described as: a clear day vs. a cloudy day. The smooth frequency range opens up the source and enables the audio engineer to hear it in its entirety. It makes equalization a snap."

Engineer **Fred Aldous**' career in television spans three decades and has garnered numerous Emmy Awards. Aldous writes: "I installed two DPA 4060 miniature microphones on the 'swish' position for the NBA Quarter Finals, the game series between the Utah Jazz and the L.A. Lakers. The production truck was ATE Unit A, which contains a Soundcraft Europa console and a good amount of quality processing. We used a 48-volt adapted version placed on the backboard net, and signal was sent back to the truck without a line driver on over 250 feet of cable. My initial impression was that this little mic was very smooth-sounding and had a lot of gain, which allowed me to pad the input of the console down and reap the benefits of reduced microphone preamp gain. Operationally, it handled high impact and did not distort or over-resonate on shots that firmly hit the rim, even when Shaquille O'Neal did his patented attack dunk! I found the sound pick-up to be very tight-sounding, even with a crowd sound measured at 118 dB SPL (A-weighted). The net 'swish' sound was very clear and required very little equalization.

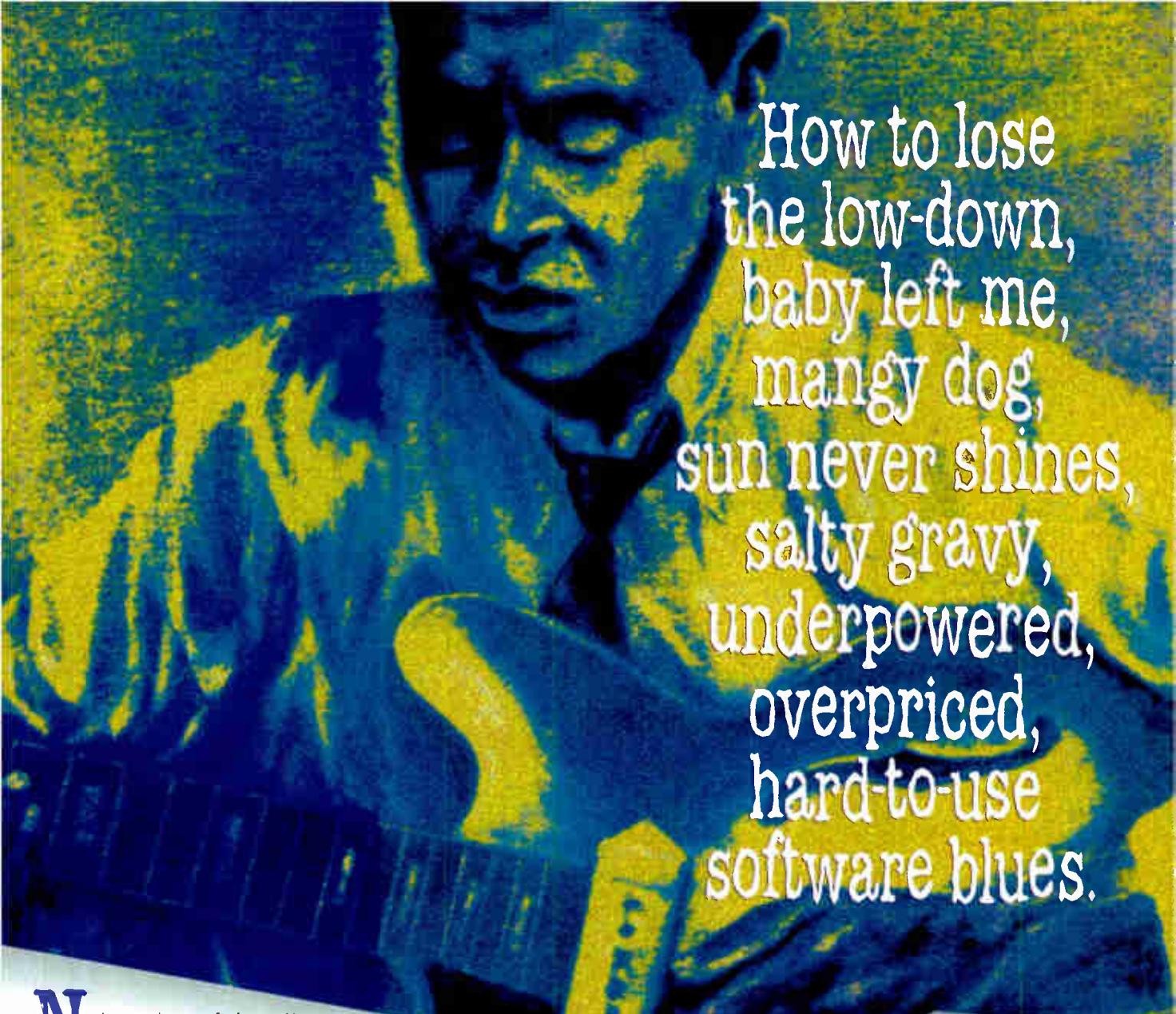
During the 1996 political campaign, American Audio Visual was retained by both political parties for speeches by President Clinton and Bob Dole in the Southeastern United States. **Mark Spinicelli** received four DPA 4060 miniature microphones for evaluation and also tested a new podium mic technique. "During President Clinton's stop at Valencia Community College, in Florida, we used the now idle third wire set on the Presidential podium to do a simple test of the DPA 4060. We laid this miniature microphone on the podium (at that time there were no attachments available) and returned it to the FOH console. The immediate results were a great deal of gain-before-feedback, in fact more gain than the cardioid currently in use, and immunity to induced mechanical shock.



"Vice President Gore's stop at Sarasota International Airport offered an opportunity to evaluate a leading-edge podium version containing two DPA 4060 elements in a single tube, a design prototyped by Nils Warren. We installed it on the Vice President's lectern and tested it against the P.A. system, which consisted of eight EV DeltaMax cabinets with Crest amps. The gain before feedback was ample, and the mic also held up to a constant 20mph wind and light rain with only a small windscreen for protection." Of course, this is not a recommended application; protection against direct downpours should be avoided.

Nils Warren is a film, field and ENG

—CONTINUED ON PAGE 229



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CIRCLE AO NUMBER ON PRODUCT INFO CARD

JOEMEEK SC2

STEREO COMPRESSOR

I guess I'm now an official Gear Slut®. Not only is my basement filled to its sound absorptive ceiling with all kinds of audio equipment, I also spend every last dollar on the latest stuff I can afford—and now I'm even writing about gear. (You know that old Roger Nichols joke: "Don't tell my wife that I'm going to an audio convention—she thinks I'm having an affair!") This is my first product review, and I have to admit I'm not the type to analyze the impact of .0004% second-order distortion at 29 kHz. I'm a working mixer; the gear I love has to make my tracks sound great, fast, and this unit qualifies easily. I purchased a Joemeek six months ago, and it's been used on every mix I've done since then. If I had four I'd use them all.

The Joemeek SC2 compressor ($2,199.99) is a two-rackspace, 2-in, 2-out box that rocks. Even before it's plugged in, the super-cool retro green finish elicits oohs and ahhs from the peanut gallery. Everybody notices it. And after it's inserted, the engineers start oohing, too.

When I started out as an engineer, there was a running joke going around. Every console seemed to have a few extra, unused buttons, and invariably they were labeled Producer Eject, Funky and Balls. The Joemeek compressor, quite simply, has balls. Almost every sound run through it has more impact, gets more in your face and makes you wish you had more of them to use. In fact, Anne Kadrovich, operations manager of Larrabee North, tells me that each morning she has to break up fights in the hall between engineers vying to get the Joemeeks that day.

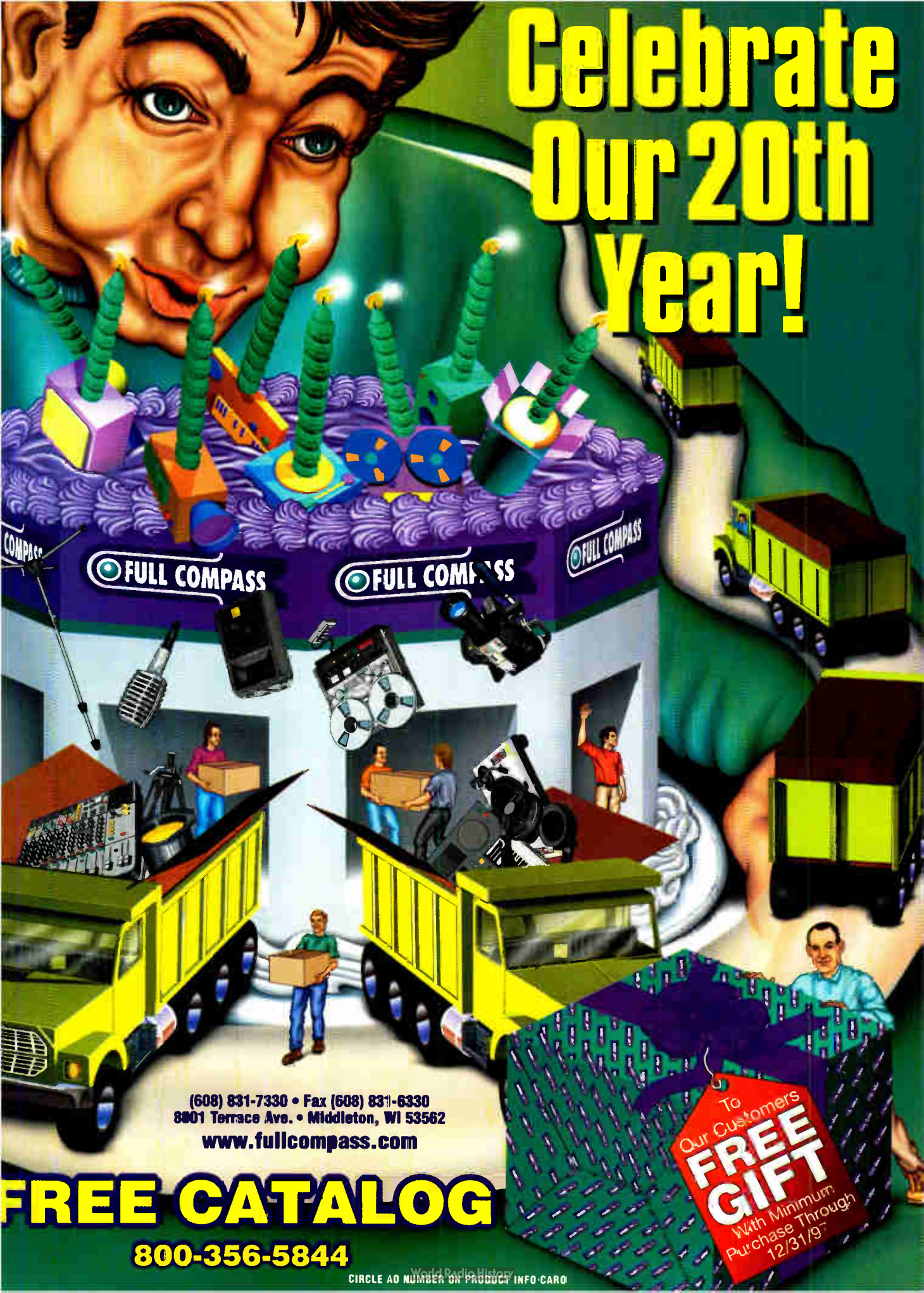
Okay, let's talk about the actual unit. On the back are sets of XLR and ¼-inch ins and outs for flexibility, and a gain pot that goes to 11—*a la* Spinal Tap. The unit works either balanced or unbalanced, so it can interface easily in either pro or semi-pro installations. On the front panel are five knobs, a VU meter and an in/out switch. The SC2 doesn't have the usual threshold or ratio knobs, instead having three pots labeled Input Gain, Slope and Compression. Input Gain simply adds "more"—a useful move for any box—while Slope is a four-position knob that is designed to emulate the feel of the famed Fairchild compressor. The Compression knob adds more compression by varying the threshold. The knobs all interact depending on what's going through, but it's very easy to get a great sound. There are also attack and release knobs, and they function just as you would expect. If all this sounds a little basic, it is. Just stick this box across almost any signal and prepare to be blown away.

BY KEN KESSIE

I've used the Joemeek on drums, guitars, basses, vocals, even on stereo buses. Guitars and bass are great...in your face, detailed—controlled without feeling squished. The Joemeek has the ability to turn the wimpiest guitar into something powerful...perfect for any alternative rock band. Basses are really enhanced—this is one area where the Joemeek's lack of noise really shows. The unit is also fantastic on drum overheads—I've used it to tame sloppy cymbal tracks into perfectly grooving leveled masterpieces. (This is where the attack and release controls are really useful.) And the Joemeek can definitely help vocals to stay fat while fitting into their proper place in the track. On one song the Meek turned a useless bass drum into a piece of savage beauty, and on another I was able to remaster a thin stereo track into the lead-off cut for a CD using the Joemeek and a pair of Pultecs across the stereo bus. Retro heaven!!! Look, everybody who's bought one of these beauties loves it. Don't be the last on your block. ■

Joemeek, 23773 Madison St., Torrance, CA 90505. Phone 310/373-9129; fax 310/373-4714.

Ken Kessie is a Los Angeles-based producer/engineer. When he isn't in the studio, he's checking out the latest hyper-rides at various amusement parks.



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CIRCLE AD NUMBER ON PRODUCT INFO CARD

SOUNDCRAFT GHOST

ANALOG 8-BUS MIXING CONSOLE

The Soundcraft Ghost is primarily intended for multitrack recording/music production in project studios or small commercial facilities. There are two versions of the console, the Ghost and Ghost LE, which are identical, except that the LE model does not include CPU control or automation features (see sidebar). Both models come in 24-channel and 32-channel frame sizes; a 24-channel expander module (shown below) is also available.

Ghost is an analog 8-bus console. Its in-line format offers two active inputs for each channel, referred to as Channel and Mix B. Panasonic 100mm long-throw faders are used throughout. Ghost's most noticeable feature is the CPU section in the center of the console. Construction is completely modular inside, but the bottom cover must be removed to inspect or take out a channel strip. Separate vertical circuit boards are used for each channel, instead of one horizontal circuit board for every 8 channels.

The console is supplied with a fan-cooled, rackmount power supply with a heavy-duty 20-foot cable and comes with a one-year parts and labor warranty.

CONNECTIONS

All audio connections are on the top rear panel. The optional meter bridge screens the cables from view, yet still allows access. All jack connectors are ¼inch; mic inputs use XLR connectors. The jack input receptacles are solid metal and are mounted to the frame, not the circuit board. The rear bottom panel houses the PS connector, MIDI In/Out/Thru jacks, SMPTE in/out jacks, Sony 9-pin connector and C3 link and expander connectors for the 24-channel expander module.

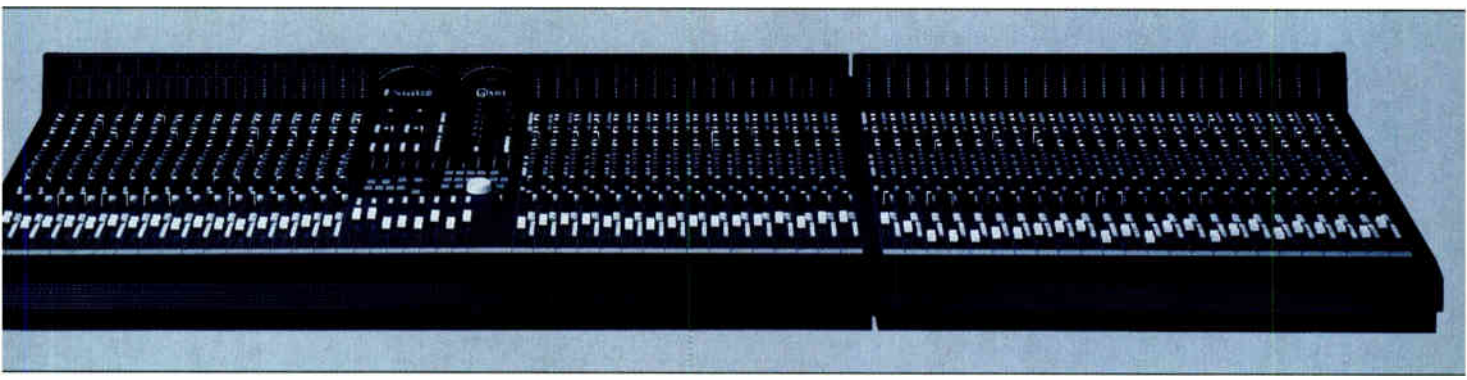
Each channel offers mic input, line input, insert, Mix B/tape return and direct/tape send jack connections. Mix B inputs are +4 but can be individually changed to -10 by clipping two resistors inside the console. Each mic input has a 48V phantom power button, and each dir/tape send output has a dir/Grp X button (where X designates a group bus from 1 to 8). It would be more practical if these two buttons were on the channel strip instead of the rear panel.

The rear panel master section contains the meter bridge connection and the following jack connections: individual jacks for eight group outputs, eight group inserts and six aux sends, and L/R stereo jacks for two aux sends, four effects returns, Main Mix outputs, Main Mix inserts, Mix B outputs, Control Room outputs, ALT C/Room outputs, Studio A outputs, Studio B/Phones outputs, 2-track A inputs and 2-track B inputs. A headphone jack is located beneath the armrest on the front of the console. The +4 Group outputs can be changed to -10 via internal jumpers.

BY DOMINICK J. FONTANA

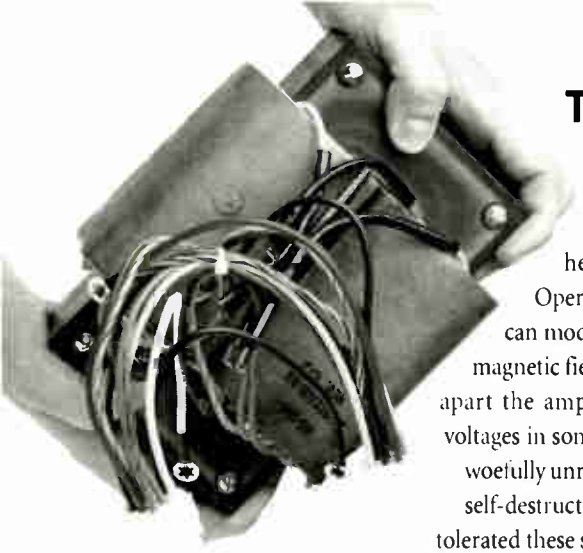
INPUT CHANNEL STRIP

Ghost probably offers more features than any other console in its price range. All 32 channels are identical, and each input section offers mic/line and phase-reverse switches and switchable lowcut filter (100 Hz, 18 dB/octave). An input sensitivity pot controls the channel preamp gain. The Mix B (Tape Return) input has a Tape Trim pot adjustable ±15 dB. Normally, the channel input is routed to the main channel fader for assignment to the groups or L/R mix; the Mix B input appears on a rotary fader and goes to the Mix B stereo bus. The Reverse switch (sometimes called fader flip) reverses this routing.



The channel insert point is pre-EQ. Ghost's 4-band EQ has two high/low shelving bands (12 kHz and 60 Hz, respectively, which can be switched into the Mix B path), plus two bands of fully parametric mid EQ. All gain ranges are ±15 dB. The Hi-Mid and Lo-Mid bands also have pots for center frequency and Q. The Hi-Mid is sweepable from 400 to 20k Hz; the Lo-Mid sweeps from 25 to 1.5k Hz. Q is variable from 0.7 to 6.0. Each channel has an EQ bypass switch.

There are six mono sends (four usable at once) and two stereo sends. Auxes 1 and 2 are mono



THE PAST...

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

...AND THE FUTURE

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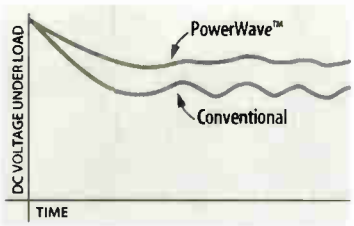

PowerWave sags less under load and has less AC ripple

Output Power in Watts per Channel

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PowerLight 1.0	200	325	500
PowerLight 1.4	300	500	700
PowerLight 1.8	400	650	900
PowerLight 2.0^{HV}	650	1000	N/A
PowerLight 3.4	725	1150	1700
PowerLight 4.0	900	1400	2000

IN THE END, IT'S THE PEOPLE

No matter how good the gear, it's people that make the difference. We know your performance depends upon our peformance. When you buy a product from QSC you buy more than just a piece of equipment, you get our support and involvement. New PowerLight models and features have come from working directly with people like you. If our standard models don't meet your needs, our Technical Services Group can provide you with custom modifications. Need a question answered or got a problem? Get on the phone or the Web. It's like having your own engineering consulting group.

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

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Mix *Magazine*

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Pro Audio Review *Magazine*

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Southard Audio (Mt. Crawford, VA)

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channel sends, normally post-fader, but they can be switched pre-fader, post-EQ. Auxes 3 and 4 are post-fader mono sends and can be switched between the channel and Mix B inputs. A 5-6 switch routes the Aux 3-4 sends to the Aux 5-6 outs on the rear panel. Aux 7 is a stereo post-fader send for the channel, and Aux 8 is a stereo post-fader send for Mix B.

The Mix B output section has a pan pot, rotary level control, Mute switch, and a PFL (pre-fader listen) switch. A Source switch selects the pre-fader channel signal instead of the Mix B input, enabling Mix B to function either as a second input for each channel or as an extra pre-fade stereo send for the channel. From here, the signal is sent to the Mix B master section and then to the Mix B L/R outputs on the rear panel.

The channel output section has a long-throw fader, panpot, mute and solo switches, signal LED, peak LED, and assignment switches for the L/R buses and groups. The signal LED starts glowing about -20 dB below nominal level and glows brighter as the signal gets stronger. The peak LED lights at 6 dB below clipping and monitors four points in the channel. The channel signal will appear at the rear panel dir/tape send output if the dir/Grp X switch is in the dir position. Below the faders is a large scribble strip.

GROUP OUTPUTS

Each of the eight group outs has an insert point. The section consists of eight group master faders, eight group output meters, eight AFL (after-fader-listen) switches, and 16 assignment switches to send each group to the L/R mix bus or assign odd groups to the L mix bus and even groups to the R mix bus.

MASTER SECTION

The Master section has four stereo effects returns with level and balance pots, PFL switches, and assignment switches for the L/R mix or any of the eight groups. Ghost offers two stereo Studio Foldback outs for studio monitoring, Studio A and Studio B/Phones, with switches for monitoring the Aux 1-2, Mix B, and/or the control room signal. There's also a level pot and AFL switch. When monitoring the control room signal, PFL/AFL signals will not appear at the studio output.

The oscillator includes a level pot, 1k/10k Hz switch, and a To Tape button. The Talkback section has a built-in

GHOST MUTES AND AUTOMATION

Ghost's CPU section offers four functions: MIDI Machine Control (MMC) of tape transports, hard disk recorders and MIDI sequencers; timecode reader/generator; mute groups and snapshots; and MIDI controller faders.

The CPU section in the center of the Ghost has 23 buttons, assorted LEDs, a jog/shuttle wheel and a 9-digit LED display. All settings and 128 mute snapshots are stored in internal flash RAM and are retained when the power is off. You can also save or load all snapshots via MIDI Sysex bulk dump. Finally, you can update Ghost's internal software by connecting a PC to the console's Sony 9-Pin port and using a 3.5-inch software disk from Soundcraft.

For machine control, Ghost currently supports the following machines: Tascam DA-88; Alesis ADAT and BRC; Fostex RD-8, G Series and R Series; Akai DR4; Sony 9-Pin; and various generic MMC, LTC and MTC master/slave modes. Ghost provides all standard transport controls, track arming/disarming, four locate points, loop mode and jog/shuttle, but not all features are supported on all machines. I tried its MMC features with a Tascam DA-88. (Note that the Tascam SY-88 sync card is required for MMC to work.)

You can use the DA-88 either in MMC mode by using ABS timecode on a formatted tape, or in LTC mode by using SMPTE TC striped on a formatted tape. I used Ghost's transport controls to operate all the transport controls on the DA-88, including Record. I was also able to place any of the DA-88's tracks into or out of Record Ready mode. Ghost supports arming/disarming of up to 48 tracks; however, the DA-88 only allows track arming/disarming on the master machine. Setting up four locate points and looping between points 1 and 4 worked flawlessly. Unfortunately, I couldn't use the jog/shuttle wheel because the current DA-88 software doesn't support it. Ghost's timecode display followed the DA-88's timecode flawlessly, even in fast wind modes.

Ghost also includes a SMPTE timecode reader/generator for striping tapes or providing a master timing reference. By reading external timecode, Ghost can recall its mute snapshots at various points in the music. It generates and reads both LTC and MTC at 24, 25, 30 non drop and 30 drop fps.

Ghost allows you to control mutes in several ways. The easiest way is via the four mute groups. Any console mute configuration can be assigned to a mute group button to instantly recall your mute settings.

The console's 128 mute snapshots afford more powerful mute automation. Store any combination of channel and Mix B mutes into any of the 128 snapshots. Then recall them: manually from the Ghost, by recalling the snapshot number; automatically, by using incoming or internally generated timecode; or via MIDI, by sending a program change message to the Ghost.

Ghost allows dynamic mute automation, in conjunction with an external sequencer. Whenever mutes are pressed, the CPU generates MIDI note-on messages representing each channel or Mix B mute. During a mix, start your sequencer in Record mode and then perform your mute moves, which are recorded into the sequencer. On playback, the sequencer sends the MIDI data to the CPU, which automatically triggers the mute moves.

Finally, Ghost also features four MIDI Controller Faders. This unique feature allows sending MIDI continuous controller information from the console using faders. However, Group faders 1-4 double as the MIDI faders, so you can't use them for audio and MIDI at the same time. Each fader transmits any of 128 different types of controller information on any MIDI channel. These configurations can be stored in snapshot memory. You can't automate the MIDI faders; they only operate in real time. Potential uses for the MIDI faders include mixing levels on a MIDI sequencer, changing parameters of outboard gear, or remotely controlling lighting, synth or sampler parameters in real time.

The CPU section of the Ghost is well-implemented, easy to use and extremely useful. Not only does it provide convenience features, but it helps you create better recordings. It makes the excellent Ghost mixing console an even better value.

—Dominick J. Fontana

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electret mic, level pot, and routing switches for Aux 1-2, Studio and To Tape. There are eight Auxiliary master output pots; each has an AFL switch.

A solo section LED lights whenever any PFL, AFL or solo is depressed, and there's a pot to control the level of PFL/AFL signals sent to the control room. When the solo-in-place (SIP) switch is off, the channel solo switches function as PFLs. When SIP is on, pressing a channel solo switch mutes all channels that don't have their solo switches selected.

The Control Room monitor section allows monitoring Mix A, Mix B, 2-track A, and/or 2-track B. Any signal sent to the control room outs is also routed to the headphone jack; a single pot controls the level of both. A mono check button sums the output to mono, and an ALT button switches the output to the ALT L/R outputs for using a second power amp/monitor combination.

The Mix B output master section has a level pot and a Mix B To Mix button that sends the stereo Mix B signal to the main L/R buses, which doubles the number of inputs at mixdown. The Mix B signal always appears at the Mix B outputs, even when also sent to the main L/R mix. There is one stereo long-throw master fader (unity gain at top of travel) for the Main Mix L/R buses.

METERING

The console has eight LED peak meters for the group outs and two for the L/R metering of the control room/solo source. A snap to install, the optional meter bridge ($895/24-ch, $995/32-ch) includes 32 channels of vertical LED peak metering for the channel inputs or tape returns (jumper selectable), as well as L/R LED metering. The meter bridge L/R meters are shaped in an arc to resemble VU meters, but display peak levels. All meters are 12-step LED type, except for the L/R meter bridge, which has a finer resolution, with 20 LEDs in 2dB increments.

The metering is easy to view and extremely accurate. Using a test tone, I confirmed a direct correlation between the controls and their effect on the meters. Such precise metering is not common on other mixers in this price range.

The Ghost's meter bridge displays the tape returns (Mix B) by default. There is no way to display the main channel inputs with this configuration. I prefer input metering and selected this by moving a jumper (no soldering) inside the console for each of the 32

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channels. As the channel inputs are metered after the Reverse switch, this offers the best of both worlds. When tracking and overdubbing, the meter bridge displays channel inputs. Press the Reverse switch on mixdown and the meters display tape return levels.

SOUND QUALITY

The sound quality of the Ghost was consistently superb. The mic preamps were extremely quiet, with a transparent, accurate quality. Using condenser mics with the Ghost, every nuance and subtlety of the source sound was preserved.

Ghost is also a very quiet console. With no source signals applied and all channel faders turned up to their nominal levels, there was just a trace of hiss. It wasn't until more than 16 faders were turned up to +10 (not the normal way I mix) that the noise increased. Even with all 32 faders turned up, the noise was still acceptable. The same was true for the Mix B signal path.

This console has a wide dynamic range. Very strong signals never overloaded it, and very quiet signals could have their gain increased with no signs of noise or distortion. The headroom was also quite impressive. In fact, there was no noise or distortion even with all faders turned up fully, the input sensitivity turned up about 80% and a maximum reading of +15 dB on the meters—even then, the Peak LED was not lit. It was necessary to turn the faders all the way up and increase the input sensitivity to between 90% and 100% before the Ghost would start to clip.

The console's frequency response and crosstalk were also impressive. Switches were generally silent, with no annoying pops when pressed, except for the EQ in/out switch, which made a very slight pop when engaged.

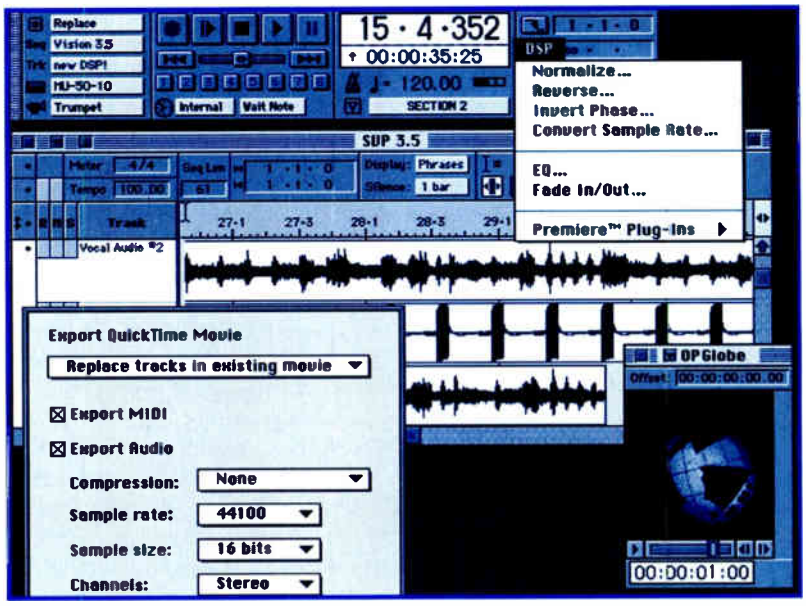
Ghost's EQ really shines. Some consoles' EQ is very musical, while others are very accurate, but the Ghost gives you the best of both worlds. The Hi EQ is very musical at 12 kHz, imparting a sense of air to the sound without sounding shrill. The Low EQ at 60 Hz is good for removing AC hum or solidifying the bottom end. The two Mids have an overlapping region from 400 to 1.5k Hz, which is very useful, and together they cover the entire audible frequency spectrum from 25 to 20k Hz. The continuously variable Q of both mid bands allowed me to single out particular instruments in a mix for corrective mea-

—CONTINUED ON PAGE 227

OPCODE STUDIO VISION PRO 3.5

MIDI-INTEGRATED DIGITAL AUDIO RECORDING SYSTEM

Studio Vision Pro Version 3.5 is Opcode Systems' latest facelift of its powerful integrated MIDI and digital audio recording system for the Macintosh. While it's not a complete software overhaul, SVP 3.5 includes several key enhancements and additional features that professional users—and Digidesign TDM users in particular—are sure to appreciate.



Features in Studio Vision Pro 3.5 include enhanced QuickTime integration, new DSP features and full TDM support.

SYSTEM REQUIREMENTS

Minimum requirements for using Studio Vision Pro 3.5 are Mac 68030 or higher, System 7 or higher, 8 MB of RAM for the application, and a large hard disk. In addition, an audio card is required for non-Power Macs. Opcode's recommended configuration is Power Macintosh with System 7 or higher, 12 MB of RAM for the application, about 300K RAM per DSP plug-in, Level 2 cache and a large hard disk. Of course, a MIDI interface and MIDI input/output device are also required. Studio Vision 3.5 is compatible with the following audio systems: Digidesign (DAE, NuBus and PCI) Pro Tools III and all compatible TDM plug-ins, Pro Tools Project, Session 8, Sound Tools II, Pro Tools 442, Audiomedia LC/II/III; and Yamaha CBX-D3, CBX-D5 (with updated ROMs from Yamaha). For this review, I used a Power Mac 8100av with 48 MB of RAM, System 7.6 and two different audio systems—Digidesign's 442 I/O and an STII card, and a core TDM Pro Tools III system with an 888 I/O.

The Deluxe CD Edition of Studio Vision Pro includes a set of well-written manuals; a 116-page Version 3.5 Manual Supplement; key disk; and CD-ROM containing the Studio Vision Pro 3.51 Installer (which includes OMS 2.3.2) and Galaxy 2.1 Installer, as well as a host of other goodies, including plug-ins from Waves and Arboretum Systems, demos of other software products, and interactive tours of SVPro and OMS.

PERFORMANCE ENHANCEMENTS

Users will see greatly improved computation times, as Vision now runs native on Power PCs. For example, Version 3.0.4 took 60 seconds to convert a 5.5-second mono 44.1kHz soundfile to 48 kHz on an 8100 machine. The new version took five seconds. In particular, those DSP commands that use floating-point computation—such as sample rate conversion, EQ and audio-to-MIDI—will see the biggest improvement. Most other DSP functions are also faster than in Version 3.0. One exception is the Mix command, now with a Prevent Clipping option, which involves additional computation and takes more time. If you disable Prevent Clipping when you mix, the mix time is comparable to that of previous versions.

Other new features involve improved flexibility and user friendliness. For example, a Global Instrument Solo Indicator on the control bar lets you know if tracks have been solo'd in any of several potentially hidden locations, such as the MIDI Instruments window. Clicking on a highlighted Global Instrument Solo indicator automatically brings up the window(s) that contain solo'd instruments. Another enhancement is the ability to zoom vertically in the Tracks window. You can now view audio and MIDI tracks at one of four vertical zoom levels.

BY PAUL POTYEN

AUDIO ENHANCEMENTS

Some of the most exciting improvements are in the area of audio and DSP. Up to 64 audio instruments are now supported. (This feature is most important to users who have large Pro Tools systems; the number of available voices is still dependent on your hardware.) And speaking of Pro Tools systems, Digidesign's TDM technology is fully supported in this revision. (See sidebar: "Studio Vision Pro 3.5 and TDM.") Previously, canceling a waveform build would cancel the building of all waveforms in your sequence. Now

you can individually cancel waveform builds, vastly improving your efficiency and flexibility when working with many audio tracks.

Studio Vision 3.5 now supports Adobe Premiere plug-ins, and as mentioned previously, several are included with the Deluxe CD-ROM. The good news is that these plug-ins are hardware-independent, relying on the Mac CPU for processing. The bad news is that, unlike Digidesign TDM plug-ins, they don't function in real time; rather, they create a new file with the (hopefully) desired effect. However, you can preview as much as ten seconds (depending on your RAM) of a selected audio event, which automatically loops. Preview mode uses Apple's Sound Manager to preview your DSP effect, so if you are using other audio hardware, make sure you either have your Mac audio output routed to your console, or alternatively, use Digidesign's Sound Drivers extension to route the Sound Manager's output to your audio hardware. When you have adjusted your effect, Studio Vision writes a new file, which nondestructively replaces the original file in your sequence. While it's not the ultimate solution for many, this technique brings some powerful DSP tools to a whole new echelon of users. We looked at Waves' AudioTrack (a chopped-down version of its Q10 TDM plug-in) and EZVerb (a useful, if not very flexible digital reverb based on its TrueVerb TDM plug-in), as well as H-MMP Echo and LowPass plug-ins from Arboretum Systems.

A new Formant Shift command in the DSP menu allows you to adjust a sound file's resonant characteristics without altering pitch—a useful feature for altering the listener's perception of a singer's age, sex or personality, for example. We used it to modify vocals and found it to be flexible (offering independent, precise control over both pitch and formant), and the resulting audio files were of excellent quality.

Opcode has improved the synchronization between MIDI and digital audio tracks in the new version. The manual also includes an elaborate but well-organized procedure for fine-tuning your particular computer to achieve the best synchronization results.

IMPORTING/EXPORTING QUICKTIME AND OTHER FORMATS

Opcode's MoviePlayer application is now seamlessly integrated into Studio Vision Pro 3.5. Open any QuickTime movie from the File>Open menu; then

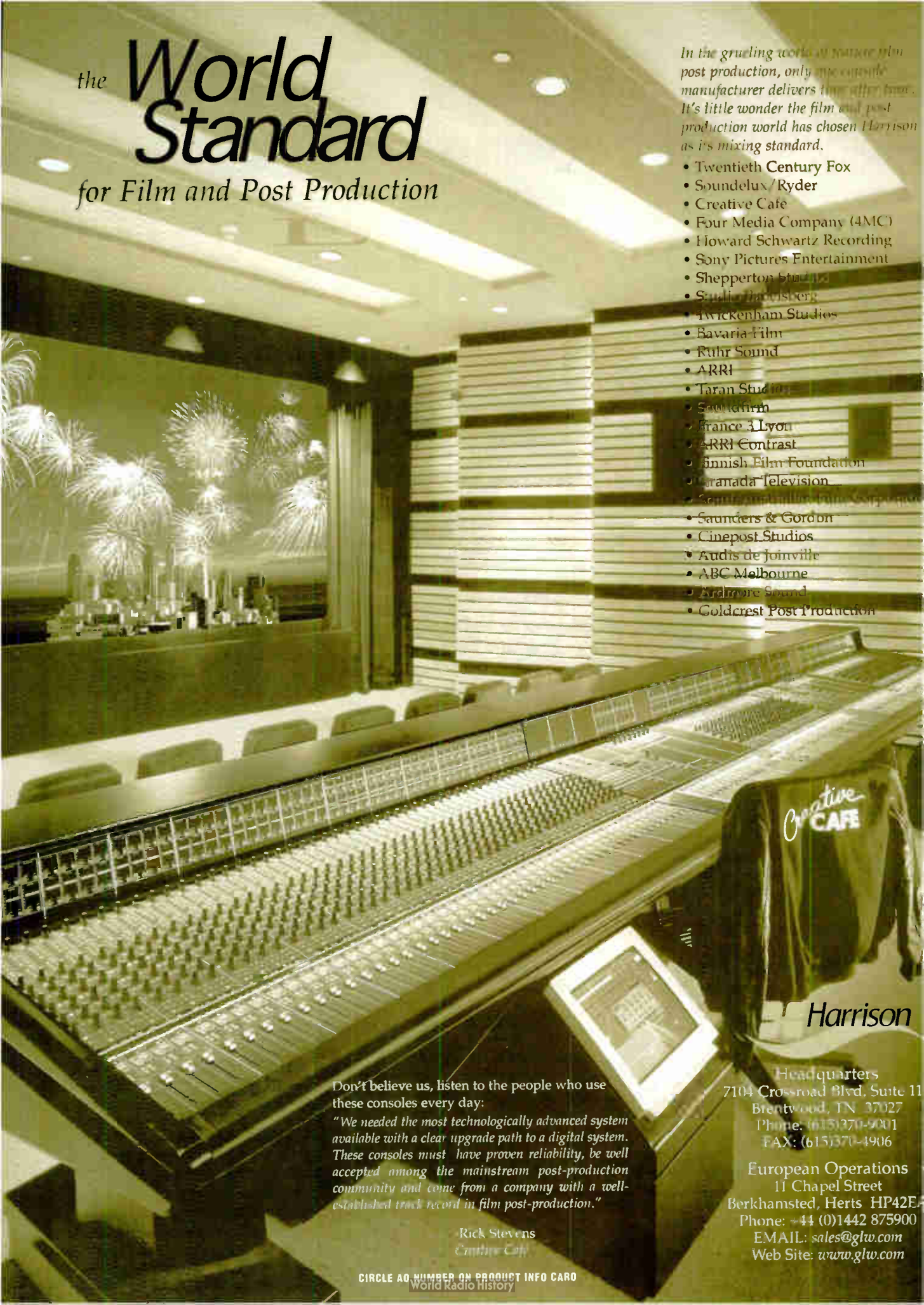
STUDIO VISION PRO 3.5 AND TDM

Users who have Digidesign TDM systems stand to benefit the most from this new revision of Studio Vision. Many improvements have been made to both the Audio Instruments window and the Console window, giving TDM users much more flexibility when using Studio Vision Pro. Assuming you have the supporting hardware, you can now play up to 48 simultaneous audio voices using up to 64 audio inputs or outputs. Mono, stereo and mono-in/stereo-out TDM modules are all supported in the new version. You can now route audio instruments to hardware outputs or audio buses directly from either the Console window or the Audio Instruments window. Each Console channel now supports up to four separate sends, and 16 internal audio buses are available. These options are intelligently integrated into the Console window.

Pop-up menus in both the Audio Instruments window and the Console window let you choose the way you want to configure your system. Checking the Stereo option in the Audio Instruments window lets the application play linked pairs of files as a single audio instrument, and in the Console window the corresponding channel plays as a stereo file. If, for example, you want to have independent control of stereo reverb on that stereo pair, simply route the output pair via a bus to another channel and assign a stereo reverb insert on that channel. All buses are stereo; if the audio signal is mono, its pan control will determine the L-R placement of the audio signal within the resulting bus. If you want to create a mono bus, use an Audio Send.

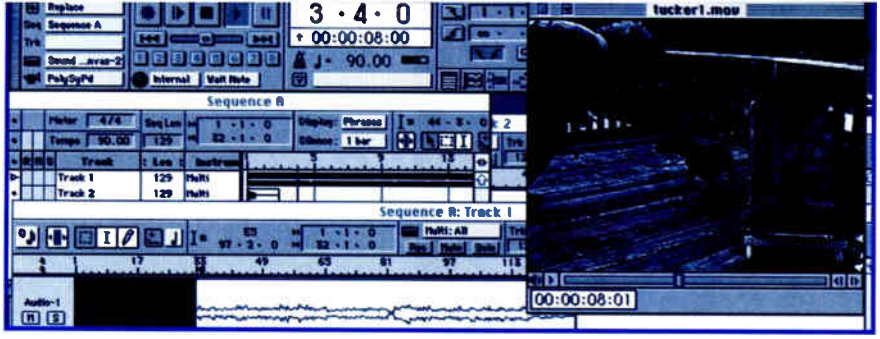
Complex mixes—including dynamic faders and panning—can be saved with your Studio Vision Pro file by choosing Fader Assignments and Fader Values in "What to Save..." when you save your file.

—Paul Potyen



simply select Lock to Timing and set a SMPTE offset in the QuickTime movie's pop-up menu to synchronize playback of audio and video. Scrubbing in the track window scrubs the movie, for quick location of precise sync points. Version 3.51 did not allow this functionality; however it has been fixed in Version 3.53 of the program—an upgrade is available from the Opcode Web site, at www.opcode.com.

You can import audio or MIDI from a QuickTime movie into a Vision track either from the File>Open or the File>Import Audio Using QuickTime menus. In the case of audio files, you can select a different sound format and sample rate. Exporting audio and MIDI is just as simple. You can create a new audio and/or MIDI QuickTime movie, you can add your tracks to an existing movie, or you can replace existing tracks. In addition, audio export options include several compression algorithms, sample rates and bit depths, making Studio Vision Pro the application of choice for integrating quality audio and MIDI into QuickTime.



Opcode's MoviePlayer, integrated in Version 3.5, allows easy sync of audio and QuickTime video playback.

Two new commands in the File menu are Export Audio Mix and Export Audio Events. The first creates standalone audio files from a selected region that can include multiple audio events; this option incorporates the effect of any volume, pan or fader events that fall within the selected time range. The second command lets you select one or more audio events and create new files for each event—an ideal way to create new files for your sampler, for example. Export audio format options include AIFF, Sound Designer, .WAV and Sun .au, in all the common resolutions and bit depths. However, you are limited to importing QuickTime, AIFF and Sound Designer files. You can also import audio from a Red Book Audio CD.

THE CONSOLE AND MMC WINDOWS

The Console window is significantly improved: It's now resizable and features a horizontal scroll bar. Non-adjacent faders can now be grouped and moved in one of three ways: Absolute fading, where all grouped faders move the same amount up or down; Proportional fading, where all grouped faders reach their minimum or maximum positions simultaneously; and Snap fading, where all faders move to a single level.

The MMC window replaces the old AV Control application, allowing direct control of MIDI Machine Control-supported devices that are connected to your MIDI interface and defined in your OMS Studio Setup.

WARNING: COMPLEX SOFTWARE AHEAD!

As in most of my software reviews, I manage to inadvertently break the pro-

—CONTINUED ON PAGE 229

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YAMAHA 03D

DIGITAL MIXER

Once in a while, a product comes along that's destined to make its mark in recording history. Sometimes it is simply a matter of the right product appearing at the right time, and at other times it is the product itself that drives the change. The new Yamaha 03D falls into both categories.

Introduced in 1994, Yamaha's ProMix 01 demonstrated that a compact automated digital mixer could be offered at a remarkably low price. Two years later, Yamaha made considerably bigger waves by creating the 02R, a larger, fully automated digital mixer with the sort of features previously found only on large consoles that cost *many* times more, including complete digital interconnectivity. At around $10,000, the 02R was recognized as an exceptional value, but it was still out of reach for many. Now, for those who have lusted after the 02R but found it to be more mixer (or more money) than they could handle, there is the 03D. The 03D has many of the same features as its big brother, while incorporating some of the cost-cutting measures of the 01. And, at $3,699 for the basic configuration, the 03D brings digital clarity and the power of automation to the small console user.

OVERVIEW

The 03D is a relatively compact (18.1x8.3x20.3-inches) yet weighty (35.3 pounds) recording and mixing console with an attractive appearance and ergonomically arranged controls. It boasts 32-bit internal processing and 20-bit A/D and D/A converters, with assignable internal dither. It is driven by twin RISC CPUs—ample processing power to handle all of its many functions. The 03D is initially a 4-bus unit, though by installing an optional YGDAI (Yamaha General Digital Audio Interface) digital I/O card, up to eight digital outputs can be used simultaneously. In addition to the eight dedicated digital inputs and outputs on the interface card, there are also 24-bit AES/EBU and 20-bit S/PDIF stereo digital inputs and outputs.

Almost all mixer functions are automated and can be recalled and/or controlled via the Scene Memories and Automix dynamic automation. Fifty Scene Memories and four Automixes can be stored in onboard memory, and almost all settings can be backed up as MIDI data to any MIDI sequencer or datafiler, or directly to a computer via an 8-pin mini DIN. Dynamics processing and EQ are available on every input, including the stereo input and the two internal effects returns, as well as on all aux sends, each bus and every output, including the main stereo out. Input channels may be delayed by up to 200 ms (useful for live recording and video editing), and outputs can be delayed for up to 40 ms (useful for SR installations). Two internal 32-bit multi-effects processors provide a full range of stereo effects, and onboard Libraries contain effects, EQ, and dynamics presets and slots for namable user programs. Solo, monitoring, metering and synchronization facilities are comprehensive, and the 03D can even handle quad, LCRS and discrete surround sound mixing!

All of the 03D's inputs and outputs (including, unfortunately, the headphone jack) are located on the rear panel. They are arranged quite logically into two sections: At the top are inputs for channels 1 through 8, with balanced XLRs (with individual phantom power switches) and eight balanced ¼-inch jacks, which take priority over the XLRs. Inputs all have a nominal input range of -60 to +10 dB, making them suitable for various types of microphones and hot line signals. Channels 1 and 2 also have TRS phono insert points. Channels 9 through 16 have ¼-inch line-level inputs. Other analog connections include two ¼-inch jacks (analog stereo in), two phono jacks (2-track return), headphone jack, XLR stereo outputs, RCA Record out jacks (switchable between the stereo out and bus 1L/2R) and ¼-inch jacks for the four aux sends, four bus outs and stereo monitor outs. The bottom section has a D-sub connector in ESAM II Protocol for video-edit controllers (not functional with the current software), an 8-pin mini DIN To Host connector, BNC Word Clock I/O, digital stereo I/O (XLR AES/EBU and coaxial S/PDIF), MIDI in/out/thru connectors and a connector for a serial mouse. The YGDAI card slot is also located there.

USER INTERFACE

Despite the 03D's many functions, its basic control arrangement is sur-

BY BARRY CLEVELAND

prisingly simple. The front panel has a row of analog gain pots that control input sensitivity for channels 1-16 and the analog stereo input, as well as monitor and headphone levels. There are also eight 26dB pad buttons for mic inputs 1-8, and a button that selects the signal source (2-track or the stereo/solo bus) for the monitor output and the headphones.

At the center of the 03D's control surface is a large 320x240-dot monochrome display with fluorescent backlighting. A great deal of information is displayed there in a condensed yet well-organized manner. The top of the screen always shows the current scene memory, the selected channel, the chosen function and the status of the user-defined buttons. Other indicators show when Solo is engaged and when data is being received at the To Host or MIDI inputs. Similarly, the fader status and various warning messages (e.g., Warning! Wrong Word Clock!!) are always displayed at the bottom of the screen. Any other information displayed depends on which menus are chosen. Whenever a function button is pressed, a corresponding menu with tabbed pages appears on the screen.

The display has four screened boxes containing sets of controls for Setup, Channel Control, Fader Mode and Mixing Layer. The Setup controls are global, affecting the overall operations of the mixer, such as Scene Memories, various utilities (MIDI/To Host configuration and monitoring, user preferences, and the onboard oscillator), digital I/O configuration, channel grouping and pairing, solo setup and Automix operations. Another button activates the MIDI Remote mode, allowing the faders and On buttons to be used to control external MIDI devices.

Channel Control buttons access the dynamics, delay, pan/routing, and channel view menus and EQ functions. A useful channel menu gives detailed information on channel status and allows parameter access. For example, the input channel view page shows every aspect of channel status: pan/routing, phase, fader/mute group and pair assignments, delay on/off and time, aux sends levels (including pre/post), internal effects sends (including pre/post), fader on/off and level, gain reduction level, and dynamics and EQ on/off, with graphic displays for both. And all parameters except for dynamics and EQ can be adjusted from this one page! There are separate view pages for input channels, input channels configured as a stereo pair, input channels with aux 1 and 2 configured as a stereo pair, input channels with the 2+2 surround pan mode selected, etc.

Different combinations of Fader Mode and Mixing Layer buttons assign the faders to operate as channel faders 1-16, or 17-24 with aux and bus masters 1-4. For example, if you press aux 1 while you are in the channel 1-16 Mixing Layer, faders 1-16 become the aux 1 sends for those channels. If you then select Mixing Layer 17-24/Masters, faders 1-8 become the aux 1 sends for those channels. This arrangement may sound a little like playing multidimensional chess, and it is, but once you get acclimated it is actually quite easy to find your way around without getting lost.

The 03D brings digital clarity and the power of automation to the small-console user.

Four screened boxes on the display have the Scene Memory controls, four user-defined buttons, the Solo button and the parameter adjustment controls. Parameter adjustments can be made using four Cursor buttons, the Data Entry Wheel, the Enter key or via a mouse. Any one of 31 functions can be assigned to the four user-defined buttons, including sending MIDI and MMC (MIDI Machine Control) commands.

Two rows of 19 buttons, labeled Select and On, each correspond to the 19 faders below them and have multiple functions. The Select buttons generally select a channel for parameter adjustment, but they select channels for recording while in Automix mode and are used to assign channels to fader and mute groups. Similarly, the On buttons generally function as mutes but double as solo buttons whenever the master Solo button is engaged. To simplify keeping track of what's going on, bright red LEDs on the buttons flash when either the Record or Solo functions are engaged.

Included among the 19 faders are three sliders for the stereo in, the master internal effects return and the main stereo outs. The master stereo output fader is not affected by the Fader Mode status (or the Mixing Layer status), but the stereo in and master effects return faders *are*.

The faders are 60mm, like on the ProMix 01, rather than the 100mm faders found on the 02R. They have an odd nonlinear taper, with a substantial amount of gain boost in the first 20 mm or so, and considerably less at the upper end of their range. Shorter faders were, no doubt, chosen due to production cost restraints, but I found them to be a significant compromise, as they make long and/or very precise fades difficult. They also make a rather disconcerting scraping sound when automated. This can be annoying when several faders are moving at once, particularly while monitoring at low levels.

With the exception of the single stereo input, all of the 03D's inputs are mono. However, you can link adjacent input channels into stereo pairs, allowing linked control over channel delay, EQ, attenuators, dynamics processors, On buttons, solo, channel faders, aux and effects sends (including pre/post settings), and routing switches. While creating pairs, you can transfer parameter settings from either the even- or odd-numbered side to the other side, or reset both sides to their initial settings. Aux sends and bus outs can also be paired. Input channels 1-24 and the stereo input can also be assigned to one of four Fader Groups, so that when any fader is moved, all of the others in the group move as well. Complex gain relationships are preserved in the process. Similarly, input channels may be assigned to one of four Mute Groups, so that if one channel in the group is muted, they are all muted.

EQ, DYNAMICS AND EFFECTS

The 03D has 4-band, fully parametric EQ available on all input channels, the internal effects returns, the stereo input, the aux sends, the bus outputs and the main stereo output. Besides the usual boost/cut, Q and frequency controls for the four bands, the low and high bands can be configured for bell-curve or shelving response, or to act as highpass and lowpass filters. Even though the four bands are labeled low, low-mid, high-mid and high, each one actually covers the full audible range from 21 to 20.1k Hz, bringing new meaning to the concept of overlap. All parameter changes are displayed graphically, and the boost/cut controls (but not Q and frequency) can be reset to flat by pushing the low and low-mid buttons simultaneously. I found the EQ on the 03D to be not only extraordinarily versatile, but also pleasing and musical.

Separate dynamics processors are

available on all input channels, sends, the onboard effects returns and all outputs. They can be triggered by the signal being processed, or keyed by a signal from another channel, and can be configured as pairs. Each processor can function as a compressor/limiter, noise gate, ducker, expander, or hard or soft compander. The number and range of adjustable parameters is extensive enough for almost any application, and all settings can be stored in one of the 40 RAM slots in the Dynamics Library. The Dynamics Edit page has parameter controls, a graph of the processing curve, signal and gain reduction meters and controls for selecting an alternative key source. Generally, the dynamics processors were very good, but more effective on individual channels than on the stereo outputs, particularly the compressor. Nonetheless, in situations where there was a fairly constant signal level, say without any long fades or drastic changes in dynamic range, the compressor worked well on the main outputs as well. It would be nice to have inserts on the main stereo outs though, so that a more sophisticated compressor or other processor could be used in exacting applications.

The 03D's two onboard stereo multi-effects processors provide 34 different types of effects. Effects are selected and edited using the Effects Edit, Effects Library and Effects Pre/Post pages on the main screen. The 64 presets include reverbs (halls, rooms, plates, gated, reverse, etc.); delays/echoes; pitch-change effects; and various chorus, flange, phase and dynamic effects (auto-wah, flange-wah, sweep phaser, etc.). There are also several multi-effects, such as Echora-verb, Clinging Reverb and Sizzle-Reverb, and some guitar effects—overdrive, distortion, etc. The effects DSPs are the same ones used in Yamaha's ProR3 and REV500 effects units; they are generally useful and very high-quality. The only exceptions are some of the reverbs, which can be a little bit metallic for my taste, and the guitar distortion, which I found unbearable.

LIBRARIES

Among the 03D's most useful features are its four onboard libraries. The EQ and Dynamics Libraries have 40 presets and 40 user-definable program slots each, while the Channel Library has two presets and 49 user programs, and the Effects Library has 64 presets and 32 user slots. EQ, effects and dynamics presets are useful "as is," or they can serve as starting points for tweaking and be renamed and saved as user programs. The names of the dynamics and EQ presets indicate their intended usage, which can be a particular instrument or an overall setting to be used, for instance, on the main stereo outputs. Channel Library settings include EQ and dynamics, as well as routing, channel delay, aux send, phase, panning and other channel settings. I used these features extensively, particularly while I was mixing music by artists whose various multitrack tapes did not have the same track assignments. If the bass was on channel three on the first tape, but on channel six on the next, I simply saved the channel three settings in the library, and then recalled them to channel six. (As the eight optical ADAT tape returns are hard-wired to channels 17-24, this is a particularly useful function.)

AUTOMATION

The 03D has easy-to-use, yet sophisticated automation, consisting of Scene Memories and the Automix function. The 50 Scene Memories can store all channel settings (except for the mic trims, pads and phantom power switches on channels 1-8, and other analog

controls and switches) and can be recalled using the Recall button, MIDI program changes (via the MIDI input or directly from a computer with the To Host connection) or from Automix. Other data not stored in Scene Memories include 03D Setup data, MIDI program change map, MIDI control change map, the various Libraries, Automix data and MIDI Remote. However, this data, as well as Scene Memories, can be backed up to an external MIDI device using MIDI Bulk Dump. The contents of the current Mix Scene are stored in the Edit Buffer, even on power down, until they are stored or overwritten. Stored Scene Memories can be write-protected to prevent accidental data loss. When a new Scene Memory is recalled during a mix, the Fade Time can be set (individually for each fader) so that the faders cross-fade from one scene to another! The Fade Time can be set from zero to ten seconds in 0.1-second steps.

Automix provides dynamic mix automation, including moving faders, referenced to external timecode—either MIDI Time Code or MIDI Clock but, unfortunately, not SMPTE. [*Note: A SMPTE interface is optional—Ed.*] Automix start times can be offset relative to the timecode. Automix records and plays back all fader moves, channel mutes on/off, and panning and EQ changes.

The MIDI implementation is comprehensive. The 03D was obviously designed to be the control center for a sophisticated MIDI rig. In addition to the synchronization and data back up mentioned above, it is capable of controlling, and being controlled by, almost any MIDI device. Program changes can be used to recall mix scenes, Note On/Off messages can be used for fader start, control changes can be used for real-time mix parameter control, and MIDI Machine Control can be used to control remote machines. Instruction sets are already provided for controlling Yamaha digital mixers, the ProR3 and REV500 effects units, and even Pro Tools.

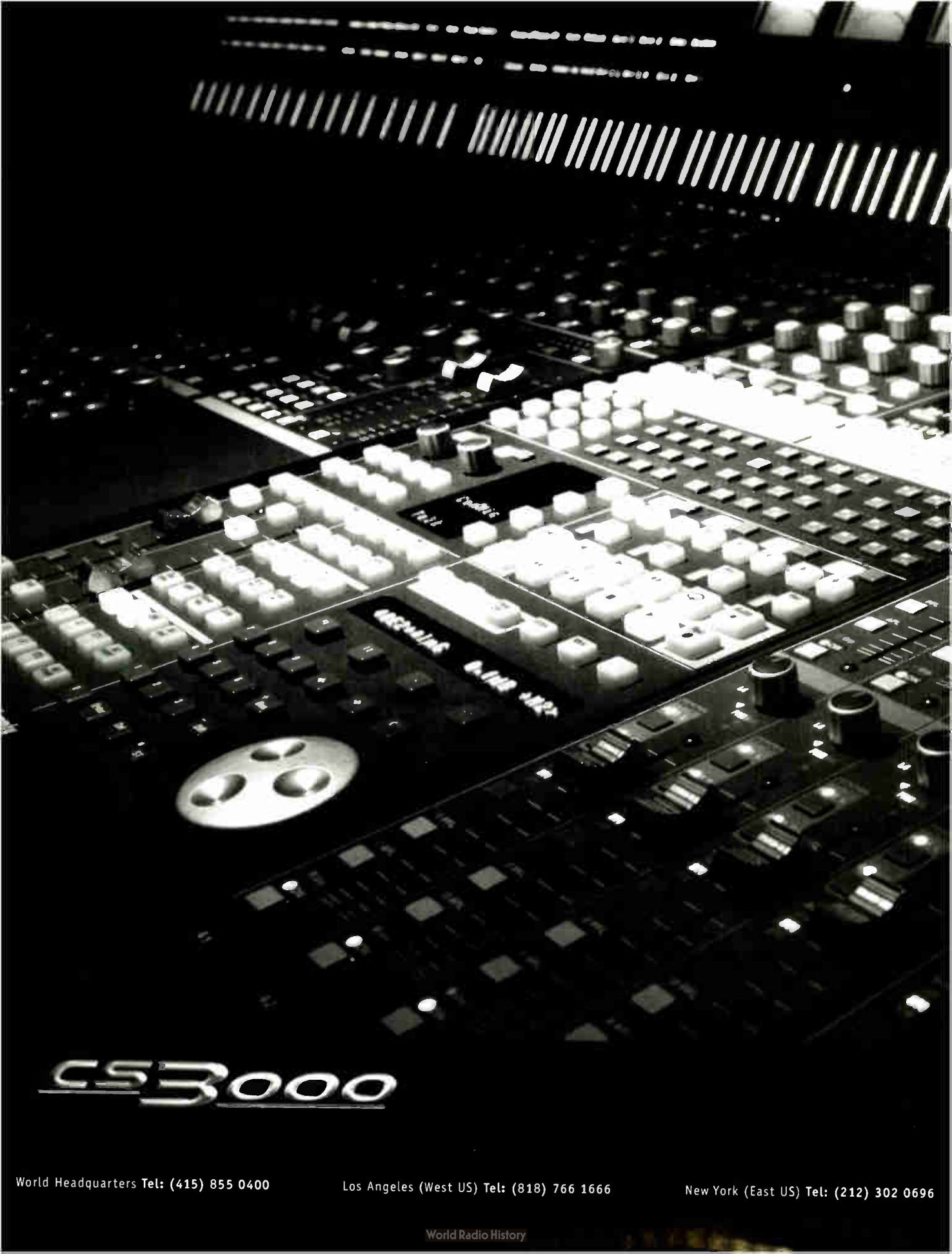
CONCLUSIONS

I used the 03D in conjunction with an ADAT for both recording and mixing, and I was continually surprised by just how good it sounded. The converters are outstanding, and all operations were *extremely* quiet, even when employing the radical EQ and effects settings. This was particularly evident while mixing material with a wide dynamic range; the quiet sections were, well, quiet! The mic pre's are as good or better than can reasonably be expected in a mixer at this price, imparting little detectable coloration (for better or worse), except, perhaps, a slight masking of the high-mids.

After working with the 03D in recording, mixing and live sound applications for more than a month, I am completely spoiled. Once I overcame the initial (rather steep) learning curve, I found that the user interface made it easy to get around. The clearly organized and well-written (if a bit dry) manual was quite helpful, though there were times that I wished it contained a short tutorial, written in a less technical style. In spite of my dissatisfaction with the short faders, the shortcomings of some of the effects and the lack of inserts on the stereo outs, I found the 03D to be an absolutely amazing mixer. It may not be perfect, but it's perfect for my needs.

Yamaha, 6600 Orangethorpe Avenue, Buena Park, CA 90620; 714/522-9011; fax 714/739-2680. Web site: www.yamaha.co.jp/product/proaudio/homeenglish/index.html. ■

Barry Cleveland is a San Francisco-based composer, engineer and producer. He also plays guitar with the improvisational group Cloud Chamber.



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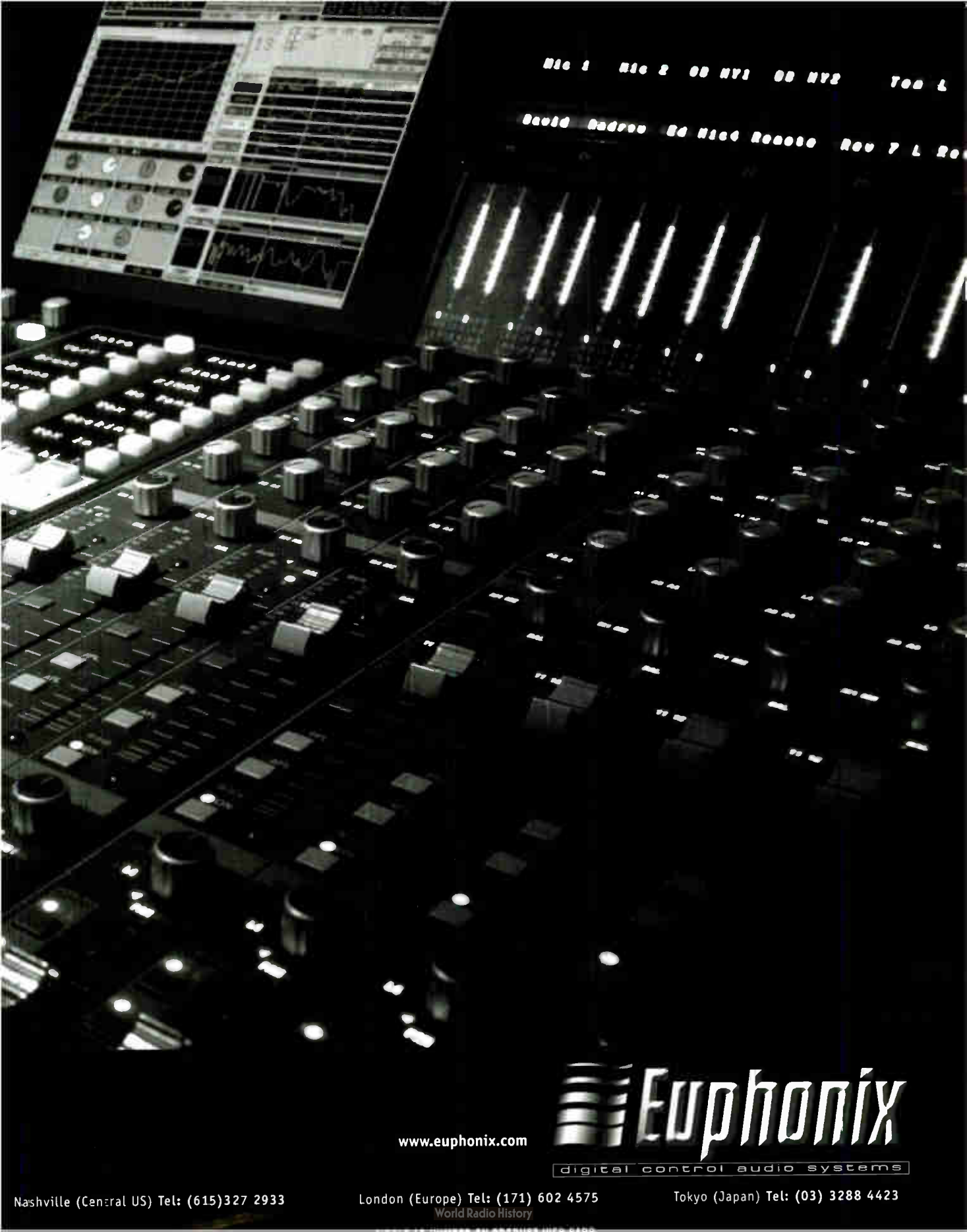


DIAMOND AUDIO S2 PRO MEDIA 4100

MULTIMEDIA SPEAKERS

The product category of "multimedia" speakers is besmirched by a dark patina of cheeseyness. Think of all those millions of pairs of feeble beige wedges with fragile little wires, and the horrible sounds they make—the type of speakers you'd like to crush with the heel of your boot.

Well, Diamond Audio Technology (Santa Monica, Calif.) has bucked that sorry trend with its S2 Pro Media 4100 multimedia speakers. The 100-watt S2 Pro Media 4100s are at the high end of the computer-speaker food chain—the last step before you'd go with full-blown studio monitors. They're heavy-duty, sound good, kick a lot of air, and they're matte-black, not beige.

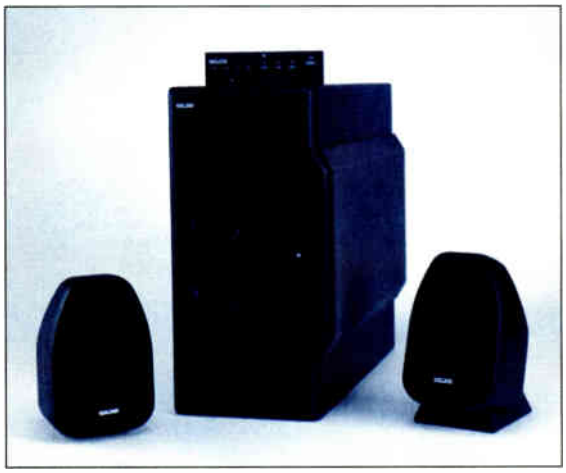
The satellite speakers are two stout little coneheads made of die-cast aluminum with perforated metal grilles. The rugged enclosures house 13mm dome tweeters and 4.5-inch mid/bass drivers, and they're extremely well-shielded.

The subwoofer is among the largest available in a product of this type. It's the size of your average CPU and weighs 30 pounds. Remember to lift with your knees when you're picking it up. The speaker is an 8-inch cone, and like the mid/bass drivers, it has a high-end rare earth neodymium magnet structure.

The subwoofer enclosure has dual ports in front, and all the connections are on the back. Inside is the circuit board, plus a power supply built around a large toroidal-style transformer. The speaker contacts are simple push terminals; there are gold-plated RCA jacks for two input channels, plus ⅛-inch mini stereo input and output.

The power switch is also on the subwoofer, not on the remote, but that's okay because the S2s have a "green" feature—they go into a power-saving mode if the input senses less than ten millivolts over a ten-minute period, then wake up again when they receive over ten mV of signal. There's no click; you'll never notice a thing.

A remote plugs into the back of the subwoofer; there's a 10-foot cable. The best thing about the remote is that the volume knob is the largest thing on the panel; it's easy to locate out of the corner of your eye. There's also bass, treble, balance and mute, a Loud (bass boost) setting, A/B input selector and the 3DSP™ setting, which sounds similar to the Wide settings found on some portable stereos. It places the apparent sound source approximately 15 to 20 degrees out from the actual speaker position and pushes the center image way back, sometimes obscuring the voice. Leave the 3DSP off unless you're playing games.



I didn't test the maximum SPL claim of 105 dB—suffice it to say that they get way too loud, and there's plenty of headroom before distortion. Diamond Audio Technology also makes a 60-watt version of the S2s, which boasts all the same features of the 4100 model but has less power and a smaller subwoofer.

I spent many days doing audio editing on a desktop workstation with the S2s, and I found their sound to be crisp but not excessively bright, and well-defined but not bottom-heavy. I was able to rely on them to make fairly accurate judgements about placement, volume and EQ.

I was pleasantly surprised to discover that the street price on the Pro Media 4100s is around $500 to $650/pair (60-watt models are around $400). At that price, the S2s can certainly find a home with computer aficionados who must have the latest, grooviest peripheral. In some low-budget studios, the S2s may make sense as an alternative to traditional self-powered reference monitors. Or in the corporate world, if you're doing a presentation and audio impact is important, the S2s are a much better solution than any of the beige wedges, especially if you don't have the space (or the need) for a P.A.

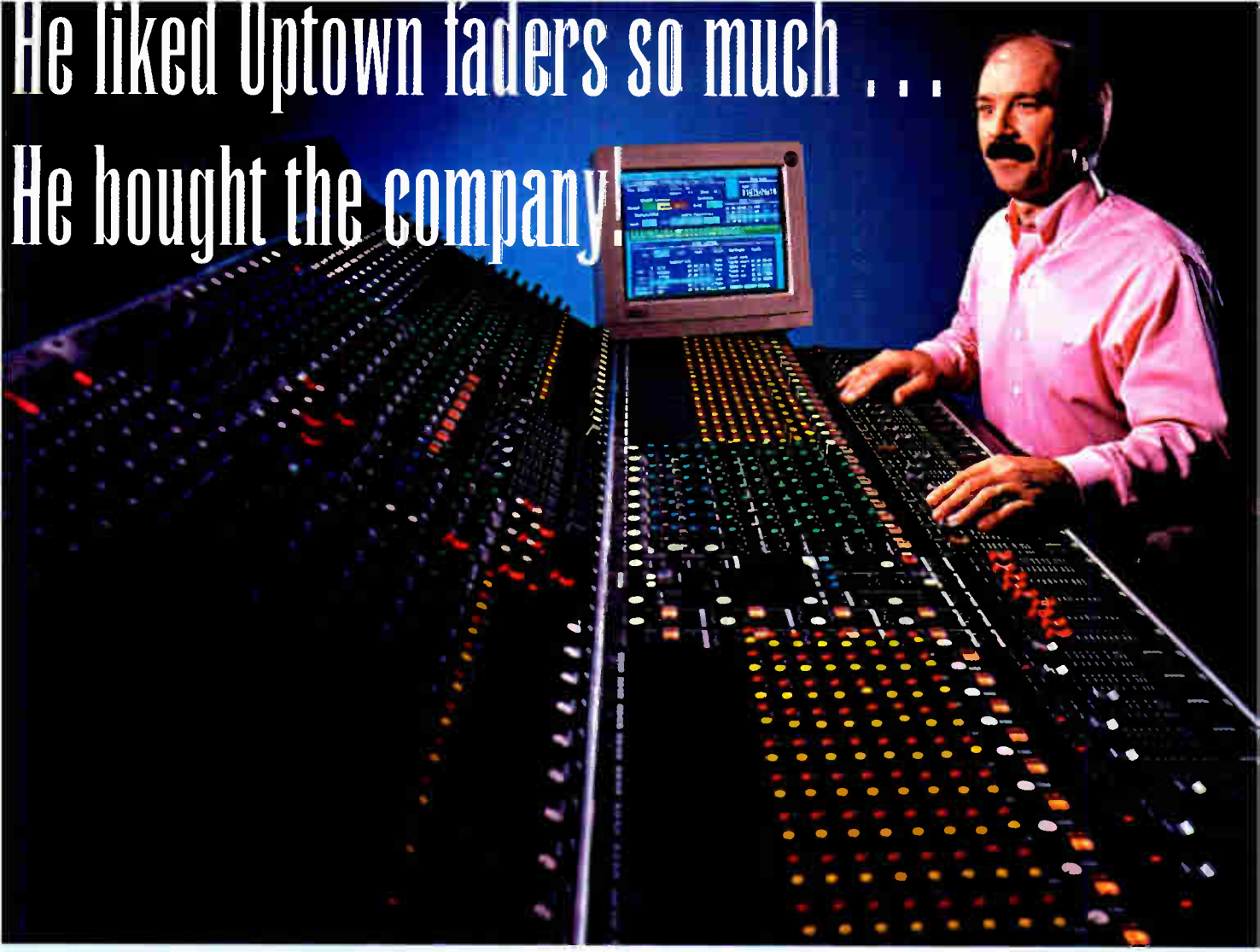
I frequently have to give music software demos at crowded trade shows, and my tactic is to carry in the most powerful self-powered speakers I can find, then crank enough firepower to overcome the signal-to-noise ratio. With apologies to the convention dB police (and neighboring exhibitors), my approach yields results, and the S2s are ideal for this type of work.

Diamond Audio Technology Inc., 3030 Pennsylvania Avenue, Santa Monica, CA 90404; 888/222-9439; www.diamondaudio.com. ■

Todd Souvignier is a San Francisco-based composer and technology worker.

BY TODD SOUVIGNIER

He liked Uptown faders so much . . .
He bought the company!



When Larry Droppa* was looking for an automation system to fit the renowned Paragon Console, a variety of systems were considered. After all, he couldn't put just any automation into the most sophisticated live mixing console ever built — he needed the *best*. And he found it in the System 990 from **Uptown Automation Systems,** the leader in high quality moving fader automation. An Uptown Automation system is easy to use, installs in virtually any console, and is one of the most affordable automation systems on the market.

Uptown System 2000

Uptown has hundreds of systems installed in the most prominent Music Recording, Post Production and Live Theater facilities in the world, so Larry's decision to buy Uptown Automation was, well . . . *automatic!*

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*President of ATI/Paragon and live sound engineer for Stevie Wonder

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FILE FORMAT INTERCHANGE

A DECADE OF INCOMPATIBILITY

FILE FORMAT INTERCHANGE incompatibility is neither a disease nor a disability. It has no telethons, no fundraising campaigns, no slick slogans. There is no poster child for FFII, although if there were, it might be a quietly frustrated post-production engineer, mixer, sound designer or studio manager wondering when digital audio workstation manufacturers will finally get together and solve the vexing issue of exchanging formatted data between workstations.

The problem is nearly as old as the workstation industry itself, and it became more apparent once the number of DAW manufacturers reached double-digits. The causes of FFII are clear: Aside from the basic platform differences between operating systems such as Mac OS, Windows and UNIX, the need on the part of DAW manufacturers to differentiate their individual products from one another in an increasingly crowded marketplace propelled the growth of proprietary hardware/software systems.

BY DAN DALEY

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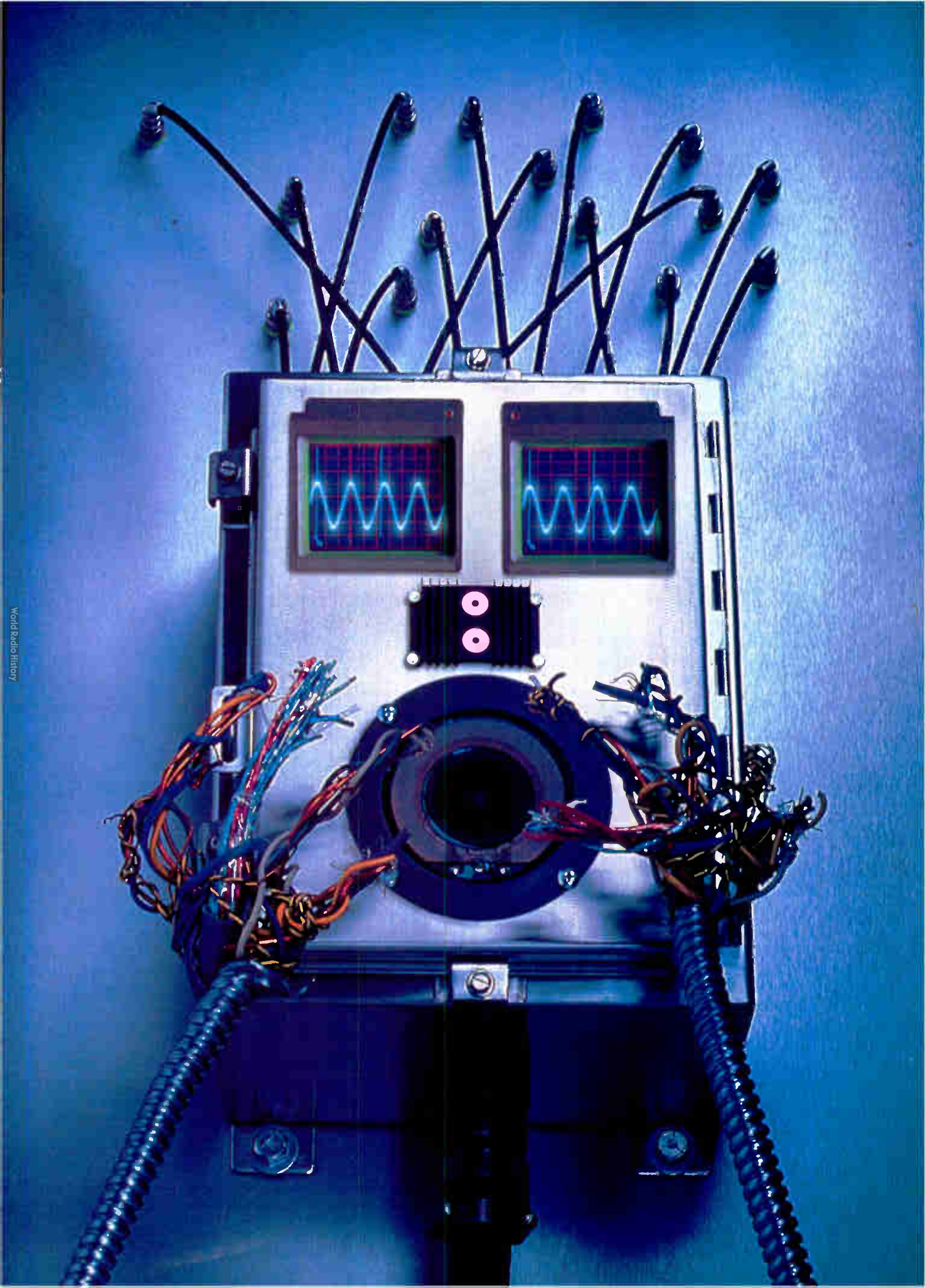

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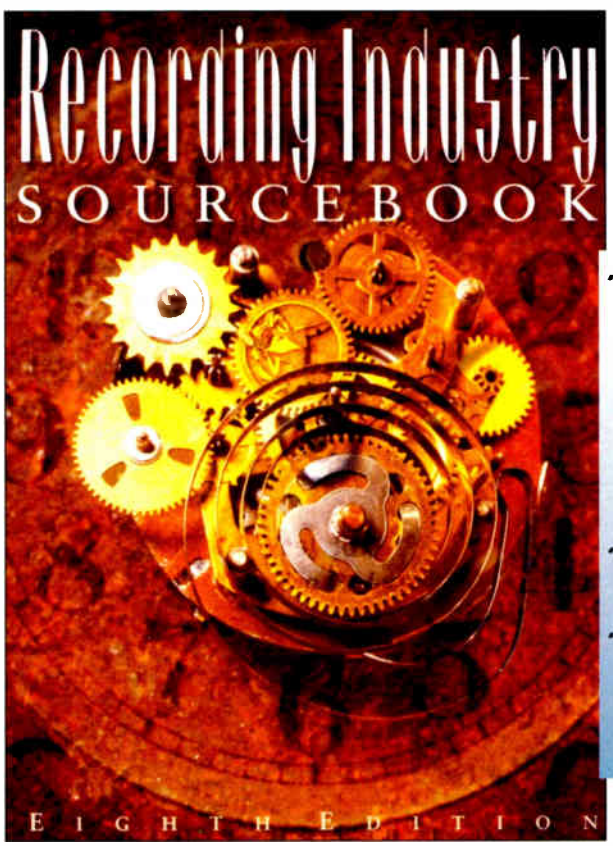

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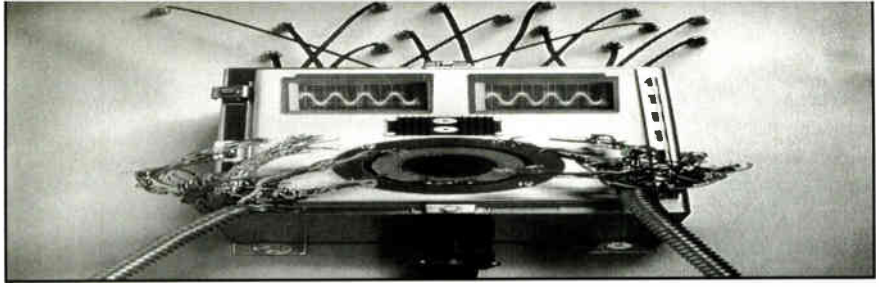
But the clamor from users grew as the post-production industry shifted to nonlinear platforms and the exigencies of one business (post-production) ran up against the exigencies of another (manufacturers). Small wonder that the effects of the issue are, at their root, economic, as well.

"It's a nightmare from a financial point of view," says Rollin Feld, editorial manager at Skywalker Sound in San Rafael, Calif. "In addition to the basic, fundamental differences between computer operating systems and then the proprietary software programs, you have to add on the fact that the manufacturers are segmenting their products according to markets. They separate products that can be used in home studio environments from broadcast products from studio and post products. I even sometimes have trouble transferring files painlessly from an Avid audio platform to a Pro Tools system, and they're the same company. I mean, Ford owns Jaguar, but so what? They're two very different automobiles for two very different markets."

Feld's point refers partially to the Open Media Framework (OMF) initiative launched by Avid over five years ago (and prior to its acquisition of Digidesign). OMF is the most successful attempt at creating a common file interchange format among audio and video workstations to date. How successful that actually is depends upon the context in which it's viewed. With over 30 partners to the OMF protocol—including Neve, Fairlight USA, Merging Technologies, Sonic Solutions and Studer Editech; animation systems manufacturers such as US Animation; and graphics systems manufacturers like Silicon graphics—OMF has significant numbers. However, with the number of DAW manufacturers still hovering around 60-plus, the approximately 15 audio-based OMF participants (two of which are Avid and Digidesign) represent a fraction of the world's available systems.

According to Ed McDermid, a marketing engineer on the OMF Developer's Desk at Avid, the OMF protocol is essentially a hierarchically arranged, object-based, computerized abstract model of audio/video production and post-production edits that can transfer both media (file) data, EDL-type information and meta data between participating systems. It was an evolutionary phenomenon and remains one, he says, and the protocol continues to undergo refinement and add participants. McDermid acknowledged occasional transfer problems between Avid and Digidesign platforms, but countered by summing up the challenge that any attempt to codify the diversity of platforms faces. "OMF is trying to solve an incredibly difficult problem," he says. "We're trying to apply modern asset management and database applications to a wide variety of systems, some of which are old and some of which are new in terms of technology. In some cases, we're trying to interface with automation systems that, in the words of



one tape-based engineer, date back to 1950s punch-card technology."

Avid makes a free OMF Tool Kit available for downloading by users and prospective developers from its Web site (www.avid.com/omf); however, it requires that participating manufacturers write the code themselves that will conform their products to the OMF standard. McDermid also noted that Avid has been publishing the source code for its data compression scheme on the Web site for some time and does not charge for the software or require a nondisclosure agreement. OMF is also before AES and SMPTE technical committees for possible endorsement as a standard, but one that would not necessarily be binding upon manufacturers.

Still, OMF's representation in other manufacturers' platforms remains fractional because, McDermid concedes, "It hasn't always been clear to some manufacturers that interchange is valuable. People are building proprietary post-production systems and solutions, and they're concerned about how far they should open their doors to those systems. And others are simply unwilling to collaborate with their competitors. On the other hand, we'd love to see more people come in on OMF and share the engineering responsibilities. We don't make any money off OMF, but we certainly do spend a lot on it. The value-add for us comes from compatibility with [various] systems, particularly video, effects and graphics systems."

Single-manufacturer-led proposed solutions are not new in the DAW industry. In the mid-1980s, now-defunct New England Digital, maker of the Post Pro, offered its proprietary technology to the industry at large to be used as the basis of a common file format interchange. The offer was rejected by an industry that had collectively spent millions of dollars devising various operating systems. More recently, Fairlight ESP has put forth an initiative, offering its file information to any manufacturer that will reciprocate (even as Fairlight continues to participate in OMF) and is seeking to establish a leadership role in fostering discussion among manufacturers to further develop interchange.

John Lancken, CEO of Fairlight USA, which is deeply immersed in both the crowded DAW and the nascent digital dubber markets, admits that there is a marketing aspect to Fairlight's initiative, which has thus far announced Lightworks, SADiE, DAWN and the recently re-animated TimeLine as participants. "But it's not just about selling more MFX-3 systems," Lancken says. "It's about making the entire market feel better about buying more digital audio workstations in general, whether it's ours or theirs. The real underlying point of the initiative—and of compatibility—is to make the market more comfortable with the technology. We're also attempting to address people with orphaned systems, like the Dyaxis [Studer Editech announced that it would no longer actively market its DAW late last year], saying, in a sense, 'Buy more stuff from [manufacturers in our camp], and you'll be able to play older systems in conjunction with newer systems and continue to access all your archived files.' We're trying to take an assertive stance, to be responsible manufacturers to get together to push this forward until standards bodies endorse a common file format. We applaud what OMF has accomplished so far, but we as an industry should develop a better version of the interformat concept embodied in OMF. We need to create something that pushes at the proprietary boundaries where OMF stops."

The kind of conformity that Lancken is looking for from collaboration may come from third-party technology. Grey Matter is a Santa Cruz-based software developer with roots in professional audio (they developed an expander board for Yamaha's seminal DX-7 synthesizer and developed the System Accelerator for Pro Tools), as well as in the data management market. The company's Mezzo Archiver software for workstations has been modified and renamed Mezzo Interchange, and, according to company president and senior engineer Steve Kellogg, will act as a junction box between alien DAWs, taking both OMF and proprietary data and converting it—in real time, in the background—to a destination format. One of the first applications for the software package is for converting between Sonic Solutions and Akai's new DD8 digital dubber. (Dolby Labs has also confirmed that they are currently in negotiation with Grey Matter.)

Grey Matter's software requires subscription by manufacturers wanting to participate. Kellogg would not disclose the terms but says that there is "a financial arrangement between us and the host vendors. We then sell a stand-alone product." And, adds Kellogg, as part of the fee, Grey Matter will do the code writing for each participating manufacturer's system.

THE POST HOUSE POV

Meanwhile, the post facilities have learned to adapt. Some have opted to buy into totally proprietary solutions—multiple systems from the same manufacturer—to solve the interchange problem. Others have chosen a few systems for each aspect of post and try to limit their files to those areas, in

IF THERE WERE ONE PLATFORM FROM WHICH TO DO MUSIC, EFFECTS AND DIALOG, THAT WOULD BE GREAT, ECONOMICALLY AND CREATIVELY SPEAKING.
—ROLLIN FELD, SKYWALKER SOUND

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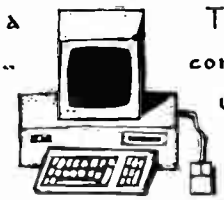

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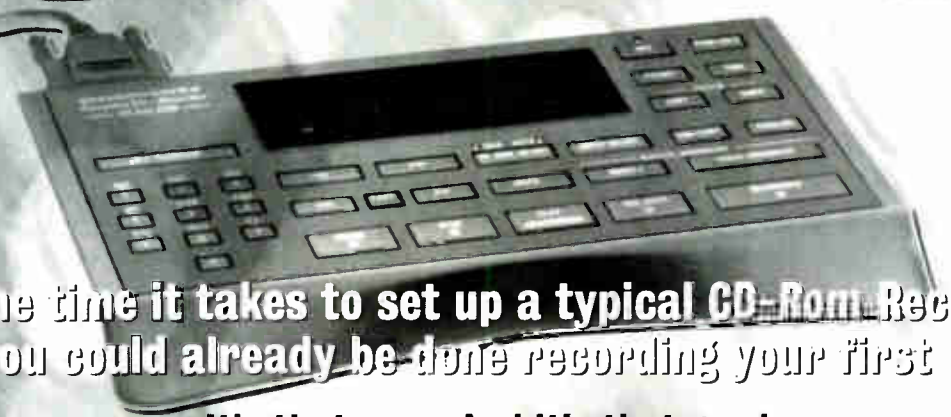

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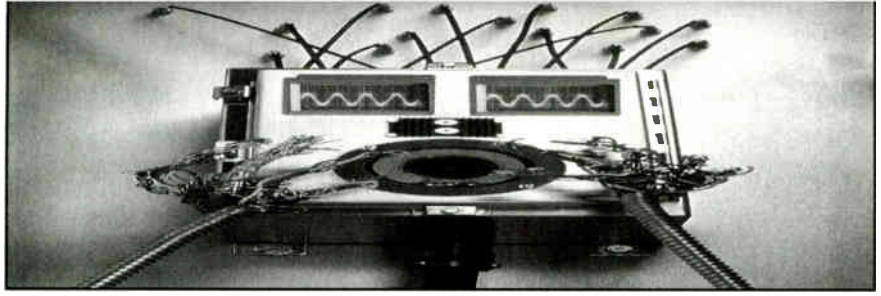

some cases setting up in-house LANs to exchange at least basic data.

"I have editors cutting on Pro Tools, and when they go to the mixing stage, we have to have Pro Tools there too to process the sounds as they were cut and if they might need last-minute edits," explains Skywalker's Feld. "If the sounds were done on a Studioframe, then I need that on the stage. I'd love to be able to use a generic computer for all of the formats that come in, but I can't. There are standards that could be agreed upon, like SD2 or AIFF, but if you can't get everyone to agree, or if not everyone is willing to disclose their proprietary bitmapping, then that leaves us where we are."

Skywalker, a company whose survival is based on outside productions hiring its facilities, must then deal with a multiplicity of formats, sometimes by purchase, sometimes by rentals, and rely on both tape-based and soon digital dubbers (as well as mag) to move file data around the facility. "A large studio like Fox can get away with choosing one system for the facility; Skywalker lives off of outside producers, and we need a wide range of interfaces," explains Feld. "If there were a true transfer format that could transfer all the data, that would save us thousands of dollars a year in workstations we wouldn't have to purchase. If there were one platform from which to do music, effects and dialog, that would be great, economically and creatively speaking."

Mark Mangini, co-owner and supervising sound editor at Weddington Productions in North Hollywood, says compatibility has to take place on two fronts to be truly effective. "It has to interface with film and sound editing systems, and it has to be ready to go to the dubbing stage," he says. "For editing, [interchange] is not as much of an issue. When I'm editing, all I want are the raw sound files. Music is easily moved around on dubbers of any kind. I need the formatting most of the time when it comes to effects. At the dubbing stage, it's a different story. I don't know what [formats] I'll end up with, or how much proprietary type of information I'll be able to retain and work with." Typical of the most efficient interface operation that Mangini does on a regular basis is the export of data from an Avid Media Composer to Pro Tools, his platform of choice for editing, via a Jaz drive.

Like many post house owners and managers, Mangini realizes that an ideal world is unattainable, so he works around it. "Theoretically, it should be more of a problem than it really is," he says. "We get the jobs done, we find ways around interchange problems. My business is more about content than it is about technology, so we try not to get hung up on the technology. But it would be nice to have a more elegant solution." And via OMF, Mangini says, the economic aspect of facility management has improved. "I can work off a slimmer transfer and dialog editing budget because the scale of data importing is smaller with OMF," he ex-

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plains. "Once the material is imported into Pro Tools, it's already with frame-accurate sync, so there's less labor involved in assembling it. You just edit and clean up the tracks. It's allowed me to work more cost-efficiently."

But that ease simply whets Mangini's appetite for a broader approach to compatibility. "No one is going to become the Moviola of the industry," he says. "My prediction over the next five to ten years: People will move more toward in-house choices of compatibility. We standardized ourselves here around Pro Tools. It was a decision made by us, not the market. It's where you have to draw a line so you don't go nuts with too many formats."

In New York, Jonathan Porath, chief engineer at Sound One, a film-only audio post facility, says the market made his decisions for him, and he's glad to have had the responsibility taken off his shoulders. "New York is a much smaller film post market than Los Angeles, and everybody uses either AudioVision, Pro Tools or Sonic Solutions," he says. "It makes life a lot easier because we don't have to keep tracking which workstations people are using." Sound One is using Akai's DD8 digital dubber and worked closely with Grey Matter as it developed the Mezzo Interchange software. "But New York developed its own de facto standards," Porath concludes with relief. "If it's not one of those three formats, you bring your own. And I've never had to turn down work because of a format issue."

Dean Beville, supervising sound editor at Creative Café in Los Angeles, says that the OMF protocol has its flaws, but that in lieu of anything else, it has helped his facility streamline its operations, allowing file transfers between the facility's AudioVision, Pro Tools and MFX-3^{plus} systems. "What OMF really does, though, is it gives the sound people more and earlier influence in a project," Beville explains. "They can interact with picture sooner, and that makes the whole process more efficient." Still, he adds, how and when picture and sound are digitized by various systems during the course of a project will also affect its efficiency, underscoring the fact that OMF, like other computer-based environments, is subject to the axiom of GIGO—Garbage In, Garbage Out.

But, Beville concludes, without OMF, his facility would not likely have purchased three workstations from three manufacturers. "OMF's promise exceeds its real-world capabilities," he observes. "For instance, some devices can read OMF files but can't write them. But I expect that to change as time goes by." And, he adds, he expects third-party software developers like Grey Matter and Gallery Software to fill in gaps between major manufacturer solutions. "In the meantime, we just move along using every means we can," he says. "The projects still get done." ■

Dan Daley sends his ClarisWorks documents over the Internet, where they are converted to Microsoft Word. Sometimes the bolds and italics disappear, but the words still make it into print.

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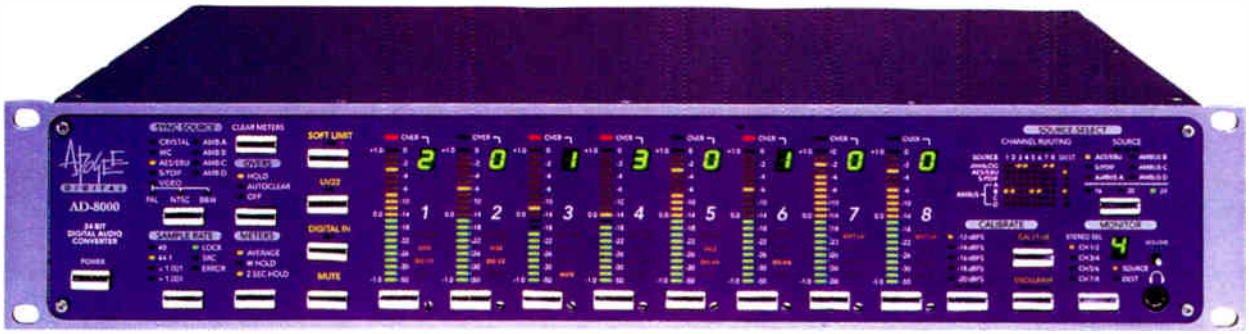

APOGEE AD-8000
Apogee Electronics' (Santa Monica, CA) AD-8000 is an 8-channel A/D conversion system with 24-bit ADCs, optional D/A and interface cards and more—all for less than $6,000. The two-rackspace unit incorporates Soft Limit®, allowing maximum level to tape without digital "overs," and the UV22® process, which translates 24-bit data to 20- or 16-bit output, on a channel-by-channel basis. ADAT and TDIF interface cards allow for 24-bit digital audio recording across multiple tracks on 16-bit MDMs; a Pro Tools interface card and 24-bit D/A expansion cards are available. Status indicators include six-mode light-bar channel meters with peak and average ballistics and selectable peak hold. Also standard are confidence monitoring, digital track bouncing and overdubbing, and AES/EBU and S/PDIF inputs. The AD-8000 syncs to various external signals and sample rates, including video (optional), and provides pull up/down facilities and optional sample rate conversion.
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SEER SYSTEMS REALITY
Seer Systems (Los Altos, CA) is now shipping Reality™, a professional software synthesizer for the Pentium® PC. Capable of five types of synthesis (physical modeling, PCM/sample, analog, FM and modal), Reality includes digital reverb and chorus effects and has a capture utility for real-time direct-to-disk recording. As a software-based synthesizer, Reality requires no additional hardware investment beyond a Pentium-based Windows PC, a Creative Labs Sound Blaster 16 or higher sound card, and any MIDI controller or sequencer. Price is $495, or $695 including a Creative Labs AWE64 Gold sound card with S/PDIF output.
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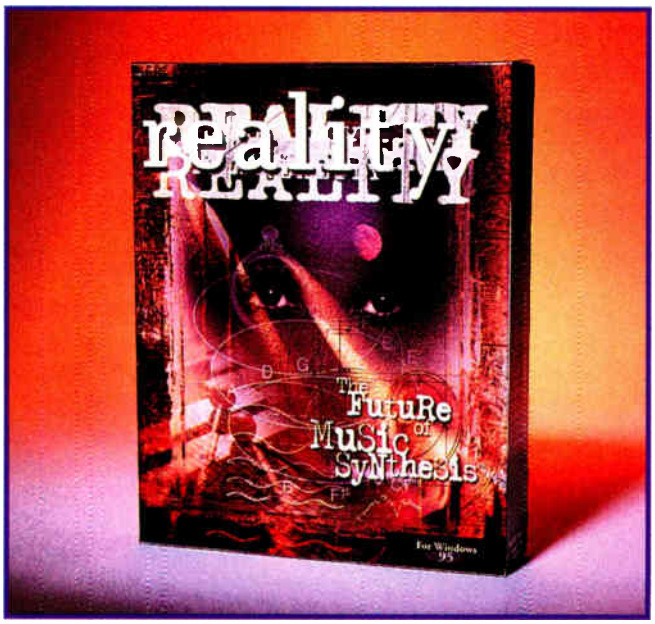

OPCODE STUDIO 64 XTC
Opcode Systems (Palo Alto, CA) introduces the Studio 64 XTC digital sync processor and MIDI interface/patchbay, a one-rackspace device that economically and accurately synchronizes any analog or digital multitrack recorder with Macintosh- and PC-based hard-disk recording systems. The XTC features simultaneous word clock and Superclock outputs and can control ADATs through MIDI Machine Control (MMC). As a synchronizer, the XTC can write SMPTE as a master reference, can generate word clock and Superclock from incoming SMPTE, and will also accept video and blackburst as a reference. The unit also offers a 4x6 MIDI interface with patchbay capabilities and routes MIDI Time Code and MMC. OMS compatibility ensures smooth operation with software from Digidesign, Cakewalk, Steinberg and Emagic, and the unit will work with almost any PC sequencing program. A Sony 9-pin P2 video transport control is optional. Price is $495.
Circle 329 on Product Info Card

PREVIEW

FOCUSRITE BLUE 300 MASTERING CONTROLLER

Developed in response to a growing requirement for a high-quality routing and monitoring control in mastering facilities, Focusrite's Blue 300 Mastering Controller (distributed by Group One, Farmingdale, NY) provides analog/digital source selection, precision monitoring control and record path routing with inserts and precision stereo peak metering. An oval remote panel connects to a two-rackspace master module, providing eight stereo analog inputs selectable to two independent stereo recording and monitoring paths; six digital inputs can be added using the Focusrite Blue 260 D/A converter.

Circle 330 on Product Info Card

TASCAM DA-20 MKII

Tascam (Montebello, CA) introduces the DA-20 MkII DAT recorder, a new version of its established DA-20. Among many new features, the three-rackspace deck offers a sampling monitor function, which allows for easy checking of sources; input signals may be monitored in either analog or digital. Selectable sampling rates are 48, 44.1 and 32 kHz, and a long play/record mode allows up to four hours of operation on a single tape. An Auto ID detection level switching function switches among four selectable audio levels for automatic recording of Start IDs. Additional features include an error rate display function, self-diagnostic capabilities and a wireless remote. I/Os are S/PDIF (digital) and RCA (analog). Price is $1,099.

Circle 331 on Product Info Card

RSP EXPANDS CIRCLE SURROUND

RSP Technologies (Rochester Hills, MI) completes its family of matrix 5.2.5™ Circle Surround® components with the new 5.2.5 Encoder ($1,499) and the 5.2.5 Controller ($2,599), a four-joystick surround panner. The one-rackspace 5.2.5 Encoder accepts LCR/LS-RS channels from a console and outputs a stereo-compatible matrixed signal that is also backward-compatible to all major matrix systems and mono. Outputs are +4dBu balanced XLRs; an additional 25-pin D-sub connector accommodates LCR/LS-RS+LFE inputs. The 5.2.5 Controller features individual mutes for each joystick and may be used as a stand-alone audio panner (up to four Controllers can be ganged together) or with the 5.2.5 Encoder. In addition to an LCR/LS-RS summed output, signal outputs are available from each panner. A third output set interfaces directly with the 5.2.5 Encoder. All I/Os are on Tascam DA-88-compatible D-sub connectors.

Circle 332 on Product Info Card

E-MU THUNDERKAT

E-mu Systems (Scotts Valley, CA) releases the ThunderKat™ polyphonic gesture-tracking MIDI controller and instrument, the result of a collaboration between E-mu and Don Buchla and Associates. ThunderKat combines a traditional touch surface with patented optical-array scanning technology to provide pinpoint three-dimensional control. Sound may be played by tapping, scratching or strumming the playing surface; the unit is reportedly

PREVIEW

capable of translating even the most delicate touch into a vast array of dynamic MIDI-note, trigger and continuous controller data. Sixty-four presets and 64 user-programmable patches define the controller's 19 multifunction zones.

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NEUTRALIZER SURGE SUPPRESSOR

The Neutralizer AC surge suppressor from Zero Surge (Frenchtown, NJ) is now available in rackmount 15- and 20-amp models. The Neutralizer provides maximum surge protection for sensitive equipment and is rated as UL-verified Grade A, Class 1, Mode 1 performance—the highest rating in the new government performance standards. Each unit is surge-tested, shipped with its performance test record and carries a ten-year warranty.

Circle 334 on Product Info Card

HOHNER MIDIA CD MASTERING SOFTWARE

CDaudio Plus from Hohner Midia (Santa Rosa, CA) is a Red Book audio CD production software package with a simple drag-and-drop interface that allows manual placing of track start addresses, track pauses, indices, emphasis, etc. CDaudio Plus accepts .WAV, .AIFF and .RAW files and offers complete PQ editing functions (pause times, sub indexes, ISRC and UPC/EAN codes) and complete TOC list editing. Other features include TOC printing and playback, selectable record speed, simulation mode, autoloader support and online help. CDaudio Plus is $349.

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INDUSTRIAL TEST AMPLIFIER

Industrial Test Company (Port Washington, NY) offers the model 500A power amplifier for general laboratory and automatic test equipment applications. Featuring a closed-loop negative feedback circuit to ensure low output impedance, the 500A reaches full power with a load resistance of 1.25 ohms and 25 volts RMS output voltage. Any combination of output voltages up to 15,000 volts and currents up to 200 amps may be obtained via optional output transformers.

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PINNACLE MICRO REWRITABLE CD DRIVE

A new rewritable CD drive from Pinnacle Micro (Irvine, CA) plays standard CD-ROMs, records to write-once CD-R discs, and writes and rewrites on the new CD-ReWritable (CD-R/W) media. The RCDW226 functions as a 6x reader, 2x recorder and 2x rewriter and is available in both internal and external models for PCs. Prices start at $649 for an internal PC CD-R/W drive (RCDW226IPC). An external Macintosh drive (RCDW226 MAC) is $799.

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CORRECTION

Due to an editing error, the printed description of the MIDIMAN Portman 4x4/S parallel port PC MIDI interface in the July "Preview" section was misleading. The unit features four independent inputs and four independent outputs, enabling it to support 64 independent MIDI transmit and receive channels simultaneously.

HOT OFF THE SHELF

"Jurassic Dinosaurs and Other Fantastic Creatures" is a 99-track CD packed with dinosaur sound effects. There are 600 index points, and the set includes an Alien/Robotic/Supernatural creature section. Order the $99.95 set from 800/292-3755 or visit www.hollywoodedge.com...**Analog Devices' SSM2005 chip** integrates Rocktron's Circle Surround® 5.2.5 Decoder technology. The 3000+ transistor real-time processor IC can output 5.1 channels of surround sound from stereo inputs. Call 617/329-1241 or visit www.analog.com ...**Steinberg's WaveLab version 1.6** is the latest iteration of the 24-bit real-time audio processing and mastering program for Windows 95 and NT. Plug-ins available for WaveLab include a de-clicker, a de-noiser, a loudness maximizer and an audio optimizer. Call 818/993-4161 or visit www.steinberg-na.com ...**The Jensen Tools catalog** has more than 100 new products including electronic service equipment kits, scopes and meters, multipurpose tools and new tools with ergonomic designs. For a free catalog, call 800/426-1194 or check out www.jensentools.com... **The CONCEPT:FX CD-ROM** from F7 Sound and Vision has 195 royalty-free sound effects for both PC and Mac platforms. All 195 abstract "sonic edge" sounds are in .AIFF and .WAV formats and are reproduced at three resolutions. Price: $49.95 plus shipping. Call 813/991-4117 or visit www.zipmall.com/f7sound ...**Ensoniq's AudioPCI™ S5016 board for the PC** is offered with 2, 4, and 8MB wavetable instrument sets. The add-in board (also available as a chip set) manages resources on the PCI bus, including sound and wavetable MIDI music, and enables MMX systems to be compatible with legacy DOS software. Call 610/647-3930 or visit www.ensoniq.com...**Energetic Music's** newest release, "Technical #1," has 11 different musical selections composed for radio, TV, corporate and multimedia use. Price for the buy-out music package is $59.95. Call 800/323-2972 or surf to www.Netmusic.com/energetic. ■

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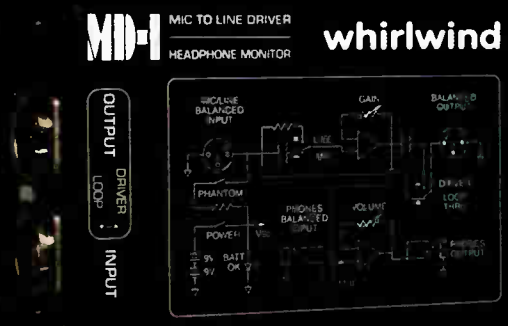
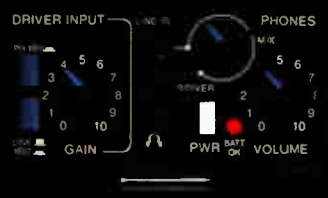


The Qbox™ • *The Qbox includes a headphone amp with a built-in speaker, a test tone generator, a built-in mic, plus Voltage Present LEDs to indicate phantom or intercom power on the line. You can monitor mic, line, or intercom signals with a headphone, earpiece, or the built-in speaker. You can use the mic and preamp to talk back up the line to the console or another Qbox, set levels with the tone generator, or test dynamic mics without powering up the main system.*



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TODAY'S CLUBS

NEW SYSTEMS MEET HEIGHTENED EXPECTATIONS

In the old days, live music clubs often relied on the band to provide a sound system. The results were often mixed: Bands brought in rigs that were oversized or under-powered, sometimes didn't work, took up valuable table space and obscured sight-lines. Today, live music clubs often must compete with larger venues, as well as with each other, and increasingly sophisticated patrons expect CD-quality sound at live shows. Though a smaller room can offer an intimate and relaxed atmosphere that can't be experienced at a shed or stadium, patrons now expect—and deserve—comparable production values.

Club managers looking for reliable, consistent sound can usually be persuaded to install a permanent system. Though the initial investment is significant, such systems do not have to be loaded in and out for each show, and they generally provide a better fit for the room than rental systems. A well-designed club system will satisfy engineers for national touring acts while also remaining simple enough for less experienced operators to handle. This month, we visit a few new installations to see how clubs are spending their money on sound.

KEY LARGO CLUB: NEW SYSTEM FOR A PORTLAND FIXTURE

The Key Largo Club in Portland, Ore., has been open seven days a week for more than a dozen years. Located on First Ave. in the Rose City's Old Town section, the 250-capacity club has seen early performances by many national acts, including Bruce Hornsby, Cheryl Crow and k.d. lang. Owner Tony DeMicoli rented a used sound system for many years, paying for it several times over in the process; he recently decided to buy a new system. He discovered that the price of a four-year lease will pay for the new system, and monthly payments are no higher than the rental on the old gear. At the beginning of the summer, following Portland's river-front Rose Festival, which is also booked by DeMicoli, Key Largo's new system was inaugurated with appearances by ex-Bangle Suzanna Hoffs and Commander Cody.

Below, Commander Cody at Key Largo.
Right, Key Largo owner Tony DeMicoli.

The centerpiece of Key Largo's new system is a Soundcraft K1 console featuring 32 channels for maximum flexibility. The K1 is simple enough for unseasoned operators to use, and the Soundcraft name satisfies veteran mixers. Though many Key Largo acts easily fit onto the 16 channels to the left of the desk's center master section, the extra channels allow larger input lists. All cables were supplied by Rapco, including a 32-pair PRO Snake with a 25-foot XLR split. The extra expense for the split was justified by the extra functionality: Live broadcasts and remote recordings are simplified, and separate monitor systems can also be brought in.

The snake split is not often used for a second console, but there are other benefits to having so many inputs and a split. The first 16 channels are normally double-patched to inputs 17 through 32 by plugging the lower snake channels in the split's fan-out into higher channels on the stage-box. This duplicates the stage inputs on both halves of the desk, allowing the K1 to act as two 16-channel desks sharing the same mix buses. This way, support acts with their own engineer can use the other half of the desk without affecting the headliner's board settings. This duplicate-input mode also allows independent control of channel EQ for monitor sends or for multitracked remote recordings fed from the direct outs on the K1. Already,

—CONTINUED ON PAGE 174

No Doubt

Tragic Kingdom Tour

No Doubt has sold 7 million copies of their third album, *Tragic Kingdom*, which has generated four Billboard Top 10 singles and also garnered a Grammy nomination last spring. Their catchy, ska-tinged guitar pop songs have caught the attention of the MTV generation. Lead singer Gwen Stefani, who has been called the anti-Courtney Love, charms the audience with her pixie-ish stage presence, energetically prancing and posing in Doc Martens and having FUN.

No overnight success story, No Doubt's ten-year history includes the suicide of original member and singer John Spence, and the more recent departure of founder and keyboardist Eric Stefani, Gwen's brother, who left to work as an animator on *The Simpsons*. The band's material reflects the group's optimism and forbearance in the face of adversity.

The business card of No Doubt's front-of-house engineer, Jacques Von Lunen, reads "the tallest sound guy around," and he comfortably stands on the arena floor with no mix riser, towering over his Midas XL-3. He has only been mixing live sound for six years and tells a "right place, right time" tale of meeting No Doubt a year ago when they suddenly needed an engineer at a festival in Europe, where he was already mixing Bad Religion. The gig went well and the rest, as they say, is old itinerary. It turned out they had many old friends and contacts in common, and he's been with them since.

Tom Dumont and Gwen Stefani peer at the crowd.

PHOTOS: STEVE JENNINGS

(L to R) Paul Winnicky, monitors; Chris Iacuone, crew chief; Jacques Von Lunen, FOH engineer

Von Lunen claims his mixing philosophy is to "balance everything and then keep the vocal on top." This deceptively simple approach succeeds in spite of Stefani blowing off this show's sound check—understandable given the intensity of her performance and a grueling five-per-week tour schedule that has been almost nonstop since the album's release two years ago. (As you read this, the tour's North American leg of arenas and summer sheds has wrapped, and the band is doing shows over in Europe before getting ready to make another record.)

Von Lunen credits Clair Bros. with excellent support. "Clair basically gave us anything we wanted, and everything we carry is just as requested," he says. Inserts include BSS DPR-402 compressors used on keyboards, trombone, trumpet, bass, acoustic guitar and on the stereo drum sub-group. For Gwen Stefani's lead vocal, Von Lunen uses a Summit DCL-200 with a TC Electronic 1128 programmable equalizer patched to its side-chain. Von Lunen also uses a TC Electronic 2290 delay as a doubler, a Lexicon PCM 70 to "power flange" the guitars, and a Lexicon 480 for vocals and drums. There are also three Yamaha Pro-R3 digital reverbs available: One is used with a long reverb-flange on the horns, a large hall setting is used on percussion, and a chamber is used on snare drum.

Chris Iacuone is the FOH system engineer and Clair's crew chief. He has the speakers trimmed nice and high at 42 feet, which may be the secret to success in Portland's Rose Gar-

BY MARK FRINK

den Arena, as most every P.A. that's been hung high there has sounded good. The top two rows of the main speaker arrays are S-4 P-type long-throw boxes, with a third row of S-4 short-throw F-types. Below that are two rows of Series II R-4 speakers, which are roughly half an S-4. The sides of the P.A. wrap with two rows of the short-throw S-4s and three rows of R-4 below those, all pulled back for a good vertical splay. There is also a small center cluster of four P-4 "Pistons," and two small P-2 speakers are on the down stage edge for front fill. The Clair system is JBL-loaded and is powered with Carver-manufactured PM-2.0t and CBA-1000 amplifiers. System controllers are Clair's Coherent Transfer System S-4 processors, used with eight TC Electronic 1128 programmable equalizers and a TC Electronic 1280 stereo delay. Behind the mix position, a hanging delay cluster with six R-4 speakers in two rows helps cover the back of the arena. As I enter before sound check, Von Lunen and Iacuone are employing the time-tested method of tapping the board mic with a Sharpie to synchronize the delayed speakers at the back of the hall with the mains.

After a quick inspection of the input list, Von Lunen happily confesses to being a Shure endorser. Mics on Adrian Young's drum kit include a Beta 52 on kick, Beta 57A on snare, SM-98s on the toms and congas, SM-81 condensers for overheads and hi-hat and an SM57 on timbales. The trumpet and trombone are also miked with the Beta 57A. SM58 mics are used for vocals, including the capsule on the Shure UHF wireless used for Stefani's vocal. Tony Kanal's GK-powered SVT cabinet is also miked with a Beta 52. The only departure is on Tom Dumont's guitar rig; Sennheiser MD409s are used on the vintage tweed dual-12 Fender Tonemaster cabs and the tweed Fender quad-12s used with his Mesa Tremoverb head.

Paul Winnicky is the band's monitor engineer and is assisted by Clair's monitor tech Bob Bickelman and third man Ed Frebowitz. Monitors are mixed from another Midas XL-3 with ten channels of TC Electronic 1128 equalizers and the requisite remote fader head. Though there are two pairs of 12AM floor monitors down stage center, Stefani uses a Garwood IDS system for wireless in-ear monitoring and listens on UE-5 Ultimate Ear custom molds, which provide her the freedom to run all over the stage, wings and floor stacks. Outboard equipment in monitor-land includes Drawmer gates, BSS compressors, a Yamaha SPX 900 and a Roland SDE-3000. Onstage, the band listens to pairs of Clair's 12AM wedges; two pairs of R-4 cabinets are flown for sidefills. Opening act Weezer carried Audix mics and used a PM-3000 at front-of-house and a Ramsa 840 console for their stage mixes.

If No Doubt's long road in the music business is any indication of "what it takes," then there's hope for musicians who continue to slug it out year after year in the clubs, trying to move up to the next level. The band's stage performance is as lively as the album's promise and, uncharacteristically, the lights are not the most memorable part of the show. The group's performance is strong, and it's hard to find anyone in the audience without a smile on their face. Even a jaded concert veteran like me can't help feeling it would be fun to see the show again. ■

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

—FROM PAGE 170, TODAY'S CLUBS

one local band has taken advantage of these features by bringing in three Tascam DA-38s and patching from the K1's direct outs to track a live recording.

Also at the mix position is a Marantz PMD 350 combination CD-and-cassette, plus a Fostex D-5 DAT recorder. Two pairs of recording sends are taken from the K1's four matrix outputs, allowing levels from back-line amps to be rebalanced from the subgroups so that screaming bass and guitar amps are not lost on the tapes. Blank cassettes and DATs are kept in stock for bands to purchase. The system was sold to Key Largo by Portland's Super Digital Ltd., which is owned and operated by former Kenny G and MSI road veteran Rick McMillen. Along with retail pro audio at mail-order prices, Super Digital provides a full range of mastering and replication services, and recordings made at Key Largo are easily turned into a demo tape or CD at their nearby studios.

Because this system is used every night of the week, heavy-duty Belden mic cables with Switchcraft connectors were ordered from Rapco. A six-pair extension box installed down stage keeps front-line cable runs neat. Rapco also custom-built an eight-circuit Speakon panel for the back of the amp rack with engraved labels and color-coded MDP connectors to make circuit identification easy.

DeMicoli says that Audix mics were selected for their sound quality and durability. "Several bands in town carry Audix, and even with the old P.A., we could tell the difference," he explains. There are five OM-5 vocal mics, selected for their feedback rejection, which is especially important on smaller stages. The rest of the inventory includes two D-1 mics for snare and hi-hat, five D-2 tom mics, two D-3 guitar amp mics and Audix's brand new D-4 kick drum mic.

Two Symetrix 532E stereo graphics are installed, one assigned to the stereo mains and another to the monitor feeds. Two Symetrix 551 parametric equalizers are also used on the mains. These are pre-adjusted based on a combination of SIM, Smaart and LMS measurement systems, plus, of course, input from visiting engineers. In this way, the main speakers are EQ'd at turn-on, though adjustments can always be made on the graphic if necessary. At the mix position, there are four channels of Symetrix gates and three compressors for inserts. Effects are Yamaha's REV500 digital reverb and Symetrix's new 606 Delay F/x machine.

All of the speakers at Key Largo are by Stage Accompany, noted for the smooth response of their unique high-frequency ribbon transducer. "When we demoed them, we got comments from both musicians and customers about the sound," DeMicoli recalls. "They have one of the few high-frequency drivers that provides a recording studio sound at close distances." The mains are two SA C-27 single-15 full-range traps flown from the ceiling and two double-15 C-14 subwoofers on the floor. Monitors are three L-24 single twelve wedges for the front line mix and an L-27 single fifteen for the drum mix.

The system is powered with Carver Professional's new PX Series amplifiers, selected for their sound quality and low price. Listening tests were performed with other top-name installation amps, and the Carvers were hands-down winners. Though the PX amps are rated for 2-ohm loads, none of them are run that low; every speaker has its own channel of PX 1450, ensuring high headroom, good damping and low distortion. The Key Largo system has the clean, clear sound of a studio control room, but its relaxed, intimate atmosphere helps create that sparkle you only get from live music.

Folks visiting Portland to attend the North By Northwest (NXNW) conference October 16-18 (512/467-7979) are encouraged to take the MAX light rail to the Burnside Bridge stop and come check out the new Key Largo system and the showcased bands while enjoying a local microbrew. —*Mark Frink*

PHOTO: JAMES RADKE

PHOTO: STEVE JENNINGS

Left: Yoshi's production manager/chief engineer Dan Pettit. Below: Yoshi's jazz room features a fully self-powered Meyer system.

YOSHI'S NITESPOT: WORLD-CLASS JAZZ CLUB FINDS A FANCY NEW HOME

Four years ago, it seemed as if Yoshi's Nitespot was headed for bankruptcy. The Oakland, Calif., jazz club/Japanese restaurant—named for Yoshi Akiba, co-founder and former wife of co-founder Kaz Kajimura—had been a fixture on the Bay Area jazz scene for nearly 20 years, booking national acts such as Tony Williams, Shirley Horn, Stanley Clarke, Jack DeJohnette and Michael Brecker. Yet for some reason, business began to decline. After much agonizing, the owners, Akiba, Kajimura and Hiro Hori, sold the property to the Dreyer's ice cream company next door and began arranging to shut down. Then, a twist of fate—the business began to bounce back. But with the building sold, if the owners wanted to stay in business, they would need to relocate.

In another surprising turn, the city of Oakland came to the rescue and approached the club owners with a plan to offer financial support. There were talks of moving Yoshi's across town to the city's historic Jack London Square, a shop- and restaurant-lined port that

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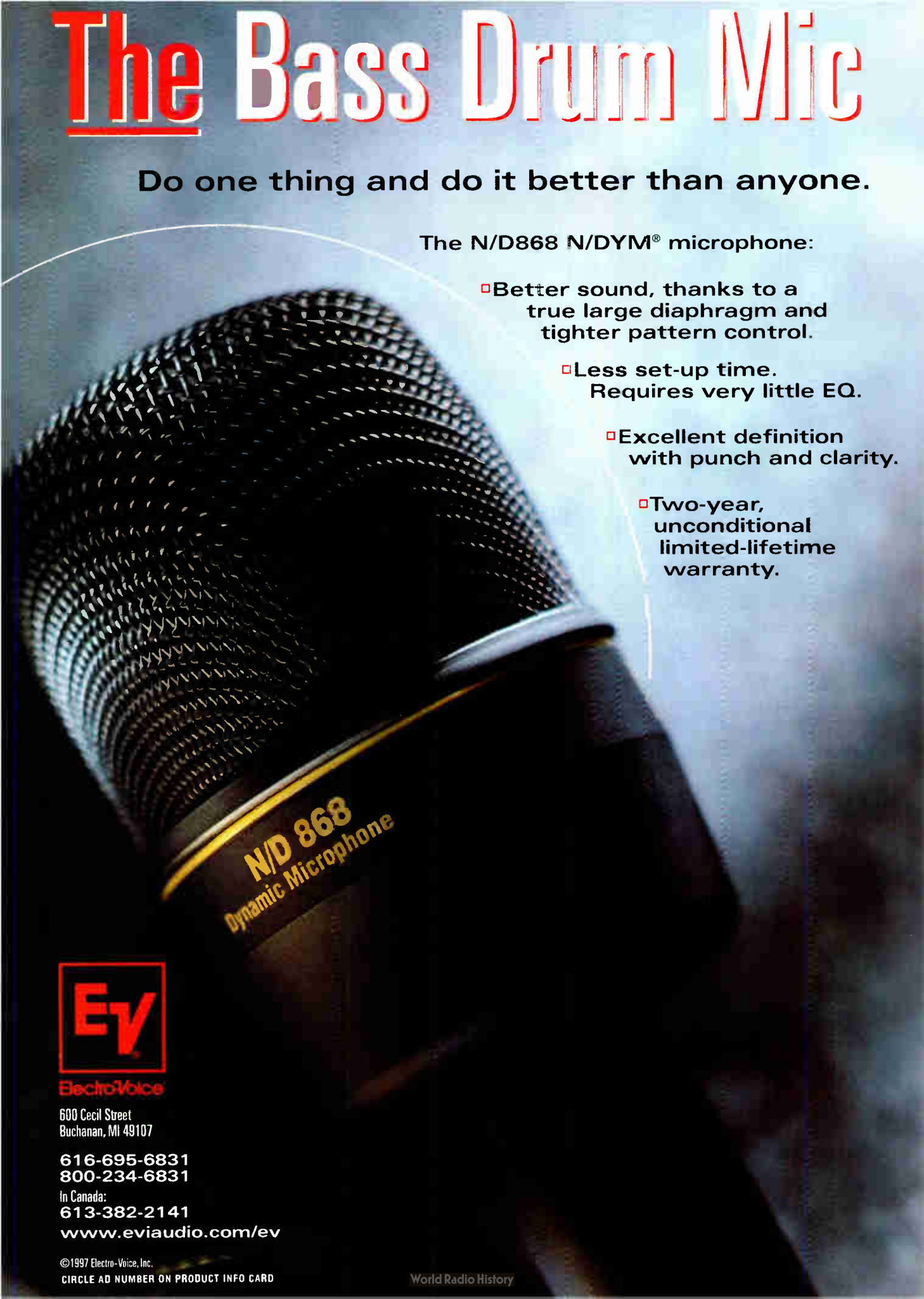

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links downtown Oakland to the San Francisco Bay. For the past few years, the square has undergone extensive renovations in an effort to improve commerce, and city officials felt that bringing Yoshi's to the square could give the area the push it really needed to draw crowds once again. The Oakland Redevelopment agency agreed to contribute two million dollars to the overall relocation/renovation expenses, totaling more than $5 million. In addition, the Port of Oakland pitched in more than $2 million.

The new venue design was two years in the making. Architectural design was by Hiroshi Morimoto, who had also planned the original Yoshi's, and by the Engstrom Design Group. Acoustic design was the work of Tom Schindler of Charles Salter Associates (San Francisco) in collaboration with Berkeley, Calif.-based Meyer Sound, which supplied the venue's new sound system.

The restaurant and club have been built into the ground floor of a seven-story parking structure, alongside railroad tracks. To ensure noise isolation, the club was built as a structure within a structure, and Amtrak trains now pass by unnoticed only ten feet away. Inside, a semicircular, four-tiered floor plan offers seating for more than 300 patrons, yet somehow creates a feeling of intimacy. "The nice thing about the room is that even when it's sold out, completely packed, it's still comfortable," says production manager Dan Pettit, who has been a sound engineer for 15 years and has been Yoshi's' house engineer for three years. Plush banquettes

NEWSFLASHES

All audio and lighting for the famous **Houston Livestock Show and Rodeo**, which is reportedly the world's largest rodeo, is being provided by LD Systems (Houston, TX). The event takes place in the Astrodome, and QSC reports that LD uses QSC EX4000 amplifiers to power the low- and mid-frequency transducers and EX1600 amps for the highs...The new **Hard Rock Cafe** in Cancun, Mexico, purchased a 40-channel DDA CS3 console from distributor **Audio Dynamics**...The fifth annual **Classic American Guitar Show** featured a Celebrity Jam, which took place in the 700-seat theater at Five Towns College (Dix Hills, NY). All technical aspects of the show were coordinated by Dave Wilkerson of **Right Coast Recording** (Lancaster, PA). The system spec'd by Wilkerson included a PAS TOC™ (Time Offset Correction) system, consisting of two RS-2.2s, two FT-2.2s and two CB-2 dual 18 sub cabinets on each side. The PAS gear was provided by Steve Remote of **Aurasonic Ltd.**...New York City's new production of *Candide* at the **Gershwin Theatre** features a sound system provided by **Westsun** (Winnipeg). The system makes use of Renkus Heinz cabinets powered by CyberLogic NC-812 and 807 power systems. The console is a Cadac F-Type. Sound design for the production is by **Jonathan Deans**...Summit Audio reports that the current **Enrique Iglesias** tour is using four Summit DCL-200s on eight channels of vocals. The tour, which started in the U.S., will also play dates in Mexico, South America and Spain...**Harrah's Casinos** in Atlantic City and St. Louis acquired Allen & Heath consoles. The Atlantic City venue has a new 32-channel GL4, and the St. Louis riverboat casino purchased a 24-channel GL2000...The **Mondrian Hotel**'s (Hollywood) new sound system was installed by **Bradford Wells & Assoc.** (Los Angeles). New gear in the hotel lobby includes a 12-channel Allen & Heath mixer and a pair of Tannoy System 215II dual concentric studio monitors powered by Bryston 4BTHX amps. The hotel's reasoning for installing such high-end gear for a lobby P.A. is that it caters to mainly entertainment-industry clientele who would appreciate high-quality audio. The Mondrian's Sky Bar also has new gear, including four Tannoy System 800 studio monitors with Limpet power modules and a PS115 powered subwoofer...An Electro-Voice DeltaMax loudspeaker system was installed at the **Arena Cafe** in Hollywood. Evangelists of the **Billy Graham Ministries** also used a Deltamax system for their spring South African tour...Tibetan spiritual leader the **Dalai Lama** paid a visit to Taiwan this past March. The sound system used for the event included Midas XL464 and XL248 consoles provided by distributor **Taisheng Trading Corp.** ■

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combine with chairs and tables, and since there are no support structures, every seat has a direct sight line to the stage. The walls are painted a dark purple, "to suggest the night sky," according to designer Eric Engstrom; a series of rich paintings of jazz legends lend a gallery feel to the room.

The centerpiece of the sound design of the new club is an all-self-powered system by Meyer Sound. Pettit says the new system is quite a departure from the old configuration, which was an assortment of Electro-Voice and Klipsch gear. "It was kind of a rag-tag setup, but it worked well with the acoustics of the [old] room," he recalls.

"We have a left-center-right cluster configuration," says Pettit of the current design. "On the left and right sides are CQ-1s, with 15-inch drivers and 4-inch horns, offering 80 degrees of horizontal coverage. A pair of dual-amped PSW-2 subwoofers fill out the frequency range down to 35 Hz on side coverage. In the center bin, we have three CQ-2s." CQ-2s differ from CQ-1s in that they provide 50 degrees of horizontal coverage. In addition, four HM-1s are soffit-mounted into the stage, to help fill in the front coverage and to enhance visualization of the audio image. "I've been just experimenting with them, turning them on very subtly. I like them a lot. They're really smooth and clean," says Pettit.

The system also incorporates Meyer's RMS™ Remote Monitoring System, a real-time network system that enables the engineer to monitor parameters such as amplifier voltage, power output and driver status from a remote PC. "RMS shows the capacity and output of every speaker; it lets you know at what percentage of capacity the whole speaker is running. It's really just a safety measure. You can see when you're entering the danger zone," says Pettit.

Room response was optimized using Meyer's SIM System II, a dual-channel system for making audio response measurements (such as signal-to-noise, spectral content) and applying electronic corrections to compensate for inconsistencies. Room analysis was performed by Meyer's own "SIM wizard," Bob McCarthy. "There's really only two frequencies—160 Hz and 2.5 k—that become bothersome [due to slight resonances], and I think those are inherent frequencies of the room," says Pettit. "I can adjust those on individual channels."

Pettit's console is a 32-input Crest Century TC Series board. Pettit says he is particularly enjoying his roomy new mix area. "It's the most spacious position I've ever had. It was designed with respect for the engineer, which is rare."

Thanks to the combined efforts of Charles Salter, Meyer and the architects involved, the room is a sonic success. Even the mainstream media is taking notice: The *San Francisco Chronicle*, not known for its audio reviews, ran a feature entitled "Yoshi's Sounds as Good as It Looks," in which it noted "The sound—a balance of the natural acoustics and a pricey new sound system—is crisp and clear."

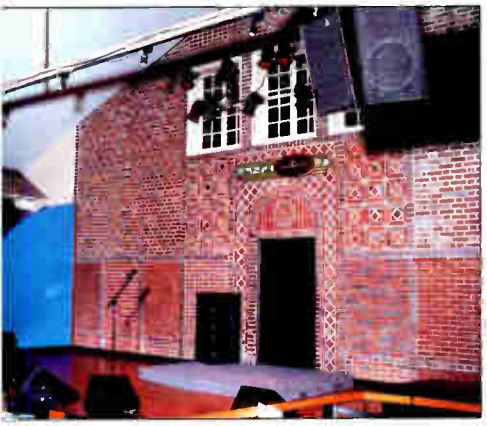
The new Yoshi's opened on May 9 with George Shearing performing to a sold-out house; performances the first week included Herbie Hancock, John Lee Hooker and Tito Puente. And business has been booming ever since, with the restaurant running consistently at capacity and the club 60% to 100% full every night.

"Yoshi's is really unique in the jazz world, because it's very rare to find a club that is open seven nights a week presenting jazz," says Pettit. "The economy historically does not promote and support that kind of environment. The Bay Area has enough educated musical followers to keep a facility open seven nights a week, and I think it's a credit to the owners to put the devotion and dedication into a club and trust the public's good taste." —*Sarah Jones*

CAFFÉ MILANO: BRINGING DIVERSITY TO NASHVILLE

One of the long-standing ironies of Nashville was that, for a town nicknamed "Music City," there were precious few places to play live. Fortunately, that has changed considerably over the past five years, as Nashville has become more musically and culturally diverse.

A number of new clubs have opened, and a few have been upgraded, but the premier sit-down venue is Caffé Milano in the Nashville suburb of Franklin. Starting out in 1994 as an Italian restaurant with a small stage, Caffé Milano offered the upscale musical types from L.A. who were moving to Nashville's more affluent outskirts the chance to get some decent marinara and a place to jam. Then, some of Caffé Milano's original owners eyed a spot on Fourth Avenue in the city's revitalized downtown area, where they opened a larger version of the venue in 1996. With a combination of a location, timing and a canny booking



The Caffé Milano stage

policy—one that lured Chet Atkins out of semi-retirement and back into a regular Tuesday night gig—as well as appearances from new Nashvillians such as Mark Knopfler, Peter Frampton, Donna Summer and Michael McDonald, Caffé Milano took off.

The 6,000-square-foot room has a small (15x20-foot) stage at one end of an almost all-brick rectangle, with the FOH mix position located in a thick "L" off the left halfway into the room. The rear wall and most of the surrounding walls are open-faced brick with strategically placed acoustical panels, which were recommended in a room analysis done by Dallas-based designer Russ Berger.

Co-owner Pino Squillace hired live sound engineer and Nashville studio owner (The White House) Russ Long to create the room's sound system. "I had been out on the road with [Christian artist] Steve Taylor opening for The Newsboys, and they were using these Canadian Adamson speakers," recalls Long. "I thought they sounded great and had a lot of efficiency for their size, so I contacted another engineer who had experience with them, Jeff Nulty [now the sound tech at Lee Greenwood's theater in Pigeon Forge, Tenn.], and we put the system together. It's a sizable room but a small stage, so we wanted to keep the speakers off the stage yet still maintain an intimate club atmosphere."

The system consists of four Adamson MH 121.5 (12-inch horn, 2-inch tweeter) speakers flown in double-bin clusters on either side of the stage, and a pair of Adamson B-318 subs on the stage edge. Crossover processing is via an Adamson DX4000. The main system is powered by a Crown M5000 for the MH121s and a Crown MA2400 on the subs. A JBL rear speaker in the restaurant is run off a delay line. The monitor

rig consists of four Adamson FM121.5 speakers (12-inch speaker, 2-inch horn) and a custom drum monitor powered with a pair of Crown MA2400 amps and EQ'd with a White 4001 ⅓-octave graphic. House mics are garden-variety, including Shure SM57s, Audix OM-5s, an AKG D112 and an A-T 4031. The venue also took delivery of one of the first production versions of the Mackie 40·8 live sound console, which replaced a rented Crest Century console last April.

Both Long and house sound engineer Marcus de Paula note the room's tendency to get brighter as it gets louder, thanks to the brick walls. "When I came in here earlier this year, I warmed the EQ curve up," says de Paula, referring to the BSS FCS-960 dual 31-band graphic EQ used to tune the house. "I pulled the high-mids—the 4 to 5kHz range—back between 3 and 4 dB and also rolled off some of the low end, since the three 18s are pretty loud for this-sized room, and one of them was blown once before. The problem frequencies are at 250 Hz, 315 Hz and 400 Hz on the low end, so I cut them about 6 dB, and at 800 Hz and 1 kHz, which I pulled back between 4 and 5 dB. That's the basic curve; then visiting engineers can adjust it for their acts as they see fit."

The loudest act so far has been the reformed Bad Company lineup, now known as Lend Us a Quid and featuring Duran Duran's Andy Taylor. "That got us up around 114 dB," de Paula recalls painfully. "I try to keep it maxed at 107 dB."

One advantage the Mackie console offers, explains de Paula, is its four matrix outputs, which interface with the four monitor feeds originally designed by Russ Long, two of which are used as a stereo feed for regular live broadcasts on local Lightning 100 radio. The venue also offers three Betacam video cameras (at additional charge; acts are also charged for the use of sound equipment and personnel), and the video sound feed is also derived from the Mackie matrixes.

"It's a great room for music because of the combination of the sound system and the vibe," says de Paula. "It can handle the volume, and that's something else Nashville's getting used to." —*Dan Daley*

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SHURE PERSONAL MONITOR SYSTEM

Shure (Evanston, IL) enters the in-ear monitor market with the PSM600™ system, available in hard-wired and UHF wireless versions. The personal bodypack receiver includes a defeatable fixed-threshold peak limiter, volume and balance controls and dual-mode EQ. A MixMode™ feature allows users to mix two mono signals instead of a stereo signal; in MixMode, the balance control adjusts level between mono sources. The wireless unit operates in the 626-662MHz range, and each system operates over two selectable frequencies, providing interference protection. Ten frequencies are available, all compatible with other Shure VHF and UHF systems. Features of the half-rackspace transmitter unit include tone key squelch, stereo LED input meters, mono/stereo source select and headphone monitor output with volume control.

Circle 315 on Product Info Card

NADY SILVER SERIES

The Wireless 331 and Wireless 332 Silver Series high-band VHF systems from Nady Systems (Emeryville, CA), start at $199.95. The 331 has a single antenna, whereas the 332 offers two antennae and Nady's DigiTRU Diversity™ digital processing circuitry for maximum dropout protection. Both models are rack-mountable with front-mounted antennae, and both feature Nady's patented companding circuitry for up to 120dB dynamic range and are available with ¼-inch or XLR output connectors.

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EV S SERIES FLOOR MONITOR

Electro-Voice (Buchanan, MI) introduces the S15M floor monitor. Containing a 15-inch woofer and a DH2010A compression driver and Time-Path™ phasing plug on a 80°x55° horn, the Thiele-Small vented enclosure offers solid performance down to 77 Hz; cabinet geometry allows the monitor to be set up with the front face at 40° or 25° relative to the floor. Rated at 250 watts, the S15M includes EV's PRO™ self-setting HF driver protection circuitry. Price is $600.

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APOGEE EXPANDS ACS LINE

Apogee Sound (Petaluma, CA) adds three models to its ACS loudspeaker line, which may be used with or without a processor. Designed for monitor, delay and distributed applications, the $79 ACS-Point5 and $157 ACS-Point5 Pro (higher output) are compact, full-range systems featuring injection-molded enclosures, a 5.25-inch mylar composite woofer, ½-inch mylar tweeter and a 100-20k Hz ±3dB frequency response. Designed as a speech reinforcement speaker (frequency response of 130-15k Hz ±3 dB), the $386 ACS-Sat3 can be augmented with a subwoofer for full-range applications. It has a 6-inch LF driver and 1-inch HF driver; 100W max power handling with peak SPLs of 114 dB.

Circle 318 on Product Info Card

AUDIX OM6 MIC

Audix Corporation (Lake Forest, CA) has introduced its OM6 microphone. The OM6 is a handheld hypercardioid dynamic model that offers flat frequency response from 48-9k Hz and can handle input SPLs of 144 dB. The latest in Audix's OM Series, which includes the OM3, OM5 and OM7, the OM6 offers outstanding off-axis rejection characteristics. List price is $349.

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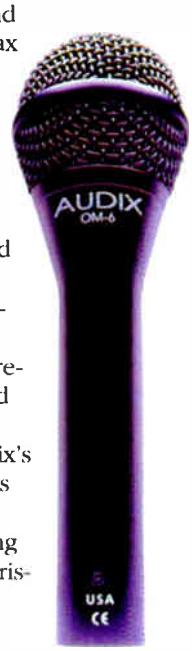

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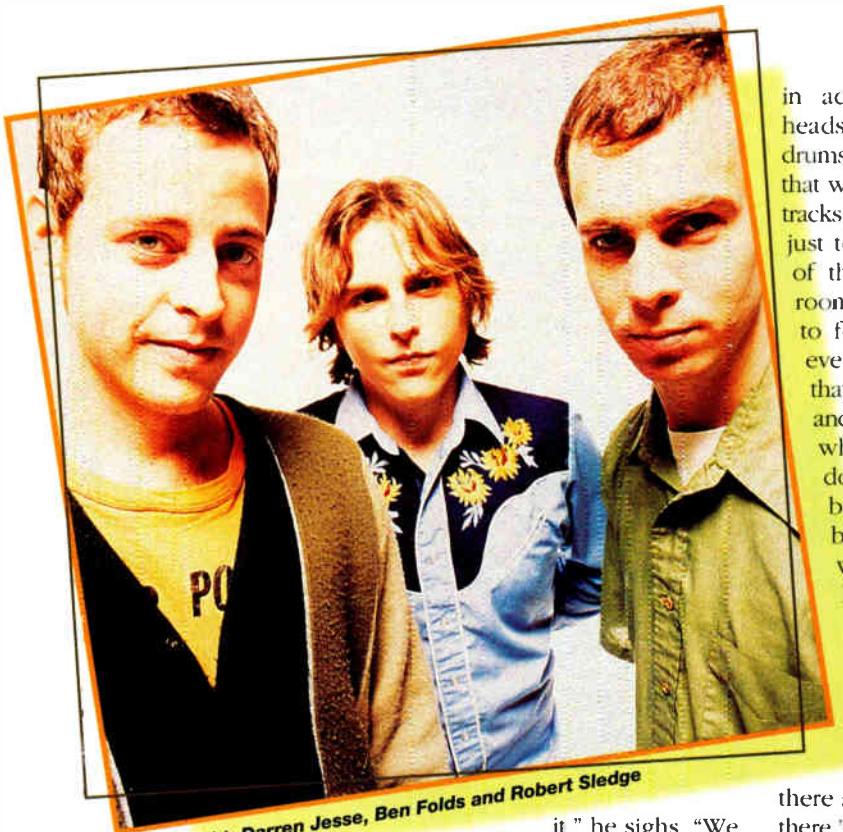

Left to right: Darren Jesse, Ben Folds and Robert Sledge

BEN FOLDS FIVE

PLAYING ON FAITH

by Robin Tolleson

Despite the success that *Whatever and Ever, Amen* has had in helping pull the Ben Folds Five out of the alternative rock pack, you get the impression that this unorthodox piano-led trio has misgivings about the way they recorded their sophomore effort (and Sony 550 debut). "It was a major mistake, a major waste of money, and it came out exactly like I wanted it to," the 30-year-old Folds says good-naturedly. True, it was tracked in the familiar surroundings of Ben's former bachelor pad in Chapel Hill, North Carolina, and Folds even got to listen back to the tracks on his own everyday speakers.

"The idea was that we needed our own headspace, but it's more expensive than you think when you get into it," he sighs. "We recorded on two DA-88s and put most of the money into soundproofing the house so the neighbors wouldn't hear it, and into mic pre's." What Folds and co-producer Caleb Southern anticipated being a $40,000 to $50,000 record tripled in cost pretty quickly, and they found themselves recording in an inferior studio for a moderately high budget. They discovered having the band in the cramped living room only worked on the softest tracks. For most of the songs, drummer Darren Jesse and bassist Robert Sledge were sent packing, with gear, to separate bedrooms down the hall.

Sledge gives the trio some distortion and fuzzed wah effects, using a Big Muff and a 4x12 cabinet, and *cranking* it. Jesse also tends to bash a little bit—he plays his ride cymbals like crashes, broken up rather than ping-y. Southern normally sets mics back off the drums, but couldn't in this situation. "I had kick, snare, top and bottom, and rack and floor, and a hat mic in addition to the overheads—eight channels of drums," he says. "Every time that we'd set up for different tracks, I'd move them closer, just to get a better picture of the drum without the room causing the cymbals to fold right back in on everything. We deadened that room with mattresses and blankets on the walls, which I don't like to do. But this room was bad when it was live because the dimensions were way too small, like 10 by 15 feet, with eight-foot ceilings," Southern says. "It's not a big old house with high ceilings and wood everywhere. But they'd practiced there and were comfortable there."

Folds didn't sing during the recording of basics, partly to prevent "ghost" vocals in the piano tracks, and partly because he hadn't finished the lyrics yet. That presented an extra challenge because the players couldn't see each other for cues. "If we hadn't played together a lot over the last few years, that wouldn't have been advisable," Folds admits. "I brought in songs and Robert was frustrated that I wouldn't tell them what the lyrics were while I was working on it. We'd start playing and I'd go, 'This goes like this, just play this,' and they were trying to embellish. But we're pretty intuitive players, and it worked."

One of the tracks they did record together in the same room was "Brick." "On 'Brick' I played my old, turn-of-the-century Stieff upright, and used two C-ducers, C-strips on the piano with no mic," Folds says. "Then the leakage thing isn't even an issue. I like to put the instruments as close together as

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BERNIE KIRSH

THE MAD HATTER'S APPRENTICE

by Mike Haid

Aristotle said, "We are what we repeatedly do. Excellence, then, is not an act, but a habit." Veteran engineer Bernie Kirsh has been in the habit of creating excellence in the engineering of electric and acoustic jazz for more than 20 years. He has engineered practically every recording project for the legendary jazz keyboardist Chick Corea since 1976, including three Grammy-winning releases: *The Leprechaun*, the Elektric Band's *Light Years*, and *The Akoustic Band* project.

Chick Corea

Kirsh's relationship with Corea began in 1975 when, as a staff engineer at Electric Lady Studios in Manhattan, he was asked to fill in for veteran engineer Ken Scott while recording an acoustic jazz track titled "Song for John" for bassist Stanley Clarke's *Journey to Love* LP featuring Clarke (bass), John McLaughlin (guitar), and Chick Corea (piano). Kirsh had already worked as an assistant engineer on John McLaughlin's classic Mahavishnu Orchestra recording *Birds Of Fire*. Kirsh was then asked to engineer a live broadcast of Corea's popular jazz fusion band, Return to Forever, and Corea and Kirsh have been working together ever since.

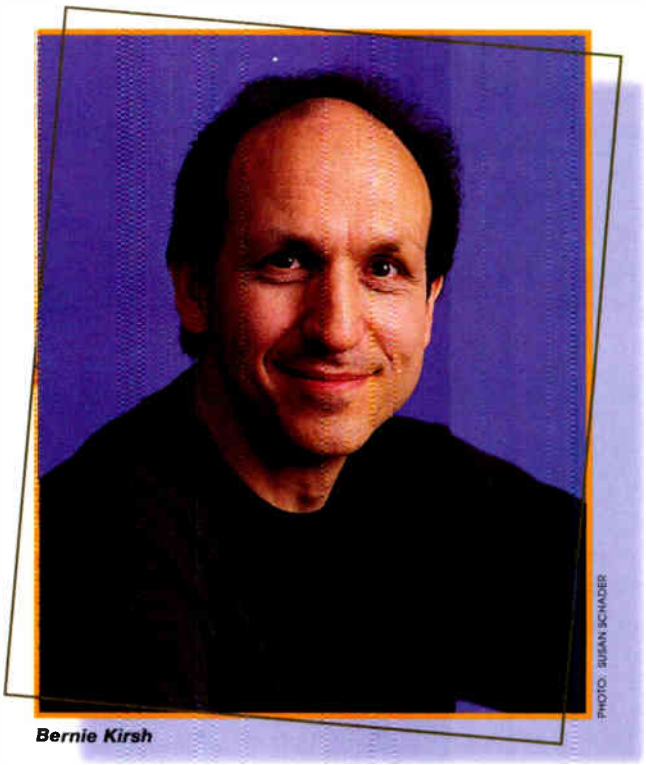

PHOTO: SUSAN SCHADER

Bernie Kirsh

"One can't have any greater respect for another than I have for Chick," Kirsh says. "Not only as a musi-

—CONTINUED ON PAGE 190

THE CICADAS

RODNEY CROWELL EXPLORES HIS POP SIDE

by Robyn Flans

How many groups do you know who would put a picture of a big—and from this writer's perspective, fairly unattractive—bug on the cover of their debut album? Hank Devito's hand-painted cover art for The Cicadas, a group of veteran music makers, features the insect known to migrate in cycles.

"They're nasty little critters," says Cicada Rodney Crowell, "and they make a lot of noise. They may disappear, but they come on back later."

Just like Crowell himself, who has taken on many different forms—sideman, singer/songwriter, solo artist, and now bandmember. Which leads us to another fairly unusual question: Leaving your band to pursue solo stardom is common in the music business, but whoever heard of a solo artist joining his own back-up band? Leave it to Crowell to do it backwards!

PHOTO: HANK DEVITO

L to R: Steuart Smith, Michael Rhodes, Rodney Crowell, Vince Santoro

"I have amused myself with this as well," admits the singer/songwriter, who started out as a sideman with Emmylou Harris and finally graduated to solo status in the mid-'80s. "I am doing this backwards," he concurs. "I'm doing the Merlin thing—I'm growing younger."

Crowell sees the band mentality as younger and looser. "The truth is that being in a gang is more fun than being on your own," he continues. "And the truth is, I reached a point in my life where solo singer/songwriter is too self-important—self-consciousness comes with that turf. Becoming part of the group kind of deflects that kind of self-consciousness and the

group becomes the consciousness. Sure enough, what it created was a way to be looser and make music from a less self-important place. That's a long-winded way of saying it's more fun," he laughs.

The other Cicadas have been with Crowell for years. Vinnie Santoro (drums and vocals), Steuart Smith (keyboards) and Michael Rhodes (bass) all toured with Crowell in 1985 in support of Crowell's *Street Language* record. Santoro and Smith remained for four more years after Crowell's very successful *Diamonds and Dirt*. Rhodes came back for a big band project and a tour they called the New Spirit Revue. In essence, these guys have been promoted.

"Hey, they earned it," Crowell says. "Steuart Smith has always been an artist. So has Vinnie Santoro and Michael Rhodes. I was just the one who said, 'Ya know what? We're going to make some adjustments. You guys are going to come to the fore and assume some responsibility here.'

"Vinnie used to steal my show with the two or three numbers he did. I would say to him, 'Vinnie, if you had to do 13 or 14 songs and I only had two, I could steal the show from you.' He is such a great vocalist and kind of a heart and soul of that unit. He just got promoted to co-lead singer because he worked hard and long. Steuart and I have collaborated for years going back to *Street Language*. His musical contributions were very productive, so he not only got promoted to artist in the band, he also became a producer based on the collaborative history we had together."

The other big change is that Crowell, best known as a country songwriter/artist, has switched formats, now creating rock 'n' roll—sometimes more edgy and other times more poppy—a different palette of musical colors for Crowell and his buddies. It may come as a big shock to longtime Crowell fans.

"People are just going to have to get over that," he says, bluntly. "God, don't people have a big enough imagination to stretch out a little bit? This is just good music. Nobody can tell me it's not. It can be not good music to them, and that's okay, but not because it's not 'Rodney Crowell, country guy.' There is no format for that country stuff anymore. There is no outlet for Emmylou now. It's a different world. That reality, combined with the reality of what I want to do for myself personally, has created a situation where I'm making music for me. That's really the only reason anybody should ever do it."

Jim Ed Norman, President of Warner Bros./Nashville, gave Crowell the opportunity. "I produced a new singer named Claudia Church, a Brady Seales record and a Beth Nielson Chapman record for Jim Ed and Warner Bros.," Crowell says. "I was talking to Jim Ed and said, 'You know, all I want is for somebody to support my creative impulses,' which is asking a lot, I know. It's a lot of money, but I can produce enough things for Jim Ed to make him enough money that he can spend a little money to support my creative impulses," Crowell laughs. "And if we roll 7's on something, then it's even better. I'm grateful to him because he has the courage to support my creative wanderings."

Crowell describes the roles he and Smith played as Cicadas co-producers as "paint by numbers." "It was, 'What do you think?' 'You think you can get out the bondo and the spray paint and start fixing this thing up?' It's really as simple as that, or even simpler—'Let's do this.' 'Okay.' 'I've got these songs and here are some ideas.' Then we started arranging them and Steuart started to put his musical stamp onto it and it just grew into something. We went in and rehearsed like a band. Then we went into the studio and recorded it like we rehearsed it."

Surprisingly, the toughest part of joining a band came for Crowell during the rehearsals. "As we started doing it live, it began to reveal my inadequacies as a guitarist," he laughs. "So I started woodshedding and talking to my friends who were sidemen, saying, 'Oh man, I'm having to stay home and practice.' [Former bandmate] Hank Devito said, 'Now you know what we've been having to do for years.' I had to practice the guitar parts. It wasn't a matter of getting up there and strumming a guitar and singing anymore. It was putting my talent on the line. I need a little more time to where it's second nature for me to be a guy in the band, but the recording was no problem because there is a little bit of a net under you in the studio. But live it's, 'Here it is, and if I miss my bit, I don't get another shot.'"

The truth is that being in a gang is more fun than being on your own. I reached a point in my life where solo singer/songwriter is too self-important.

—Rodney Crowell

Once they went into Nashville's Treasure Isle Recording with engineer/mixer Peter Coleman, though, they were ready to record, as evidenced by several first takes that were used on the album. "These guys are players. It was just a matter of getting the performance. We had already solved all our arranging problems. There were also a couple of 20-takers, too. I think we recorded 'Through the Past' for a long time, just trying to get that element of mystery. Mystery can come instantly and if not, you gotta work at it," Crowell says, matter of factly.

Steering clear of the clichés of the

contemporary country idiom created different production and recording approaches than what Crowell has been recently accustomed to.

"Oh man, first of all, we didn't have to use reverb," he says enthusiastically. "We could make ourselves a dry record without having it be soaked in reverb, and not have that same old digital reverb sound and that same compression ratio that most country records have. Just the freedom to not even have to think about that was great. And with Peter Coleman as engineer, it was about using miking as a way to get space in the sonic picture instead of just recording it all and then mixing it with reverb. It's fun to get that organic with it, which is sort of a contradiction because you think that country music used to be the organic format, but not anymore.

"Frankly, The Cicadas makes it easier for me to deal with the constraints I must take into consideration while I'm producing records for other artists, because I have that outlet now of absolute freedom. The Cicadas afford me a working atmosphere and situation that is totally free—with no restraints—to do whatever it is we want to do, and whatever makes us happy. And I've found that that is what usually makes the listener happy, too." ■

—FROM PAGE 184, BEN FOLDS FIVE

possible and allow the bleed to happen in a short, controllable way, rather than spreading the instruments out and putting baffling up—then leakage becomes an issue. If your piano mics are going to be [the drum] overheads, then just make them sound good."

Southern got a great brush sound on Jesse's snare on "Brick." "The overheads got a nice ambient picture of the bass and the piano, because the brushes were light enough," says Southern. "Then you could bring in the close mics on the drums and the pickups on the standup bass and pianos, and fill in the rest of the picture. That was the first time they'd played that song too, completely a first take."

"I showed 'Brick' to the guys, and as we were playing it, Caleb recorded it," says Folds. "He wants the purity of it, and we got that. To him, the right take is when you're discovering it. However, most musicians don't get the notes right on the right take, so then you have to get the second best, which is the musicians hitting the right notes and sort of

getting it. He'll get pissed because we play things like 80 times to try to get it right. He'll go out to the car and go to sleep. I don't even want to call it 'good ears.' He has a good heart. He knows when something is right."

Folds says they had a Mackie console just for monitoring takes, bypassing the board to go direct-to-tape on most tracks. "We bought six Telefunken pre's, V72s and the 76s, and about six Neves, 1073s and 1072s, the old cool ones. We got a U48 and a bunch of Sony C-38s, and we used a lot of SM7s—bass drum, vocals sometimes, bass guitar.

"On 'Cigarette' I played the piano at 4 o'clock in the morning. Then I picked up the 48 and did the vocal out on the porch. With the 48 you can pinpoint one cricket at 20 feet. It's amazing. I like singing on the porch because you can see your breath; it's real dramatic. The moon was full, and the neighbors were still asleep. In the mix we put the vocal out of phase so that it would be a little creepy, so the middle would go away." By all accounts, Folds is incapable of standing still and singing. He's either got to be glued to a piano vocal mic or running around with a hand-held.

It was a major mistake, a major waste of money, and it came out exactly like I wanted it to.

—Ben Folds

A hurricane slammed into the North Carolina coast while they were working, knocking out power for a week. The lights came back on the day the Klezmatics flew in to play on the wild show-stopper, "Steven's Last Night in Town." "We just stuck a couple mics on them and put the sheet music in front of them. They played it, and they split," Folds says. "And we were like, 'Man, I hope this sounds like something when we're done.' Probably didn't use the right mics and the right rooms. They have a trumpet, clarinet and violin, and we put them in the same room. A trumpet is louder than a violin, but we're rock guys. We don't know that."

The lyrics to "Kate" were written around midnight on the last night of tracking. "I got the vocal down by 1 o'clock and the guys got their backing vocals done by about 3, and it took us three hours to pack the studio equipment into boxes to put on a plane," says Folds, who is accused by his friend and co-producer Southern of being a procrastinator. "By 9 o'clock in the morning me and Caleb are in Nashville, standing at the airport waiting for a ride. We show up at the studio, record the strings [for "Selfless"] onto those DA-88s, pack them up again and go to the mix."

"I was pulling my hair out at the end," Southern confides. "They have a tendency to over-analyze things, and I try to just get energetic performances out of them. They played 'Battle' from 7 at night until midnight, and I was frustrated because I felt the energy was completely drained out of it at that point. There was a lot of rehearsal and tracking mixed together because they were writing at the same time as recording, and because of the casual feeling of doing it in a house."

Andy Wallace (Nirvana) was their choice to mix the album, based on some of the adventurous projects he'd done. "It turns out that he's a very pretty and balanced mixer. He makes heavy bands palatable for your average

audience," Folds laughs. "We already sound pretty, you know. It was frustrating to begin with, because his idea of what we were doing and our idea were totally different. We mixed the album in a week, and then realized that it wasn't what we wanted and came crawling back to him, and asked him if he could please try to see it another way and do it again. And he did. Once he got it, he got it, like, 'Oh, that's what you wanted. Why didn't you say so?' Oddly enough, on the remix period I started to realize that some of the lyrics were wrong and some of the vocals weren't what I wanted. So he'd mix the song, have everything balanced, and then we'd ask him to go to lunch and we'd do the vocal again. That's what I did with 'Battle of Who Could Care Less,' and 'Song for the Dumped.'"

Folds shakes his head thinking about the chaotic recording process and his trashed house in Chapel Hill. "We nailed so much hush board to the windows, walls and floor, it's airtight. That's another thing we spent money on—central air. Financially it was a mistake, but as far as making a record goes, I'm all for an event. If I had unlimited money, I would build a studio, record the album in it and bulldoze it." ■

—FROM PAGE 185, BERNIE KIRSH

cian, but as a friend. Through his own vision, he has brought me along to glimpse these things, and I feel very fortunate. I guess it is an unusual kind of occurrence to have this kind of a relationship over the years in an industry that often produces fickle relationships."

Kirsh's first full-fledged Chick Corea project was *The Leprechaun* in December 1975. "We recorded, mixed and mastered that record, which was a fairly complex album, in ten days," Kirsh says, adding, "There was no digital technology to work with at the time, so we used the facilities of the studio a great deal on that record."

Kirsh co-founded Corea's Mad Hatter Studios in Los Angeles with the pianist in 1981, and he was responsible for setting up shop for their first recording, *Three Quartets*. "Studio A is both a tracking room and a mixing room housing a Neve 8078 console with Studer recorders in both rooms," Kirsh says of the studio. "The original console that went into Mad Hatter was a modified Trident 80 Series board that was

used until 1990 and was originally in Electric Lady Studio A in New York. A lot of incredible music has come through that console. Studio B has a beautiful Neve 8078 that has been modified to 64 inputs by augmenting the monitor section by one more bucket and installing another 24 faders. All 24 faders have a 1073 equalizer in them, as well as aux sends and busing that would allow it to utilize the left side of the console.

"Mad Hatter is home base and my place of preference to work," Kirsh continues. "The processing units I enjoy working with most are the [TC Electronic] M5000 reverb unit, which produces great density, and the Lexicon 480 reverb. I've also been going back to [EMT] plates lately. I prefer recording to analog tape. All the projects I've done with Chick have been analog. I usually go 30 ips, and I don't use Dolby unless I have to. I mix everything to half-inch stereo 30 ips. One of the reasons, aside from the fact that I like the sound better, is also for archiving purposes, because we will be getting higher-resolution digital audio soon. On any future reissues, when I use analog tape I'll be able to take advantage of that technology and it won't be locked into a particular digital format and sampling rate. Rather than being locked into 44.1 as a sampling rate when this new technology comes out, if I'm using analog as my storage for stereo, I can use a 96k sampling rate to full advantage."

Though generally he prefers analog recording, and even the sound of high-quality vinyl records as opposed to CDs, Kirsh admits that he's looking forward to the advances in DVD technology, stating that it should add some life to the quality of CD recording and help bring back some of the richness that was lost when digital replaced analog. "There was a period of time, in the '50s and into the '60s—the Hi-Fi period—when you had fantastic recordings occurring in the analog world and there was not the complexity of multitrack technology," Kirsh notes. "Then transistor technology started to occur and the recording equipment pushed by manufacturers gave greater facility to the engineers and producers, but I don't know that it enhanced the sonic quality of recordings."

Kirsh is also excited about DTS technology and the possibilities afforded by multichannel mixing for the home listening environment. "The mixes I've heard on DTS are astounding in terms of enjoyment for the listener," he says.

"It puts the listener in a position to really hear the delineated portions of the recording. Instead of using EQ and various mixing techniques to bring things out in the mix and to create space and depth in the music, DTS allows the engineer the capabilities to expand on the stereo image in a five-speaker setting, creating its own space and depth, and makes mixing a lot more interesting. When this technology takes hold, I see it as another creative area that composers and musicians will use in conceiving what the final product will be. We are moving from a two-dimensional world with a third dimension being created through mixing techniques into an area of spatial relationships that can be delineated through the use of a five-speaker system."

In his role as engineer, Kirsh says his approach to recording has not changed much over the years: "Techniques change, but the idea is the same—make the musicians comfortable in the room and get to recording as quickly as possible. Especially the headphone thing, which can really get psychotic. The phones become the link between visions, and the greater communication that can take place between players, the greater the degree of communication that will exist on tape. I try to take all that stuff away and treat players with respect. If everyone is comfortable then the attention is on the music and the attention of the musicians is on each other. I try not to bring attention to what I do. I don't do what I do because of my love of technical things, I do it because of my love of music and musicians. Musicians are my favorite people."

Corea says he was never much involved in the recording of his music until he met Kirsh. "On my first few records, I never even heard them until they were released in the stores," he notes. "In the '60s, I never met the engineers or went into the control room. That's how disconnected I was from the process."

Corea recalls that he and Kirsh "had similar likes, and he was really into understanding and loving the music. From that point on, I began to request Kirsh, knowing that he would handle things for me sound-wise. We began to sit together in the control room, which was a whole new thing for me."

"Kirsh provides for me what I think a lot of times producers provide for artists, which is being a partner in the making of the music. Every time I get together with Kirsh to record a new project," Corea explains, "we have this

PHOTO: KAREN MILLER

Rear (L to R): Christian McBride, Joshua Redman, Wallace Roney and Kenny Garrett. Front (L to R): Roy Haynes and Chick Corea.

simple conversation about the music and what we're going to do on the record. Kirsh understands his tools so well and continually simplifies, yet at the same time stays abreast of all the new developments. He knows the modern way things are done, as well as the ancient way to do them, yet he is not stuck in a routine way to do things.

"He helps me to figure out what we'll need to get through the date and has a very simplistic approach to overdubbing and editing so that, in essence, the mechanics of the recording disappear for me and all I have to deal with is Kirsh and his smiling face saying, 'O.K., what do you want to do next?' He takes the whole recording thing off my plate and allows the art to flow."

Kirsh also traveled the world as Corea's live engineer from 1977 to 1988, but when a second studio was put in at Mad Hatter, Kirsh decided to devote his energies to that operation primarily. He still goes out on the road occasionally, including the first leg of the tour that eventually led to the recording of last year's excellent *Remembering Bud Powell* album. Kirsh comments, "We picked up sound systems in each venue, and it was pretty simple since it was just an acoustic quartet." To capture Corea's distinctive piano style in the live environment, "We used AKG 414s on the piano and also a C-ducer when necessary. When you use an acoustic piano live onstage, open full stick, the piano becomes the miking through which all of the stage travels. We had to make sure we had good sounds coming through those mics, not just to hear the piano, but for everything, because the drums and the bass are passing through it as well."

In the studio, Kirsh's miking scheme for Corea's piano is slightly different. For instance, on a new album of acoustic duets between Corea and vibraphonist Gary Burton, due this fall on Corea's own Stretch Records label, Kirsh used two AKG C-12s run through Neve 1073 and API 550A preamps to the Studer 800 recorders at Mad Hatter. (Burton's vibraphone was captured with a pair of Neumann U67s, flat.) The performances were recorded live with just a few minor fixes.

In the case of the acclaimed Bud Powell tribute album, the recording was live once again, "with the drums in a booth and everything else in the room," Kirsh says. "I did have them separated by goboes just to keep the horns [bleeding] into the bass to a minimum and that sort of thing. What's on there is complete performances; they're not edited." Kirsh used almost no processing on this sonically marvelous record, just some judiciously employed EMT plate. "I was interested in just documenting these guys," Kirsh says, "because the sounds they get on their instruments are so great they don't need anything on top."

Kirsh has long had a busy and successful engineering career away from his association with Corea, too. Working primarily out of Mad Hatter (but not exclusively—he also professes a fondness for both O'Henry and Ocean Way Studios), Kirsh has cut records with such jazz luminaries as Dave Grusin, Herbie Hancock, Quincy Jones, Arturo Sandoval, the GRP All-Star Big Band, Hugh Masakela and many others. Still, it is obviously a special bond that he shares with Corea, and two decades down the road, the partnership remains strong.

"What's great about working with Chick is he works in so many different musical formats—duos, small groups, electric and acoustic, and of course he's blended these different things at different times," Kirsh says. "The thing about Chick is, he lives as a creator. He decides about how things will be and how he would like them and then he makes them that way. For a guy who likes to put bands together and write music, that's perfect." ■

NASHVILLE SKYLINE

by Dan Daley

Two Up—One Down. Two new record labels opened in Nashville in the spring. Disney's new country label (which is as yet unnamed; they will not use the Hollywood marque that the company's pop division uses) and Dreamworks, a Nashville outpost of the Geffen/Spielberg/Katzenberg triumvirate. Dreamworks is trying to do with music what it has done so far with films. The first signing of the label in Nashville was Randy Travis. On the minus side, Imprint Records—the first publicly funded label in Nashville—announced in July that it is close to extinction due to low revenues. The label had released records from five artists; all of the recordings were made in Nashville studios.

The most interesting of the label developments from a studio point of view is Dreamworks, which tapped James Stroud, a veteran producer (Clay Walker, Charlie Daniels, et al.) and studio owner (Loud Recording) as label chief. Stroud, who owns Loud in conjunction with producer Richard Bennett, has used the studio for most of his projects in the past three years, but Stroud has regularly used other facilities as well, particularly Sound Stage. Producers using their own studios is practically a tradition in Nashville, and commercial studio owners generally regard producers as prolific as Stroud as having the potential to generate significant overflow that heads in their direction. As one local studio owner put it, "It's exciting. Both labels have lots of money. And we like that."

Playback Party—BASF held a tape shootout at Ocean Way on June 17. The event was part of the now-Korean-owned media manufacturer's attempt to pull larger share in all major U.S. studio markets. Nashville was actually one of the few markets that AGFA, which was bought out by BASF six years ago, had in the U.S. Attendance at the event was very good, according to Daren Chamblee, southern sales manager for JR Pro, which distributes and markets BASF in North America. Nearly 200 people listened to playbacks in Studio A's double-Neve-equipped control room of live material recorded that same evening, switching back and forth between BASF and competing analog brands. (Enough people so that even that spacious control room was packed pretty tightly.) It

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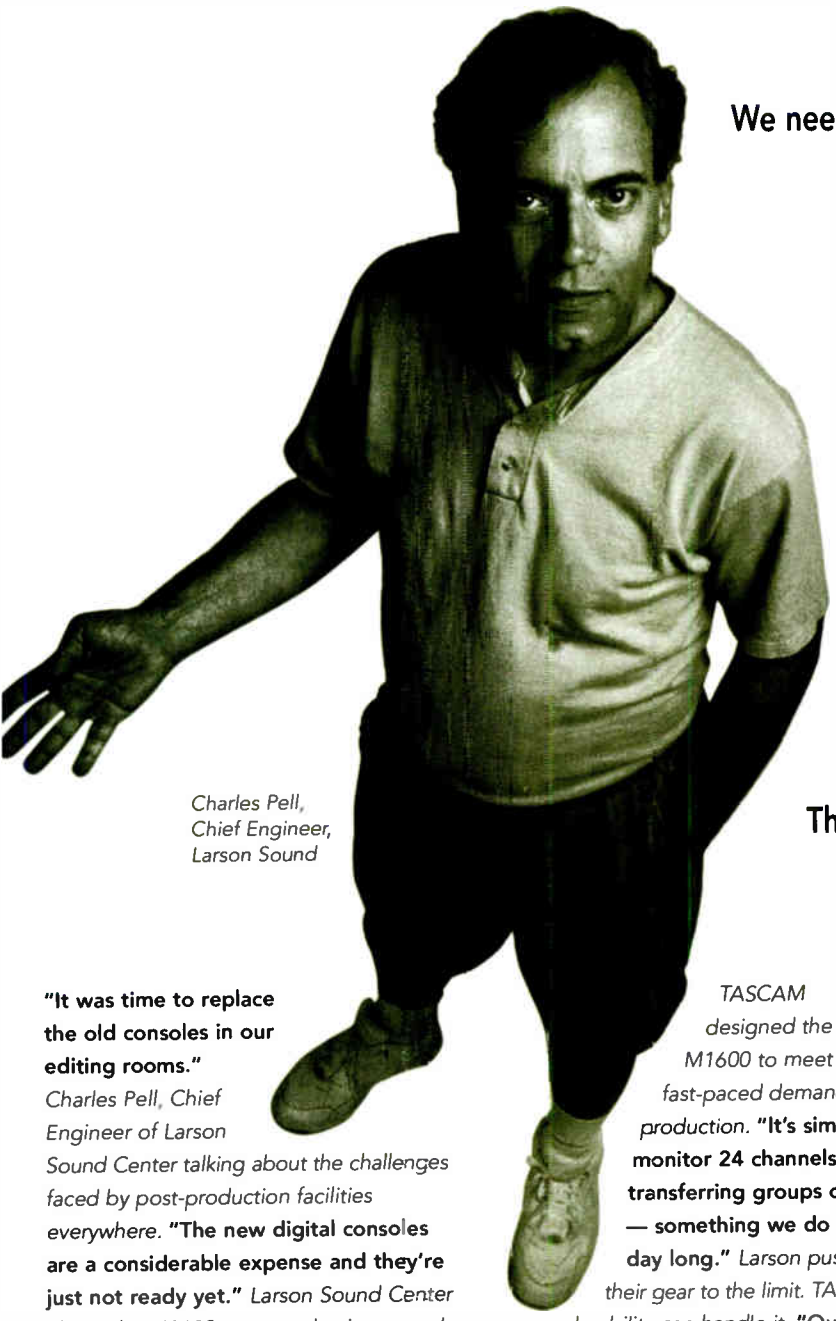
was one of those nice, springtime Nashville evenings where studio owners could grab a beer and talk about business, sports or anything else before returning to the trenches the next day. We should have more evenings like this.

New Rooms—It still had no name as of July but has been in the planning and building stages for over a year. **Chuck Allen** was in the short-lived Nashville rock band (why does that sound redundant?) Guilt, who were signed to MCA Records in L.A. but whose album was never released (due to an executive shakeup at the label, Allen says). Allen has lived in Nashville for two decades and apparently has considerable financial resources even without a hit record. Last year, he decided to build what was originally supposed to be a private production facility in a former rehearsal studio in the Berry Hill neighborhood. In preparation for that, Allen purchased the vintage Calrec console from Javelina Studio A when that facility was upgraded. Then, however he retained longtime Tom Hidley contractor Mike Cronin (now also a Nashville resident). A few months later, he pulled out the rest of the stops by hiring Hidley to do an updated version of the 20Hz control room design that was first implemented two years ago in Nashville's The Tracking Room (with updated Mesa Kinoshita monitors). Allen also bought the SSL 9000J console that Allen Sides had originally purchased for Ocean Way Nashville (which was replaced—before it could be installed—with the Sony Oxford now in Ocean Way's Studio B).

Estimating the final cost of the new 5,500-square-foot one-room facility at approximately $2.5 million, Allen now acknowledges that he will have to lean more heavily on studio rentals than he had originally planned. "The costs really escalated when we decided to go with Tom [Hidley]," says Allen, who adds that the cost of the high-end design and console were mitigated somewhat by the fact that the site already had a floated floor and other usable acoustical aspects from its rehearsal hall days.

However, building an elaborate facility with his own financing has raised some concerns from other Nashville studio owners, who worry that Allen may be able to subsidize himself for some time after the slated September opening and drive rates down in a town that already has four 9000J boards. Allen is aware of those concerns and replies, "That's not going to be the case; there's not going to be any rate dropping here.



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Allen says that the studio will be primarily for outside rentals upon opening; he hopes to have that closer to 50-50 with his own production work within a year. He still has the Calrec and is pondering where it might fit into future plans. ■

Nashville news? Send it to Dan Daley at danwriter@aol.com or fax 615/646-0102.

—FROM PAGE 197, SESSIONS & STUDIO NEWS

Ron Nevison at **Rumbo Recorders** in Canoga Park...**Paula Abdul** and producer **Nile Rodgers** worked on overdubs for Abdul's "Best Of" collection on the SSL 4064 G Plus at **Royaltone Studios** in North Hollywood. **Gary Tole** engineered and **Jeffery Thomas** assisted...**Bic Runga** mixed her self-produced Sony New Zealand debut with engineer **Matt Wallace** at **Brooklyn Recording**, L.A...Mother/daughter duo **Special Angel** put the finishing touches on their latest demo at **Rotund Rascal Studios** in North Hollywood with producer **Jon Walmsley** and engineer **Dave Perlman**...Producer **Alan Elliott** cut tracks with Dreamworks artists **Speakeasy** (featuring Ry Cooder and his son Joachim) at **Sound Image** in Van Nuys. **Hank Cicalo** engineered, assisted by **Chris Morrison**...

NORTHWEST

Mile Post 4 was in at **Music Avenue** (Sonoma, CA) finishing their third album with **Vincent Vangone** producing and **Tonebarge** at the board. **Paul Graham**

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Jerry Cantrell of Alice in Chains (second from left) worked on a solo project for Sony at Studio D in Sausalito, Calif., with (L to R) Pro Tools engineer Scott Olson, producer/engineer Toby Wright and assistant Mike Creswell.

was also in, finishing the assembly work on his new album...At Coast Recorders in San Francisco, "out" funksters Soul Coughing recorded new material for Slash/Warner Bros. with engineer Tchad Blake and assistant Zac Allentuck, and Blind Pig artist Preacher Boy recorded and mixed an EP with producer/engineer Brian Z., assisted by Michael Johnson...Presidents of the U.S.A. cut a song for the *George of the Jungle* soundtrack with producer Don Was at Robert Lang Studios, Seattle...Revered norteña combo Los Tigres del Norte recorded their latest FonoVisa release, *Jefe de Jefes*, at Music Annex in Menlo Park, CA, with co-producer/engineer Jim Dean and assistant Joseph Pope...San Francisco studio Toast had producer Joe Chicarelli in Studio A tracking the Mecury debut for Box Set. Restless recording artists Penny Dreadfuls were in Studio B recording an EP with producer Philip Steir and engineer Chris Haynes...

SOUTHEAST

At Masterfonics in Nashville, Patty Loveless mixed for Sony with producer Emory Gordy Jr., engineer Dennis Ritchie and assistant John Patrick Murphy...Curb Records artist David Kersh recorded vocals at Criteria Studios in Miami. Pat McMackin produced and engineered the 48-track digital dates, as-

Industry veteran Tom Dowd (seated at right) produced the new Verve Records release for Ronnie Earl and the Broadcasters at Blue Jay Recording in Carlisle, Mass. Standing (L to R) are assistant Andy Hollinger, Ronnie Earl and road manager Peter Downey. Engineer Neal Ward is seated with Dowd.

sisted by Steve Robillard...The Dirt Band mixed for Warner Bros. at The Sound Kitchen in Franklin, TN, with producer Jeff Hanna, engineer Steve Marcantonio and assistant Todd Gunnerson... Nashville's Sound Emporium had Karen Staley in overdubbing for Warner Bros. with producer/engineer Justin Niebank and assistant Matt Andrews...

SOUTHWEST

Colorado Sound Studios in Westminster, CO, (now in its 20th year) had Bill Douglas in co-producing sessions for his next Hearts of Space release with engineer Jeff Shuey. The Ars Nova Singers, a 37-member choral group, lent their voices to the project...

STUDIO NEWS

Doug Cook left the pro audio division of retailer Manny's Music in June and is now at New York's Dale Electronics... BMG Studios (New York) upgraded six of the Weiss 102 systems in its mastering rooms to 24-bit/96 kHz...Booking agency the World Studio Group was appointed worldwide exclusive agent for a complete SSL 9000 portable control room, a flight-cased cache of gear including an SSL 9072J console and a Studer digital 48-track...The Arizona Conservatory of Recording Arts & Sciences in Tempe, AZ, installed 16 addition modules (supplied by Martin Sound Inc.) in its Neotek Elite console...Gaither Studios (Alexandria, IN) installed a 56-input API Legacy Plus with Uptown moving fader automation in its Studio C...Studio C (Stockton, CA) celebrated its 25th anniversary by completely renovating its 1,500-square-foot live room and installating a Euphonix CS2000-72 automated console. ■

—FROM PAGE 196, L.A. GRAPEVINE

sounds like a wall of sound, but it's not!"

Mixing was to 15 ips with Dolby SR. "I like the low-end push you get with the slow speed," explains Horvat. "Gabe and I have done a lot of experimenting with biasing and levels; we like plus three at 15. Even though I have new-school ideas, I really respect the old engineers who set the standards, and those guys recorded at 7½ and 15. I appreciate vintage sounds—not for everything, though. A lot of things don't need tube stuff. For some instruments I like cheap, crappy compressors, stuff that really snaps, like dbx 160Xs on drums. For vocals I'm usually a traditionalist—I like 1176s, and I love the C-Gray EQs [designed and built by Soundcastle's chief tech, Chuck Gray]. They have a nice wide band, and it's a happy medium, not too pristine but not too dirty either. So many people like (Neve) 1073s, but personally I like 1081s, with the four bands, because to me the 1073s are too dirty. They're good for guitars and some other stuff, but with hip hop you really have to strive for clarity. You need tools to get the samples to come out in the loops. If you give me one loop, with kick, snare and all that stuff, I need to get just the snare or just the kick out of that loop by gating and using the right kind of EQs."

Some new tools favored by Horvat are his Studio 100 Pro AC near-field speakers. "They're great. They don't compress at the output of the low end, like Genelecs can where you'll hear it start clipping," he says. "I love them. But it's very crucial what power amps you use on them. You need a high-end amp, at least a Bryston. I had a bit of a freak out in New York because they sounded so different with Yamaha amps on them. It was so bad—like having headphone mixes rather than your mix come out of the speakers. And they were really crucial to that mix, because working in New York I've found that often you don't have big speakers that you can really rely on like we do here

in L.A. That's one reason I work here at Soundcastle a lot, by the way, besides liking the people and the clientele: The big speakers sound good."

The Alkaholiks album, titled *Likwidation*, is out now.

Everybody's talkin' DVD 5.1; meanwhile, Warner Hollywood Studios, under the direction of VP of post-production services Robert Winder, has quietly developed a very impressive DVD mastering operation, currently averaging a completed title per day ready for manufacturing, from classics like *Bonnie and Clyde* and *Whatever Happened to Baby Jane* to recent releases like *Murder at 1600* and *The Mask*. The facility services Warner Home Video and its affiliated companies, who this month are escalating their DVD distribution, expanding nationally from their original

PHOTO MAUREEN DRONEY

At Warner Hollywood, Robert Winder checks out the week's workload.

seven introductory markets, with a major promotional push planned for the Christmas holidays.

At the Warner Hollywood facility, 6-track mag dubs are digitally mastered and enhanced, with Sonic Solutions workstations the mainstay in the tapeless process. Additions include theatrical trailers, multiple-language dialog tracks, directors' commentaries and the insertion of scenes that never made it into theatrically released versions; an overview of the process shows it to be a remarkable exercise in constant troubleshooting and creative decision-making.

"There are a lot of balance adjustments and level changes to be made," says Winder. "The soundtracks have to work with each other if you language surf the English, French, Spanish, etc. tracks—you need to be able to seam-

lessly click between them. Also, we find in a near-field monitoring environment, there can be a lot of problems that weren't particularly noticeable when you were listening to speakers 30 feet away in the original theatrical environment—so we go back and fix pops, clicks and glitches."

When the multiple soundtracks are conformed, corrected, fixed and ready to go, there's yet another challenge to be surmounted—the downmix check, which is done on every single 5.1 track. "We take the 5.1 and squish it down as it'd be done at home if you were listening to a 2-channel system, or through your TV," explains Winder. "We have the system convert the 5.1 signal down to the normal L/R Dolby stereo soundtrack and then extract it back through a Dolby Prologic style matrix decoder and listen for anomalies that may occur. You have to do this, because most people, when they're mixing discretely on the dub stage, don't pay that much attention to matrix phase problems that can really trip up the Dolby stereo matrix. That's because, in general, the 5.1 soundtrack is the first one created, then they move to the other print masters, the Dolby stereo versions, and when they discover anomalies at that point they fix them on the spot and may not necessarily go back and fix the 5.1. So when the masters come back to go through our process, we occasionally come across problems that need to be corrected."

Once all those processes are done the material is ready to compress, with the current AC3 process requiring a head to tail, real-time, no-interruptions session. "You need to have all your problems resolved," comments Winder. "You don't want to get into it, have to abort and go back to the top."

After AC3 compression, the file is on disk, from which it is streamed to DLT, (digital linear tape, a high-capacity, high-reliability medium developed for the banking industry). The audio stream data is extracted from the DLT at California Video Center and inserted with the menus, subtitling and video; that whole DVD gets stored on DLT and then shipped to the pressing plant, Warner Advanced Media Operations (WAND).

"We're very proud of the system we've developed here," says Winder. "We're among the first to be doing this, and we've had to develop new systems every step of the way. While we don't have three weeks to spend polishing each track, what we do is very, very high-quality. We're working with feature-level sound, striving to keep that same kind of quality for the home market, and being very successful at it."

The ongoing acute shortage of high-quality techs has led Cal State Northridge Extension to offer a new certificate program in audio technology for technical and maintenance specialists in music, film, TV and radio. The driving force behind the new program is Martinsound's Dale Manquen, who has previously taught recording technology at Northridge and who has rounded up chief techs from many of L.A.'s top studios to help develop the curriculum."Being developed by the industry rather than an educational institution makes this program a first," Manquen says. "We have a lot of enthusiasm and involvement from L.A. studio owners and chief engineers."

Aimed at people who already have recording and electronics experience, the ten-month program meets on Saturdays starting September 13 and will consist of six courses, each of six weeks duration, focusing on audio maintenance, problem solving, and that not-to-be-underestimated skill, crisis management. Instrumental in development have been Westlake Audio's Hanson Hsu, A&M's Gary Myerberg, Groovemaster's Ed Wong, Rumbo's Greg Loskorn and Barry Ross of Sony, all of whom have been working to decide on

the content of the program as well as criteria for admission.

Candidates will be selected through an interview process, as well as possibly written testing, and must have experience in electronics and recording. "Dale has managed to get people who work in the industry day in and day out to develop this program," comments Wong, "so we have a very clear understanding of what's needed from technicians in the real world. We'll be doing some review of basic electronics, but we can't go too far back into that; instead we'll be covering very advanced topics, including digital audio and workstations."

For further info on the Certificate Program in Audio Technology contact Nancy Mondok, Program Director at 818/677-2468, fax 818/677-3929 or e-mail nlm44409@email.csun.edu. ■

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—FROM PAGE 196, NY METRO REPORT

new] clients to the studio. And as for technology, I find that I know about most of the things that will be there anyway through other sources." Amlen adds, though, that he supports the idea of having AES in another city in the future. Atlanta and Nashville have been under consideration by the AES site selection committee. "It would get me out of New York to someplace I could drive to," he says. "I'm not really big on flying."

Chung King's John King would like to have it in New York all the time. "L.A.'s too spread out," he chides. "Even people from L.A. won't go to it in L.A.; they'd rather go to San Francisco. But New York is the best because everything's in one place, condensed. You can get close to things in New York.

At New York's Clinton Recording, actor Tim Robbins and his brother Dave cut a version of "All My Children of the Sun" for an upcoming tribute to Pete Seeger on Appleseed Records. At the Neve 8078 in Studio A are (L to R) Tim Robbins, Dave Robbins, engineer Troy Halderson and Appleseed president Jim Musselman.

Reeeeal close."

The big story in the past few months has been the **Mackie Designs'** trademark and trade dress infringement/copyright and patent infringement lawsuit against manufacturer **Behringer and** giant metro area MI and pro audio retailer **Sam Ash.** Mackie, now a publicly held company, is seeking damages of $327 million in a motion it brought before the U.S. District Court in Seattle against German-based pro audio equipment manufacturer Behringer and against both Sam Ash Corp. and its wholly owned manufacturing subsidiary, Samson Technologies, which manufacturers wireless microphones and related equipment.

Mackie's lawsuit claims that the defendants conspired to manufacture and distribute copies of Mackie audio products—specifically Mackie's 8-bus mixer—using copied layouts and identical components to those developed by Mackie with its suppliers. (Ironically, Sam Ash Music Corporation has been a leading retailer of Mackie products.) The copies allegedly were manufactured and assembled by companies located in China, and were sold at substantially lower prices than authentic Mackie products. The copied products were allegedly distributed in the U.S. and Canada through the Sam Ash Companies, which the complaint asserted also funded the copying to the tune of $1 million. Mackie, which last year reported revenues of $73.2 million, claims knockoff products have cost the company lost revenues and have damaged its market position. The company's complaint seeks actual damages of $109 million, trebled to $327 million under federal law, plus attorneys' fees and costs.

Behringer has been accused of similar violations by Aphex, Drawmer and dbx, and the German company has been successfully sued on those grounds by Aphex, which won a judgment against the company after over five years of trying in the late 1980s. As a result, expect this action to take quite some time, despite it being a domestic litigation.

Richie Ash, CEO of Sam Ash Corp., which operates 16 stores in six states east of the Mississippi, and which Ash asserts is the second largest Mackie dealer in the world, says that "The claims made against Sam Ash have absolutely no merit." He adds that he personally holds stock in the publicly held Mackie Designs Inc. and has since it went public two years ago. Ash also says that the fact that Mackie put the text of its suit up on its Internet site (www.mackie.com) could "be very troublesome to them." When asked if Sam Ash was considering a libel or slander suit in response, Ash replies, "Sam Ash intends to defend itself aggressively." (The suit is a public document, however.) Asked if Sam Ash stores would continue to carry Mackie products, Ash says, "I can't say at this time."

The suit could have profound effects upon how the professional audio industry conducts business in the future; the highly competitive environment of downmarket products puts the trademarks, copyrights and designs of those products into the category of content, subject to potential piracy. That's an issue that has been part of professional audio and other technology sectors for years, but the move of pro audio into a mass market changes the scale of things. What it is not likely going to do is affect the studios that have come to rely on the pro audio departments of the once MI-only stores along West 48th Street. Stay tuned. ■

Fax New York news to Dan Daley at 615/646-0102 or e-mail danwriter@aol.com.

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—FROM PAGE 16, AD NAUSEAM

THE SAGA

By a full 15 minutes after the posted start time, the audience had organized and chosen a representative to go out and find the manager to see why nothing had started. I found a ticket taker, who found the manager in a little office, and when I told the manager why I was there, he looked surprised, jumped up, ran upstairs and the movie started. Well, not actually the movie but 38 minutes of trailers. Is *this* the improvement the all-powerful Sony has brought us?

And the audio? The sound was crap. Basically unbearable. But I have learned that the torn speakers and 105 dB of 80% distorted audio that you get with trailers often changes when the feature starts—so I waited with the patience that only a precise mix of maturity and sedation can produce through screaming, painful audio periodically compressed in a pattern that I have come to learn means that there must be horrendous low-frequency information present without a woofer to produce it. Don't you just *love* that effect? You pay seven to ten bucks for a movie, and a plane explodes or a cannon fires and all you get is a dive in level as the playback system dumps all of its mighty 20 watts of 20 Hz into a couple of 10-inch full-range P.A. speakers? That charming *subtracted* low end? You can actually hear the rumble being removed from the audio. Oh, yes, and that is accompanied by an insipid 150Hz noise burst.

But on to the main feature. When it finally started, sure enough, the theater's audio playback system did in fact go through that mysterious change. It did morph into a new and different system—which sucked. A different combination of speakers were ripped, and even more power was forced down the throats of little, wimpy speakers. It was truly *much* worse now that we had several discrete channels of distortion, clipping and bottoming. Several people in the audience left and asked the management to turn it down, but this apparently is not possible for some technical reason, which I assume is beyond our capability to understand.

Now, keep in mind that this was the premier theater at a modern Sony multiplex, mid-afternoon, with 20 people in the audience. I only go to matinees, as this lowers my chances of having my seat incessantly kicked, drinks spilled in my hair, gum stuck to my shoulder, smelling smuggled-in Polish sausage, buds or crack, and having to hear 12 running critiques.

And I know that Baltimore is just a little hick town, but must Sony insult its residents with theaters like this? This is no better than those strange little $1 theaters that every city has, except with those, you are satisfied because that is what you expect for a buck.

As an engineer and player, I find myself crossing over into film work regularly. I have heard movies as they are intended to be heard, and they don't sound like this! In the past decades, sound for film has become generally good, and in many cases excellent. Why can't these improvements make it to the streets?

This is why I built a home theater—I can wait a few months to watch a movie with a real sound system, even though I desperately miss the sticky creaky seats, the endless talking and the relentless kicking. I can't express in language that *Mix* would print the depth of my hatred for the Modern American Movie House. I would spit upon them in disgust, but it would go unnoticed, as apparently the entire previous audience has already done so.

THE FEAR

And now we have 5.1. Will this be the move that forces these houses of ill repute to upgrade or at least tighten the connections on the back of their little speakers? Or will it merely cause them to hang a couple more $15 boxes on the side walls and drape zip cord majestically between them? Or might things turn even worse?

Remember Quad? I do. That was worse. Some guy with too many speakers or amps in stock decided that if he could get people to buy four channels of audio instead of two, he could move some of that stuff before it hit its "best if used by" date. And so he begat Quad. Ick.

Engineers, barely able to sort out stereo, and undoubtedly guided by their observation that they only had two ears, had just begun to sort out mixing all those confusing tracks down to two. "Stereo" took on some very creative definitions over those years, but thankfully it was limited to two channels.

Then they had to deal with Quad. While there were a couple who kept their heads about them and used the four channels in a polite, rational manner, most went gimmick-crazy, throwing channels and effects around aimlessly, thereby nauseating us all so severely that we were literally unable to get into our cars and drive to the store to buy more albums, so Quad died due to lack of sales. It literally killed itself (mercifully).

But we cannot count on the self-policing effects of nausea to save us again. If DTS, Dolby Digital, SDDS or any other modern surround sound system spawns similar gyroscopic irrationality, we as a race may be able to survive by use of today's powerful new anti-nausea drugs. Remember, these didn't exist when Quad was foisted upon us.

Audio-only DVD is waiting for you at the next stoplight. It can do real multichannel music. The question is what will we make it do?

In the words of *Mix* editor Tom Kenny, "5.1 channels does not make a multichannel environment." Even a seasoned stereo mixer might get lost in a swirling world of new uncertainties when faced with becoming a multichannel mixer. Anyone can install 5.1, but who can rationally mix for it? A precious few at best.

THE PLEA

Please, all of you faced with this new (?) technology: Please remain calm in the face of danger; please be conservative, rational and sane. Surround music might be very nice if is used to recapture that live feeling, or to spread the image a bit so it remains full in a larger sweet spot. But let the world's record for discrete flying tracks and effects in music remain shared by those who earned the honor: the original Jefferson Airplane, Pink Floyd and Hendrix. These effects were great at the time, when we would actually duck if "Saucer Full of Secrets" was loud enough.

And for film? The temptation is even greater here. Have you noticed that there is already gratuitous audio in our Dolby Pro Logic rears? I have trouble understanding dialog in at least one scene in one out of five films I see now because of way too much stuff going on in the rear. Imagine the potential for abuse when the rears are actually *stereo*? I shudder at the thought—or maybe that's only my subwoofer. ■

SSC believes that there is a natural order to life. We have two ears, so Harleys have two exhaust pipes, and lawyers speak from both sides of their faces. He is all for breaking the laws of nature, but only if the result is an improvement, not just a freak show.

—FROM PAGE 20, AUDIO ON THE INTERNET

can't stand, cuts your bandwidth needs by a factor of five, which is fine for getting the stuff on and off poky mechanical media, but it's pretty useless for dial-ups: to pass a 44.1 kHz stereo 16-bit signal over a 56K line (assuming you and your ISP both are using the same kind of modem, which today is a one-in-two shot, and assuming your phone connection and the ISP's backbone connection are perfect, which is about a one-in-a-million shot), you have to compress it by a factor of *25*.

Real-time audio streaming works for some applications, like simple speech, quickie sound effects and the most primitive of music. But the claims being made that high-fidelity music can be delivered this way are simply ridiculous. "FM quality" or "Near CD quality" from a dial-up? Give me a break. And what the heck is (yes, I've really seen this) "Near Stereo quality"? 1.5 channels? And remember wrestling with SMPTE timecode and sample-rate clocks so that sound and picture would stay in sync? When your software and hardware are doing all they can to make sense out of super-compressed data, dropping and duplicating frames to give you a semblance of continuous motion, you can pretty much forget about synching anything to anything.

Okay, so maybe we won't be listening to music on our computers the way we listen to the radio. But what about *selling* records? Even if the quality isn't so hot, isn't the Internet a great way to get people to listen to stuff, which they'll then go out and buy? It could be, if those people have the patience to wade through pages and pages of garbage to get to something they like. But record labels and their marketing departments are going to have to take the technology seriously, so their sites sound good enough to make listeners want more. Internet audio is actually far more finicky than CDs: At least with CDs you know what kind of D-to-A conversion the listener is going to use. But on the Net, you have absolutely *no idea*, and so you have to tailor your audio to sound as good as possible through an absurd variety of codecs and transmission protocols.

If you read Dan Daley's positively scary interview with quality-control engineer Cheryl Engels in the June *Mix*, you know that this is a disaster on its way to happen: If major record companies, with all their resources, won't pay for quality control on their CDs, a product into which they have invested many thousands of dollars in materials and manufacturing processes, which too often contain fatal, easily-correctable-if-someone-had-just-been-paying-attention flaws, what makes you think they're going to bother to check out all the possible ways the materials on their Web site—which cost them nothing—can screw up?

Well then, maybe this really is the chance for "alternative" marketers to strut their stuff. A small label with an attractive, well-functioning Web site can blow those lazy, clunky majors out of the water, right? Wouldst that it were so. Low-end promotion on the Internet is the rough equivalent of college radio: You know it's there, and maybe you swing over there once in a while, but a lot of it is really, really bad, and you haven't got the patience to listen for hours to inept and cooler-than-thou wannabe disc jockeys (translated: wade through pages and pages of slow-loading, ugly, unreadable illiterate junk) in the hope that you'll stumble on something worthwhile. Don't get me wrong—I love college radio, and it's a great breeding ground for new talent, but you have to *want* to listen to it. It's the same on the Internet: For someone to find you, they've got to want to. This,

of course, costs money: print, radio and television ads, or banners on other people's sites.

As I was writing this, a friend forwarded me a Usenet newsgroup posting that announced a new site where, for a fixed monthly fee, you can list your records in an online catalog, and the site owners will handle all the publicity and credit card transactions. This sounds like a no-lose proposition, but this site is starting out with two strikes against it. First, people have to *read* the post, and since so much of the traffic in newsgroups is utter garbage, and everybody knows it, only a small percentage will. Second, once those few do get there, they'll find that the creators don't know how to design a site (downloading the buttons for the various musical categories takes over a minute), have forgotten to include any content (most of the buttons don't do anything), and either don't speak English or don't know how to use a spell-checker.

But you know, despite all the nasty things I have to say about it, all of this is going to happen. There's too much money, and ego, invested in the audio aspects of the Internet for it not to continue lurching forward. There will be a steady stream of marketing efforts, and new delivery systems will be announced. Some will succeed, due to brilliant strategies, brute force promotion, or a fluke in the nature of the audience that no one thought to exploit before. There will be a lot of nonsense that will vanish as quickly as it came, but there will also be genuine technological breakthroughs that will obliterate barriers we thought were impenetrable.

So we might as well take advantage of it. Those of us who have been doing well in the game business, or doing sound for CD-ROMs and other low-bandwidth media, should be able to find clients wanting audio for their Internet presence. Of course, first those clients are going to have to get over the illusion that they can handle it themselves, which may take some time—tools that make Web design "easy" are proliferating like rabbits, which is why I often find myself yearning for the good old early days of desktop publishing, when at least the garish graphics and unreadable typefaces stood still.

Some of the most promising Internet audio technologies combine audio and MIDI: There are clever things being done by way of background music for Web pages, using downloaded samples and streaming MIDI control data. (Not very *good*, but clever.) So knowledge of those technologies is more important than ever.

But while the Internet marches on, like Sherman through Georgia, there are a couple of larger issues to think about. First, there's the idea, prevalent in the breathless prose of pop and sci-fi magazine writers, that personal computers are inevitably going to become mere appendages of the World Wide Waste of time. Now, I like being on the Net, but I also like being off it—and if you're like me, you get a lot more done when you're off it. It was liberation from the mainframes of Big Blue and their ilk that spurred the personal computer revolution in the first place, and now we're supposed to believe that the only road to the future is on a network? Sorry, but I consider my computer a creative tool for *me*, and being able to spend all my time looking at other peoples' stuff is *not* a feature I asked for. Our mothers told us to turn off the TV and read a book; now we need to turn off our modems and get back into our own minds and hard drives. The Internet must not be allowed to swallow us all up, distracting and titillating us constantly, never letting us think or create.

Second is the fact that it's so damned invasive, in ways that even commercial television, as dumb and offensive as it is, can't hope to be. Would you tolerate commercials running across the bottom of the screen while you watched your favorite TV programs? At least television makes a pretense, sometimes, of being entertaining. What's propelling the growth of the Internet, at least since it has become big business, is not the thirst for knowledge, the impulse to entertain, or the need for community: It's blatant and unsullied marketing—trying to bury you with as much hype and huck about goods and services as possible, while at the same time trying to find out as much as possible *about* you, so that the hucksters can sell that information to people who can exploit you more. The most successful sites on the Net don't even sell anything; they push brand recognition, and that's all, so that when you go into a real store, you'll run for those products, regardless of what else might be available that is better or cheaper. That the Internet, this wonderful knowledge machine, should be driven solely by marketing is about as pathetic as deciding that the primary goal of the interstate highway system was to have somewhere to put billboards—but that's precisely what's happening.

Finally, and more directly affecting our industry, I fear that the increasing use of the Internet to deliver entertainment could result in the splitting of the audio world into two: one consisting of crummy lo-fi online stuff, and the other "real" audio—records, concerts, radio and TV, and home theater. What's scary about this is that in our culture, especially when it comes to entertainment, the lowest common denominator tends to push out all competing forms—look at the ratio of the money and energy spent on rock 'n' roll to that spent on "serious" concert music in this country, for just one example. If that principle holds true as people start confusing Internet audio with the real thing, those of us who care about fidelity, production values, art and craft are going to be very lonely.

Next month, I admit that there are some things the Internet is really good for. Stay tuned. ■

Paul D. Lehrman, composer, writer and part-time college professor, surfs the Net from several undisclosed locations in Massachusetts. None of his music is on the Web, yet.

—FROM PAGE 34, JOHN FOGERTY

else. Stay where you want it to be, because you do have a special way of presenting things, so make sure that it stays that way."

Sometimes the technically right notes aren't the correct notes, if the player doesn't truly understand that idiom. Just because a song is merely a I, IV and V chord structure doesn't mean that they know how to execute the proper feel. They might not know how to "become" those notes.

Exactly. It is more than just chord changes and hitting the root note. Rock 'n' roll is an idiom, just like jazz is and blues is. They are separate animals. It is a joy when you hear people who really understand where they are. I tell you that right now I am playing with two guys who are exactly what you just said. You're charmed that you can find it once in your life. The bass player's name is Bob Glaub and the

—FROM PAGE 32, SWEATING THE DETAILS

of a close room mic and a top and bottom mic. About three or four hundred samples were taken from the snare drum. That was all inserted in. When [drummer] Kenny Aronoff came into the picture, he delivered much more of what John envisioned, so Kenny's tracks are edited a lot less.

For guitar, we used a preamp from an old Bassman. John developed a liking for a Mojo speaker cabinet, which had four tens, but they were different speakers. I used a Groove Tube mic toward the amp for the cleaner guitar sounds. The old [Shure] 57 always works well, if it's placed right, on some of the other ones.

John auditioned a lot of guitar amps. In a lot of cases, I used room mics and some off-axis mics. For some of the heavier guitar sounds, like on "Rattlesnake Highway," I used a 57 up on the speaker, and I used a [Neumann] 87 and a [Neumann] 47 off-axis—one about 10 feet away and the other about 20 feet away. Sometimes I would use an Apogee filter for two of the sounds, and I would use the Sony filter for a third, the reason being that the Sony filter was actually faster than the Apogee filters, so there would be a certain phasing that would occur.

For John's vocals, we picked out the best-sounding 47 and I had him stand in a corner and sing into more of an open space. We had the 47 with a little EQ going into an LA-2A. For "Blue Boy," though, we wanted a certain effect. I used an 87 through an old Demeter tube mic pre, and I overdrove the tube. And we used an SM-57 into an 1176 for "Bring It Home for Jelly Roll."

There was a certain Saturday afternoon, when the Fairfield Four Plus One sang backing vocals on "One Hundred and Ten in the Shade." It was great. I set up five U47s and ran them all through some nice sounding LA-2As. I put those guys' vocals on analog tape. I did quite a few takes and then edited all of those vocals into one take.

Miraculously enough, when all of the edits were done, the timecode worked. It was a concern I had, because some of the tape was four and five years old by then, with well over 100 spices on some of the songs. What I did was put timecode on several tracks. My thinking was that if the timecode was on separate tracks, and the multitrack tape had all of these diagonal splices, then at any given time, there would only be one track that contained the drop-out, and the other tracks would pick up the slack.

In the end, I had close to 500 analog reels and about 12 of those large digital reels. I had inventory lists that were pretty extensive. There were times when John might say, "Remember four years ago, when we did that lick? What guitar did I use?" I had it all written down. I had to keep good records.

It got to a point pretty quickly where John would come in and, before he asked for something, I would already have it "up." I would know where we were going, based on our prior experience, and that was kind of nice. I would say that working with John, on this album, was one of the greatest experiences of my life. ■

John Lowson is an L.A.-based engineer who has worked on projects by Roger Waters, Al DeMeola, Rita Coolidge and others.

drummer's name is Kenny Aronoff. Both of those guys have it in their hearts. They just can't help it. It comes out rock 'n' roll.

To me, the great bass players not only know how to breathe with the kick drum, but they also know the art of creating mystery. If things are clicking right, there is a place the bass resides where it almost doesn't matter what notes are being played.

Yeah, it is about the feel or the tonal texture of everything together. Bob Glaub is just rock 'n' roll.

Kenny Aronoff is great at pushing a groove and creating interesting space. His snare sound is one of the best.

That's really why I called in the first place, because basically that was my sound, too. I have to say that I have used a lot of drummers to get to the finished product. We worked with a lot of drummers. Kenny is the driving-est, rocking-est drummer I have ever played with.

Bob Clearmountain did a great job mixing the new record.

Bob is a genius. I would come home and tell my wife that. The guy is a genius. As you know, this is the first time I have had anyone other than myself doing the mixing. Of course, I sat right there by his side. It wasn't like I mailed it across the universe and said, "Go do your thing." [Laughs] In years past, I always handled the mixes; I never thought of that as a separate task. In the last few years, I started seeing that phrase "mixed by" so-and-so. I guess Bob is the premier guy. I have been a fan of his work for a long time, and I got to the point in the record where I just needed someone to take it off of my shoulders and loosen the spring a little bit.

Bob is a friend of mine. He just sort of offered to give me a mix one day. I brought over "Bad Bad Boy," and that is exactly the mix that ended up on the album. We didn't go back and sneak in another one. He passed the audition, if I can be so flippant, with an AAA+. I thought, "This sounds great! Why should I even worry about it?" So we continued the relationship and the process.

Over the years, I used to call Bob "Mr. Digital." That meant he was up to date with all of the latest digital technologies. To tell you the truth, at his heart, he is an analog guy. I learned that with "Bad Bad Boy." I was a little hesitant that the mix might end up sounding a little uptown or slick or whatever. I learned right away that you give him something that is from a more soulful, or ethnic or eclectic picture and he knows what to do with it. Oh man! I'm so happy with this record's sound!

So I assume you're an "analog guy," too.

Oh yeah. This was cut pretty much laid down on analog tape, with the exception of the vocals. In my heart, I am an analog guy. I suppose that makes me sound old fashioned. I use technology when I choose to, but in my heart, I am an analog guy.

Drums sound nicer when they hit analog tape, because they will saturate the tape. We've grown up with that sound. It's nice, soft and warm-sounding. I tried it digital and, oh my God, drums or percussion of any kind on digital will scare you and chase you right out of the room. [Laughs]

I prefer electric guitars analog, too. They were warmer and sounded nicer. Acoustic guitars, for some reason, sound really good going to digital first, especially if you have a nice chimey-sounding guitar. I would do it that way.

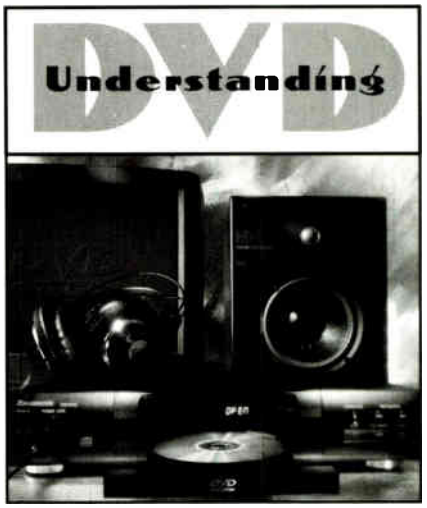
It's good to hear such a fine new album. It's been quite a journey for you.

When I was about 14, I promised myself I was going to be a certain type of musician. I was going to grow up to be one of those guys like Chet Atkins or James Burton or Carl Perkins—people who are really musical, and had a true original identity.

When Creedence happened, and we became famous and everything, I kind of stopped growing at a certain point. It was the times when I visited Mississippi, a few years back, and got the blues thing straight in my mind, that I think was the beginning of my own awakening. It was a process that continued through recording *Blue Moon Swamp*.

When I finally landed at what I would say is the center of where I am supposed to be, the controversy went away. I can't be anything other than what I am now. I feel really strong and comfortable about the musician I have become. I am so ready to start playing my guitar in front of people. You can only stay back behind the scenes for so long. There is a mindset, a place where I am comfortable with myself. In a sense, I feel that I have finally gotten it right. ■

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



—FROM PAGE 66

and places and are quite likely to have slightly different picture edits. The audio mix itself may vary from locale to locale, even to the point of having different elements! Creating multi-language versions in 6-channel that stay in sync and work together smoothly over a 2-hour film can take a substantial amount of skill and time and significant audio workstation resources.

DVD titles use still graphics as navigation menus or as visuals (slide show) to accompany audio. These are usually delivered on disk or by modem/Internet. TIFF and bitmap (BMP) formats are accepted by current authoring systems. Subtitles represent a particular data input problem. In DVD, subtitles are displayed as overlays digitally superimposed by the player over background video, so that the user can switch them on and off and select the language desired from the up to 32 possible simultaneous subtitle streams. The subtitles themselves are represented by individual bitmaps that must be spotted to the correct times onscreen.

This process is quite different from that of conventional subtitles and closed-captioning. Present DVD authoring systems require that all the subtitle bitmap graphic images be generated externally, and imported with coordinated timecode lists, all of which must be embedded into the final video stream. At present, there are few tools available to aid this process. Hopefully, future versions of DVD authoring tools will provide for direct input of text and easy spotting to picture.

VIDEO & AUDIO COMPRESSION

Digitized video assets must be encoded into MPEG-2 form using parame-

ters that satisfy the DVD specification. In video encoding, the bit-rate of MPEG is set so as to optimize video quality while making sure entire content will fit onto the disc together with all required audio and graphic content.

At present, video encoding is perhaps the tweakiest step in the DVD production process (unless you're setting still pictures against audio, you lucky thing!) The MPEG-2 video compression standard and the currently available tools for encoding are adequate to deliver superior picture quality in a feature-length presentation within the size and bandwidth capacity of DVD...but just barely. Maintaining quality standards at the required compression ratios requires high-end compression and front-end equipment, skilled operators and a significant amount of time.

There are a number of MPEG-2 encoders on the market, including both real-time hardware and out-of-real-time software encoders. For DVD purposes, out-of-real-time MPEG encoding is generally not practical owing to the large amounts of video that must be processed. Still graphics for menus, etc. are the exception. These are generally captured uncompressed, and then processed within the authoring system. As each still is equivalent to a single frame of video, this process is efficient.

MPEG-2 hardware encoders span a wide range of prices (about $5,000 to $400K!), and most of these can produce streams that are compatible with DVD. Encoders at the lower end of the price scale produce very good results for the cost, but may not be able to meet the video quality demands of mass-consumer release. As niche and industrial markets for DVD emerge, these will have key roles, but for now professional DVD production is the domain of the "big-iron" MPEG encoders in the low six-figure range.

Almost all DVD titles on the market feature audio compressed in Dolby Digital (AC-3) format, and this will probably remain the case. AC-3 compression may be performed in real-time streaming from tape or hard disk, or in out-of-real-time from hard disk. 5.1 (full-surround) AC-3 real-time compression hardware is currently available only from Dolby. Other vendors, including Sonic Solutions and Zapex, presently offer encoding of stereo in real time and expect to deliver real-time surround encoding in the near future. Out-of-real-time AC-3 software encoders are available as part of the Sonic Solutions DVD Creator package.

SYNC OR SWIM

With the current tools, audio and video sync in DVD is a particular problem. Audio and video data are divorced early in the process, being captured and compressed separately. Presently, Sonic Solutions DVD Creator is the only system that can preview encoded video while decoding AC-3 compressed audio in sync with picture. The Sonic system uses a timestamp embedded in the audio stream to maintain sync. Other audio encoding systems, however, do not embed a timestamp at all.

The real problem is that current DVD authoring systems provide no way to evaluate audio/video sync until final layout, and there's no effective means of adjusting sync within the system if a problem is found. The only option to guarantee sync is to capture audio and video from a common timebase, with the first frame and first sample aligned.

—CONTINUED ON PAGE 225

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- Digital parametric EQ
- Support for multiple hard drive partitions
- Auto sample rate convert to 44.1 or 48 kHz mono .WAV file format
- Choice of audio interface options

SOUNDSCAPE
DIGITAL TECHNOLOGY LTD.

SSHRD-1
Hard Disk Recorder/Editor

A professional Multitrack Digital Audio Workstation, the SSHDR1 combines the highest quality processing hardware with easy-to-use Windows-based software. The most complete and affordable solution for high quality digital audio on the PC, the SSHDR1 has over 50 powerful editing tools and is expandable from 8 to 128 tracks. with up to 32 inputs and 64 outputs. Ideal for a wide range of applications ranging from project studios, to multi unit 32, 48 and 64 track systems for major TV and film studios needing audio post production linked to video.

Version 2.0

SSAC-1
Accelerator Card

The new SSAC-1 is a DSP card that can be added to any existing SSHDR-1 system for faster processing as well as an additional 8 channels of I/O in the form of a TDIF port. This card is needed by anyone who wants to upgrade an existing system to V2.0.

SS810-1
8 Channel I/O

This rack mount unit connects to the SSAC-1 card via the expansion port to give you 8 XLR ins & outs with superb A/D-D/A conversion. It also features an ADAT Optical interface. The **SS810-D** comes without the analog converters for connecting an ADAT without additional channels.

CD & CASSETTE DUPLICATION

marantz
CDR615 / CDR620
Compact Disc Recorder

Both next-generation standalone write-once CD recorders, the CDR615 & 620 offer built-in sample rate conversion, CD/DAT/MD/DCC subcode conversion, and adjustable dB level sensing. Additional features include adjustable fade in/fade out, record mute time, & analog level automatic track incrementing. A 9-pin parallel (GPI) port and headphone output with level control are also included.

CDR620 Additional Features–
- SCSI-II Port • XLR (AES/EBU) Digital In/Out and Digital cascading
- 2x speed recording • Index Recording and playing*
- Defeatable copy prohibit and emphasis • 34 key 2-way wired remote (RC620)

*Available on CDR615 w/optional Wired Remote (RC620)

Telex
ACC2000/ACC4000
Cassette Duplicators

Designed for high performance & high production, Telex duplicators offer easy maintenance and operation. The **ACC2000** is a 2-channel mono duplicator while the **ACC4000** is stereo. Each produces 3 copies from a cassette master at 16x normal speed & by linking additional copy modules, you can duplicate up to 27 copies of a 60 minute original ***in under two minutes.***

ACC2000XL/ ACC4000XL

The XL Series feature "Extended Life" cassette heads for increased performance and wear characteristics. They also offer improvements in wow and flutter, frequency response, S/N ratio & bias.

STUDIO DAT RECORDERS

SONY
PCM-R500

NEW PRODUCT

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.

FEATURES–
- Set-up menu for preference selection. Use this menu for setting ID6, level sync threshold, date & more. Also selects error indicator.
- Includes 8-pin parallel & wireless remote controls
- SBM recording for improved S/N *(Sounds like 20bit)*
- Independent L/R recording levels
- Equipped with auto head cleaning for improved sound quality.

TASCAM
DA-20/DA-30mkII

- Multiple sampling rates (48, 44.1, and 32kHz).
- Extended (4-hour) play at 32kHz.
- S/PDIF Digital I/O RCA Unbalanced In/Out.
- SCMS-free recording. Full function wireless remote.

DA-30mkII Additional Features–
- Variable speed shuttle wheel.
- Digital I/O featuring both AES/EBU and S/PDIF.
- XLR balanced and RCA unbalanced connections.
- SCMS-free recording with selectable ID.
- Parallel port for control I/O from external equipment.

Panasonic.
SV-3800/SV-4100

The SV-3800 & SV-4100 feature highly accurate and reliable transport mechanisms with search speeds of up to 400X normal. Both use 20-bit D/A converters to satisfy even the highest professional expectations. The **SV-4100** adds features such as instant start, program & cue assignment, enhanced system diagnostics, multiple digital interfaces and more.

FOSTEX
D-15

The new Fostex D-15 is the least expensive timecode DAT on the market. It has a host of new features aimed at audio post production and recording studio environments.

FEATURES–
- Chase mode functions built in
- 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 transport is faster and more efficient utilizing a 4-motor design. 120 minute tape shuttles in about 60 seconds.
- Parallel interface
- Front panel trim pots in addition to the level inputs

VIDEO and PRO AUDIO

VISA MasterCard DISCOVER AMERICAN EXPRESS Cards

Announcing our relocation on September 2, 1997 to a larger expanded facility at 420 Ninth Avenue (Between 33rd & 34th Streets) New York, N.Y. 10001

B&H PHOTO - VIDEO - PRO AUDIO

MICROPHONES

AKG

JUST IN

C414B/ULS

A reputation for flawless performance & uncommon flexibility in the most demanding studio & concert sound applications.

- Dual 1" Gold-sputtered diaphrams.
- Flat on-axis response. • 126dB dynamic range.
- Switchable 10dB and 20dB pad. • 20Hz–20kHz.

CAD

E-300

Studio Condenser Microphone

A multi-patterned side address mic that combines vintage capsule design with advanced head-amp electronics, the E-300 has an unusually wide frequency response of 10Hz to 20kHz & an exceptional dynamic range of 137 dB. It also features extremely low self noise of 11dB. Ideal for even the most critical studio applications.

Shown with optional ZM-1 Shockmount

Unique powering of all Equitek Series microphones is accomplished with a pair of rechargeable nicad 9-volt batteries in combination with 48V phantom power. This overcomes inherent current limiting associated with most phantom power supplies & can supply 10x the current.

audio-technica.

AT4050/CM5

Cardioid Capacitor Microphone

The AT4050 multi-pattern condenser expands upon the AT4033 to set the standard for studio performance mics.

- 2 capacitor elements.
- Cardioid, Omnidirectional, & Figure 8 polar pattern settings.
- Vapor-deposits of pure gold on specially-contoured large diaphragms are aged through 5 steps to ensure optimum characteristics over years of use.
- Transformerless circuitry results in exceptional transient response and clean output even under extremely high SPL conditions.

AZDEN

UHF Performance Series

Breaking new ground, Azden's new UHF receiver and microphone transmitters offer superb performance and features at prices far below anything you've ever seen.

411UDR UHF Receiver

- Crystal-controlled, PLL synthesized UHF receiver with 63 user-selectable channels in the 794-806 MHz band. Up to 9 systems may be used simultaneously. Features both 1/4-inch and XLR output jacks, volume adjustment and can be rack mounted.

41HT Handheld Microphone Transmitter

- Newly-designed handheld with supercardioid uni-directional mic element and 63 user-selectable channels. Uses 2 AA alkaline batteries or Azden ni-cads with the AMC-2A Charging Station.

41BT Bodypack Transmitter

- 63 user-selectable channels, input level control, standby switch, locking mini-plug connector and metal clip. Ideal for use with lavalier and headset microphones or as an instrument transmitter.

AMC Ni-cad Battery Charging Station

- Turns the 41HT into the only rechargeable UHF microphone available. (Uses Azden AN-1A nicad batteries only). Fully charged, the 41HT will run for 4 hours. Charging time is approximately 12 hours.

SENNHEISER

ME66/K6P

Short Shotgun Microphone

This road ready mic system is perfect for camera mount and other short gun applications. It's professional sound quality and affordable price combined with the flexibility of a modular setup make it a hard choice to beat.

MIXING BOARDS

MACKIE.

SR24x4 • SR32x4

Sound Reinforcement Consoles

These consolses do for live sound what the acclaimed 8-bus series has done for studio recording. Both professional grade mixing consoles, the SR32-4 and SR24-4 were built to deliver the same kind of useful features found on "bigger boards" while standing up to 24-hr-a-day use.

- Fast, accurate, easy level setting via "solo".
- 4 submix buses.
- 3 band EQ w/ sweepable mids.
- 6 Aux sends.
- Globally switchable AFL/PFL.
- Mackies "VLZ" technology for low noise.
- Tape return to main mix, mono out w/level control.

The new MS-1202, 1402, 1604 & SR Series all include VLZ (Very Low Impedance) circuitry at critical signal path points. Developed for Mackie's acclaimed 8•Bus console series, VLZ effectively reduces thermal noise and minimizes crosstalk by raising current and decreasing resistance.

TASCAM M-1600

16 & 24 Channel 8-bus Consoles

Great for modular Digital Multitrack setups and hard disk recording, the M-1600 is part of Tascam's next generation series of recording consoles. It features multiple options for inputs and outputs and uses the same, easy to install D-sub connectors as Tascam's more expensive consoles, all in "a compact design.

- XLR Mic inputs w/phantom power on 8 channels.
- Signal present/overload indicators on each channel.
- Balanced & Unbalanced tape returns & Balanced Group/Direct outputs using D-sub connectors.
- TRS Balanced Line Inputs on all channels.
- 3-band EQ with sweepable mids.
- 5 Aux sends (1 stereo)
- 4 assingable aux returns.
- Perfect for use with DA-88 and ADAT setups.

MINIDISC MULTITRACKS

TASCAM

564 Digital Portastudio

The Tascam 564 Digital Portastudio combines the flexibility and superior sound quality of digital recording with the simplicity and verstility of a portable multitrack. Using MiniDisc technology, the 564 has many powerful recording and editing features never before found in a portable 4-track machine.

JUST IN

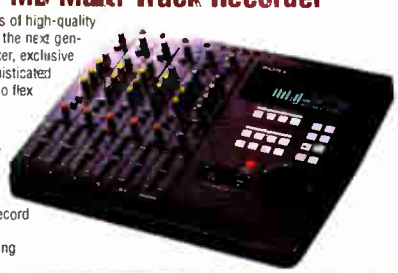
FEATURES–

- Self-contained digital recorder/mixer.
- Uses low-cost, removable MiniDiscs.
- 2 AUX sends / 2 Stereo returns.
- 4 XLR mic inputs.
- Channel inserts on inputs 1 & 2.
- 5 takes per track, 20 patterns, 20 indexes per song.
- Random access and instant locate.
- Non-destructive editing features with undo capability include: bounce forward, cut, copy, move.
- Full-range EQ with mid-range sweep.
- S/PDIF digital output for archiving.
- MIDI clock and MTC.

SONY

MDM-X4 MD Multi-Track Recorder

MD recorders are here! Offering up to 37 minutes of high-quality 4-track digital recording, the MDM-X4 is truely the next generation of personal multi-tracks. With a built-in mixer, exclusive Track Edit system, and a Jog/Shuttle wheel for sophisticated editing with ease, the MDM-X4 will encourage you to flex your creativity.



FEATURES–

- Records on high quality, removable MD data discs • 3.5-gen. ATRAC LSI for wide dynamic range.
- 10 Input / 4Bus mixer.
- 2 AUX sends, 3-band EQ. • 11-point locator.
- Random access memory for quick playback and record from anywhere on the disk.
- Editing features include Undo, Redo, & Section/Song editing for flying material between different tracks.

STUDIO MONITORS

ALESIS

NEW PRODUCT

Point Seven

DESIGNED FOR MULTI-MEDIA!

- Shielded reference monitor.
- Front ported venting system for great bass response.
- 50 watts RMS–100 watts peak @ 4Ω.
- 85Hz–27kHz, ±3dB.
- 2kHz crossover for accurate phase and a wide "sweet spot" for mixing.
- Accurate flat sound reproduction.
- Great for studio and multi-media applications.

TANNOY

PBM 6.5II

Studio Reference Monitors

The PBM 6.5 II is the industry standard for studio reference monitors. They provide true dynamic capability and real world accuracy.

- 6.5" lowfrequency driver and 3/4" tweeter
- Fully radiused and ported cabinet design reduces resonance and diffraction while providing deep linear extended bass.

SONY

NEW PRODUCT

SMS-1P

Powered Studio Reference Monitors

The new SMS-1P monitors are perfect for post production environments. They feature 2 types of inputs with independent volume adjustment, 15 watts of power, bass/treble control and shielding for use near computer monitors.

JBL

4206 & 4208

Studio Reference Monitors

The 4206 & 4208 studio reference monitors are 6" and 8" respectively. Both offer exceptional sonic performance, setting the standard for today's multi-purpose studio environments.

- Multi-Radial baffle ABS baffle virtually eliminates baffle distortion.
- Superb imaging & reduced phase distortion.
- Pure titanium diaphragm high frequency transducer provides smooth, extended response.
- ***Magnetically shielded for use near video monitors.***

ALL ITEMS ARE COMPLETE WITH ALL ACCESSORIES AS SUPPLIED BY MANUFACTURER

CIRCLE AD NUMBER ON PRODUCT INFO CARD

VIDEO and PRO AUDIO

Announcing our relocation on September 2, 1997 to a larger expanded facility at 420 Ninth Avenue (Between 33rd & 34th Streets) New York, N.Y. 10001

B&H PHOTO - VIDEO - PRO AUDIO

PORTABLE DAT RECORDERS

TASCAM DA-P1

- Rotary 2 head design. 2 direct drive motors.
- XLR mic/ line inputs (w/phantom power)
- Analog and S/PDIF (RCA) digital I/O.
- 32/44.1/48kHz sample rates & SCMS-free recording.
- Built in MIC limiter and 20dB pad
- TRS jack w/ level control for monitoring.
- Includes shoulder belt, AC adapter, & battery.

HHB PDR1000/PDR1000TC

- 4 head Direct Drive transport
- XLR mic & line analog ins, 2 RCA line outs. Digital I/O includes S/PDIF (RCA) and AES/EBU (XLR).
- L/R channel mic input attenuation selector(0dB/-30dB)
- 48V phantom power, limiter & internal speaker.
- Illuminated LCD display shows clock and counter, peak level metering, margin display, battery states, ID number, tape source status and machine status
- Nickel Metal Hydride battery powers the PDR1000 for 2 hours, AC Adapter/charger included.

PDR1000TC Additional Features–

- All standard SMPTE/EBU time codes are supported, including 24, 25, 29.97, 29.97DF, & 30 fps
- External sync to video, field sync and word sync.
- MS1000 Master Sync module ensures drift will be no more than 1 frame in 10 hrs.
- HM1000 Headphone Matrix provides a rotary switch for selection of Stereo, Mono Left, Mono Sum, & M/S (mid-side) Stereo modes.

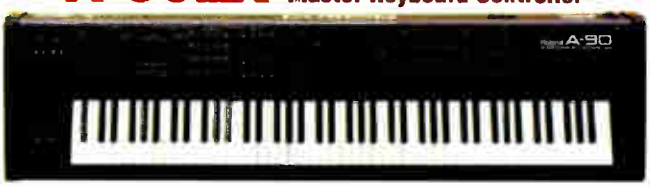
JUST IN!

SONY TCD-D8

This is the least expensive portable DAT machine available. It features 48kHz, 16-bit sampling, automatic and manual recording level, a long play mode for 4 hours of recording on a 120 minute tape, & an anti-shock mechanism. It includes a carrying case, a DT-10CLA cleaning cassette and an AC-E60HG AC adaptor.

KEYBOARDS & SOUND MODULES

Roland A-90EX Master Keyboard Controller



The A-90EX is an 88-note, weighted master controller with one of the best keyboard actions currently on the market. It offers incredibly realistic piano sounds, powerful controller capabilities and 'virtual' programmable buttons which can be configured to operate your software and other devices. The A-90EX combines the majostic sound of a concert grand, the expressive action of a fine acoustic keyboard and the comprehensive MIDI functions of a master controller—all in a portable stage unit.

Roland JV-2080 64-Voice Synthesizer Module

Roland resets the standard with the incredibly expandable JV-2080 64-Voice Synthesizer Module. This amazingly powerful package offers unprecedented expandability, digital signal processing, and remarkable operational ease, all housed in a 2-unit rack-mount design.

FEATURES

- 64-Voice polyphony / 16-part multitimbral capability
- 8 slots for SR-JV80 series expansion boards.
- 3 independant effects sets plus independant reverb/delay and chorus.
- 6 outputs, Main Stereo and 4 assingable.
- **NEW** patch finder and Phrase Preview functions for easy access to the huge selection of patches.
- Large backlit graphic display
- Compatable with the JV-1080, XP-50, and XP-80.

Roland JP-8000 Analog Modeling Synthesizer

Analog is back–FOR REAL! This synth delivers a killer array of real-time control, Roland's revolutionary new analog modeling technology, and FAT, FAT SOUNDS! The assingable ribbon controller, 4 octave keyboard, built in arppegiator w/ external sync capability, and RPS function will make this little gem a must have for DJs and re-mixers as well as that funk musician looking for some new inspiration.

NEW PRODUCT

FEATURES–

- 8 note polyphonic, 49-key velocity sensitive keyboard.
- Newly developed DSP oscillator
- "Motion Control" recalls parameter changes in realtime
- Single, Dual, & Split mode, assingable "on-the-fly".
- 128 user/ 128 preset patches, 64 user/64 preset performances.
- Tone control, 12 chorus, & 5 delay effects. *Play of soul.*

PORTABLE HARD DISK RECORDING

Roland VS-880 V2

This new version of the popular VS880 incorporates powerful additional software functions that allow you to get the most out of this baby's incredilbe creative potential.

FEATURES–

- Auto Mixing Fuction records and plays back your mix in realtime
- Easy recording with an inserted effect in "INPUT-TRACK" mode.
- Process the master output with a specific inserted effect such as total compression.
- Scene change by MIDI program change message.
- Simultaneous playback of 6 tracks in MASTER MODE recording.
- Digital output with copy protection
- 10 additional effect algorithms (30 total) including Voice Transformer, Mic Simulator, 19-band Vocoder, Hum Cancelor, Lo-Fi Sound Processor, Space Chorus, Reverb 2, 4-band Parametric EQ, 10-band Graphic EQ, and Vocal Canceller.
- 100 additional preset effects patches.
- Use MIDI program & control change messages to edit and change effects.
- In total, over 20 powerful and convenient features in editing/sync sections have been added. Some require the optional effects expansion board

Fostex DMT-8 VL

The latest in the Fostex HD recording family, the DMT-8 VL truely brings the familiarity of the personal multi-track to the digital domain.

FEATURES–

- 18 bit A/D, 20 bit D/A conversion.
- Built in 8 channel mixer, Ch 1&2 feature mic & line level.
- 2 band EQ and 2 AUX sends per channel
- Cut/Copy/Move/Paste within single or multiple tracks
- Built-in MIDI Sync., 6 memory locations.
- Dual function Jog/Shuttle wheel provides digital "scrub" from tape or buffer without pitch change. 1/2X to 16X.
- Divide the drive into 5 seperate "virtual reels", each with it's own timing information.
- **NO COMPRESSION!**

NEW PRODUCT

MIDI

OPCODE Studio 5 LX Macintosh MIDI Interface

The Studio 5 LX is arguably the most advanced MIDI interface on the market today. It incorporates a MIDI patchbay, MIDI processor, and SMPTE synchronizer with it's interface functions, all in a 2 rack space unit.

- 15 independant MIDI ins and outs.
- SMPTE reads and writes all formats– 24, 25/29.97/29.97DF/and 30.
- Network multiple units, 240 MIDI channels each.
- 128 patches, unlimited virtual instrument controls.
- 2 assignable footswitch inputs, 1 controller input.
- 8X speed when used with OMS.
- Internal power supply.

Studio 3 & 4 MIDI interfaces, and Vision 3.5 sequncing software also available.

JUST IN!

Mark of the Unicorn MIDI Time Piece AV 8x8 Mac/PC MIDI Interface

The MTP AV takes the world renowned MTP II and adds syncronization that you really need like video genlock, ADAT sync, and word clock sync, even Digidesign superclock!

- Same unit works on both Mac & PC platforms.
- 8x8 MIDI merge matrix, 128 MIDI channels.
- Fully programmable from the front panel.
- 128 scene, battery-backed memory.
- Fast 1x mode for hogh-speed MIDI data transfer.

Pocket Express Mac/PC MIDI Interface

With the pocket express you get a 2 in, 4 out, 32-channel interface that supports both Mac and PC. It also features a computer bypass button that allows you to use it ***EVEN WHEN THE COMPUTER IS TURNED OFF.***

Digital Performer Macintosh MIDI Sequencer w/ Integrated Digital Audio

Digital Performer contains all of the sequencing capabilities of Performer V.5 and adds Digital Audio to the picture. Apply effects such as Groove Quantize, shift, velocity scaling and more- ***All IN REALTIME.***

- MIDI Machine Conrol, Quicktime Video playback.
- Sample rate conversion.
- Spectral effects, pitch correction.
- Real-time editing and effects processing.
- Complete Notation.

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Product Information

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2 Circle the Product Information numbers on the card which correspond to the advertisement or editorial items which interest you. ➡

3 Complete all information on the card. Please check ONE answer for each question unless otherwise indicated. ➡

4 Mail card postage-free!

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MIX PRODUCT INFORMATION CARD

Issue: September 1997 Card Expires: January 1, 1998

NAME/TITLE

COMPANY

ADDRESS

CITY STATE COUNTRY

PHONE #

❶ Your company's primary business activity (check ONE):

01. ☐ Recording studio (including remote trucks)
02. ☐ Independent audio recording or production
03. ☐ Sound reinforcement
04. ☐ Video/film production
05. ☐ Video/film post-prdn.
06. ☐ Broadcast/radio/TV
07. ☐ Record company
08. ☐ Record/tape/CD mastering/manufacturing
09. ☐ Equipment manufacturing (incl. rep firm)
10. ☐ Equipment retail/rental
11. ☐ Contractor/installer
12. ☐ Facility design/acoustics
13. ☐ Educational
14. ☐ Institutional/other

(02)

❷ Your job title or position (check ONE):

15. ☐ Management—President, owner, other manager
16. ☐ Technical & Engineering —Engineer, editor, design engineer, etc.
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❹ Your company's annual budget for equipment, supplies and services:

24. ☐ Less than $50,000
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27. ☐ $250,000 to $499,999
28. ☐ $500,000 or more

❺ Purpose of inquiry:

29. ☐ Immediate purchase
30. ☐ Files/future purchases

❻ Where your audio-related work takes place (check all that apply):

31. ☐ Commercial (public) production facility
32. ☐ Private (personal) production facility
33. ☐ Corporate or institutional facility
34. ☐ Remote or variable locations

001	045	089	133	177	221	265	309
002	046	090	134	178	222	266	310
003	047	091	135	179	223	267	311
004	048	092	136	180	224	268	312
005	049	093	137	181	225	269	313
006	050	094	138	182	226	270	314
007	051	095	139	183	227	271	315
008	052	096	140	184	228	272	316
009	053	097	141	185	229	273	317
010	054	098	142	186	230	274	318
011	055	099	143	187	231	275	319
012	056	100	144	188	232	276	320
013	057	101	145	189	233	277	321
014	058	102	146	190	234	278	322
015	059	103	147	191	235	279	323
016	060	104	148	192	236	280	324
017	061	105	149	193	237	281	325
018	062	106	150	194	238	282	326
019	063	107	151	195	239	283	327
020	064	108	152	196	240	284	328
021	065	109	153	197	241	285	329
022	066	110	154	198	242	286	330
023	067	111	155	199	243	287	331
024	068	112	156	200	244	288	332
025	069	113	157	201	245	289	333
026	070	114	158	202	246	290	334
027	071	115	159	203	247	291	335
028	072	116	160	204	248	292	336
029	073	117	161	205	249	293	337
030	074	118	162	206	250	294	338
031	075	119	163	207	251	295	339
032	076	120	164	208	252	296	340
033	077	121	165	209	253	297	341
034	078	122	166	210	254	298	342
035	079	123	167	211	255	299	343
036	080	124	168	212	256	300	344
037	081	125	169	213	257	301	345
038	082	126	170	214	258	302	346
039	083	127	171	215	259	303	347
040	084	128	172	216	260	304	348
041	085	129	173	217	261	305	349
042	086	130	174	218	262	306	350
043	087	131	175	219	263	307	⬆
044	088	132	176	220	264	308	⬆

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024	068	112	156	200	244	288	332
025	069	113	157	201	245	289	333
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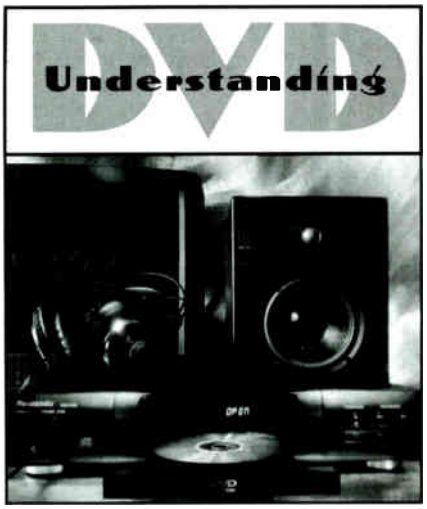

—FROM PAGE 219

AUTHOR, AUTHOR!

Once video, audio and graphic assets have been encoded and captured to hard disk, the next stage is DVD authoring. At this stage, specialized DVD authoring software is used to define video and audio clips, menu navigation and highlighting and any other user interactions. The navigational structure of a DVD title may be simple or complex, but either way it must be defined exactly as it is desired to play for the final consumer. The result of authoring is a complete description of the finished disc, with all of the source digital video and audio files defined and the connections between them specified completely.

At present, the market for DVD authoring software is dominated by the Scenarist system from Daikin-Comtec Laboratories. This package is presently available only for SGI workstations but is being ported to Windows NT. The Scenarist software is quite complete in its support of the DVD Video specification, and for now it's pretty much the only game in town.

Other commercial DVD authoring systems that have been announced include packages from Philips, Panasonic and Innovacom, but are not yet shipping in final release form.

MULTIPLEX AND FORMATTING

When the DVD contents have been encoded and defined in authoring, the project is ready to prepare for disc. The process from here consists of multiplexing together the audio, video and graphic information streams so that the DVD player can read a single stream of data. Multiplexing for DVD follows definitions contained in the MPEG standard, but with a number of special constraints to provide for the numerous alternate video, audio and subtitle streams that a DVD disc can contain, and to ensure there will be no overflow of the decoding buffer on any player.

As the multiplex process is complex, and involves reading and rewriting several gigabytes of data, it can be somewhat lengthy. About 2½ hours are required to multiplex data for a 4.7-gigabyte disc when using Daikin Scenarist on an SGI 02 with R5000 processor.

Following multiplexing, the files that control navigation on the DVD disc are assembled, following the specifications defined in the authoring stage. The multiplexed media data files are then concatenated (as the DVD spec defines) and a complete set of files and directories is assembled, exactly as it will appear on the final DVD disc.

Once the file structure is complete, it still must be formatted into an image of the final disc, using the ISO 9660 and micro-UDF directory structure described previously. The Scenarist system creates a separate disc image file by recopying the DVD directory structure into a single disc image file.

PREMASTERING AND REPLICATION

For replication, the disc image is transferred to a high-reliability tape medium called DLT (Digital Linear Tape), similar to Exabyte but of higher capacity. The data is accompanied by DDP (Disc Descriptor Protocol) files that are used in the mastering process. At the replication facility, the DDP-format premaster tape is used to create a glass master and stamper, which are then used to replicate discs in quantity.

The DVD replication process is virtually identical to that of CD, but because of the smaller pit size and tighter tolerances all around, the mastering and replication gear must be built new or retrofitted to fit the needs of the process. The one additional step in the replication process is that of bonding together separate layers of polycarbonate material. This is the mechanism by which double-side and dual-layers are supported, but is an integral part of DVD manufacturing even when the discs produced are single-side and single-layer.

Notice that one step has been left out that has been nearly standard for audio CD and CD-ROM production. At this writing, DVD-R drives are not yet available on the market, although this could change by the time you read this. Even when recordable DVD is freely available for professionals, differences in the physical formats between recordable and replicated discs may limit their use for review and quality assurance.

THE FUTURE

DVD is now at the same point that CD was in early 1984. Players and discs have been introduced, but are still confined to a fairly narrow distribution and a small slice of the overall entertainment market. We can expect that by Christmas season 1997 many more feature film titles will be available, and players will begin to move down the price curve, providing a substantial push to the format.

Computer upgrade kits for adding DVD-ROM drives and DVD Video compatible decoder cards are starting to appear. Depending on how strongly these move into the market, we can expect to see a surge in computer-oriented titles that take advantage of DVD Video's high-impact audio and video, while exploiting the extended interactivity and connectivity of the personal computer.

Music and audio will figure more and more prominently in the DVD market, whether as a subset of DVD Video, or by using the forthcoming DVD Audio spec. Either way, we'll see a surge of new audio capabilities, including ultra-high fidelity and increased demand for surround sound mixing outside of the film domain. These are trends that recording and mastering studios would do well to note in their equipment and facility planning.

As DVD Video (and Audio) grow in the market, DVD will benefit as CD did from the economies of scale that the mass entertainment market can bring. Descending costs will drive the development of additional markets, including DVD-ROM and hybrids of DVD Video and ROM. Recordable and rewritable forms of DVD will come onto the market in the next year or so, at least for professional purposes. Ultimately, it can be expected that DVD and/or formats derived from it will displace VHS tape, laserdisc, CD-ROM and ultimately even audio CD. While this process will take several years, it seems that the triumph of the medium is inevitable. ■

Gary Hall is a consultant on DVD technology and productions. He is also vice president of technology for dHouse, the first dedicated commercial production studio for DVD in the western United States.

—FROM PAGE 52, WORKSTATIONS

day stamping. System requirements and prices vary with configuration. Phone 415/893-8000; visit www.sonic.com.

Solid State Logic Altimix

Altimix is a proprietary 48-channel system aimed at audio post for video, and it is designed as a complete audio post-production station supporting file import, record, conform, tracklay, spot, edit, mix, process, sweeten, reconform and layback sound with picture. It has a dedicated editing and mixing console. It also supports 20-bit recording at 48kHz video locked, syncs to video sync, with machine control synchronization with LTC, MTC, and 9-pin serial machine control, and displays in feet/frames. Mixing includes all major surround formats with EQ and dynamics processing in every channel, and total dynamic automation of all objects. Automation may be carried out in non-real time against integrated random-access picture. Cost: depends on application. Phone 213/463-4444; visit www.solid-state-logic.com.

Studio Audio & Video Octavia

The Octavia system is based on the 2-channel SADiE system (see above), but is available in modules of 24 channels. Like SADiE, Octavia relies on proprietary processing and supports 18-, 20- and 24-bit word lengths and up to 96kHz sampling. See SADiE information for sync and mixing features. Cost: $34,995 for a complete Octavia including 4.2GB removable drive and 17-inch monitor. Phone 615/327-1140; visit www.sadieus.com. ■

Studio Audio & Video Octavia

Yasmin Hashmi and Stella Plumbridge are partners in the independent consultancy SYPHA, publisher of The Internet for Broadcasters, The Tapeless Audio Directory *and* The Nonlinear Video Buyers Guide. *For details, phone SYPHA at 44/181/761-1042 or visit www.mandy.com/2/sypha.html.*

—FROM PAGE 142, SOUNDCRAFT GHOST

sures, or to achieve musical results.

ERGONOMICS

Although I enjoyed using the Ghost, I felt the vertical placement of the knobs was too close in the channel strip, though horizontal spacing of the knobs (between adjacent channels) was fine. I prefer a slightly deeper console to allow for more space between knobs. On the plus side, there are no dual-function switches or knobs, and controls have a sturdy, smooth feel. Knobs are color-coded; panpots, EQ gain knobs and trims are center-detented.

Channel and Mix B Mutes and Solos were a pleasure to use, with large rectangular switches and built-in LEDs. The Solo switches illuminate and remain down when depressed. As the Mutes can also be controlled by the built-in automation, they are soft switches and always remain "up," illuminating only when engaged.

Other switches on the Ghost are basically the same size, shape and color, and a bit more differentiation among them would have been preferred. However, legends on the Ghost are clear and easy to read, and it was always easy to locate a depressed switch. One minor criticism is that there are absolutely no channel number indications at the top of the console, and the meter bridge LED displays are not numbered. I would also have preferred that the board had more of a slope; if it were raised a few more inches in the back, it would be easier to see and reach the controls at the top.

The faders had a very smooth, silky feel with a uniform response to the end of its taper. There was just the right amount of resistance, but not so little that you might move them inadvertently. I understand that Soundcraft used the same faders as in the company's higher-priced moving-faders consoles—the quality is apparent.

WISH LIST

Although the Ghost is feature-laden, there are a few amenities it lacks. I wish the effects returns had switches to assign them to the Studio Foldback, so that you could easily record dry but monitor wet. And since the mixer has mute automation, I wish there were mutes everywhere, instead of just for the Channel and Mix B inputs. However, Solo/PFL/AFL switches appear practically everywhere, though, curiously, only the Channel and Mix B solos are illuminated. Although there is a global Solo LED, I wish Ghost had one Solo LED for each master section of the board, wired to light when any of the Solos in that section is engaged.

There is no pre-fader Aux Send for Mix B. This means both the control room and the studio must monitor the tape returns by using the Mix B controls; you cannot have an independent tape mix for the control room and studio. Also, if you monitor Aux 1-2 in the studio phones, be aware when setting levels that both Aux 1 and 2 carry the same signal from the channel, and 1 goes to the left headphone and 2 goes to the right.

The CPU section of the manual was well done, but the rest of the manual was sketchy. There are no hookup diagrams or application notes. Some information, such as a level diagram, is in the sales brochure but is not in the manual. In this price range, many buyers won't have as much knowledge as Soundcraft seems to assume; the Ghost deserves a more thorough manual.

Nevertheless, the Ghost's outstanding qualities far surpass its shortcomings, and I still thoroughly enjoyed using the mixer.

CONCLUSION

Pricewise, the 24-channel Ghost is $6,150; the Ghost-32 is $7,295; the Ghost LE (no automation or CPU control) is $5,195 (24-channel) or $6,295 (32-channel). Options include a 24-channel expander ($5,095), meter bridges, console stands and dust covers.

Minor complaints aside, the Soundcraft Ghost is a real winner. Its combination of stellar sound, impressive feature set, automation/MMC control, quality construction, solid feel and low price set a new standard for analog 8-bus consoles in the project studio market. I have auditioned most of the current crop of 8-bus boards in this price range (see February 1996 *Mix* for a roundup of low-cost 8-bus consoles), and I've decided to buy a Ghost for my project studio.

Soundcraft USA, 1449 Donelson Pike, Nashville, TN 37217; 615/399-2199; fax: 615/367-9046. Web site: www.soundcraft.com. ■

Dominick J. Fontana is an attorney in New York City. He moonlights as the owner/operator of Studio di Fontana, a multitrack/MIDI recording studio. He can be reached at Fontana@cis.compuserve.com.

—FROM PAGE 76, BOBBY GUY AND ERNIE LAKE

will be played—it's that fast. Of course a producer's reputation can be influential. We do create music with a similar sound, primarily because of our production methods and the equipment that we use.

How do you tailor your sound to individual artists' production needs?

Guy: We won't do anything unless it's going to fit within the parameters of what we've been successful at.

Lake: If the vocals aren't soulful we stay away from it. Of course, there have been exceptions when we needed to make some cash, but right now we're not starving!

Do you use the same criteria for songwriting collaborations?

Guy: We always start with a good song. We write them rhythmic, uplifting, with big vocal [choruses], more or less on a gospel, R&B, funk tip. Personally, that's the music we love. Our newest song, "Go Let It Rain," is a real '70s [R&B] cut.

DJs love creating their own dance remixes, and I'm sure you've heard interpretations of some of your songs. How do you feel about that?

Guy: It's nice to hear other people's interpretations. We sent out "Go Let It Rain" to let other people remix so we could hear different flavors from the record. For the sake of the record companies, we shy away from doing songwriting, production and remixing.

I recently heard your remix of Roberta Flack's huge hit "Killing Me Softly" that Atlantic Records released last year. What made you sign on to the project, especially after the Fugees had such success with their cover and subsequent remix?

Lake: Actually we started off bootlegging the song.

Guy: We were going to put the remix out on our label, but Atlantic got wind of it and told us we couldn't do that [Laughs]. But they liked it and decided to buy the remix from us. Later we learned Roberta was a little put off by that on account she had nothing to do with the remix. She had to get her own people to do a remix of the song while the Fugees had it on the charts, but Atlantic wasn't releasing any of the mixes on account they were all wack! She wasn't going to let Atlantic use the song if they didn't release her remixes, even though Atlantic owned all rights to the song. They negotiated with her anyway out of respect. The record was released promo-only, but it still hit the sales charts. But because only a few records were pressed, Atlantic lost money on the deal.

Your collaboration with LaFace Records has been more fruitful, one could say.

Guy: Yeah, we have a pretty good relationship with L.A. Reid.

Lake: He's taken to us, we've taken to him. He's a mad-cool guy! We love him. Actually, everyone at LaFace is pretty cool. Babyface and L.A. have a great bunch of people working with them.

Is there a lot of pressure remixing what is already an established hit? You must get a great deal of scrutiny and criticism from the record companies, producers and artists.

Lake: We really haven't had a problem with that yet. Our remixes are primarily geared for club play. Occasionally, a mix will slip out and get to radio, like "Unbreak My Heart," but, more often than not, the mixes we do are so different from the original record that it usually presents no problem, since they are aimed at such a targeted audience.

Have you had any difficult remix sessions? What made it so?

Guy: The Whitney [Houston] cut, "Step by Step," was a three-week ordeal. It went through so many different forms to make so many people happy. Eventually, we told the record company that we were going to do what we do best, keeping with our production style. Ultimately, that mix won out. When you're working with any artist of that caliber, you know it's important and you want to help them.

Do you see remixing becoming even more popular than it is already?

Guy: Oh yes, definitely. With all the talk of dance music, and MTV making an obvious shift in their programming to include more dance videos, I think a lot more major artists will want to be on top of the most current stuff and will be hiring us or more producers like us.

Lake: We want to be the puff daddies of dance music! [Laughs]

What wisdom can you impart to the younger engineers looking at your successes, wishing to be producer/remixers?

Guy: There's a reason why certain remixers are hired, and that's because there's a certain sound that they have. Once you learn what you do best, stick with it. That also works when you're successful. Don't change what got you to that point because now you're working with Whitney Houston. ■

Chris Patton is owner/operator of Ars Nova Productions, a MIDI pre-production studio in Oakland, Calif.

—FROM PAGE 130, BRÜEL & KJAER

specialist. He adds a few operational tips that apply to all lavalier microphones: "I have used the DPA 4060 for over nine months; I am now spoiled. The characteristic common to all omni microphones is their lack of handling noise. However, when a cable is attached directly to the mic, cable-induced noise problems can result. Since most film and television engineers hide the mic under clothing, cable snagging can cause an undesired audible effect. Certain fabrics have a greater tendency to be noise offenders, such as Rayon, Crynylon, wool and some Polyester blends. One solution to this snag-induced sound is to wrap two loops of cable around your thumb at about six inches from the microphone element and secure the loops with a spot of tape. This stops mechanically induced sound into the cable and still leaves six inches free for placement.

"Another fastening method employs theatrical wig clips, which are commonly used to hold hair extensions and toupees in place. A wig clip is a small comb-like device with spring-type clamps, combined with 1-inch circles of pink vulcanized rubber. Pinch a clip open and slide the cable in perpendicular to the clip's teeth. There is a convenient gap at each end of the teeth that will allow you to close the clip and not pinch the cable. The assembly now serves two purposes: The first is to provide a vibration damper; the second is to serve as a discrete clip that can easily attach to the back side of the button strip of most shirts. Fish the element through the button hole just over where the button should be. Since the DPA 4060 is small, it may be possible to hide it in the presenters' own hair; two wig clips should be used—one at the rear of the collar and the other near the ear or hairline. If you wish to hide the mic under a garment, the wig clip combined with the pink rubber dot can be affixed with wig tape or moleskin. In this application, I recommend the long protection grid, which gives a 10dB boost at 12 kHz, enough to cut through most fabrics."

Brüel & Kjaer Microphones, distributed by Tannoy/TGI North America; 300 Gage Ave., Kitchener, Ontario, N2M 2C8 Canada; 519/745-1158; fax 519/745-2364. ■

Gary F. Baldassari is the director of engineering at Magi Incorporated, Orlando, Fla.

—FROM PAGE 146, OPCODE STUDIO VISION PRO

gram by doing something pretty stupid. In this case, under Hardware Setup, I decided to click on the DAE Powermix option, which was available on this system. After the subsequent crash, reboot, and unsuccessful re-installation of the new software, I finally sought relief via Opcode telephone technical support, who told me, "Don't use DAE 3.1. It's full of bugs." Unfortunately, this version is automatically installed when you install Studio Vision 3.5. In fact, anyone who is patient enough to thoroughly read the volumes of support material that come with the software will find a warning about the use of DAE 3.1. It's probably a good idea to repeat that warning here in the interest of saving others some headaches. So here goes:

"You may encounter problems with DAE/DSI 3.1 in two areas:

- When appending a new audio take to an existing file, you may encounter errors where previously recorded audio is played back in place of audio you have just recorded.
- You may encounter problems with the Where-Is dialog, when DAE cannot locate an audio file required by Studio Vision."

Both of these bugs have been fixed in a new version of DAE (3.1.1), which was unfortunately not available from Digidesign for inclusion on the Studio Vision Pro CD-ROM. It is now available for downloading from Opcode's Web site, as well as from Digidesign's site, at www.digidesign.com.

CONCLUSION

Studio Vision Pro is a real boon to those who want advanced TDM features in a powerful, mature MIDI/digital audio sequencer. But even without all the added benefits for TDM users, this package is well worth the price of upgrading. Version 3.0 users can upgrade for $179; upgrades from earlier versions of Studio Vision are $199. Studio Vision Pro retails at $995.

Opcode Systems, 3950 Fabian Dr., Palo Alto, CA 94303; 415/856-3333; fax 415/856-3332. Web site: www.opcode.com ■

Paul Potyen is a frequent contributor to Mix. *He has yet to find a software application he can't crash, thereby losing hours, if not days, of otherwise productive time.*

MARKETPLACE

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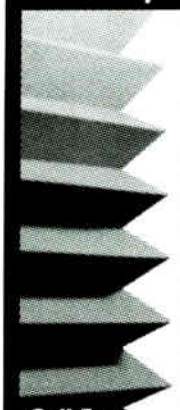

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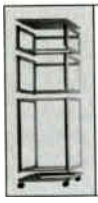

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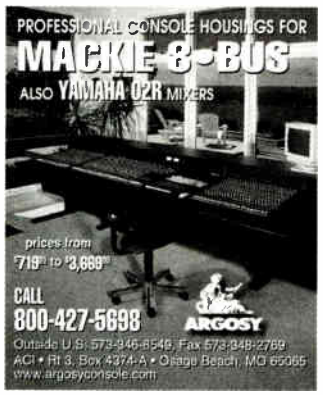

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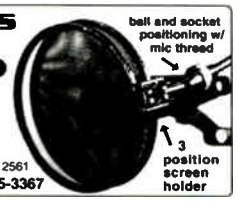

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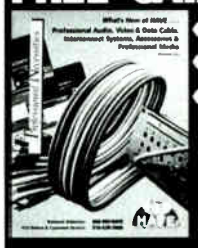

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FEEDBACK

ANTE UP

Tom Kenny's "Sound Along the Strip" piece in the June 1997 issue leads off with a stunningly inaccurate rewrite of history. If anyone "upped the ante" for live sound on the Strip, it would have to be the EAW house system installed in the Troubadour by Markus Audio & Lighting in 1990 or 1991. That is at least two years before the opening of the House of Blues in 1993. Please correct this misleading and inaccurate information at your next available opportunity. I'm sure it will do wonders for your cred.

Christian Doering
vice president, Strategic Marketing
Eastern Acoustic Works

REVENUE REVELATIONS

I enjoyed Mark Frink's "Live Sound" column in the March issue. I have just finished a relatively thorough evaluation of my company's '96 finances. One of the quantities that we have been using for revenue comparisons for various systems and shows is the "net revenue as a percentage of the system value" (i.e., net $5,000 from a $500,000 rig = 1%), which was mentioned in the first paragraph of the article.

Of course, any accountants who read that would go into a long discussion (my eyes are starting to glaze over already) of "What is the actual value, i.e., how far are things depreciated, etc.?" and "What is the actual per-show net calculation?" but your basic expression of gross revenue less labor and transportation is close enough for us sound company owners who are forced to be accountants on the side.

A consistent, easily applied comparison method is essential to the discussion of whether we sound companies are getting paid enough, and my vote is for the "net as percentage of value." With that established, we can continue the discussion of who's working too cheap and who's expectations are unrealistic (and why) when it comes to production pricing.

One of my favorite soap boxes at present is: Why can the local AV suppliers rent a $10,000 video projector for $250 to $350 per day (2.5% to 3.5% per use), but the same production company would beat us up over 1% for renting a mixing console and sound system?

The going rates we saw for major rock tours last summer were in the 0.5% of value range, when counting the actual numbers of show dates involved. This may be okay if you can work it enough, can tolerate a four-year payback on your equipment, and if your debt load and fixed costs are low enough to keep your return on equity at or above 10%. But that's another accounting story.

We must agree that we're all somewhat to blame, because we all know that if we didn't get lean on our pricing, someone else would. I know I have let some things go this year already because the numbers weren't right, and I sure tend to regret it when the SBA notes and payroll checks have to go out. We, the sound industry, can't collude on our pricing, but a little peer pressure to get real—especially looking at the returns for AV equipment in comparison—is long overdue.

Richard B. Thornton
Sound Services
Little Rock, Ark.

IT'S THE LITTLE THINGS THAT COUNT

Thank you to Steve Graham ("Feedback," June 1997) for discovering the dBv vs. dBV error in my March '97 article, "Level Practices in Digital Audio." Graham is absolutely correct—common practice reserves the use of uppercase V for a 1 volt reference and lowercase v and u for a .775 volt reference. As that is also my practice, the error was not in the manuscript I submitted for publishing. My little v's appear to have grown without any fertilization on my part. Did someone say, "We'll fix it in *Mix*?"

Bob Katz
Digital Domain
Orlando, Fla.

BUT WAIT, THERE'S MORE...

We would like to clarify a point in your article in the June issue regarding the Sennheiser 1000 series RF wireless systems. You wrote, "The U.S. version operates on one of 16 frequencies between 674 and 698 MHz...and up to eight channels can be used simultaneously." This was the case when it was first introduced in early 1996. Since its introduction we have expanded the line considerably. In the U.S. we now offer three standard ranges (584 to 608, 674 to 698, and 722 to 746 MHz) in which 24 channels can operate simultaneously (eight in each range). We can also provide custom ranges, 27MHz wide, between 572-960 MHz. We will continue to expand this series, especially in terms of accessories, to make it even more flexible. It is also noteworthy that the components of this series are completely compatible with our 3000 and 5000 Series products. Therefore, one may use the BF1083-U (1000 Series) body-pack transmitter with the new EM3032-U (3000 Series) true-diversity dual receiver. Conversely, the SKM5000 (5000 Series) handheld transmitter may be used with the EM1031-U (1000 Series) true-diversity receiver.

Joe Ciaudelli
Sennheiser Electronic Corp.
Old Lyme, Conn.

MIDDLE ON THE ROAD

I am an avid reader of *Mix* and would love to see a column about midlevel live sound applications. By this I mean someone like us, a central Texas act running 30,000 watts of QSC power with a Spirit 40x8 and separate monitor board. Not a huge touring system, but somewhere between the Peaveys onstage and the Yamaha 3500s. I suspect that there are more than a few of us out there...hey it's an idea. Keep up the good work.

Steve Stallings,
Bremond, Texas

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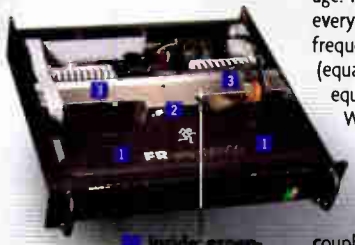

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