

# MIX

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**Reports from  
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**Audio for  
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vibrations experienced within a loudspeaker cabinet, can improve overall system bass and midrange resolution. Consequently, within the DMT II crossover, Tannoy used coils vacuum impregnated with a resin selected to reduce vibration.

With the mechanical aspects of the DMT crossover design largely resolved, Tannoy engineers addressed the problems of interaction with magnetic fields within the system. Air cored inductors radiate a significant measurable magnetic field which can affect nearby components and the inductors are themselves affected by the driver's magnetic radiation. It was found that creating a split crossover, with the inductor mounted on the cabinet's cross-brace away from the other crossover components and driver magnets, produced sound quality improvements that more than justify the additional manufacturing costs.

The final components to come under scrutiny in the DMT system were internal connection cables. By using custom manufactured braided Teflon Kimber Kable, unwanted signals ordinarily induced into the internal wiring from within static and magnetic fields can be virtually eliminated, yielding substantial audible improvements.

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# MIX

PROFESSIONAL RECORDING • SOUND AND MUSIC PRODUCTION

APRIL 1994, VOLUME 18, NUMBER 4



PAGE 164

## AUDIO

- 20 **The Fast Lane:** Digitalis, Part Two  
*by Stephen St. Croix*
- 32 **Applications of Dynamics Signal Processing**  
*by Rick Clark*
- 44 **NAMM 1994:** Shake, Rattle, Rock 'n' Roll  
*by George Petersen and Paul Potyen*
- 72 **Studio View:** Engineering in Project Studios  
*by Dan Daley*
- 84 **Watching the Detectives:** Finding the  
Vintage Stuff *by Dan Daley*
- 104 **Studio Vocal Mics:** The New Generation  
*by George Petersen*
- 160 **Producer's Desk:** Cypress Hill's DJ Muggs  
*by Jeff Forlenza*
- 164 **Recording Notes:** The Band Is Back; The  
Making of Rob Wasserman's "Trios"; Ottmar  
Liebert—Flamenco's Wild Card; Al Kooper—  
B-3 B. Goode *by Blair Jackson*
- 178 **Tape & Disc News/Splices** *by Philip De Lancie*

## AUDIO & MULTIMEDIA

- 24 **Insider Audio:** Multimedia—Heaven or Hell?  
*by Murray Allen*
- 56 **CES & MacWorld Expo:** News from the  
Trade Show Floor *by Paul Potyen*
- 62 **Multimedia Chip Shots**
- 64 **Audio for Desktop Video:** Working with  
Premiere 3.0 and the MovieMovie Card  
*by Philip De Lancie*



PAGE 56

## PRODUCTS

- 112 **Field Test:** Data Translation Media 100  
Video/Audio Editing System *by Phil Cochlin*
- 117 **Field Test:** Sennheiser MKH80 Condenser  
Microphone *by George Petersen*
- 120 **Field Test:** Night Technologies EQ<sup>3</sup> Sound  
Enhancement System *by George Petersen*
- 124 **Preview/Hot Off the Shelf**

## AUDIO POST-PRODUCTION

- 92 Post-Script:** Sound for Film—Turn It Down!  
*by Larry Blake; Ry Cooder Helps Bring  
“Geronimo” to Life by Blair Jackson;  
Foley Miking by Tom Kenny*

### 102 Post Products

## LIVE SOUND

- 128 SoundCheck:**  
Report from the Live  
Sound Workshop;  
Todd Rundgren In  
The Round; Club of  
the Month—Fenix  
Club *by Mark Frink*



PAGE 104

- 136 The Dinky Diaries:** A Tour of Clubland  
*by Dinky Dawson*

- 152 The Making of MD Systems**  
*by Karen Mitchell*

- 157 New Sound Reinforcement Products**



PAGE 128



PAGE 20

## MUSIC

- 78 Lunching with Bonzai:** Taj Mahal  
*by Mr. Bonzai*

## DEPARTMENTS

- 8 From the Editor**

- 12 Current**

- 16 Industry Notes**

- 180 Coast to Coast**  
(Including Sessions/  
Studio News, L.A.  
Grapevine, NY Metro  
Report, Nashville  
Skyline, Chicago  
Loop)

- 188 Showcase**

- 192 Ad Index**

- 198 Marketplace**

- 200 Classifieds**

Cover: Photographer Paul Morrell created this fantastic visual cover based on the concept of computers, audio and video interacting in today's professional recording environment. Screen Insets: Screen captures from many popular audio programs.





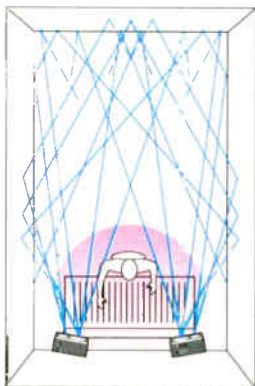
# The Truth From

The truth...you can't expect to find it everywhere you look, or *listen*. But when mixing music, hearing the truth from your monitors will make the difference between success and failure. You'll get the truth from the **Alesis Monitor One™ Studio Reference Monitor**.

## Room For Improvement

Fact: most real-world mixing rooms have severe acoustical defects. Typical home and project studios have parallel walls, floors and ceilings that reflect sound in every direction. These reflections can mislead you, making it impossible to create a mix that translates to other playback systems. Trying to solve the problem with acoustical treatments can cost megabucks and still might not work. But in the near field, where direct sound energy overpowers reflections, reverberant sound waves have little impact, as shown in the illustration. The Monitor One takes full advantage of this fact and is built from the ground up specifically for near field reference monitoring.

Working close to the sound solves the room problem; but creates other problems, such as high frequency stridency and listener fatigue (typical of metal-dome and composite tweeter designs). Our proprietary soft-dome pure silk tweeter design not only solves these problems, but delivers pure, natural, incredibly accurate frequency response, even in the critical area near the crossover point (carefully chosen at 2500 Hz).



*Does your living room double as your mixing suite? The pink area in the illustration shows where direct sound energy overpowers reflected waves in a typical mixing room. The Monitor One helps eliminate such complex acoustic problems by focusing direct sound energy toward the mixing position, instead of the love seat.*

## The Truth From Top To Bottom

The Monitor One gives you all the truth you want in the mids and highs, but what about the low end? You probably know that the inability to reproduce low frequencies is the most common problem with small monitors. Most of these speakers have a small vent whose effect at low frequencies is nullified by random turbulence, or they're sealed, which limits the amount of air the driver can move. Such speakers give disappointing results in their lowest octave.

The Monitor One overcomes wimpy, inaccurate bass response with our exclusive SuperPort™ speaker venting technology.

The ingenious design formula of the SuperPort eliminates the choking effect of small diameter ports, typical in other speakers, enabling the Monitor One to deliver incomparable low frequency transient response in spite of its size.

The result? A fully integrated speaker system that has no competition in its class. You'll get mixes that sound punchier and translate better no matter what speakers are used for playback. Whether you mix for fun or for profit, you want people to hear what *you* hear in your mixes. The Monitor One's top-to-bottom design philosophy is a true breakthrough for the serious recording engineer.



*Alesis SuperPort™ technology gives you the one thing that other small monitors can't: incredibly accurate bass transient response. No, the SuperPort doesn't have a blue light, but it makes the picture look cool.*



**ALESIS**  
**MONITOR ONE™**  
 STUDIO REFERENCE MONITOR

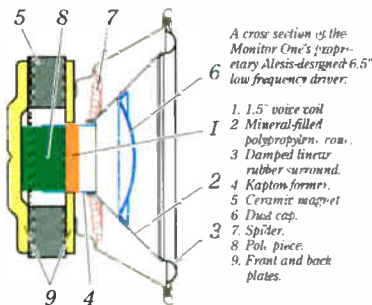
# Left To Right

## Power To The People

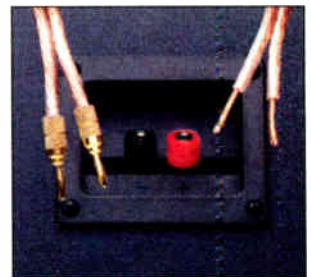
High power handling is usually reserved for the big boys. While most near field monitors average around 60 watt capability, the Monitor One handles 120 watts of continuous program and 200 watt peaks...over twice the power. Also, its 4 ohm load impedance allows most reference amplifiers (like the Alesis RA-100™) to deliver more power to the Monitor One than they can to 8 ohm speakers. That means the Monitor One provides higher output, more power handling capability, and sounds cleaner at high sound pressure levels. If you like to mix loud, you can.

## The Engine

Our proprietary 6.5" low frequency driver has a special mineral-filled polypropylene cone for stability and a 1.5" voice coil wound on a high-temperature Kapton former, ensuring your woofer's longevity. Our highly durable 1" diameter high frequency driver is ferrofluid cooled (costly, but it's the best way to cool a tweeter), to prevent heat expansion of the voice coil which inevitably leads to loss of amplitude and high



frequency response. Combined, these two specially formulated drivers deliver an incredibly accurate, unhypped frequency response from 45 Hz to 18 kHz,  $\pm 3$  dB. The five-way binding posts provide solid connection, both electronic and mechanical. We even coated the Monitor One with a non-slip rubber textured laminate so when your studio starts rockin', the speakers stay put. Plus, it's fun to touch.



The Monitor One's five-way binding posts accept even extra-large monster wire, banana plugs and spade lugs. Hookup is fast, easy and reliable.

## The New Alesis Monitor One™

You don't design good speakers by trying hard. It takes years and years of experience and special talents that only a few possess. Our acoustic engineers are the best in the business. With over forty years of combined experience, they've been responsible for some of the biggest breakthroughs in loudspeaker and system design. The Monitor One could be their crowning achievement. They're the only speakers we recommend to sit on top of the Alesis Dream Studio™.

See your Authorized Alesis Dealer and pick up a pair of Monitor Ones. Left to right, top to bottom, they're the only speakers you want in your field.

The Monitor One is the speaker for the Alesis Dream Studio™. Need more information about the Alesis Monitoring System? Call 1-800-5-ALESIS. See your Authorized Alesis Dealer. Monitor One, SuperPort, RA 100 and the Alesis Dream Studio are trademarks of Alesis Corporation. © Alesis is a registered trademark of Alesis Corporation.

Alesis Corporation ■ 3630 Hollywood Avenue Los Angeles CA 90016



# FROM THE EDITOR

**T**he role of the computer in the studio has evolved from that of an administrative device used to help organize the peripheral aspects of a recording project to the backbone of the production process. The studio computer's continued evolution, driven by quantum leaps in speed, storage and processing power, will move us steadily toward the dream that many of us have of a universal multimedia authoring station—at least if you're gearing your services toward the looming, lucrative market of interactive multimedia products.

If, however, you are planning on shunning other media distractions and remaining true to the musical muse, your computer may offer a different, yet equally profound set of tools for audio production. It's a safe bet that one day soon, a studio will be built around a super computer that emulates every possible operation required for record production. Although the name on that computer isn't too clear just yet, the platform issues are sure to diminish in significance in the future. And certainly, application software is already pouring out of the doors of some of our best audio manufacturers, as implied by this issue's cover illustration.

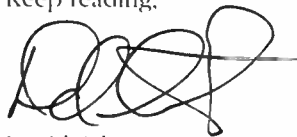
And many of you are banking on the film/broadcast medium as the growing outlet for your audio services. Here, again, there is no question where it's moving: pictures and sound, slipping and sliding around as random-access bits and bytes. Last month's NAB conference brought home the message that computers have the power to reduce the cost of production dramatically. With a glut of programming needs to fill, we will require production Ferraris that get 75 miles to the gallon, and this is what today's computer industry is beginning to supply to the visual medium.

The point is that computers are evolving into tools that we need to do our best work, rather than the evil machines that we were afraid would lead to our early retirement. The future of the computer is bright, not only for the technical possibilities it brings, but for the understanding that people are bringing to it in order to address real needs and everyday situations.



Big changes here at *Mix*: We are pleased to announce that *Mix, Electronic Musician* and the *Mix Bookshelf* have been purchased by Cardinal Business Media, a quickly growing, diversified business information company based in suburban Philadelphia. (Our editorial and advertising operations will remain in Emeryville, Calif.) We look forward to new growth opportunities with Cardinal, particularly in the fields of interactive media. We bid our friends at Act III farewell and welcome our new associates.

Keep reading,



David Schwartz  
Editor-in-Chief

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*Mix* magazine is published at 6400 Hollis St., #12, Emeryville, CA 94608 and is ©1994 by Cardinal Business Media, Inc. *Mix* (ISSN 0164-9957) is published monthly. Subscriptions are available for \$46.00 per year. Single copy price is \$4.95, back issues \$6.00. Missed issues within the U.S. must be claimed within 45 days of publication date and abroad, within 90 days. Send subscription applications, subscription inquiries and changes of address to *Mix* magazine, PO Box 41525, Nashville, TN 37204 or call (800) 888-5139. Outside U.S., call (615) 377-3322. POSTMASTER: Send address changes to *Mix* magazine, PO Box 41525, Nashville, TN 37204. Address all other correspondence to *Mix* magazine, 6400 Hollis St., #12, Emeryville, CA 94608; (510) 653-3307. Fax: (510) 653-5142. Second class postage paid at Oakland, CA, and additional mailing offices. Editeur Responsable (Belgique), Christian Desmet, Vuurgatsstraat 92, 3090 Overse, Belgique. This publication may not be reproduced or quoted in whole or in part by printed or electronic means without written permission of the publishers. Printed in the USA.

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# Mac Evolution



*The Studio 5x is the top of the line interface with 15 INs and OUTs, 240 MIDI channels, MIDI activity LEDs, serial thru switches, and SMPTE to MTC conversion. It has unlimited merging, on-board MIDI Processing, and stand alone patcher capabilities. You can network up to six together for the ultimate connection.*

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*The Studio 4 has 8 INs and OUTs, 128 MIDI channels, MIDI activity LEDs, serial thru switches, and SMPTE to MTC conversion. It has unlimited merging, virtual instruments, and MIDI Processing with the Macintosh active. You can network up to four together for multiple racks.*

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**\$495**



*Tim Myer, one of the systems designer at Hydra Tech, knows what musicians need. "I've installed Opcode interfaces exclusively for years — they're reliable, and there's always a model to fit the need, with the features musicians want. Since day one, it's been easy to communicate with Opcode, the people are great."*

Hydra Tech studio and tour support credits include: Janet Jackson, Bruce Hornsby, Michael Jackson, Greg Phillinganes and Chuck Leavell with Eric Clapton, Don Henley, Lionel Richie, Elton John, George Harrison, Michael Bolton, Chick Corea, The Moody Blues and many, many others.



3950 Fabian Way Suite 100, Palo Alto, CA 94303 (415) 856-3333 FAX (415) 856-3332

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# CURRENT

## AUDIO SOFTWARE

### DEVELOPERS PLAN FOR POWERPC

This March, Apple was expected to roll out its vision of the next computer platform: the PowerPC Mac. For those who are only vaguely familiar with the highly anticipated new computer, three products were expected to be unveiled in the introduction of the new line, with CPUs ranging from 60 MHz to 80 MHz at prices between \$2,000 and \$4,000. They are designed to run standard Macintosh applications at approximately the speed of a Quadra 610, in what Apple calls emulation mode. However, applications rewritten and compiled in the computer's native mode will reportedly provide two to four times the performance of equivalent code running on a Quadra 950. *Mix* talked to several audio hardware/software companies that de-

velop for the Macintosh to find out what their strategies are regarding the PowerPC Macs.

Digidesign's Tom Verdon says, "We're totally committed to the PowerPC platform. While we haven't tested everything yet, we expect that Pro Tools should work in emulation mode right out of the box. When it makes sense, we'll rewrite our code to run in native mode. We're currently evaluating which parts of our code we'll rewrite. We don't think there will be any penalty to the user."

According to an Avid spokesman, that company is aware that the Quadra 950, the basis for AudioVision and Media Composer, will eventually be phased out and plans to move to another Quadra platform before the 950 is discontinued. At the same time, the company is evaluating the PowerPC

platform and plans to move to it "at some point in the future."

Mikail Graham of Emagic says, "We have begun work on native code versions of both Logic and Logic Audio. We expect to show them at AES and will be releasing these versions by the end of year at the very latest. An upgrade process from Mac to PowerPC will be available at a minimal charge. And finally, we will continue to support native Macintosh versions of these programs."

According to Mark of the Unicorn's Daniel Rose, "We'll immediately support the PowerPC in emulation mode. We have no official announcements on when native mode applications will be available."

Steinberg will be releasing Cubase Score running in native mode in April, followed closely by a PPC version of Time Bandit. During the summer, Steinberg will continue to port over the entire Mac line. However, Cubase Audio is dependent on Digidesign and its schedule for a PPC version of its hardware.

Paul DeBenedictus of Opcode Systems explains, "Our first priority is to support the PowerPC in emulation mode as a minor update, at a small charge. Within a year, we expect to have Vision and StudioVision running as native applications. However, OMS will be the first to go native, and that will be this spring."

DeBenedictus cautions that "people need to be aware that [the PowerPC] is not just a system upgrade: This is a new computer." Given that third parties will be offering hardware upgrades for the newest Macintosh Quadoras to turn them into PowerPCs, and given the speed at which the transition is expected to take place, prudent

—CONTINUED ON PAGE 16

## NARAS HOLDS MUSIC AND MULTIMEDIA CONFERENCE

The San Francisco chapter of the National Association of Recording Arts and Sciences is joining with the 37th San Francisco International Film Festival to present a day-long conference on Music and Multimedia, co-sponsored by *Mix* magazine, May 7, 1994, at the Castro Theatre in San Francisco.

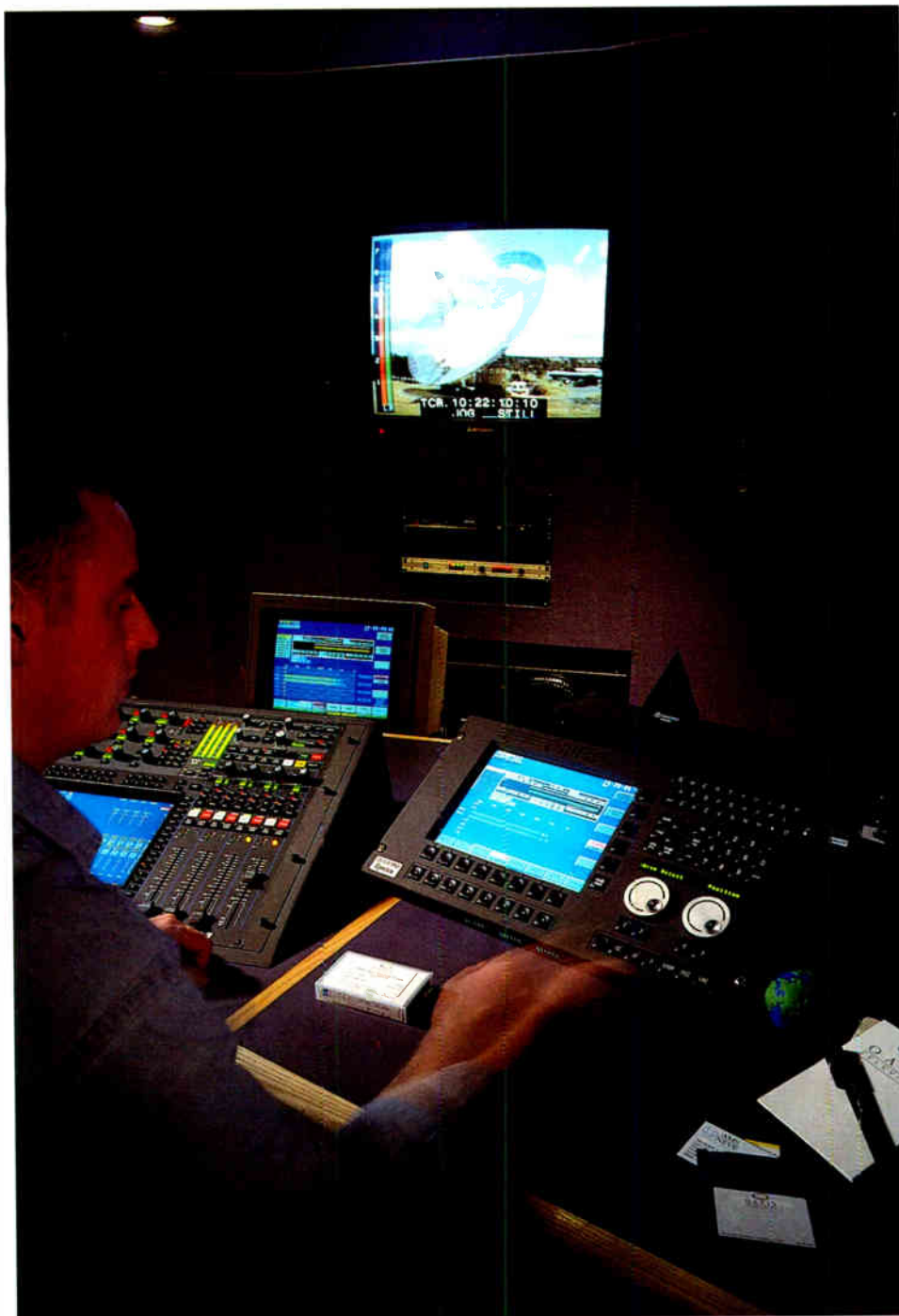
Although much attention has been focused on CD-ROM, CD-I, interactive games and the information superhighway, this is the first event of its kind dedicated to the musical aspect of interactive multimedia.

Panel discussions with leading industry artists, producers and executives will include topics such as understanding the language of multimedia; authoring tools for title development; licensing, intellectual property and other legal issues; and record company perspectives on the future of the genre. Panelists and moderators include musician/producers Jeff Baxter and Scott Page, and Mike Greene of NARAS. New interactive projects by artists such as Peter Gabriel, David Bowie and The Residents also will be shown and discussed as case histories.

An exhibition room will feature leading title publishers, development tools and software applications, and multimedia services. A special evening presentation will demonstrate some of the latest aspects of interactivity as it relates to music recording and reproduction. For more information, call Beverly Sommerfeld at (415) 433-7112. ■

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MUGH MITCHELL-DAWSON AT OASIS TELEVISION

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T H E A U D I O F I L E

# The Serious

## THE TASCAM DA-88 THE DIGITAL MULTITRACK DECK FOR SERIOUS PRODUCTION

It's true. The first machine designed specifically for low cost digital multitrack production is now available. And it comes to you from the world multitrack leader, TASCAM. It's simply the most advanced, well thought out and heavy duty digital 8-track deck you can buy. The best part is, it's incredibly affordable.

The DA-88 is built for production. The integrity of TASCAM's design is evident in every facet of the deck. From its look and feel — to its exceptional sound, unsurpassed features and expansion capability.

## GOES FASTER, LASTS LONGER AND TAKES A BEATING

While we admit that it's an elegant looking machine, it's tough to see its finest asset. The tape transport. Designed and manufactured by TASCAM specifically for the DA-88, it's fast, accurate and solid. And that's what counts in production — in personal studios, project studios or in those demanding high-end facilities.

You'll notice it uses superior Hi 8mm tape, giving you a full 108 minutes of record time. What's more,

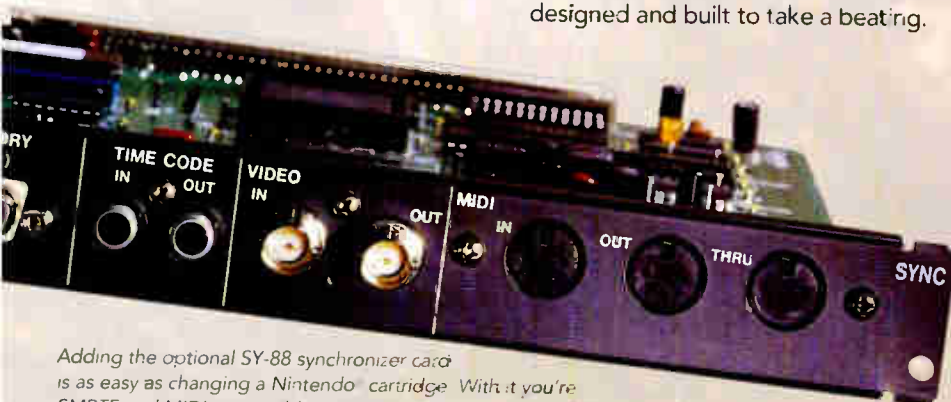
the transport is lightning fast and yet so quiet you'll barely hear it blaze through a tape.

We didn't stop there. Because production environments are notorious for constant, if not abusive, shuffling, punching, 24-hour operation — you get the idea — the transport was designed and built to take a beating.

Even more impressive is the transport's responsiveness. Take a look at the front panel. Notice the shuttle wheel? Turn it just a bit and the tape moves at one fourth the normal play speed. Turn it all the way and it flies at 8 times faster. Do it all night if you want. It's quick, smooth and it's precise. Need to get to a location quickly? Accurately? Shuttle a bit and you're there. The location is easily viewed on the DA-88's 8-digit absolute time display — in hours, minutes, seconds and frames. With the optional SY-88 sync card it displays timecode and offset, too.

## YOU ALREADY KNOW HOW TO OPERATE IT

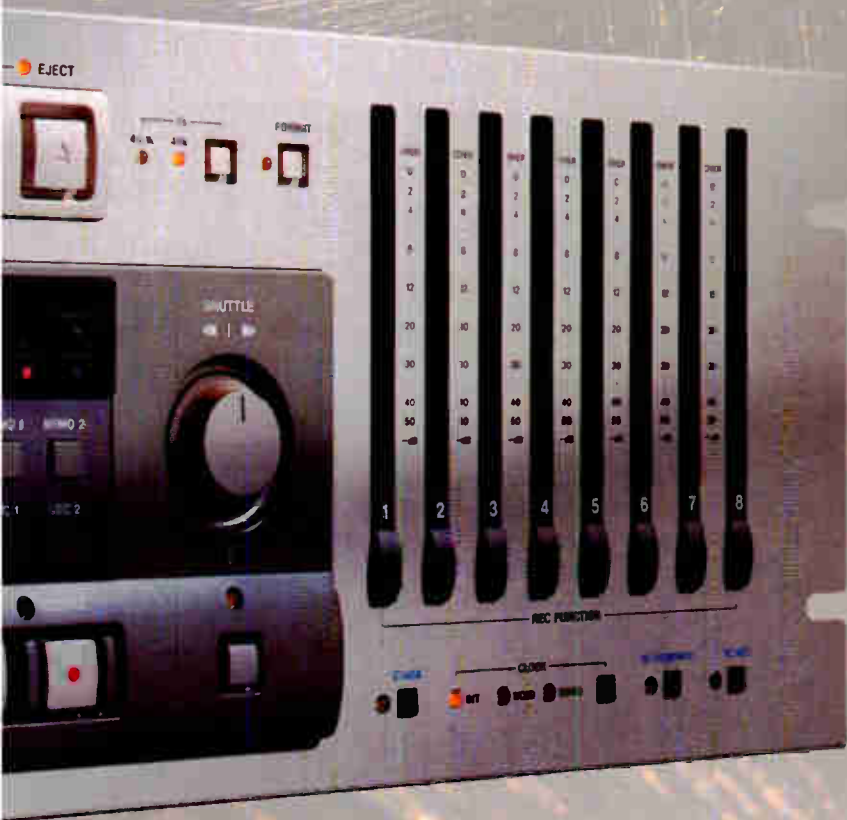
Unlike other digital multitrack decks, the DA-88 works logically and is simple to operate. Like your analog deck. All functions are familiar and easily operated from the front of the deck.



Adding the optional SY-88 synchronizer card is as easy as changing a Nintendo cartridge. With it you're SMPTE and MIDI compatible. And no matter how many DA-88s you have locked up, you need only one sync card. Other optional accessories include AES/EBU and SDIF2 digital interfaces allowing the digital audio signal to be converted for direct-digital interfacing with digital consoles, signal processors and recording equipment.



# s Machine



Take punching-in and out, for example. You have three easy ways to do it. You can punch-in and out of single tracks on the fly. Just hit the track button at the punch-in point. Hit it again to punch-out. You can use the optional foot switch, if you like.

Or, for multiple tracks, simply select the track numbers you want to punch, push play, and when you're ready, hit record to punch-in, play to punch-out.

Finally, for those frame accurate punch-ins, you've got auto punch-in and out. In this mode you can rehearse your part prior to committing it to tape.

No matter which way you choose, your punch-in and out is seamless and glitch free due to TASCAM's sophisticated variable digital crossfade technology.

That's not all, you also can set your pitch ( $\pm 6\%$ ), sample rates (44.1 or 48K), as well as crossfade and track delay times. All from the front of the DA-88.

## COMPLETE SYNCHRONICITY

There's more. Add the optional SY-88 synchronizer card to just one of your DA-88s and you've got full SMPTE/EBU chase synchronization. The best part is, you can record time-code without sacrificing one of your audio tracks. You also get video sync input, an RS-422 port to allow control of the DA-88 from a video editor, and MIDI ports for MIDI machine control.

## A DIGITAL RECORDING SYSTEM THAT GROWS WITH YOU

The DA-88 is truly part of a digital recording system. Start with 8 tracks today — add more tomorrow.



Adding tracks is as simple as adding machines — up to 16 for a total of 128 tracks. They interconnect with one simple cable, and no matter how many DA-88s you have, they'll all lock up in less than 2 seconds.

Controlling multiple machines is made simple with the optional RC-848 remote. With it you can auto locate and catch 99 cue points on the fly. It comes complete with shuttle wheel, jog dial, RS-422 and parallel ports, and it controls other digital and analog machines, too.

## LISTEN TO THE REST

Of course, the sound quality is stunning. With a flat frequency response from 20Hz to 20kHz and dynamic range greater than 92dB, it delivers the performance you expect in digital recording.

So get to your authorized TASCAM dealer now. Check it out. Touch it. And listen to it. Once you do you'll know why the TASCAM DA-88 is the serious machine for digital production. The TASCAM DA-88 is the choice of studios worldwide. And at only \$4,499, it should be your choice.



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# INDUSTRY NOTES

Fender (Corona, CA) appointed **Steve Woolley** director of electronics marketing and promotions in Europe. Based in London, Woolley will introduce sound reinforcement products and offer personal training and market development assistance to Fender's European dealer network. He was previously national sales and marketing manager for Ramsa/Panasonic Pro Audio...Promotions at **Ampex Systems Corp.**'s (Redwood, CA) sales and marketing management team: **Robert Atchison** to VP operations; **Michael Arbuthnot** to director, DCT Products; **Michael Wilke** to VP of marketing, DCT Products; and **Mike Wolschon** to national sales manager, DCT Products...**Kurzweil** (Waltham, MA) recently restructured its sales organization, introducing a dedicated team specializing in the sales, dealer training and marketing of the company's pro products. The pro sales lineup includes **Bruce Bergh**, **Jeff Dunmire**, **Ken Gilmer**, **Larry Ketchell**, **Tom Kowalczyk**, **Greg Tali**, **JMS Marketing** and **Loppnow Associates**...**Greg Braithwaite** was named national sales and marketing manager at Ramsa (Cypress, CA)...**Shure Brothers Inc.** (Evanston, IL) formed a new applications group providing tech support for the company's products and training for Shure sales personnel, reps, distribution centers, dealers and end-users. Under director **Michael Pettersen**, members of the group include **MaxAnn Buchanan**, **Chris Lyons**, **Chris Potter**, **Jon Tattoles** and **Tim Vear**...**Bill Robinson** was appointed as the new managing director of **SoundTech** (Vernon Hills, IL). Also, **Mark Lierly** was promoted to the dual position of product development manager and worldwide director of education and training...**Audio-Technica** (Stow, OH) promoted **Buzz Goodwin** to director, professional products division. The company also announced the direct distribution of its ATH900 Series Stereophones to the Canadian market...York, PA-based **Turtle**

**Beach Systems** hired **Stacey Pierson** as the new director of press relations...**Alesis Corp.** (Los Angeles) restructured its sales and marketing department. Promoted were **Allen Wald**, to VP of sales and marketing; **Douglas White**, to national sales manager; **Marc Nathan**, to the newly created position of national promotion manager; and **Ted Keffalo**, to product support manager. New regional sales managers are **Gregory Westall**, **Gary Lynn** and **Perry Celia**...**Galaxy Audio** (Wichita, K) appointed **Marc Chover** to the new post of national sales manager...**Freed International Inc.** moved to a new, larger facility. The address is 2751 S.E. Monroe St., Stuart, FL 34997. Phone (407) 288-7200, fax (407) 288-7299...**Clark Wire & Cable** recently completed a new custom cable termination facility at its Deerfield, IL, headquarters. The facility allows the company to quickly supply customers with audio, video and A/V cable tailored to particular needs and specs...**Gold Line** (West Redding, CT) joined the **MediaLink** network, becoming one of the companies licensed to manufacture products using **Lone Wolf Corp.**'s **MediaLink** multimedia networking protocol. The **Gold Line Audio Spectrum Analyzer** will provide real-time frequency and sound level information to and from any node on the **MediaLink** network...**Inter-sonics Inc.** of Northbrook, IL, sold its pro sound speaker business to **Quantum Sound Inc.**, a new manufacturer and marketer of pro speakers...**M&P Technologies Inc.**, the North American marketing arm of **Selenium Loudspeaker Manufacturing**, recently moved. The company can now be reached at 1 East Uwchlan Ave. #110, Exton, PA 19341; Phone (610) 524-5530, fax (610) 524-5531...Finally, we are sorry to note the passing of **Raymond Scott**, The maverick composer, inventor and electronic music pioneer passed away in early February at his home in Los Angeles. ■

—FROM PAGE 12, CURRENT

audio professionals may want to wait until the inevitable bugs are worked out of the new line of Apple machines.

—Paul Potyen

## HARMAN ACQUIRES STUDER

Harman International Industries recently purchased Studer Revox AG. With the takeover, Harman continues the expansion of its professional group, which now includes JBL Professional, Soundcraft, Allen & Heath, DOD, Lexicon, BSS and AKG.

Studer Revox management welcomed the purchase and is convinced that the connection with Harman will beef-up Studer in terms of both technology and marketing. Studer will continue to be managed as an independent group company.

The consumer electronics division, which accounts for about 20% of Studer Revox's business, was excluded from the agreement, and, at press time, negotiations with buyers interested in the consumer division were still in progress.

## TENTH ANNUAL TEC AWARDS RETURN TO SAN FRANCISCO

The Mix Foundation for Excellence in Audio announced that the Tenth annual Technical Excellence and Creativity Awards will be held in the recently remodeled Grand Ballroom of San Francisco's historic Westin St. Francis hotel on Friday, November 11, 1994.

Located on Union Square, the St. Francis is within walking distance of Moscone Center, site of the 97th convention of the Audio Engineering Society. The TEC Awards will be held on the second night of AES.

"We are excited to once again be hosting the TEC Awards in our hometown," says Hillel Resner, publisher of *Mix* and president of the MFEA. "We are planning a very special show for the tenth anniversary of the TEC Awards, and we think the St. Francis is the perfect place for the event." ■

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OUR ENGINEERS STUMBLED UPON THE CURE

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UNTIL THEY GOT WHAT THEY WERE AFTER.

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equipment into Pro Tools, this 256-channel virtual digital mixing environment provides a unique, open-ended architecture that welcomes a host of hardware add-ons (such as Lexicon's NuVerb™ card), as well as powerful software "Plug-Ins" such as dynamics, EQ, reverb, 3-D spatialization and more—all powered by our DSP Farm™ cards. As our list of Development Partners at the right suggests, there's no shortage of great things in store for Pro Tools.

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- A virtual "digital mixing console" with automatable inputs, effects, master faders, and more.
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- Add TDM to your SampleCell II to get 22-bit digital audio, integrated mix, processing, and automation capabilities.



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Eye & I Productions

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Grey Matter Response

Greysounds  
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GW Instruments

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World Radio History USE READER SERVICE CARD FOR MORE INFO

by Stephen St.Croix

# DIGITALIS, PART 2

## (OR, I KNOW HOW TO FIX IT)

“**A** time will soon come when analog will be that temporary state of audio necessary for interfacing to human ears: a fragile, momentary condition, a step that exists only because we can't think of a way to design it out.”  
—Stephen St.Croix, 1994, because he thought this month's column should open with a quote.

To recap last month's column, I will provide you with *St.Croix Notes*—similar to *Cliff's Notes* but without the yellow and black cover: Ice is to digital as Jell-O is to analog. All clocks are really analog, so...Problems are caused by unstable or off-frequency clocks. If they are very unstable, loss of transfer occurs, resulting in drop-outs or shutdown. More common instabilities result in the need to gear-box or data-rate convert (not a great idea, because the process is destructive) or to lock. Locking seems to work fine, but a system locked to a jittery clock is a jittery system—it works anyway, until...

So where were we? Oh, yes. Run a line from one piece of digital gear to another and you are subject to the following curses.

### IF THE GROUND LOOP SEES ITS SHADOW...

The ground looping that may have caused hum in your old analog cable run now causes eddy currents that can do impressively bad things to your wonderful new digital datastream. These currents modulate the data offset and create complex voltage-difference patterns between the gear, which in turn can do scary things to...You guessed it, the clocks. Solution? If you thought controlling house grounds was critical in your old analog systems, you ain't seen nothin' yet.

Follow every rule you know, don't use metal rack bars, don't let this digital gear touch chassis with other digital gear, use a true star real-Earth



ground. Don't ground-loop! This can cause major damage to reasonable data clocks traveling along the data line. They can become so modulated (no; mudulated) and dirty by the time they arrive at the receiver that there is big trouble. In extreme cases, it can even mess up the clock generator circuitry.

### TO CAP IT OFF

Line capacitance that caused loss of highs and damaged transients back when audio was analog now does exactly the same thing to the digital signal (which is, in reality, still an analog signal, and becomes more and more analog with each meter it travels): It rolls it off. You know that in the old world, the higher the frequency, the more severe the roll-off.

ILLUSTRATION ANDREW SHACHAT

The  
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# Hit Makers



Hit recordings are created through the artful combination of talent, experience and the right tools. Top studios, including The Hit Factory in New York City, know the value of these tools and settle for nothing less than the best. That's why they choose Neumann.

The TLM 170R is the ideal multi-purpose studio microphone. Its large diaphragm and transformerless circuitry offer superior performance and that famous "Neumann Sound."

Regardless of the the scope of your project or the size of your studio, you need the right tools. You need Neumann... the choice of those who can hear the difference.



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Simple enough. We spent our money and our lives trying to get all the way up to 20 kHz through these wires without roll-off or phase shift. We never made it. And we were only trying to pass 20kHz *sine* waves!

Now we invent digital, and we want to pass 3MHz *square* waves (the AES/EBU bit rate). If data is sampled at 44.1 kHz, and each sample is converted to a 16-, 18- or 20-bit (yeah, right) word, we are actually attempting to shove 3 MHz down the same wires that barely dealt with 20 kHz. These digital pulses are anything but square after a couple feet of wire. Long runs can actually round those tiny square waves and skinny pulses to the point of unreadability, so that the receiving unit will simply refuse to work. No data, no audio, you get a chance to go to the beach to think it out.

**WHAT'S IT ALL ABOUT? ALPHA?**

No, not really. I'd have to say that the present digital state of the art is well into beta. I should also point out that all this clock craziness

doesn't really cause too much trouble (except for simply not working at all if the data is too soft from those long runs) until it gets to the D/A converters. Then there is trouble.

Currently, most of these converter clocks are locked to the incoming digital bits or clocks derived from them, which can have very high jitter because of the problems listed above. While digital data itself can carry quite a bit of timing fuzziness and still be usable within the digital domain, converters will happily show you just what all this jittering can mean if you give them half a chance.

Since current design gives them a full chance, you get music with a strange "feel" to it; a bit wooden, with sort of dirty fades and cloudy reverb, a collapsed stereo image, no real depth and a type of artificiality that you just can't put your finger on—a totally new type of HF, nonharmonic fuzz that *never* occurs in any real-world analog conditions. Remember that the human brain is *very* interested in anything that it has not experienced before, so we can sense or "feel" extremely small amounts of these new artificial digital distortions, while we

tolerate a much higher level of harmonic distortion. So there.

Now that you have taken my advice and cleaned up all your grounds (and you thought that if you stalled long enough, digital would come along and you would never have to go through your studio and clean up those analog grounding problems), there is one tip left. Second-to-last and, in fact, probably the second most important, is the following insider decoder-ring-class secret: Don't ever use metal to connect digital gear!

Copper is *not* your friend. Glass is. With no metal-connecting chassis, there is no ground-looping; with no electrical currents, there is no possibility of induced interference from mains lines, RF or those killer CD players and Game Boys that drop commercial airliners from the skies every day. So, optically connect your gear. The horrible plastic fiber connections supported by consumer and S/PDIF semipro gear is actually okay for runs up to three or four feet, so use it. It's dirt cheap, and it works. Just keep in mind that the plastic cable typically loses about 3 dB per meter, but if it gets kinked, loss can

You've got a stereo signal. Why in the @#!? would you want to combine and process it in mono when you could process the whole thing in stereo with the exceptional effects processor you see right here.

The remarkable Yamaha SPX990. Which, unlike other processors in its price range, offers two discrete inputs from beginning to end.

Here's the other big reason why you're going to want this beauty.

It sounds a lot better.

Where other processors offer you standard 16-bit A/D and

D/A converters, the SPX990 boasts 20-bit A/D and D/A conversion. And internal 28-bit processing to deliver much greater dynamic range than most any effects processor you care to name.

And as you might expect from the company that brought you the legendary SPX90, the first affordable digital effect processor, everything about the new Yamaha SPX990 has been designed to silence other effect processors in its price range.

For starters, we've enhanced our algorithms to produce



*So you'll have no trouble patching things up, the SPX990 takes either XLR or TRS phone jack connectors.*

# THERE'S NOTHING WRONG WITH YOUR LAST





instantly get ten times worse. For long runs, try to use real glass. This stuff is great, and properly implemented, it approaches ideal. Use it and listen. You will be very happy that you spent the time to read this column.

If you still aren't convinced, try this on for size: One popular source of interference in digital gear *is the other digital gear!* Since all clock resolving must be done at each receiving point, each piece of gear sends its data out clocked at its own personal best—maybe 44.097, maybe 44.101, or who knows what—and relies on the receiver to sort it all out. You, in turn, bundle all these cables up in a nice clean group so that they have the maximum linear exposure to one another.

Digital, being nice and newborn, young and naive, is easily influenced by others. So piece "R," clocking out at 44.0967, happily sprays broadband fundamental and harmonic clocking artifacts everywhere, right through the shielding (and *from* the shielding itself, because the currents involved can actually modulate the grounds that these shields are connected to). And as data waveforms are rectangular, the harmonic content is rich

and lush—so there's lotsa garbage.

Now piece "Y," clocking out at 44.1006, happily goes, "Oh, *that* frequency looks interesting. Maybe I'll use a little of it, too." And little spikes of the 44.0967 grow on its original 44.1006 datastream. Then that data is piped to piece "L," and suddenly L has to make some very serious decisions about which of these edges to follow. Some of this false, illegitimate, Brundled [explanation below] data is pretty convincing.

The receiving circuitry believes it is real, and conversion artifacts are then introduced that we—as analog animals—don't appreciate much. If sophisticated jitter removal and intelligent data reconstruction techniques are not used, these artifacts become a permanent, unfortunate part of our audio data. Well, guess what? Sophisticated jitter removal and intelligent data reconstruction techniques are *not* used. And we thought we were safe once we converted to digital. Ha.

So, use glass and bundle to your heart's content. Remember what Jeff Goldblum looked like in the remake of *The Fly* after he accidentally screwed up and crossed DNA with the fly.

The Brundle program did its best to sort it out, but the result was still pretty ugly. Copper can do this to your bits, but glass won't. So only with fiber-optic interconnections can you bundle without Brundle.

May your data (and your DNA, for that matter) move on down the line with as little damage as possible. But for the damage that it *does* suffer, you might have to byte the bullet and get your clock cleaned.

#### POSTSCRIPT

I hope this makes some sense, and maybe even has a bit of continuity with Part I. What have I learned here? Two-part columns are a real pain, because you actually have to remember what you wrote in the first part when you write the second part. I guess I could have read the first part, but that wouldn't be cool. ■

*Stephen St.Croix has gone further with his totally digital environment science experiment. He has eliminated all analog transducers and listens directly to the digital datastream. He says, "When done properly, science can be quite painful."*

far more natural sounding reverbs than you probably thought was possible.

But there's more to it than that.

The SPX990 features 39 different types of Reverbs, Delays, Echoes, Modulations, Pitch Changes and Sampling – plus variations on each – for a total of 80 all new effects. And if that's not enough, you can simultaneously add EQ and/or compression on top of any of these effects.

The SPX990 also features 100 internal memory locations to store your own variations.

And you can say goodbye to all the button pushing. The data entry wheel on the SPX990 lets you enter your data on the fly. Looks like we're running out of room. So here's the big finish.

Every so often, something comes along that makes people in the recording industry sit up and take a good hard listen to the way they're doing things. This is one of those times.

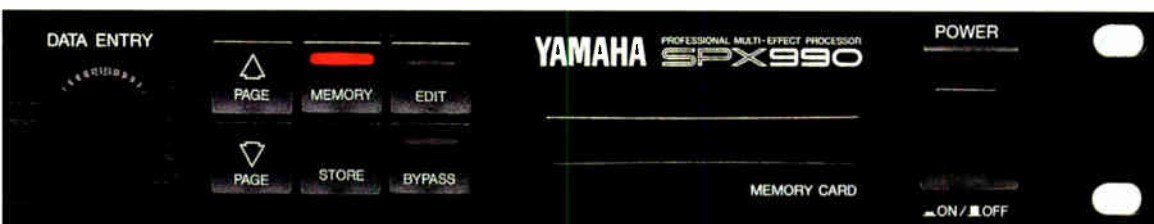
Stop by your nearest Yamaha dealer and check out the SPX990 today. For more information, call 1-800-937-7171 Ext. 310.

Your next mix will thank you for it.



Store up to 100 of your favorite effects programs on one of these cards and you can take them with you to every session.

# MIX THAT A LITTLE MORE INPUT COULDN'T HELP.



by Murray Allen



# MULTIMEDIA HEAVEN OR HELL?

**A**s I booted up my Mac, I was alarmed by the mysterious sound of clarinets pirouetting mischievously around the melody of "Bridge Over Troubled Water"—a simple sinusoidal chord normally accompanies this process. The fact that the icons were dancing in tempo to the music, although entertaining, was also unnerving.

Then a fine purple mist seeped out of the modem. My mouse escaped into a hole in the wall. The sky turned dark, though it was only noon. My Duo Dock began to shake and laugh hideously.

Terrified, I fell to the floor and crouched in a fetal position. The laugh turned into a booming voice: "It ain't gonna sell if it ain't in the grooves."

**M:** What the hell? Who said that?

**G:** I said it. Now get off the floor. I've got something important for you to do.

**M:** Who are you?

**G:** I am the God of Multimedia. I promised myself that I would never interfere with you MIDI guys, but enough is enough. I've decided there will be 40 days and 40 nights of the most God-awful rain you've ever seen. And I have selected you to save the world of multimedia audio before it becomes infected with the same virus that has spread throughout the record and advertising businesses.

**M:** What virus are you talking about?

**G:** BMIIIHOBATTTTTUS. Being More Interested In How One Builds A Track Than How The Track Ultimately

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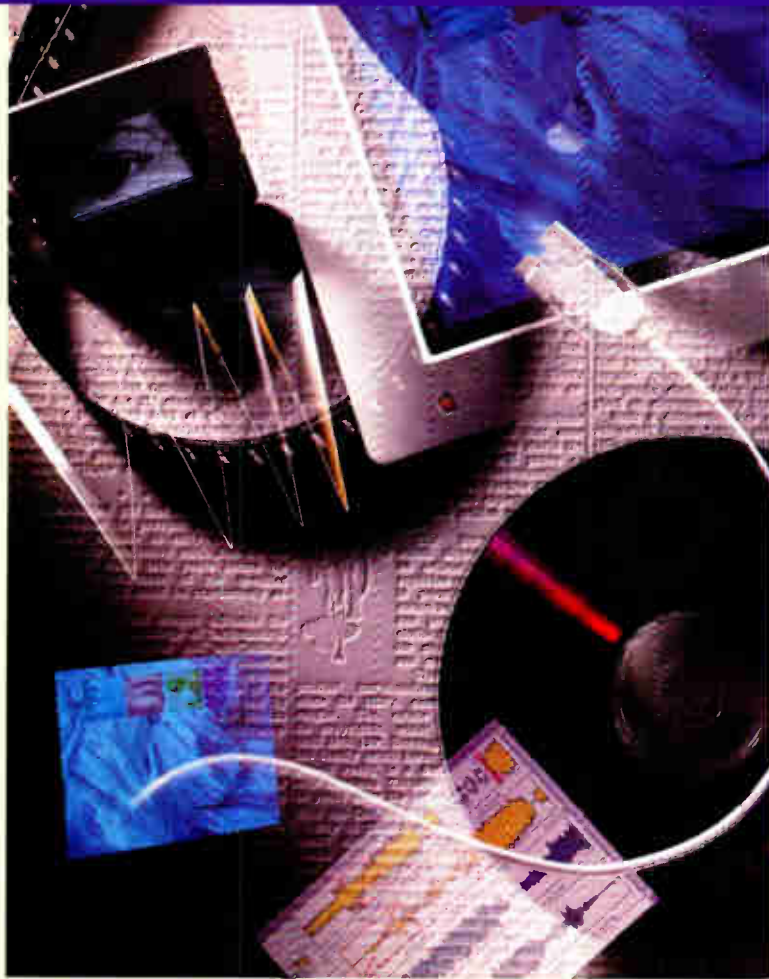
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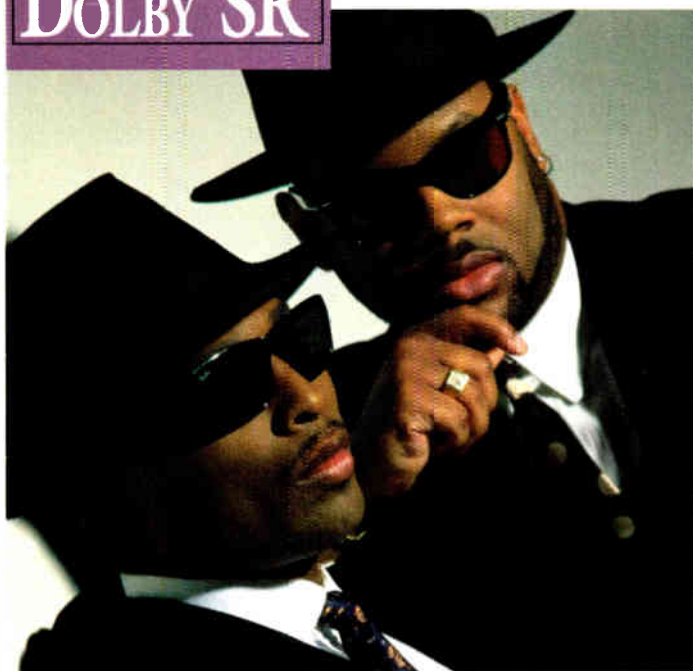
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# Flyte Tyme

DEMANDS

# DOLBY SR



Todd Gray

Jimmy "Jam" Harris (right) and Terry Lewis of Flyte Tyme Productions

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Jimmy Jam and Terry Lewis

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**Dolby**  
World Radio History

INSIDER AUDIO

Sounds. Like I said, "it ain't gonna sell if it ain't in the grooves."

**M:** Come on, you gotta be kidding. This is way beyond my window of expertise. I can't change the order of things.

**G:** Just listen to me. Follow my instructions and the world of multimedia will be a land of milk and honey. If you don't, you will be doomed to compose and decompose in a murky multimedia hell.

**M:** What do I have to do?

**G:** The first thing you must do is build an ark. Your latest edition of *MacWeek* features several software packages that will help you design and build a state-of-the-art model. Once it is built, round up one of each type of PC and one each of every sound card on the market and store them within the ark. You will also need every model of every computer that bears the name of Macintosh. Then I want you to get every MIDI device, every keyboard and every software program that feeds you and your friends' voracious electronic music appetites.

**M:** How is this going to kill the virus?

**G:** Be patient. That's the problem with you MIDI guys: You want everything laid out in nice, neat packages of ones and zeros, but that's not the way the world turns. Listening and appreciating music is analog in nature, not digital—at least until the signal reaches the neurons within your cochlea. Like I said, "if it ain't..."

**M:** Okay, enough of that grooves thing. Where is this all leading?

**G:** Buy a CD player, a high-quality amp and speaker system. Now comes the fun. Go to your local record shop and buy 40 times 40 CDs representing every style of music ever recorded. Start with Bessie Smith and Billie Holiday. Carry this through Sarah Vaughn, Frank Sinatra and Barbra Streisand. Buy the best of John Philip Sousa. Beverly Sills, Placido Domingo, Pavarotti and Kathleen Battle are musts. Of course, we must have Elvis, and then the Beatles, Janis Joplin and the whole gang from the '60s. Round it out with Snoop Doggy Dogg, Pearl Jam and Nirvana.

**M:** I was raised on polkas. Should I buy some of them, too?

**G:** Of course. I said every style of music. Now listen very closely. The most important part of your mission is about to begin.

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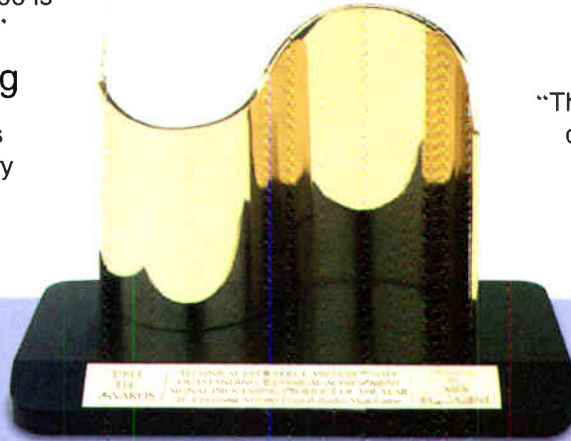
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*Bean, from D'Cuckoo, whose new "Umoja" CD is on RGB Records.*

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The virus we are fighting makes you forget the importance of the end product of composition and how the end product fits into the grand scheme of music. If you don't stop it, this elusive virus ultimately can cause every piece of music to sound as if it were composed by the same person at the same time.

With the advent of electronic music, a door was opened to sonic timbres never before imagined. It became possible to create sounds that had never been heard or, for that matter, conceived. Whereas the composers of the early 20th century pushed the window of acoustical sounds to new limits, electronic music expanded the window exponentially. In a manner of speaking, it actually became possible to never repeat the same timbre twice.

But what happened? It seems everybody wants to imitate someone else. It is common practice to purchase CDs of musical instrument samples. Everybody with the same CD will use the same basic sounds in their productions. Almost every composer has the same sampling devices. You hear the same string sound coming and going. Some musicians don't even bother to buy the sample discs; they just borrow the sound off of a commercially released CD.

**M:** What's wrong with using someone else's sound if you like it? If you have a great song and can't afford to hire a great drummer, why not just use the sound?

**G:** Well, for starters, a drummer is more than just a sound. A drummer is the sum total of the sound, a sense of rhythm, a treatment of dynamics, and musical taste. A drummer may hit one pickup note at just the right volume to create a musical moment in time.

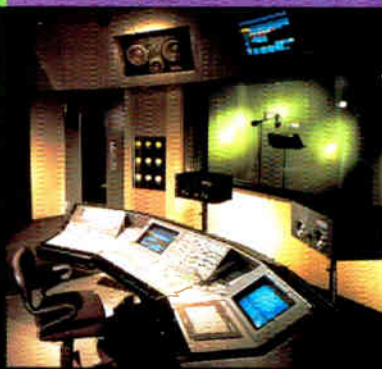
**M:** I can do all this electronically. No problem at all.

**G:** Yes, it can be accomplished electronically, and to be honest, it can even reach a higher level of artistic accomplishment than the drummer could ever dream of reaching. But how often does an electronic musician actually do this? Yes, there are great electronic composers who go the extra mile to make their productions stand out, but these folks are the minority. When you are a god, you hear an awful lot of demos, and I have to tell you that I hear the

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same sounds over and over.

The dynamic that has always driven music is the need for change. Rock 'n' roll was born when people grew tired of the Mickey Mouse-simple love songs of the Hit Parade era. Anytime something becomes too repetitive, you can count on something new replacing it.

Now here's the plan. Line up all your PCs, Macs, keyboards, MIDI devices and samplers. Start playing your collection of CDs. By osmosis, little by little, all of these devices will begin to absorb every sound that has occurred in modern music.

As a parallel example, Shakespeare's vocabulary consisted of 35,000 words. The average pop novel today consists of 6,000 words. It is obvious who has the most staying power. (Imagine if Shakespeare received a residual payment for every performance of his works. The amount would make Disney's income seem paltry.) The key is to increase your musical vocabulary. You don't have to use every sound, but it sure would be nice to have them around if you wanted to grab one now and then.

**M:** I think I'm getting the point. We can kill the virus by minimizing the reiteration of overused, overperformed, over-recorded sounds. You want us to use electronics to create change. You want us to use electronics to expand our window of potential tonalities. You want us to use electronics to do for the aural world what the same electronics have accomplished for the manipulation of audio.

**G:** Exactly. The virus cannot live in a world filled with change. Once you begin expanding your aural vocabulary, you will begin to listen to all sounds more acutely. You will dig deeper into the world of listening. You will become aware of sounds you never even knew existed.

**M:** Okay, but does it really have to be an ark? Won't a nice 50-foot sailboat do just as well?

**G:** Sonny boy, you have no sense of history. And by the way, see if you can think of some way to make the tempered scale more real. ■

*Murray Allen, former owner of Universal Recording in Chicago, is now head of the audio division at Electronic Arts, a leading educational and entertainment software publisher.*

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# DYNAMICS

BY RICK CLARK

**DEPENDING** on which engineer or producer you are talking to, the subject of when and how to use dynamics signal processing—compressors, limiters, expanders, gates—can raise a passionate range of opinions. If you say to the wrong guy, “Hey, I really like the sound of a com-

pressor smashing the crap out of a room drum sound,” you might have permanently discredited yourself. Someone else might get enthusiastic and excitedly share his methods in achieving new levels of sonic bizarreness.

When it gets down to it, almost everyone will admit that it’s whatever works for your ears. Obviously,

jazz or symphonic music requires a different sonic approach than rap, hard rock, folk or country.

It is generally believed that dynamics signal processing came into existence during the 1930s, when Bell Laboratories designed some equipment to control the amplitude characteristics of telephone signals. It was around that time when the film, broadcasting and music-recording industries picked up on this development, enabling



# S

ILLUSTRATION  
BY PAUL MOCH

# IGNAL

# P R O C E S S I N G

users to have better control of excessive signal variances.

Basically, limiters kept extreme or sudden loud passages from going beyond a certain point, and compressors helped contain those loud sections, while bringing up the volume of quieter passages. This enabled the signal to have more apparent loudness.

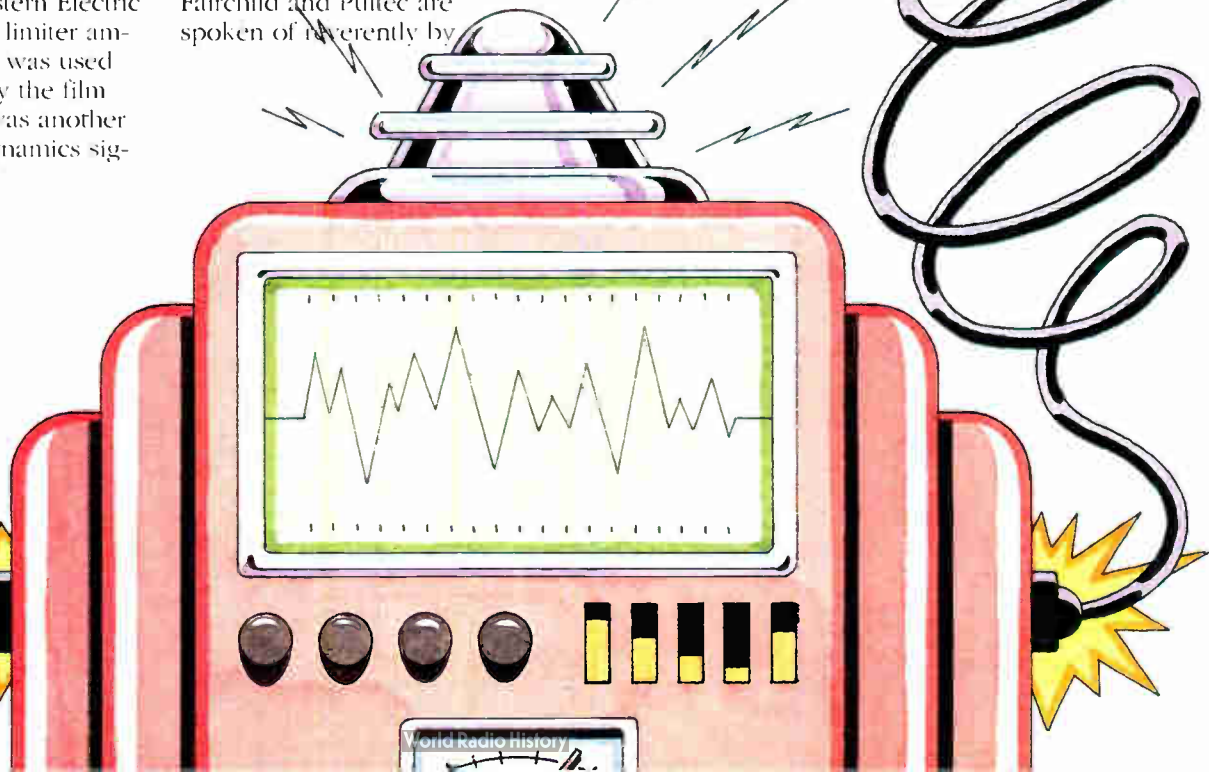
Early devices of note were the Western Electric model 1126A limiter amplifier, which was used extensively by the film world. RCA was another pioneer in dynamics sig-

nal processing. And one of the best-known (and loved) limiters was the Teletronix/UREI LA-2A, which came out in the early '60s, a classic that found much use in the film world (and still has its devotees)

Since then, there have been a truckload of signal processing devices introduced in the audio world. Most haven't endured, but names like Fairchild and Pultec are spoken of reverently by

quite a large cult of engineers. As a result, the value of these vintage units has increased to phenomenal proportions.

For this piece, *Mix* talked to several engineers and producers who generously gave their input concerning the dynamics signal processing gear they like best and how they use it in the studio.



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## JOE HARDY

Joe Hardy is the guy responsible for helping ZZ Top achieve their legendary gritty crunch. Besides engineering and mixing the multiplatinum *Afterburner* and their latest effort, *Antenna*, among others, Hardy's producer/engineer credits include the Georgia Satellites, Steve Earle, Jeff Healey and The Hooters.

"The term compressor, in and of itself, sounds pejorative. It's like: 'You're compressing my voice? You're taking my big huge voice and squeezing it down to this?' It sounds like an evil thing, but compressors are our friends," remarks Hardy with his usual off-center dry humor. "A lot of singers might get a nice, thick tone, but when they go up to another note, their tone thins out a little bit," he explains. "To a degree, compressors really help all that, because they even everything out."

To help give immediacy and presence to Billy Gibbons' voice on ZZ Top's *Antenna*, Hardy cut with a Valley 440. "I don't think they make those anymore. They were made in Nashville. They are great vocal compressors. The Valley 440 takes the low stuff and turns it up. It still limits the dynamic range, but instead of not letting the high stuff through, it takes the low stuff and turns it up, so the dynamic range is moved up from the bottom. All of Billy's vocals are going through the Focusrite pre-amp and a Valley."

Hardy ran Gibbons' guitar signal through a Fairchild limiter to achieve his classic in-your-face guitar skronk. "I'd say I had 10 or 15 dB of compression at all times. I also probably compressed it some during mixing on the SSL. I compressed the mix and the mastering guy compressed the mix and then the radio station compressed the mix," Hardy says. "People like compression."

"For mixing, I use the SSL main compressor for the whole mix a lot," Hardy continues. "I usually use a 4-to-1 ratio, and I don't really try to compress stuff more than about 4 dB or so. I've seen very famous mixer guys go way higher than that. I think you want to get as much compression on there as you can and still sound loud, but to where you don't start hearing 'breathing.' The SSL is one of those compressors that if you set it right, you don't hear it much. You want it to sound fairly smooth and to sound louder. I think the SSL

compressors are really good for that."

Hardy notes that he especially likes the convenience of the SSL compressors: "One reason I really use them is because everybody changes their mind so much on the mix. The computer remembers where the settings are for each channel. So it is way easier, because you know you can get the mix back to where it was, better than having to rely on notes about outboard compressors. That's why everybody likes SSL."

Generally, Hardy goes for "the slowest attack I can get and the fastest release I can get. If the attack gets fast, it really starts crunching the

transients. It makes everything sound non-raucous. You want to let all the transients come through, but if the attack time is too ridiculously slow, it never catches anything.

"Compressors kill high end real fast," Hardy cautions. "They can really dull stuff out, and it is because they start taking the transients out. If your perception is, 'The cymbals don't sparkle as much as they used to,' it is because you are not getting that first big spike that screams 'cymbal' or 'snare drum' at you. Pianos, acoustic guitars, all those things start getting duller when they just don't have that little spike on them."

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**L**imiters, and compression in general, tend to remove high frequencies first. I would rather have peaks that go past the limits of what we should be doing and keep the primitive energy there.” — *Bruce Swedien*

#### **BRUCE SWEDIEN**

Bruce Swedien, whose engineering credits range from Duke Ellington to Quincy Jones to Michael Jackson, feels that a producer or engineer should be very judicious with signal processing.

“I do a lot of R&B music,” he says. “If the music doesn’t have a lot of the primitive energy in it, then it loses a lot of its appeal. To me, compression kind of takes away that extreme energy and makes things sound a bit contrived. Limiters, and compression in general, tend to remove high frequencies first. I would rather have peaks that go past the limits of what we should be doing and keep the primitive energy there.”

Swedien points out that his work on Michael Jackson’s classic 1979 dance hit “Don’t Stop ‘Til You Get Enough” has “absolutely no compression. The absolute opposite of that approach was ‘Jam,’ the opening cut of *Dangerous*. On that track, there is a lot of individual channel compression on the SSL.”

Among the compressors and limiters that top Swedien’s list are the Fairchild, the UREI 1176LN and the Neve 2254, which Swedien occasionally uses slightly on Jackson’s voice and is a favorite for mixing. Swedien also has a stereo pair of 165A dbx limiters, as well as four dbx 160s.

“I found this Neve console in Toronto,” he says, “and in it were these Class A solid-state 2254 Neve limiters. I had them pulled out and installed in my racks. I replaced the dbx 165As with the Neve 2254s. I didn’t change anything else and made Michael [Jackson] a mix on a cassette. He called me the next day and said, ‘You’ve changed something on my voice, and I love it.’ If that isn’t a testimonial, I don’t know what is. It was precisely the same gain control and the same levels, in and out, but a totally different emotional response. It was warmer. It almost sounded like more low end, but of course, it isn’t. I would also use adjectives like clearer, less fuzzy.”

“The Fairchild is also a classy

piece of gear,” Swedien continues. “The one I have is an old tube 2-channel mastering limiter. It is extremely warm and very gentle. I don’t think you can even vary the attack or release; it’s pre-set. If you have a choir image or something where the miking image hasn’t been optimum, and you’ve got some tones or sounds that are a little woofy or will present too much level to your mix without adding any impact, then the Fairchild is a wonderful choice.”

“But unless I am going for the specific effect of a squashed sound during the mixdown process, I will almost never put a program limiter in the chain. I can remember a couple of instances, but not very often.”

#### **JOHN HAMPTON**

John Hampton, whose credits include The Replacements, Lynyrd Skynyrd, the Vaughan Brothers, The Cramps, B.B. King, the Allman Brothers and the Gin Blossoms’ recently Platinum *New Miserable Experience*, prefers dynamics signal processors that are transparent, but he also doesn’t mind using them for effect.

“I generally put limiters, like a Fairchild, on musical instruments, and compressors on voices,” he notes. “Usually I will break out a limiter on acoustic guitars or clean-sounding electrics that have a lot of dynamic range, especially when they have to compete with a wall of constant level Marshalls in the mix. However, I don’t like constricting the dynamic range that much.”

“I use slower attacks on programming in general, including the drums,” he continues. “A slow attack will hold down the overall level, but it lets the little transient things pop through, which to me is a more life-like sound.”

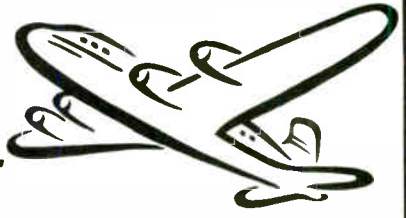
“If you want ‘I don’t hear it’ compression that does a good job of

**U**sually I will break out a limiter on acoustic guitars or clean-sounding electrics that have a lot of dynamic range, especially when they have to compete with a wall of constant level Marshalls in the mix.”

—*John Hampton*

G E T I N

I WAS KINDA BORED. JUST DRIFTING. GOING NOWHERE. I STUCK OUT MY THUMB. TWO TRUCKS AND AN OLDSMOBILE PASSED. THEN THIS BIG 727 SCREAMS IN L I G H T L I Z A R D S OFF THE ROAD.



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10 am: We saw how recording sessions are done. 11 am: Hey, I'm working the camera in a film studio! 12 pm: Time for lunch. 1 pm: Now I'm beginning to get it: Full Sail is one of the best schools in the world for learning how to record music, make movies and television shows! 2 pm: Wow! I just saw how interactive media is created by merging audio and video onto a CD! This is the future of communications, the stuff Time Magazine calls "The Information Highway." So, that was it, man.

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controlling level, my preference is the UA 176B. A slow attack—like 4-to-1 ratio—with a pretty quick release, but not totally quick, is almost perfect for something like a female singer where you don't want to notice a lot of compression. With the UA 176B you can control the attack and release times, something you can't get from old Fairchilds. Generally, I like the artifact of compression and the way it sounds on a voice. Some people don't like it, but I personally do.

"The SSL compressors are perfect for giving you a hard, agitated effect. If you don't necessarily want that, I will ditch the SSL from the program and use the Summit DCL 200. I'll dial the attack time and release on the Summit to where I'm kind of hearing a similar tone. Then, I'll A/B the SSL compressor to the Summit, and most of the time [the Summit] will be toned down a little bit and not quite as hard-sounding. The Summit definitely warms things up. I use that religiously on mixes, drum kits and a number of things.

"A transistor compressor that I like is the Valley 440. You can control all

of the parameters on it—the ratio, release and attack time, threshold—and you can dial up just about any kind of compression on it quickly.

"Expanders work well on voices that have too much noise on poor analog recordings. I will use an expander as a kind of single-ended noise reduction. They let the voice come through, and as soon as the singer is done singing, or in between words, they kind of close things up a little to keep the noise down. It doesn't work quite as hard as a gate, which turns the signal completely off. There is an expander in the Valley 440 that I use. There are also expanders on the SSL console.

"For really weird compression, hit Listen Mic To Tape on the SSL console, and put any track in Record. Whatever is going through the input of that compressor is recorded on tape," Hampton says. "It's this wild, crazy, pumping 60 dB of gain reduction thing that smashes everything to pieces. It's a real neat sound to add occasionally, when you are looking for a raved-up sound.

"Gates come in handy for a lot of things, but I never automatically gate

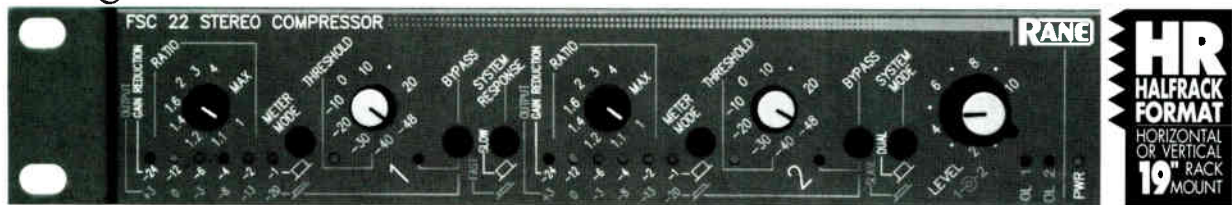
anything. Gates on kick drums with a fast attack, and a pretty fast release, can add a whole new dynamic envelope to the drum. A lot of times you can economize the amount of low end in your mix that way, which helps the bass guitar be more intelligible.

"During the '80s, mainly in metal music, a lot of people only wanted to hear the stick on the head and then let the reverb become the rest of the drum, so to speak. For that effect, gates played a big role. As a result, you could have this little drum attack, with the giant reverb attached to it. It's really no longer a drum. It's another animal—I don't know what it is.

"I will use gates with slow attack a lot of times if I've got, for example, a real quiet passage and I've got single-coil guitar buzz that I want to eliminate in between the parts the musician is playing.

"I personally tend to not use any compression at all, if there is something that has got its own natural attractive dynamic all by itself, and it's not competing with too many constant level sounds. Once the overall level of everything is set, I like to let

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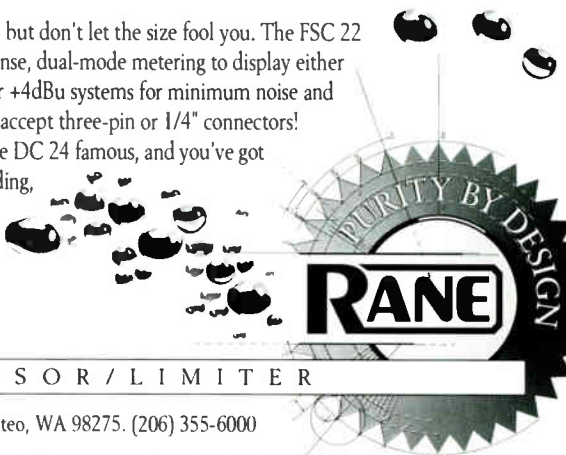
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H&SR (UK edition) 9/94

"The mic input circuitry is the remarkable low noise design that first brought Mackie into the spotlight." H&SR (UK) 2/94

32 x 8 shown (instead of 24 x 8) because we had a cooler picture of it.

"I'm happy to report that the desk maintains Mackie's reputation for clean, quiet circuit design. Some of my tests, involving CDs, showed up the noise on the original recording quite clearly. Even without the EQ switched in, the desk displayed a very open, transparent quality."

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Electronic Musician 2/94

"Replaced a \$20,000 console with the 24 x 8. Your console kicks butt over my old one. I love the EQ, the headroom and even the pans." D.C., Burbank, CA

"Amazing. Beautiful. Sexy. I've been waiting for six years for someone to come out with a mixer like this." J.C., Charlotte, NC

MIX magazine 2/94

"When I read about your 'quiet' fan in your power supply manual, I almost fell over. When I didn't hear it, I fell to my knees. When I brought up fader after fader and still heard nothing, I almost blacked out! Who in the world EVER realizes that audio gear must be quiet? I love you people." D.S., Palmdale, CA

"Used a competitor's console while waiting for your 8-Bus and will never use the other board again. Yours is quieter, has better mic pre's, better EQ, more logically laid out, much cleaner sound and better quality construction." P.P., Salt Lake City, UT

"The back of the board has 24 submaster/tape outputs incorporating a triple bus system normalizing your submaster to tape ins on the multitrack. When you send a signal to submaster 1 output, for example, it

appears at submaster outputs 1, 9 and 17, which simplifies operations with 8-, 16- or 24-track recorders."

MIX magazine 2/94

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the music have its own dynamic and then ride faders as needed. After all, there are definitely times where dynamics signal processing can work against you."

However, Hampton notes, "When you are trying to get a record okayed by a record company, you might run the mix through a compressor so it will sound like it's on the radio. Sometimes that's what it takes for some record company people to visualize the commercial potential. I try to do it always, even when I am doing rough mixes, so people will kind of get an idea what it is going to sound like when it is finished. It's going to get smashed when it comes out of the radio transmitter anyway."

#### **BOB LUDWIG**

For many years, Bob Ludwig's name has been synonymous with great mastering. His credits, which could fill a book, include The Doors, Barbra Streisand, Pat Metheny, Steely Dan, Jimi Hendrix, Madonna, Led Zeppelin, Fleetwood Mac, Bruce Springsteen, Pink Floyd, the Rolling Stones, The Police and hundreds

more. Besides his extensive work with tube and solid-state sound processors, Ludwig has developed quite an expertise in digital compression and limiting, as well.

"We have four different digital domain compressors here at Gateway [Mastering, his studio]," says Ludwig. "We have one on the Neve DTC 1.5 console, another on our Harmonia Mundi Acoustica BW/102

console and one on our Sony STP 1000. The fourth one is on the Sonic Solutions system. They all have their different characteristics, just like analog compressors do.

"If I were to characterize them, I would say that the Harmonia Mundi is probably the most transparent of them all. The Neve has a definite sound to it, and when that sound is appropriate for the music, there is

**I**f the tape comes in the digital domain, I like to stay in the digital domain, because the A/D and D/A is the weakest link. In that case I will use whichever digital console sounds best."

—Bob Ludwig

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nothing quite like it. It's best for a lot of dance stuff or generally for rock music. Depending on if it is working right, you would say it glues everything together in a very musical way and adds punch. When it is not working, you would say it is muddying it up.

"I almost never use the Sony, because it is not quite as full-sounding as the Neve," Ludwig continues. "The Sonic Solutions has a compressor that is good for one thing, which is some certain kinds of classical music compression. Other than that, in my opinion, it is useless."

When working with digital tape, Ludwig feels that it is important to stick with digital dynamics signal processing. "It's not a matter of choice," he says. "If the tape comes in the digital domain, I like to stay in the digital domain, because the A/D and D/A is the weakest link. In that case I will use whichever digital console, either the Harmonia Mundi or Neve console, that I feel sounds best for it."

Analog mastering still makes up about 60% of Ludwig's mastering business at his Portland, Maine, facility. "To tell you the truth, I like analog a lot. When I work in the analog domain, I normally use an old analog solid-state compressor that is very difficult to find, made by NTP in Denmark. It is the 179-120."

Concerning the application of dynamics signal processing in the mastering stage, Ludwig lets the music inform him as to how he should work a signal. "It sounds like a cop-out, but I'm a fan of whatever sounds best," he says. "I really mean that. In the morning I might compress the hell out of something, and in the afternoon I might not use any compressors at all. It completely depends on what I'm presented with. My whole job is to get as much musicality out of it as possible. Also, I must take into consideration that if it is a single that is going to be on the radio, I should try to make it competitive so it will jump out at a program director when he is going through a stack of CDs." ■

*Rick Clark would like to thank Robert "Red" Eberenz, Walter Sear, Larry Lipman, Mitchell Froom, Roy Pritts, Dr. William Moylan, Dan Queen, Shirley Kaye at SPARS, as well as those interviewed in this piece for their generous gift of time and input.*



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"instruments": preprogrammed voices that provide the fundamental tone or timbre, controlled via assignable parameters (such as throat, pressure, embouchure, tonguing, pitch, and damping in woodwinds) and tailored with modifiers (harmonic manipulators, filters, equalization, etc.). Intended as a lead instrument, the VLI has a four-octave keyboard with internal digital signal processing and onboard floppy disk drive.

Sample playback systems continue to rise in popularity. Kurzweil's PC88 is an 88-key master MIDI controller with 48 factory sounds (most-

ly grand pianos, organs, electric pianos and strings), onboard signal processing and 32-voice polyphony—in a package that weighs less than 50 pounds. E-mu unveiled two sample playback synths that replace the Proteus 1 (Pop/Rock) and Proteus 3 (World) units. The UltraProteus (\$1,795) has 16 MB of ROM samples (512 voices) combined with 32 resonant 14-pole filters, Z-Plane morphing synthesis capability and internal effects. The Proteus FX (\$749) has 8 MB of ROM samples, along with the grand piano from the Performance module and 24 digital ef-

fects. In other E-mu news, a new bank of sounds for its Vintage Keys synth is now available.

#### THEY'RE B—A—A—C—K: ANALOG SYNTHESIS RETURNS!

Stage Electronics Inc., of Buffalo, N.Y., showed its Mini Programmable Analog Synthesizer, a compact rack module priced at \$1,195. Designed by former Moog Music technician Jim Suchora, the unit is a monophonic synth, and multiple modules can be combined to create a polyphonic instrument. Because the single-rack-space panel doesn't leave much space for knobs, a Mini Remote control (\$595) is available for simplified tweaking. The module features three VCOs, two VCAs, noise and contour generators, an external audio input, stereo outputs with programmable panning, and MIDI and CV control.

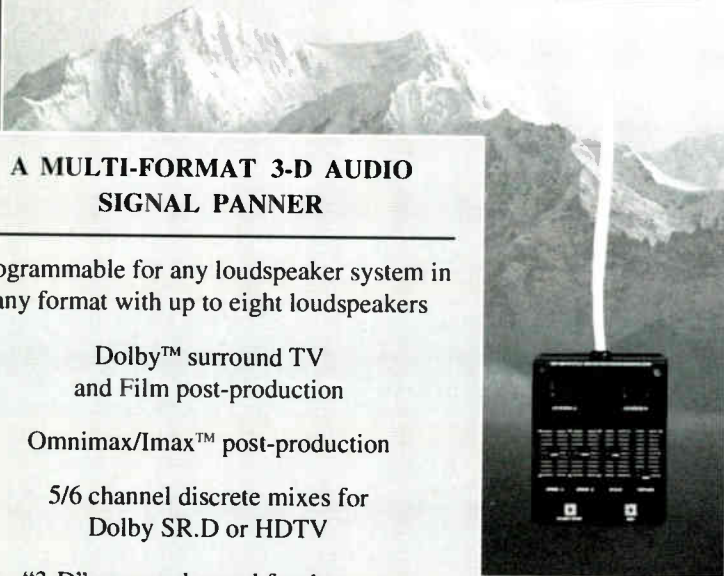
Another contender in the market for monophonic synth modules is the SE-1 (\$1,395) from Studio Electronics of Encino, Calif. The SE-1 offers MIDI control, 99 memory locations and four ADSR envelope generators. The two filters provided (Moog- and Oberheim/SEM-style) are constructed entirely of discrete components.

Available in a rack-mount package, the OBMx synthesizer from Oberheim (Oakland, Calif.) has extensive front-panel control, with 32 knobs and 59 switches for easy signal manipulation. It features up to 12 stereo polyphonic voices—each having two oscillators (and noise generators)—four multistage envelopes, two filters and three LFOs. The filter sections have the classic Oberheim and Minimoog filters, and the 128 presets that are included can be replaced by custom user sounds. The basic two-voice unit is \$2,149; two-voice expander boards are \$769.

It wasn't on the show floor, but if you poked your head into the right hotel suite, you could check out Marion Systems' (Aptos, Calif.) MSR-2 Modular Synthesizer System. New from synth pioneer Tom Oberheim, the system is based on a single-rack-space "mainframe" that accepts two plug-in modules, each a complete synthesizer in itself. An 8-voice analog module is now available; future modules will feature wavetable synthesis, sampling, reverb/effects and more. The mainframe has a programmable 6-channel stereo mixer with

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two external inputs, EQ and two MIDI ports. A basic system with main-frame and synth module is \$1,495.

And in case your keyboard chops are less than ideal, the WaveRider system, from WaveAccess of Berkeley, Calif., converts brainwaves, muscle or cardiac activity, and/or galvanic skin resistance to MIDI data. Information from headbands or armbands is sent to a peripheral box connected to any Windows-compatible PC, where the data is sent to a sound card or to external MIDI devices. A Macintosh version is also in the works.

#### MIXING IT UP

One of the most noticeable trends at the show was the emergence of cost-effective 8-bus consoles for the project studio market. With the popularity of modular digital multitracks, such as the ADAT-format machines and Tascam DA-88 recorders, the market for mixers to accompany these decks is growing by leaps and bounds.

Mackie Designs (Woodinville, Wash.) showed its 24x8 and 32x8 models with meter bridge and side-

car rack options, and Alesis is slated to ship its X2 mixer soon. Available in 16/24/32-frame sizes, the Spirit LC from Soundcraft (Northridge, Calif.) is an 8-bus recording board featuring 3-band EQ with sweepable lows and mids, eight aux sends and seven aux returns.

Distributed by Samson Technologies of Hicksville, N.Y., Soundtracs' Topaz has 4-band EQ with sweep mids, six aux sends, four stereo aux returns, and automated VCA faders and mutes. Retail is \$3,995 for a 24-channel Topaz; a 32-channel model is \$4,995. And new from Tascam (Montebello, Calif.) is the M-2600, an 8-bus recording model that has 4-band, mid-sweep EQ (splittable between the channel and tape inputs) and four mono (and one stereo) aux sends. The 16-channel M-2600/16 is \$2,999; the M-2600/24 is \$3,799, and the M-2600/32 is \$4,699.

#### AND THAT'S NOT ALL...

With an eye on the growing pool of MDM users, Mark of the Unicorn (Cambridge, Mass.) showed its Digital Time Piece, a sync interface for interconnecting DA-88 and ADAT-for-

mat recorders to sequencers. This single-rackspace, \$995 unit is MIDI Machine Control-compatible and includes ports for word clock, ADAT 9-pin sync, Tascam 15-pin sync, and SMPTE and MIDI Time Code.

Signal processing proved another area of seemingly relentless activity. Here are a few highlights:

The Vortex morphing processor from Lexicon (Waltham, Mass.) is a stereo effects device that can produce simultaneous effects including modulation, spatialization and looping, all controllable via dual quadrature LFOs, an envelope follower or footpedal. It also offers the ability to morph effects, producing a continuously varying combination of two effects. Retail is \$459.

Eventide's (Little Ferry, N.J.) new Studio Dynamic UltraHarmonizer H3000-D/SX packs most of the punch of the classic H3000S but omits some of the less-used features, such as vocoder, stutter and Time-Squeeze!<sup>SM</sup> and it brings the retail of the unit in at a remarkable \$1,995.

Looking toward the musician market, Sony launched two half-rack digital multiprocessors (each with up

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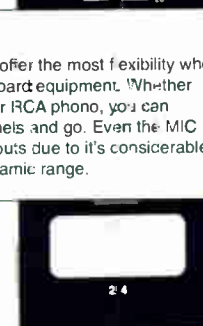
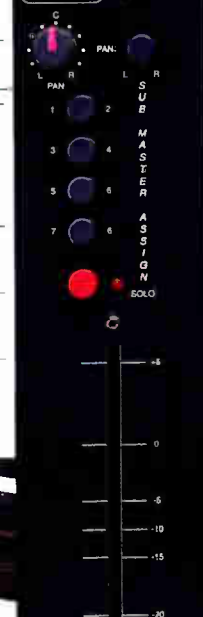
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Alesis debuted its latest signal processor, the QuadraVerb II, which improves upon the original design with true stereo processing, a huge LCD, a large data wheel and any of eight simultaneous effects, which can be arranged in any order. The \$799 unit features analog and ADAT fiber-optic format inputs and outputs.

#### **SURPRISE, SURPRISE**

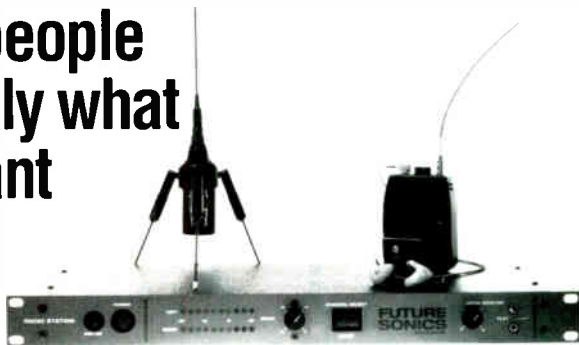
One of the best parts of NAMM shows is surprise unveilings. AKG announced the formation of a new wireless products division and showed its first product, the WMS900, a modular UHF system designed for high-end, no-compromise performance. Also in the line is the WMS100, a cost-effective VHF system; other wireless products will be introduced later in the year.

In another twist, QSC provided a long-range preview of its VS 2, a compact, 20-pound amplifier that delivers 600 watts/channel into a 4-ohm load. The amp uses a switching power supply, and its modular back panel accepts an analog XLR/barrier strip input card and/or a Q-Link card for fiber-optic connections. QSC plans to ship the VS 2 and other (larger) models in the line later this year, possibly by fall; VS pricing is expected to be similar to that of QSC's premium EX Series.

A more interesting debut was Peavey's "Patrick," an in-store computer kiosk that provides music store customers with detailed, up-to-the-minute information about Peavey products—at the touch of a button. Patrick also can print out product spec sheets and let users watch informational videotapes.

Hits of the show? Two that really knocked me out were Korg's G4 Rotary Speaker Simulator and Sabine's AX-800 guitar tuner; these products aren't earthshaking (pardon the pun), but they're ultracool. Retailing at \$450, the G4 is the best Leslie™ simulator I've heard, featuring acceleration and speed controls, a horn/rotor balance knob and a stereo section that mimics the spread of two microphones placed in front of the cabinet. The G4, in its four-pedal housing, is an awesome tool for live or studio applications. Sabine's AX-800 (\$79.95)

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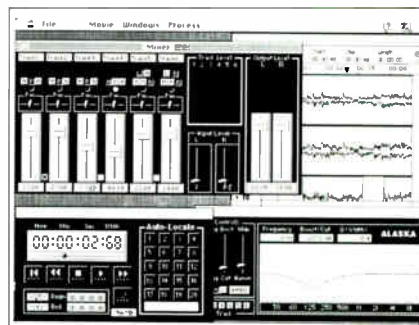
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Digitrax, from Alaska Software (Sunnyvale, Calif.), is designed for multimedia authors looking for professional digital audio production software. It offers six tracks of record/playback (mixed to stereo) on Macintosh 840AV and 660AV machines. Other features include automated punch-in/out; real-time visual waveform editing; six bands of parametric EQ; MIDI, SMPTE and QuickTime movie synchronization; and control of CD-ROM drives.

British manufacturer Soundscape Digital Technology Ltd. (Cardiff, UK) debuted its Windows-based workstation. The 4-track (expandable to 64 tracks in groups of four) Soundscape Hard Disk Recorder is designed for music-only and audio post applications. The hardware offers analog unbalanced and digital S/PDIF I/Os,



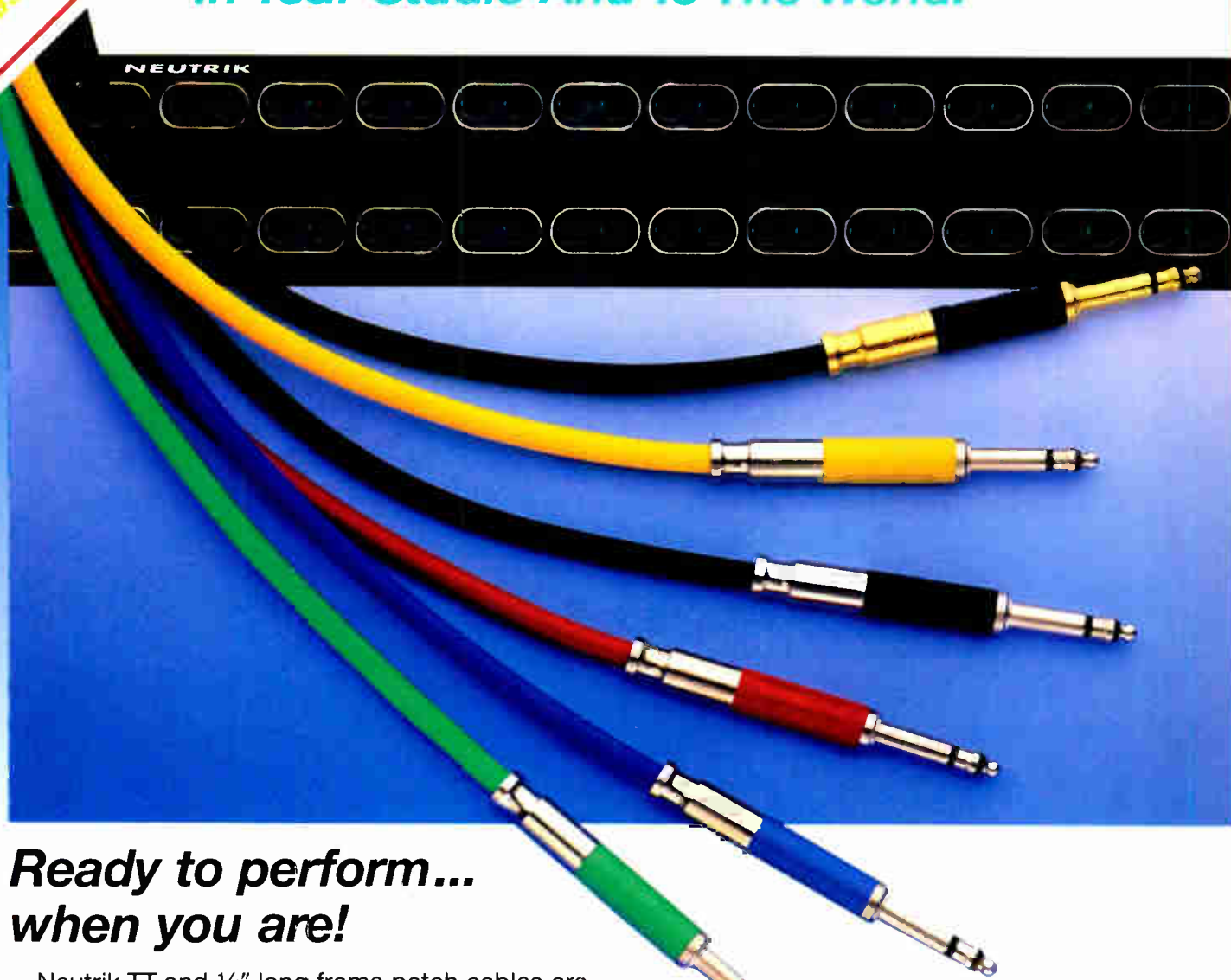
**Digitrax**

with balanced analog and AES/EBU provided as an option at \$325 per four channels. Software features include continuous chase lock to MTC for frame-accurate sync with external devices; eight real-time parametric EQs per module; and compatibility with any Windows MIDI sequencer. List price for a 4-track system (does not include hard disk storage or CPU) is \$3,250; additional 4-track expansion modules are \$2,925.

The AX-S was one of several products announced by Spectral Synthesis of Woodinville, Wash. The AX-S accepts and generates AES/EBU digital I/O, converting to and from balanced analog signals in a single-rack-space unit for less than \$1,000. Also on display was Spectral's AudioPrisma workstation, which provides 96 audio tracks mixed to 12 channels. The AudioPrisma requires a 25MHz 386 computer running under Windows. ■

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by Paul Potyten

# CES AND MACWORLD EXPO

## NEWS FROM THE TRADE SHOW FLOOR

**J**anuary had more than its share of interesting trade shows, including the Consumer Electronics Show in Las Vegas, MacWorld Expo in San Francisco and the Anaheim NAMM show. These first two events provided a good barometer regarding the status of the (dare we say it?) multimedia industry. (See page 44 for a NAMM report.)

The Tenth Annual MacWorld Expo, held at the newly expanded Moscone Center, was the largest to date, attracting more than 50,000 people. More than 500 companies were represented, and there was more than a hint of Tinseltown in the air for the opening. Todd Rundgren, whose interactive CD-I disc, *No World Order*, has created an industry stir, and veteran multimedia artist Graham Nash were both on hand. Actress Shelley Duvall and high-tech Hollywood producer Scott Billups were among the other luminaries who spoke at the event. In addition, a host of second-generation interactive CD-ROM titles drew crowds on the show floor.

If MacWorld Expo could be described as big, then the CES show was (as Ed Sullivan might have said) *really* big. More than 1,600 exhibitors displayed their latest and greatest consumer products for an estimated audience of 79,000 buyers and distributors. And the most rapidly growing area in this year's four-day event was (surprise!) multimedia—with exhibitors up a whopping 600% over last year.

One whole wing of the sprawling Las Vegas Convention Center was occupied by large and small purveyors of multimedia, from Microsoft, Creative Labs, Compton's New Media and 3DO to a myriad of three- and four-person enterprises. In addition, Sega, Nintendo, Philips Interactive Media and a host of other game de-

velopers were accommodated in a separate large building.

### CD-ROM TITLES GO BOOM

The increased sophistication of digital video compression techniques, together with plummeting production costs, has played a big role in opening up the market for CD-ROM titles. Until Al Gore and his high-tech cohorts figure out where to store those thousands of terabytes of information that will travel their information superhighway, CD-ROM—in one or more flavors—will continue to be the delivery medium of choice. So many folks are jumping on the CD-ROM bandwagon, it's a wonder that it doesn't break.

Of particular note are the emerging music-oriented titles. Todd Rundgren's CD-I title seems to have taken a "producer" approach by concentrating primarily on the audio elements to let users create their own mix. Peter Gabriel and Steve Nelson of Brilliant Media have released their Macintosh *Xplora* title (see *Mix*, July 1993), which uses QuickTime to create a much more visually oriented interactive experience. And from the new batch of discs on display, it's clear that those "big name stars" who own content are parlaying that for the interactive experience. Interactive titles from relatively unknown, but technically able, producers are not getting the attention of the media—and therefore, the public—to the same degree as the former group. In many cases, some kind of collaboration between these big names and the developers and/or publishers of titles is the norm.

A case in point is RoundBook Publishing Group, a small outfit from Scotts Valley, Calif. RoundBook has negotiated with Kardana Productions and Pete Townshend to work on a

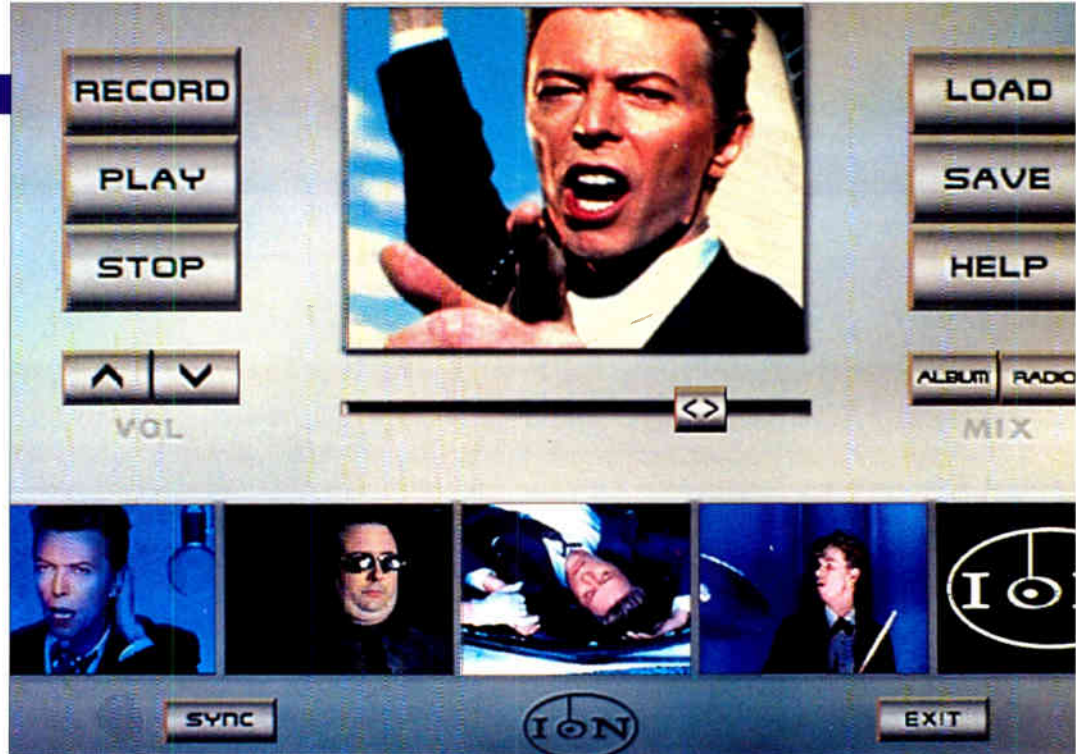
"comprehensive multimedia exploration of the *Tommy* phenomenon in all its forms." The *Tommy* CD-ROM will be published initially for the Windows and Macintosh platforms in the fall. Compton's New Media has agreed to distribute the product. Incidentally, Townshend and Kardana Productions will become equity investors in RoundBook.

Ty Roberts is the "digital engine" of ION (Los Angeles), and its first product, *Jump*, is expected to be available this spring on the Mac platform. The disc uses music and video from David Bowie's hit single "Jump They Say," featured on his *Black Tie, White Noise* album. Roberts brings a wealth of software design experience from his time at Apple Computer, Pixar and other ventures. The main attraction of this disc is an interactive video studio, where you can create your own music video in real time from about 30 minutes of QuickTime video clips. In addition to two CD-Audio mixes of "Jump They Say," music consists of 8-bit audio incorporated with the QuickTime video clips.

Ebook Inc. (Union City, Calif.) is a developer and publisher of jazz-oriented CD-ROMs for MPC and Macintosh machines. The first three titles in its Jazz Portraits series feature Louis Armstrong, Count Basie and Billie Holiday. Each disc provides biographical information enhanced with photos, discographies, video interviews with musicians and, of course, as many as eight tracks of classic CD-Audio music.

Also developed by Ebook, *Jazz: A Multimedia History* takes a more educational approach than most other music-oriented CD-ROMs. It's a mixed-mode Mac disc with 30 minutes of video sequences, photos, audio examples of rhythms and MIDI reconstructions of tunes, highlighting various musical themes. Ebook products are published and marketed by Compton's New Media.

Compton's also announced its first venture in association with a record



From ION comes *Jump*, a CD-ROM featuring the music and video of David Bowie.

label, Rhino Records. The company plans to issue a series of jazz, R&B and early rock multimedia records based on the material licensed from the L.A.-based Rhino label. Affiliated labels include Roulette, Atlantic, Stax Volt and Atlantic Jazz Masters. Each CD-ROM will contain ten to 15 full song tracks accompanied by biographies, discographies and news events from the year that selected songs were released.

Scheduled for a February release was *Heart/20 Years of Rock and Roll*, the first MPC CD-ROM from The New Music Show (Carmel, Calif.). According to company president Bob Hamilton, the disc features an interactive biography of the Seattle-based band Heart, with a memorabilia museum, interview library and song sampler. It includes more than 125 60-second

audio clips from 13 Heart albums, and when combined with audio interviews with bandmembers, totals over five hours of 4:1 compressed, 32kHz, 16-bit mono audio.

In Nashville, meanwhile, bluegrass group Run C&W will release their second album for MCA records as a mixed-mode CD-ROM. Mixed-mode discs contain audio tracks that are playable in any regular CD-Audio player but also include a track of data (text, graphics, etc.) that can be accessed when the disc is used in a CD-ROM drive hooked to a computer. The disc is expected to be priced comparably to a regular CD album. Run C&W includes former members of The Eagles and the Amazing Rhythm Aces.

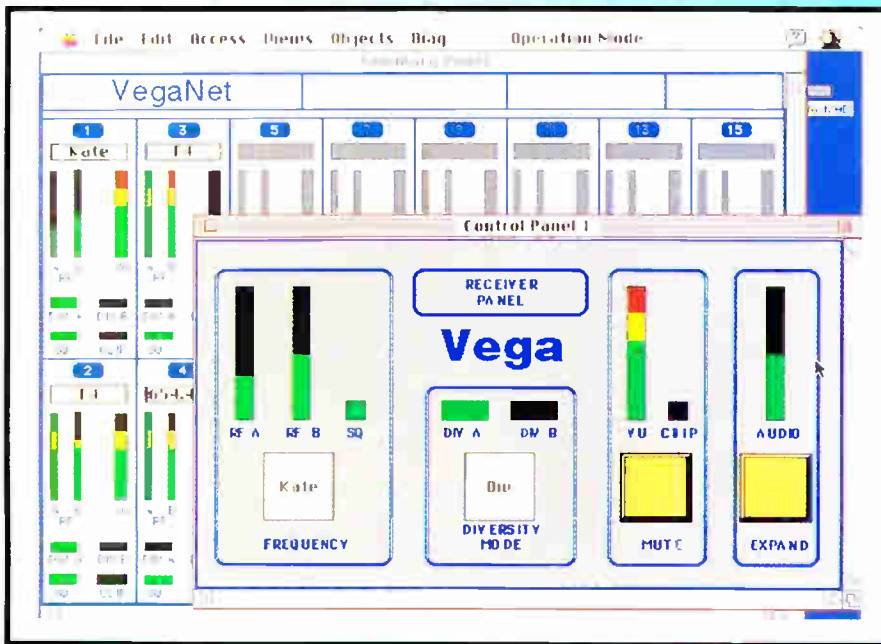
A slightly different approach comes from 7th Level Inc. This Los Angeles-based company's first entry into the world of CD-ROM entertainment software is *Timeland*, an interactive cartoon with 42 reorchestrated public-domain children's songs and complete underscore. Featured performers are Jon Anderson from Yes, the Tower of Power horn section and guitarist Jeff "Skunk" Baxter. Backed by junk bond king Michael Milken and Lorimar Pictures' Merv Adeleson, 7th Level cofounder George Grayson has assembled a formidable team consisting of former Pink Floyd saxophonist Scott Page and producer Bob Ezrin. *Timeland* also features the vocal talents of comic Howie Mandel and is currently



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available for the MPC platform.

And now, for something *completely* different: 7th Level is in production on its next title, *Monty Python*, featuring Terry Gilliam. Page, head of production at 7th Level, says, "From an audio point of view, this medium has not been exploited the way we think it can. Sound is obviously very important to us."

Bucking the trend of using big names and pre-existing music and video content, Substance Interactive (San Francisco) released the first edition of its *Digizine*, an interactive digital magazine on CD-ROM for PCs running Windows 3.1. Designed to appeal to the X-Generation, *Digizine* explores the effect of emerging technologies on culture and industry. Feature articles include an exclusive interview with Trent Reznor of Nine Inch Nails and a talk with Jim McKay, co-founder of C-00 Film Company, an independent film production studio. The original music heard on the disc is in Red Book Audio format and was written and recorded in Substance's production facility.

It remains to be seen which of these varied approaches consumers will embrace as this market begins to mature. Do they want to play with video? Do they want to mix their own audio? Do they care enough about historical information to navigate? Or would they rather just have their dinner music delivered to them in couch-potato mode?

It is a safe bet that each approach will find its own niche (however small), just as CD-Audio reissues of old material in classical, pop and jazz have over the past ten years. Given that the content *is* compelling, if there's any justice in the world, acceptance of the new generation of interactive discs will be determined by user-friendly, seamless design and good production values. Too bad there's no justice in the world.

#### PLATFORM HELL

It's a surprisingly well-kept secret that although more CD-ROM titles are available for MPC and Windows-based systems than for Macs, using the shiny discs on an Intel-based platform often involves more than double-clicking with a mouse on an icon. According to which computer store you talk to, between 25% and 50% of MPC upgrade kits sold to customers are returned. Assuming that you are

willing to run the MPC gauntlet, you can expect additional hurdles each time you try a new CD-ROM title. Conflicts and crashes seem to be more frequent than with Mac titles, and some of these discs require returning to DOS to install the necessary software to run the system—not a pretty picture. Come to think of it, DOS doesn't even know about pictures.

Most high-tech prophets agree that in order for the multimedia industry to gain wide consumer acceptance, an integrated home entertainment device will be required. But titles for PC and Macintosh computers far outnumber those available for the Philips CD-I, 3DO, Sega-CD and other stand-alone systems, indicating that we're still some distance away from that scenario.

The newest entry in the stand-alone player wars comes from Atari (Sunnyvale, Calif.), where the Jaguar's 64-bit processor makes it the fastest game machine to date. Four titles were released with the November launch, and Time Warner—a big player in terms of content—will make its library of video clips available to Atari and its licensed publishers for use in Jaguar titles.

It's still too soon to project a winner in these platform wars. Developers need to get more information about what kinds of interactive experiences consumers are willing to buy. And they'll be getting some of that important feedback very soon from Blockbuster Video. Last November, the video rental giant started renting CD-ROM titles—as well as various hardware platforms to run them—in 57 of its San Francisco Bay Area stores. Titles range from games and adventure to education, entertainment and reference. Platforms include 3DO, Sega-CD, Philips CD-I, Apple Macintosh TV and IBM PS/1 system. With the exception of the Apple and IBM platforms, customers can rent players from Blockbuster. So far, participants report that consumers have responded well to the program, which promises to provide the industry with valuable information about what customers want.

My take is that the hardware interface design is a critical part of this equation. Case in point: At CES, I had a chance to play with *Rock, Rap and Roll*, which remains one of my favorite CD-ROMs more than a year after its release on the Mac platform. This particular version was running on a 3DO

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machine. One of the best features of the original title involved using the Mac keyboard to play interactively with the music. Well, guess what: 3DO doesn't have a keyboard, and the remote control device, which vaguely resembles a TV remote control, couldn't come close to re-creating the interactivity I experienced on a Mac. The crowds milling around the massive 3DO area at CES may indicate otherwise, but my hunch is that 3DO is not the holy multimedia grail that others claim.

#### POWERPC, MAGIC CAP OR ???

Perhaps the biggest buzz at MacWorld was over the new PowerPCs. Apple's new RISC-based machines, which were expected to be available in March, are designed to run both Macintosh and Windows software—a feature that should go a long way toward integrating a fragmented marketplace. But PowerPC machines running native applications are the real key to Apple's hopes. At least 61 third-party developers had announced forthcoming native versions of their ap-

plications by show time, and many of them were being demonstrated at the event. PowerPC applications offer extraordinary improvement in speed over existing Apple and Windows versions.

Mountain View, Calif.-based General Magic used MacWorld to unveil Magic Cap, a software environment for communicating applications and a foundation for personal communicators. The first handheld devices that will incorporate Magic Cap are expected this summer from Sony and Motorola for less than \$1,000. The software offers access to fax, telephone and public electronic mail services, all without using a keyboard.

Even more interesting than Magic Cap is Telescript, General Magic's communications technology. Telescript is an object-oriented language optimized for the collection and dissemination of data. Using Telescript, a user might point to an image of an airline ticket counter and tell the machine to make travel arrangements for an upcoming business trip according to their specifications. Telescript creates an agent that will gather the necessary information from

any number of online databases, even when the machine is turned off. When the agent comes up with the ticket, it can inform the user by beeping or creating an electronic message. Magic Cap's technology also is designed for compatibility with Windows and Macintosh systems.

Who knows whether some hybrid of Magic Cap, PowerPC or other PC-based technology will be the environment that consumers eventually embrace, or whether the answer will come from the telephone industry, the cable industry or some unknown direction. In any event, it may come sooner than you think, because things are moving fast.

Finally, I nominate the Intel exhibit as the most air-headed piece of hype at this year's CES show. The Adventure Inside, which was pitched like a high-tech Disneyland attraction, was nothing more than a thinly disguised glitzy commercial for the company, lacking in any meaningful information. Render unto me a break. ■

*This month, the role of Mix crusty curmudgeon is played by associate editor Paul Potjen.*

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# MULTIMEDIA CHIP SHOTS

## **PASSPORT DESIGNS PRODUCER PRO FOR WINDOWS**

Passport Designs (Half Moon Bay, CA) announced a Windows version of Passport Producer Pro, which provides multimedia producers with interactivity, path-based animation, external device control, video support, and extensive graphics and text capabilities. The package also includes a wide variety of video clips, background textures, Photo CD images, and digital audio and MIDI files. System recommendations are an 80486-based, 66MHz PC or compatible with Windows 3.1 and 16 MB of RAM. Producer Pro for Windows will be available in spring of 1994.

Circle #201 on Reader Service Card

## **AVID NUBUS EXPANSION CHASSIS**

Avid Technology (Tewksbury, MA) announced that it has qualified a NuBus expansion chassis from Austin-based Second Wave Inc. for use with its Media Suite Pro desktop video system. The new chassis expands the range of Macintosh platforms capable of supporting Media Suite Pro 2.0 to include the Quadra 800 and 650 systems.

Circle #202 on Reader Service Card

## **ROLAND MULTIMEDIA SOUND CARD**

Roland Corp. US (Los Angeles) announced its next-generation sound card, the 16-bit Roland Audio Producer (RAP-10) for the IBM PC. Listing for \$599, the RAP-10 allows CD-quality audio recording on a hard disk, plus nondestructive editing capabilities and synchronization with user sequences or commercial Standard MIDI Files. In addition, the card provides a 28-voice wavetable synthesizer and a digital signal processor for reverb and chorus effects.

Roland also introduced a series of self-powered speakers for multimedia and home video use, as well as the SC-7 General MIDI Sound Module for music playback on the IBM or Macintosh.

Circle #203 on Reader Service Card

## **JVC MULTI-ENTERTAINMENT CD-ROM SYSTEM**

JVC (Elmwood Park, NJ) introduces the X'EYE CD player, capable of hooking up to any standard TV and playing audio CDs, CD+Graphics Karaoke, Electronic Book, CD-ROM educational and informational software, Sega platform CDs and Genesis cartridge software. The player uses JVC's 1-bit PEM D/A converter with an eight-times-oversampling digital filter for audio reproduction, mini-



**JVC X'EYE**

mizing crosstalk and improving clarity. Access to programming functions such as random play, repeat, program and direct track can be gained via an onscreen menu. The system will include one controller, one RF adaptor, three software titles, including Compton's Interactive Encyclopedia, a CD+G Karaoke disc and a Sega CD game; list price will be \$499.99.

Circle #204 on Reader Service Card

## **SYQUEST SCSI II CARTRIDGE DRIVE**

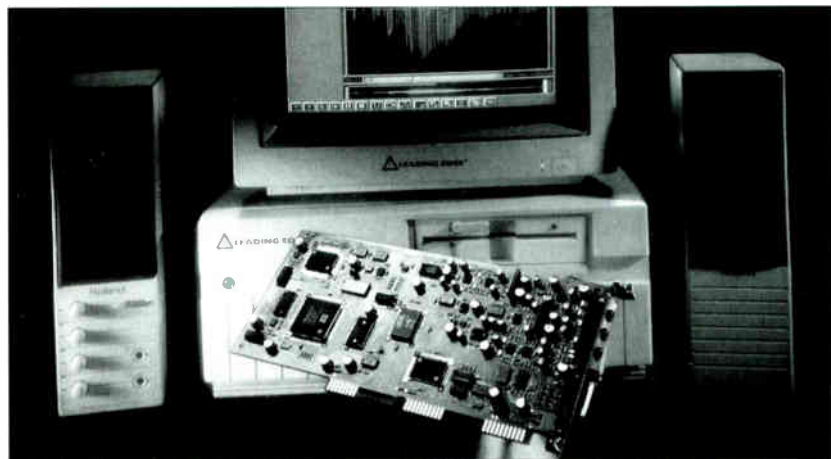
The SQ3270S is a new SCSI II version of the 3.5-inch, 270MB removable hard cartridge drive introduced by SyQuest Technology (Fremont, CA). The drive, which reads and writes to SyQuest's 3.5-inch, 105MB cartridges, has more than twice the capacity and is said to be three times faster than 128MB MO drives in Read mode (eight times faster when writing). Retail price is expected to be around \$650 for a drive with one cartridge; additional cartridges should be about \$80. Units were expected to be shipping by the end of February.

Circle #205 on Reader Service Card

## **COSA AFTER EFFECTS 2.0**

CoSA (The Company of Science & Art; Providence, RI, an Aldus subsidiary, began shipping CoSA After Effects 2.0 Professional Version. The upgrade to the digital post-production software package includes speed enhancements and a new comprehensive interface that provides an all-inclusive time view and more precise motion control, including the ability to edit visible motion paths and key frames via cut-and-paste techniques. The new I/O architecture also supports additional file formats. The company is also shipping version 2.0 of its CoSA EFFECTS PACK Vol.1, available free to registered users who purchase After Effects 2.0.

Circle #206 on Reader Service Card



**Roland RAP-10**

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World Radio History

by Philip De Lancie

# AUDIO FOR DESKTOP VIDEO

## WORKING WITH PREMIERE 3.0 AND THE MOVIE MOVIE CARD



When Apple Computer first introduced QuickTime in 1991, it was hard for many observers to work up much enthusiasm. The demand for "desktop video"—the missing color on the multimedia palette—was obvious. But the size and image quality yielded by Apple's software-based compression and synchronization scheme fell far short of awe-inspiring. Indeed, with images little over 2x1½ inches (on a 72DPI monitor), and playback at a jerky ten or so frames per second on most CPUs, the practical value of QuickTime was open to question.

Luckily for Apple, the picture has changed quite a bit since those early days. First, the company was smart enough to rapidly build an installed base of QuickTime-capable machines by making the system extension easy to get. And because Apple has worked hard to improve the product, QuickTime's current version (1.61) supports improved quality and larger image size. Apple further extended the functionality of the system by developing QuickTime for Windows, which means that movies created for the Macintosh also can be seen on PCs.

QuickTime has also benefited from the sharp drop in computer prices, which has brought machines with decent CPU speeds well into the range of the average consumer. QuickTime's playback is "scalable," meaning the faster the CPU, the better the speed and quality.

Another aspect of QuickTime's growing appeal is the fact that it is more than just a desktop video delivery format. It is actually a whole series of compression algorithms for video, still images and animation, as well as a means of synchronizing the occur-

rence of events in time. Compression schemes are crucial to keeping the size of media files within the data-handling capacity ("data bandwidth") of current CPUs, while synchronization provides the temporal predictability that is essential for any kind of pro-



Figure 1: Typical recording set-up in ScreenEdit

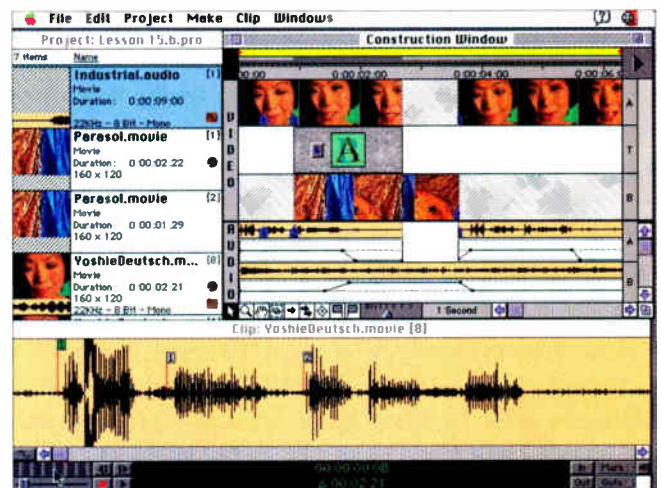


Figure 2: Adobe Premiere with project, construction and audio clip windows open

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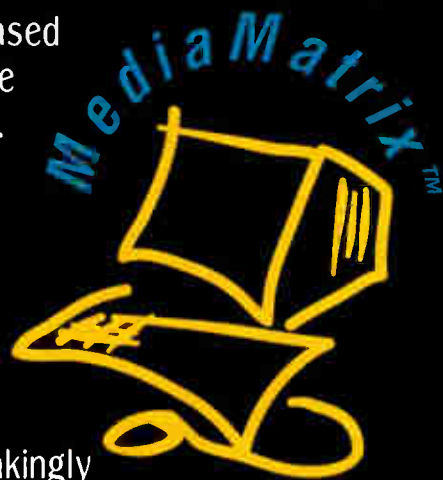
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# Peavey MediaMatrix™

MediaMatrix is a complete, integrated, software-based sound system. To preclude obsolescence, upgrades will be available periodically, as well as new devices and features. By tying the many features together, you can design a system that looks, operates, and interfaces the way you want it to.

While MediaMatrix opens doorways to audio-system creation that were previously unavailable, we at Peavey have always kept the audio quality of the system the most important priority. Each device has been painstakingly designed to provide the features, capabilities, and quality that you want. For example, our crossovers offer the ability to make asymmetrical filters, user-selectable filter types, and adjustable slopes up to 48 dB per octave. But most importantly, they sound great! The converters used in MediaMatrix were carefully selected to assure the highest level of fidelity available.



**MediaMatrix™ is an** unprecedented way of designing and building sound systems. You no longer have to purchase audio-processing devices, mount them in equipment racks, wire them up, and then troubleshoot the wiring! MediaMatrix is a software-based **audio system** that operates under the familiar Windows™ interface; it is a tool **that gives you the freedom** to design **and** build sound systems easily, in the **convenience of** your own office. Simply load the sound-system configuration, which is stored on **a floppy disk**, and you have “installed” a major part of the system. If you want to change anything in the system later, you can select a device and add it, or change the wiring with a few clicks of the mouse—just make the desired change and proceed. You can also save an existing system and compare it with the “new” system to determine what is best for your client.



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As an extension of the Macintosh operating system, QuickTime is not application software. But as QuickTime's installed base and functionality have grown, the tools designed to take advantage of its capabilities have developed rapidly, as well. These include hardware for recording ("capturing") video on hard disk and software for editing and special effects.

Perhaps best known of the QuickTime video editing software packages is Adobe Premiere, recently released in version 3.0 for the Mac and 1.0 for Windows. Version 3.0 includes the capability to mix up to 99 audio tracks, which caught our attention at *Mix*, and Adobe was kind enough to provide the software for an exploration of audio-for-video in a QuickTime setting.

We also take a look here at Sigma Design's MovieMovie, a Macintosh NuBus video capture card, and the ScreenEdit software that comes with it. MovieMovie is well-regarded within its price range (\$350) for its ability to interleave audio and video successfully, as well as for the fact that it includes an audio input. As an entry-level capturing package, MovieMovie/ScreenEdit offers an effective vehicle for exploring some of the basic considerations involved in getting QuickTime video and audio into the computer for manipulation by programs such as Premiere.

#### VIDEO CAPTURE WITH MOVIE MOVIE AND SCREENEDIT

The first step in assessing any hardware or software is to define what you are trying to do with it. The purpose of the MovieMovie card is to provide a low-cost means of digitizing video for playback on a computer. It is an input-only device, meaning no provision is made for outputting finished digital movies back into the world of analog video. Systems designed to use the computer as a random-access edit controller for full-screen, broadcast-quality video are in a whole different league as far as price and capabilities. (See April and May '93 "Byte Beat" for more on such systems.)

MovieMovie does not provide hardware-based video compression. A QuickTime compression algorithm may be applied after capture to reduce a movie file to a manageable size, but the video is initially captured

to a hard drive uncompressed (or to RAM if you have a very small video or very large memory). That kind of video capture is among the most demanding applications for a computer system in terms of processing throughput and storage capacity.

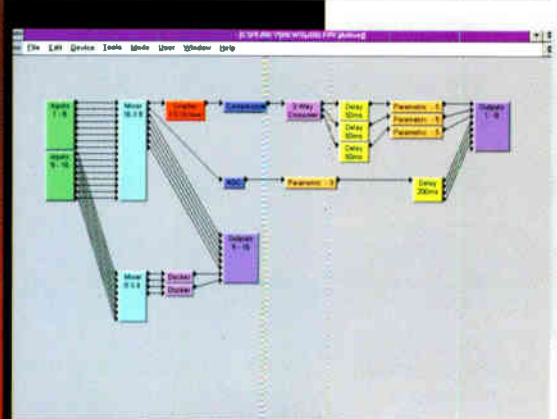
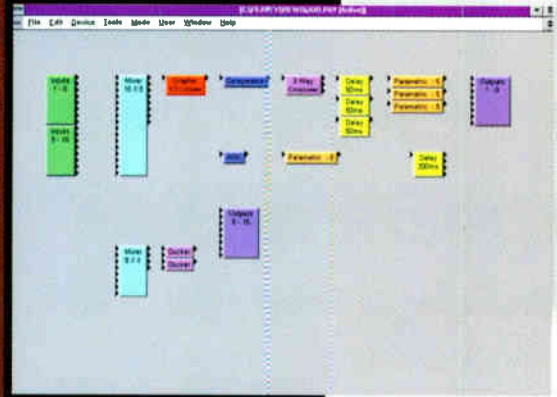
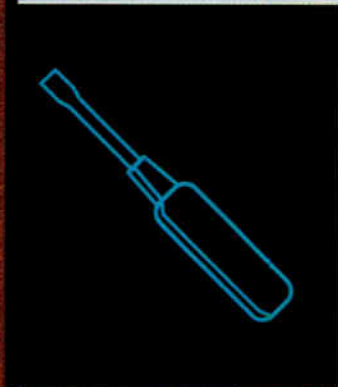
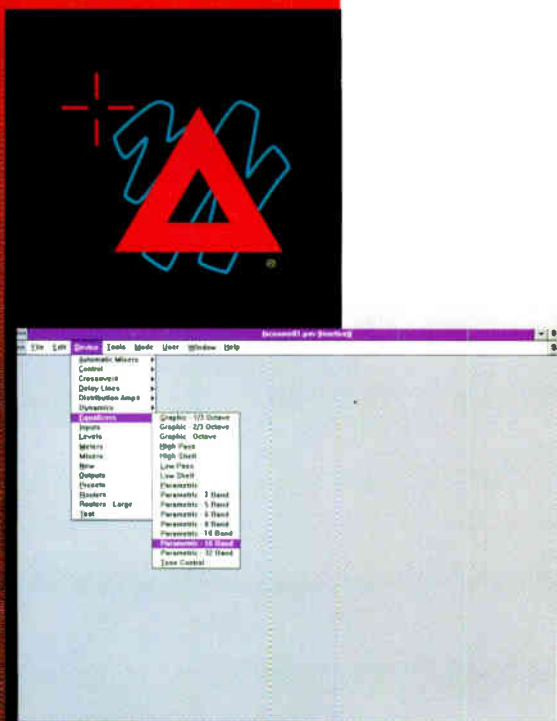
Consider a movie captured at "quarter-screen," or 320x240 pixels (approximately 4.4x3.3 inches). At QuickTime's 16-bit resolution, each frame is 150 kilobytes. Multiply by 30 frames per second and you get 4.6 MB per second or 276 MB for a minute of video. It's easy to see why enormous drive capacity is required for any serious video work.

In addition to storage capacity, throughput, which is related to drive speed, is an issue. The faster the rotational speed of a drive, the higher the maximum sustained transfer rate. Anyone shopping for a hard drive with video capture in mind should be looking at SCSI-2 fast drives with minimum rotational speeds of 5400 rpm. (If the host Mac is slower than a Centris 650 or equivalent, the CPU will be the slow link in the chain when used with one of these drives.) Also, buyers should be aware that some drives may perform thermal recalibration during recording, which can cause glitches in the video.

Even with a suitably fast hard drive, 4.6 MB/second is a lot of data for a computer to process and store. Depending on the ultimate application for the video being recorded, therefore, users may want to record at smaller image sizes and/or frame rates. ScreenEdit provides a straightforward interface for setting these capture preferences, as well as any post-compression options, in preparation for recording.

The frame size of a captured movie is determined by the size of the Preview window (Fig. 1), which lets you see the incoming video from the source you connect to the video line in (RCA jack) on the back of the MovieMovie card. The preview window's standard Macintosh zoom box (upper right corner) toggles between the two supported frame sizes: 320x240 and 160x120.

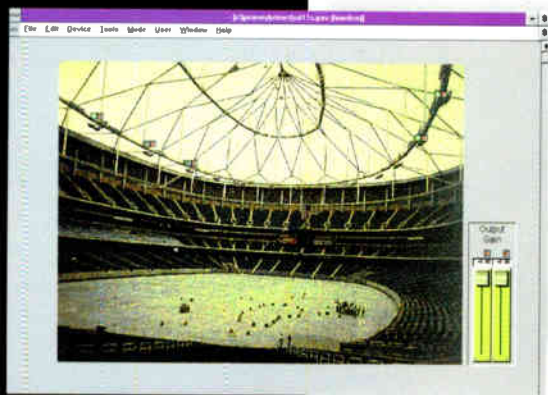
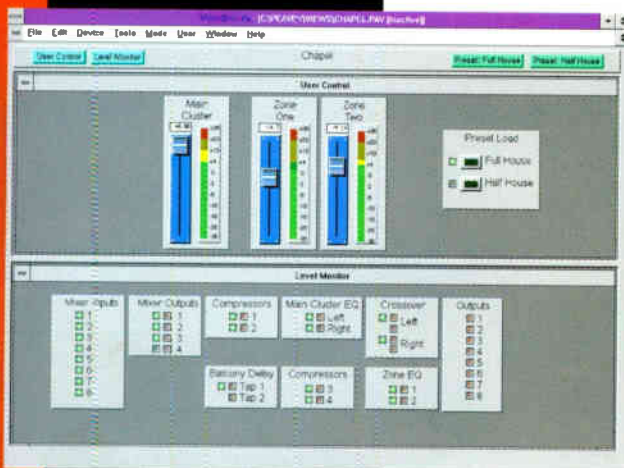
A 320x240 frame size at an acceptable frame rate produces too large a datastream to play back reliably from a single-speed CD-ROM drive, which has a data bandwidth of only 150 kB/second. And, though 160x120 isn't quite as ridiculous as it sounds on paper (because viewers



**MediaMatrix** consists of a personal computer with one or more audio-processing boards plugged into standard I.S.A. slots, breakout boxes for input/output connection, and software. Included **is an extensive array of audio-processing devices**, including mixers, equalizers, dynamic processors, routers, signal generators, delay lines, distribution amplifiers, crossovers, filters, automatic mixers, and metering. You simply select the devices, wire up the system on the screen, and comply it; the system is now configured and ready to be connected to the system inputs and outputs.

Begin **designing** the system by selecting the signal-processing devices you want to include in the sound system from the Device menu. Each category has an extensive selection of individual devices to choose from. When the desired device **is** selected, a screwdriver appears on the screen. Use this to place the device in the desired location. Repeat this process for each type of device placed on the screen. **Simple** shortcuts allow you to place multiple devices of the same type on the screen quickly and arrange them in an orderly manner. Once you have placed all of the devices, you are ready to begin wiring. You can always rearrange the design at any time.

Upon entering the Wire mode, a 1/4" plug appears on the screen. Each device includes input and output nodes, which represent the inputs and outputs of the device. To connect an output to an input, simply connect the nodes of the devices by selecting them with the plug. Connecting multiple nodes is **simple and intuitive**. By placing the plug over a device, you can select all of its input or output nodes.



**MediaMatrix** allows you to do things you never could before! By copying meters, signal presence, indicators, and clip lights from devices onto the schematic, you can have metering in the schematic drawing! The drawing **becomes an active** part of the sound **system, enabling** the operator to locate the source of a problem (such as a muted output) or an overload situation and quickly make the required adjustment. Text-editing tools allow you to relabel all devices. To protect system configuration, MediaMatrix offers four levels of **password access**. You can create enunciator panels **and** operator panels that limit operator access to controls.

You can scan in any bitmap as a background on the screen by typing the system into **a visual interface**. You can scan in a photo of a facility and place "invisible buttons" over the clusters; you can place Signal Presence and Clip indicators over the clusters, as well. If you see a signal loss or an overload situation, you can click on the cluster to open its control panel. You can scan in a CAD drawing such as a plan view of a facility, allowing you to open the controls of a particular room from a graphic layout of the facility.

The design philosophy behind MediaMatrix is simple: We offer you the ability to create the ideal system to satisfy your specific needs, liberating you from the prescribed parameters of less enlightened manufacturers.


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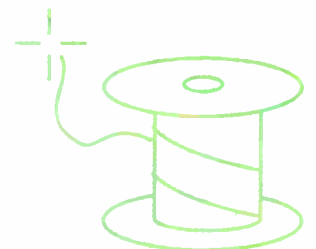
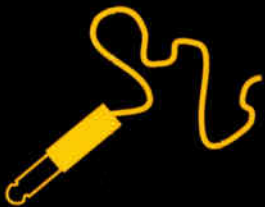


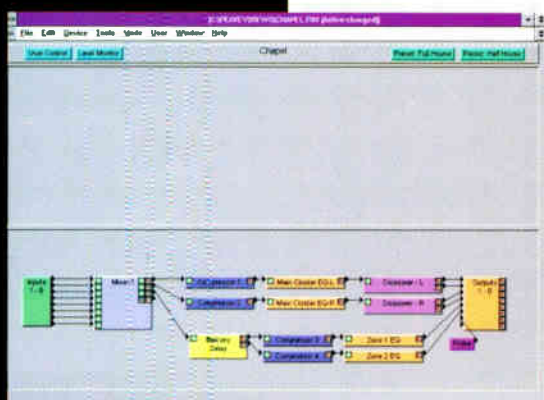
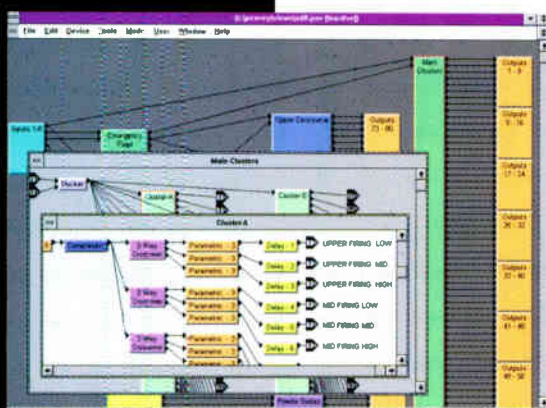
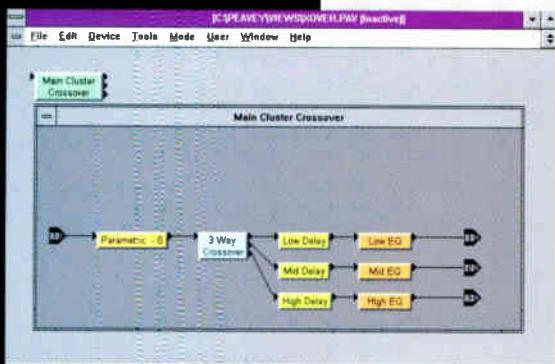
This **interface** makes it possible to interconnect multiple devices in a very short time. After the system is wired, the screen will look like a CAD drawing of a schematic diagram of the sound-system design. Simply select Compile from the File Menu, and your design actually becomes the sound system.

Now the system is ready to be adjusted. By double-clicking on any device in the schematic drawing, you open its control surface. **Control surfaces** resemble traditional analog audio devices with meters, knobs, fades, and buttons. They also include features such as indicators, which **show the precise settings** and levels of controls. You can open as many control surfaces as you want and rearrange them on your screen, or change the control panels by rearranging controls—just adjust the controls to the desired settings and save these settings. You can change any parameter in the system by selecting a single button (on-screen or external).



**You can create** control panels for specific tasks. For example, you might include controls from devices on a single panel, such as a fader from a mixer, a threshold from a gate, an output meter, a preset button, or a knob from a crossover. You can make these changes in the convenience of **your own** office, store them on a floppy disk, and bring them with you to the job site. You might have one **control panel** for adjusting concourses, one for main clusters, and another one for office areas. A concourse control panel might include the bus fader





from the mixer that feeds the concourse, the appropriate controls from the delay lines, equalizers and compressors, and the output meters—just choose the concourse control panel and make the changes.

**MediaMatrix** gives you the flexibility to create custom devices to meet specific needs. No two applications are the same. Suppose you need output equalization and delay on the crossovers for your main clusters but not for the other speaker systems. You **can create** the precise crossover for each application, name the new device, and store it in the Device menu. If you have a “trick” signal-processing device or idea, you can create it and use it on **your projects**. Eventually, you could have an entire library of personalized devices, control panels, presets, and configurations.

How do you fit a large sound system onto a 15” screen? **Hierarchical zooming.** MediaMatrix **allows you to** take an entire system such as “Main Clusters” and **condense** it to a small block on the screen with input and output nodes. You can then interconnect this block to other blocks containing other **subsystems**. The screen would show these blocks with wires interconnecting them. Double-click on any block, and its contents will appear on the screen. MediaMatrix uses this hierarchical method to “zoom” in and out. You can put blocks inside of blocks to create as many levels as needed. For example, there may be 12 blocks within the Main Clusters block, each labeled with the associated cluster number. Select one of these blocks, and the schematic for that cluster will appear on the screen.

# Why you should buy an FBX to do nothing to your sound.

By Doran Oster, President, Sabine Musical Mfg. Co.

Until the invention of the Sabine FBX Feedback Exterminator, engineers had no practical alternative for controlling feedback other than the 1/3-octave graphic EQ — a 35-year-old technology.

**“What’s wrong with EQs?”** Nothing — if you need to “shape your sound”. On the other hand, if you’re using an EQ to eliminate feedback, you may as well think of it as a “**sound sponge**”. In fact, EQs “soak up” a lot more sound than you might realize. Practical experience proves that EQ filters are much too wide for chasing feedback and end up muting the program.

**Here’s why: 1/3-octave EQ filters are actually one full octave wide!** Think about this: If the filters were only 1/3 octave wide, there would be no filtering

**Wouldn’t it be great** if your EQ filters could be ten times narrower? Then they could eliminate feedback without a perceptible change in the sound. What if you could get more gain before feedback? Well, the Sabine FBX does all that — and the FBX’s fully digital adaptive filters do it automatically!

**N**ow, you may say, **“If the room is set up properly with an EQ, I don’t have a problem.”** But maybe you do, and don’t realize it. Try this test, and prove it to yourself. After you finish your next installation, patch in a CD player and play your favorite CD. Now punch the EQ in and out of line. **We think you’ll agree it sounds like there’s a blanket on the speakers when the EQ is in.** That’s your EQ soaking up the sound.

ulates the frequency of the feedback and, in less than a second, places a very narrow digital filter



The Sabine FBX-900

(ten times narrower than a 1/3 octave EQ and up to 20 dB deep) directly on the resonating frequency. **The FBX automatically eliminates feedback without muting the sound. And you get more gain before feedback.** Think of the FBX as an EQ with 20,000 sliders run by 1,000 top-notch engineers. It’s just that simple.

**Who’s using the FBX?** Thousands are now installed throughout the world. Here are just a few of our customers: The Ricky Van Shelton Band. Dr. John. Vienna State Opera House. The Vatican. NASA. Full Sail Center for Recording Arts. CBS Studios. Merle Haggard. McCormick Place Convention Center in Chicago. Hyatt Regency, San Francisco. Jefferson County, Colorado, Court System. Boeing. Ohio University. **And the list goes on and on.**

Make us prove it — call Sabine to arrange a demonstration of the FBX Feedback Exterminator.

**FBX**  
FEEDBACK EXTERMINATOR

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**Moving even a single EQ slider ruins your frequency response!**

between the fixed sliders. I’m not just talking about cheap EQs — even the best EQs share this problem. **In fact, if you pull your 1000 Hz slider down 12 dB, it actually removes 46% of the power going to your speakers between 500 and 2,000 Hz!** Pull two or three sliders, and you wipe out the overtones of your voice, causing you to sound nasal and your monitors to sound muddy.

**Are all sound professionals crazy** to use EQs to control feedback? No — up until Sabine invented the FBX, there was no practical alternative. Parametric EQs have narrow filters but are too slow and cumbersome for live sound.

They cause phase shifting, and drift with temperature. Pitch and phase shifters ruin the sound and can’t be seriously considered.

**W**hich brings us back to the new Sabine FBX Feedback Exterminator, the only option that really works. Put it just before the power amp in the audio chain, and it automatically senses feedback. Then it automatically cal-



**“Think of the FBX as an EQ with 20,000 sliders run by 1000 top-notch engineers. It’s just that simple.”**

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are usually only 18 to 28 inches from their monitors), it is still pretty tiny for any kind of detailed image.

To balance these frame size vs. datastream considerations, many CD-ROM developers seem to have settled on 240x180 as the preferred QuickTime movie size. The lack of ScreenEdit support for this size is a software issue, unrelated to the capabilities of the MovieMovie hardware. According to Sigma Designs, 240x180 is not a standard size as defined by Apple in the QuickTime

specification, and the company has no plans to add this option to ScreenEdit. There are, however, other MovieMovie-compatible video capture applications available that allow this frame size.

Another major variable users need to decide on before recording is the frame rate. Movies destined for playback from CD-ROM need not be recorded at a full 30 fps, because the transfer rate of a single-speed CD-ROM drive only supports playback of a 240x180 movie at a mere 10 to 15 fps. The preferences box in the ScreenEdit file menu allows the user

to specify the capture rate. In general, 15 fps is recommended for video destined for CD-ROM.

ScreenEdit's video control window uses horizontal sliders for adjusting the brightness, hue, saturation and sharpness of the incoming signal. Audio controls are limited to gain (record level) and volume (monitor level). Screen Edit assumes that the audio source will be input via the MovieMovie card audio jack (line-level RCA), which is fixed at the Mac-standard mono 22kHz sample rate with 8-bit resolution. There is no provision for access to the audio input jack built-in to some Macintosh models or a third-party audio board such as Digidesign's popular Audiomedia II.

It is usually best to use as little compression as possible on a movie file before editing the video. If insufficient hard drive space is available to work with uncompressed, captured files, the Compression window (from the file menu) offers the standard QuickTime algorithms. The Apple Video option is recommended for use on raw video before editing. (QuickTime's other video compressor, CinePak, is best used only for preparing movies for distribution and playback after they have been fully edited.)

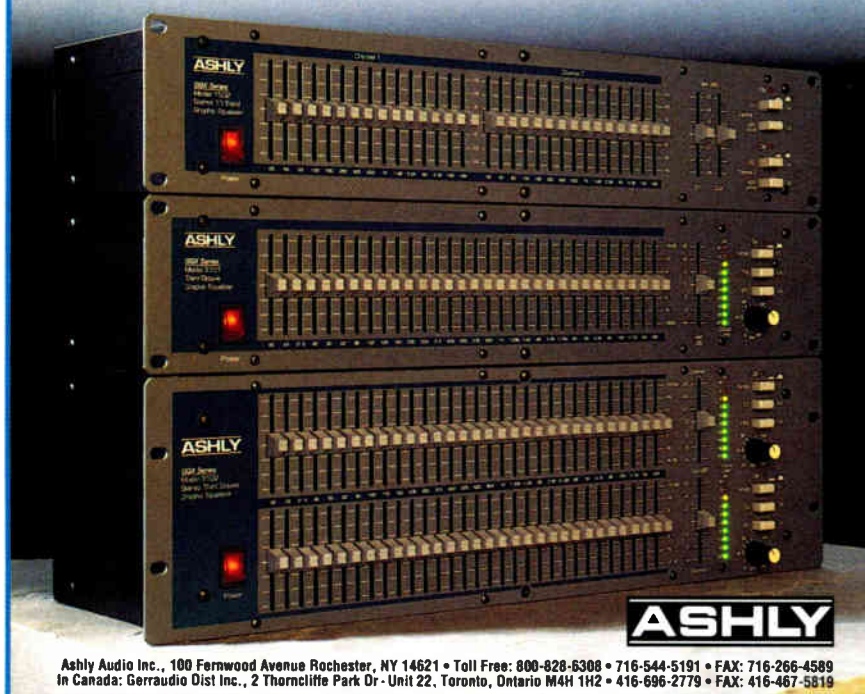
The compression does not actually take place unless Compress Recorded Movie is selected in the Preferences window. ScreenEdit will begin compression automatically as soon as capturing is complete. The movie will not be available for viewing until the compression is completed, which can make for a lot of waiting around. There is no provision for post-compressing the video at some later time.

When all the settings are specified, ScreenEdit is ready to capture. A click on the Preview button in the Preview window lets you see and hear your input sources. Dropping in and out of Record is as easy as clicking on the Record and Stop buttons. An indicator displays the duration recorded and the current frame rate, which varies depending on the preferences specified and the CPU and hard drive speeds of the system. For best results in capture and playback, the Macintosh should be equipped to support 16-bit color.

To capture a still image while in Preview mode, simply click Stop and choose Save from the file menu. The displayed frame will be saved as a PICT image, full (640x480) or partial screen, depending on the still capture

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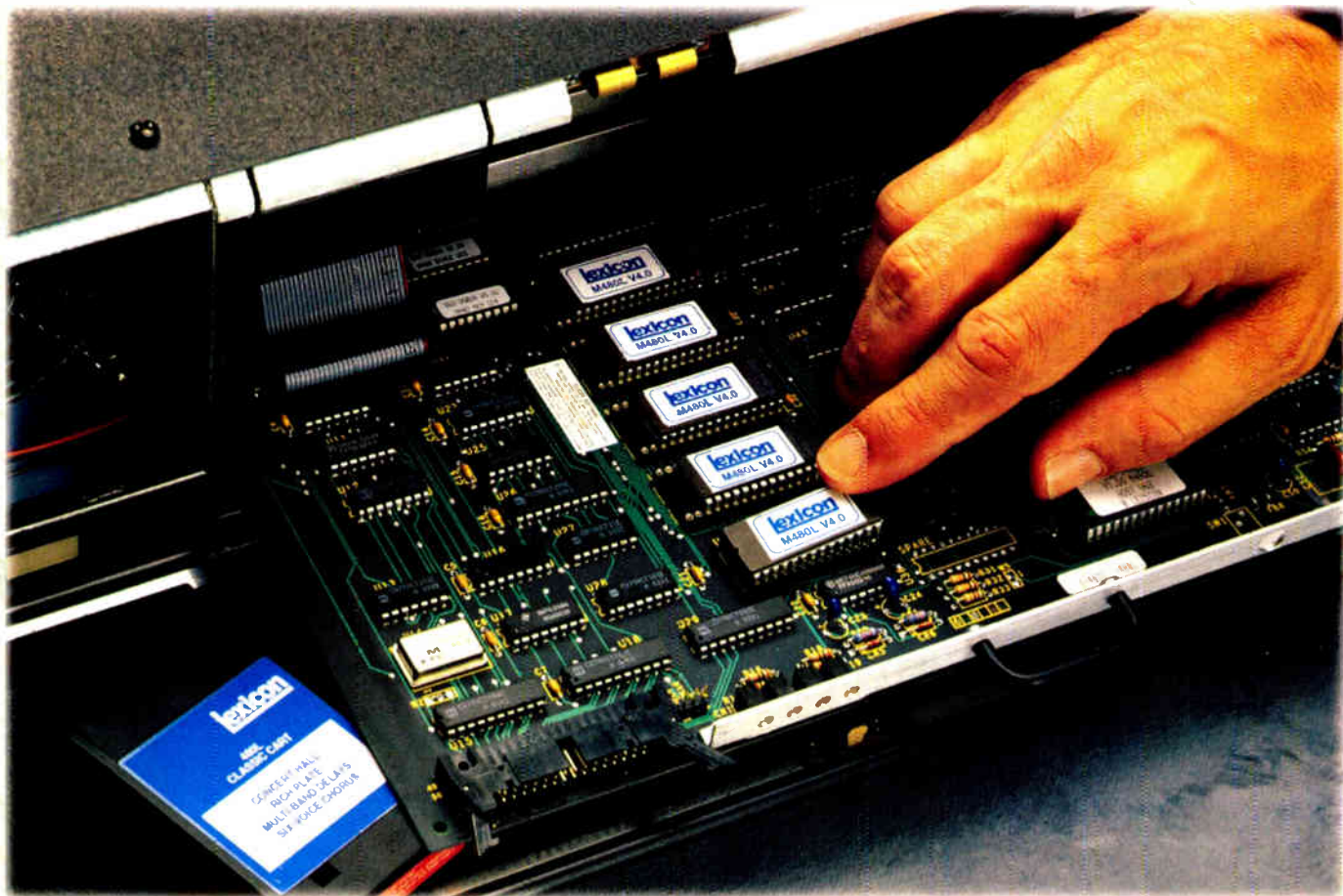
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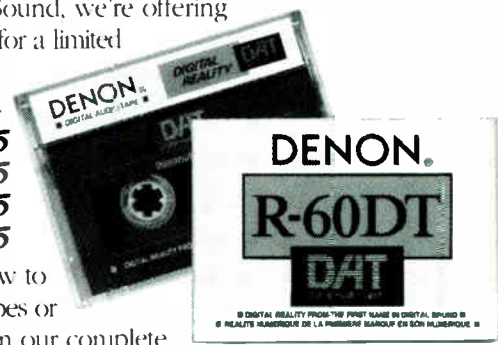
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ing to some, but that is what's happened. And although a lack of grounding in basic audio principles in some cases produces technical difficulties on a regular basis, the flip side is that it's opened up pro audio to an entirely new class of practitioner. That's not inherently good or bad; it just is.

#### ARE WE NOT ENGINEERS?

"I don't consider myself to be an engineer, but the industry has forced me to become one," says Michael Whalen, a contemporary classical composer whose scores have appeared on an impressive list of network and theatrical films, PBS documentaries and commercials. Operating from his Manhattan project studio, Whalen, who composes and produces on a Synclavier and 16-track PostPro through a Euphonix CS-2 console and relatively minimal outboard equipment, says he knows the difference between his level of skill and that of professional engineers. "I've worked with great ones on orchestral dates. I know what makes them great, and I know I'm not on a par with them," he says.

"But by the same token, I'm getting a lot of my work on the air. So, am I an engineer? I don't know. It depends upon your definition of the term. As far as I'm concerned, engineering is one of ten hats I wear along with

**From the moment musicians programmed their first drum machine or sequencer, they became engineers in the modern sense of the term.**

composer, arranger and producer."

The engineering aspect of Whalen's haberdashery is constantly reinforced by the industry at large, and the pressures, in turn, are brought on by economic forces. "These days, the clients expect that their entire job will be done by just one person," he explains. "In many cases, I'd love to be able to hand over a project to someone else and say, 'Here, what do you

think the drums need?' But with the kinds of budgets you see out there for commercials and scoring these days, it's not cost-effective to pay someone \$75 an hour. I wish I could, but if I did, I couldn't stay in business."

Whalen, who got his first 8-track deck at age 17 and apprenticed as a teenager in recording studios, feels, at the age of 27, that his generation might be the last link to any sort of traditional audio education. "Someone who is 17 now may never get the chance to work in a regular studio environment before getting his own recording situation," he says. "Of course, they may not need to anymore, either. In a way, you could almost say that a craft is dying."

That may be overstating it, but Whalen's point is well-taken. And the multiple hats that project technology has forced upon people now forces different coping strategies. Last year, I wrote a column about the ways that constant switching back and forth between task and creative cranial hemispheres affects the human brain. Personally, after a few intense hours, I get headaches and see things with concentric rings around them. These

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are documentable side effects of trying to work as engineer and musician.

"Where it manifests itself to me is in wondering where do my instincts and my realization ideas match up," Whalen says. "I can sit at the piano and compose and hear it that way, but another part of me is also listening with technical aspects in mind, second-guessing on the engineering side, to the point where the technical has become completely incorporated into the creative. Or vice versa. I'm not sure. All I know is that clients are expecting me to be able to answer their technical questions as well as their artistic ones now. The economics of the industry have come to mean that everyone expects you to be all things now."

#### LOWEST COMMON DENOMINATORS

Another side effect has been that project studios, as good and as proficient as they might be, have to learn to mix their final product for a much wider range of reproduction systems. Whalen is aware of the jokes about Auratone speakers, but like many of

his colleagues, he has come to rely upon them to provide a more accurate picture of what the big, bad world is really like once a project leaves home.

"In television, you can forget about everything below 200 Hertz," he says. "I've had things that clients tell me are going to be played in movie theaters in China. I find I'm mixing for the lowest common denominator more often now."

Is that a problem that can be laid on the doorstep of project studios? No. The economic forces that brought us good, inexpensive equipment have had the same effect on consumer playback systems, but for every THX-spec theater, there's a Jeep with 12-inch speakers desperately in need of reconing. As demand increases for American culture, the audio parts of the culture will be played back over systems that cost less than a mic stand.

#### MORE DEMOCRACY

In a recent talk, Byron Stingley of the hip hop group Ten City, said almost all of that genre is being recorded in project-type studio environments. Stingley acquired his engineering chops within that type of environ-

ment, and according to Steven Barkan, a New York-based mixing engineer who has mixed for Ten City, Burke's engineering chops are sufficient for the task, if not for a TEC Award. "He definitely doesn't have all the knowledge of the fundamentals that an engineer should have," Barkan says. "I don't think he'd make it as a freelance engineer, but he knows what he wants, and he knows how to get it in the studio."

Engineering has always had its metaphysical side, and that aspect will get more emphasis as more and more people are let into the brotherhood. The manufacturers are aware of it; at least one cassette-based multitrack manufacturer builds in more headroom than the PPM meters would indicate. Awareness and acceptance are two different things. But the ultimate arbiter of what constitutes good engineering will increasingly be the marketplace. With luck, they'll leave the Grammys out of it. ■

*Dan Daley is Mix's East Coast editor. However, at times he feels no longer bound by mere geography and gets a bit metaphysical himself.*

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by Mr. Bonzai

# TAJ MAHAL

## TRUE BLUES



Taj Mahal is cooking with the hot spice of true R&B on his latest release, *Dancing the Blues*. It's a mighty good place to catch up with an old friend—and a good intro for those who might be curious about this legendary African-American musician named after an Indian palace of love. If you have a craving for some real soul food, and if you can take the heat...

Taj explores a bountiful legacy in his tributes to T-Bone Walker, Howlin' Wolf, Fats Domino and Percy Mayfield. He shines as a true original on his own songs, brings new warmth to Otis Redding's "That's How Strong My Love Is," and he loves it up with the great Etta James on "Mockingbird." Backed by keyboardist Bill Payne and drummer Richie Hayward of Little Feat, the Texicali Horns and a rich mix of pros, this is a piece of work you can enjoy alone, or with that special party crew of yours.

The inspired Taj Mahal, an enduring figure of the music scene who came of age in the '50s, was born Henry St. Claire Fredericks and raised in Springfield, Mass. His Jamaican father was a philosopher and musician, and his mother sang gospel and earned a master's degree in education while rearing five kids. Taj, a self-described "oddball" child, went on to earn his college degree before grabbing a guitar and beginning a musical odyssey that is still going strong after more than a quarter-century.

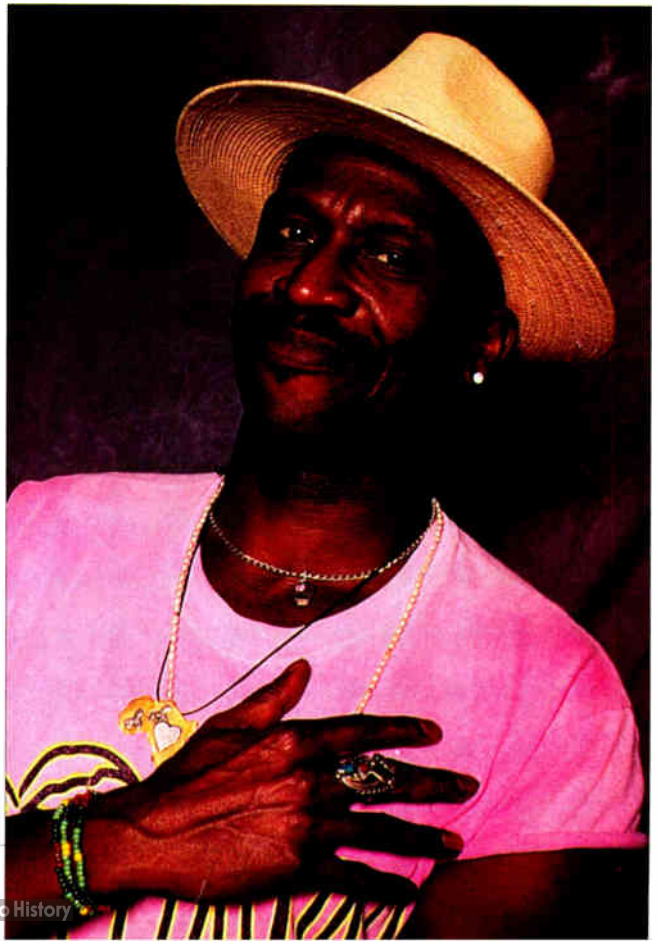
The music is the place to learn the truth of Taj—the power, the spirit and the worldly embrace of the medicine man—but just for the fun of it, let's talk some turkey with the Swami of Soul, Mr. Mahal.

Bonzai: Are you pleased with your new album?

Taj Mahal: Yes, I think that I've hit a vein of stuff that's been making sense to me—sharing what I feel—it's music that needs to be out there.

Bonzai: You really work out with Etta James on "Mockingbird." Could you tell me about that collaboration?

Taj Mahal: Well, I've always loved her and first heard her play at Montreaux around 1980. I was hoping that our paths would cross one day, and it happened on the riverboat S.S. President on the Mississippi River near New Orleans. The show was B.B. King, Dr. John, John Hammond, Etta James and myself. After the show, she invited me to sit down and talk, and I explained how moved I was by her as a musical force. She is one of the strongest performers, along with Mahalia Jackson, Shirley Caesar, Leontyne Price, Marion Anderson and the great divas. Etta is in the same tradition, just a little closer to the ground and a lot more sensuous. I loved the music, her album covers





for Chess—I was crazy about everything she did. She always meant romance for me, and finally I got to meet her and then to work with her on this album.

**Bonzai:** Was she familiar with your music?

**Taj Mahal:** That was shocking to me. She said she had all my stuff! I was thrilled.

**Bonzai:** Do you consider yourself a success? You've been at this now for 25 years, haven't you?

**Taj Mahal:** Longer than that. I was playing music in the '50s. A success? I do 200 shows a year, and that's to make a living, but I've always worked. I was a farmer for ten years before I was a musician. I was a foreman by the time I was 19 years old, ran 150 head of Holsteins and milked 70 cows, twice a day by hand.

**Bonzai:** Was music a big part of your upbringing?

**Taj Mahal:** Music is a deep part of my culture. You have your family, your work and your ceremony—your music.

**Bonzai:** How did you make the change from being a farmer to being a musician?

**Taj Mahal:** There isn't very much difference. [Laughs] Cultivating the music is what I am doing now. Success is being able to communicate at the level I am working on. It would be nice to translate that into dollars and cents, but that's not always possible. People put on my record, and they're not even sure I'm still alive. Can you imagine the myth that is going on? First of all, I was well-known when I was 27, but everybody thought I was 60.

**Bonzai:** But you've got a few years left and quite a lot of work left to do, don't you?

**Taj Mahal:** I don't know. I certainly could stay at it, but there is a lot of other stuff to do in this life. I've dedicated more than 30 years of my life to playing music, with a mixed bag of success. This business makes you think that if you don't sell a million records, you ain't makin' it.

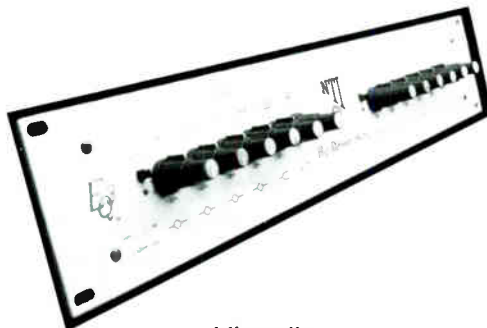
**Bonzai:** You describe yourself as an oddball child. Could you be specific?

**Taj Mahal:** I didn't have the same kind of "can't do" that everybody else had. And I didn't understand why these other guys had "can't do" going for them. It was clear that nobody was going to make it for you. You have to go for it on your own.



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and a lot of people don't know how to handle that.

Bonzai: Could this have something to do with the fact that your father died when you were 11?

Taj Mahal: Most definitely. Most kids get led through things, and even a stepfather can't lead you like your father. You should have an uncle, a grandfather or some serious type of mentor who can give you what you need. In other tribes around the world, many of them won't allow the father to raise the kids. The uncles raise them, because the father doesn't have the objectivity needed. The fabric of society is so thick and enmeshed, and culture has tried so hard to make this "nuclear" family, which never really existed anyway.

I grew up in a multi-ethnic neighborhood, and news traveled fast. Everybody knew if you were doing something wrong. When my father was removed, that information center no longer existed, and I was the eldest child with two brothers and two sisters. You grow up early. But I was looking forward to putting all of it behind me, because I could see that by staying there, I would get lost.

I go home these days to visit, and the same guys are sitting in the bar talking about some 1956 football game where they caught that pass. I say, "What?...and y'all gettin' on my case because I'm playing the blues?"

Bonzai: Could you give me some impressions of the people you've worked with. How about T-Bone Walker?

Taj Mahal: When I was growing up, T-Bone was one of those interesting names, like "Ironjaw," or "Hard Rock." Howlin' Wolf used to have a piano player named "Destruction." [Laughs] Just the name would conjure up enough for me to want to go and see them. You know, "Why would they call him 'Destruction'?"

With T-Bone, everybody knew him for his "Stormy Monday." As a guitar player in those days, you could be like Charlie Christian and run them lines, or you could be like T-Bone Walker. When T-Bone came out playing the style that he did, *everybody* went back to the woodshed. And all that sound of guitar snakin' by your ear now is a result of T-Bone.

This music around 1950 was really swinging, and Latin music was popular. The '30s and '40s were big Latin times. Just about everybody bent

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their music over to the Latin sound, including all kinds of blues stuff. A lot of the early rock 'n' roll was built on that Latin beat, like Jackie Wilson's "Lonely Teardrops." I always liked that blend. I've got a Caribbean feeling, that little space for the beat to slide a bit. People from South and Central America, the Caribbean—they like that cross swing, so you can move. It's a country walking tradition, and you can feel it in your body. But when you get into the city, you draw in your movements and shut them down. If you leave something hanging out, somebody will chop it off in a minute.

But T-Bone. I met him, I played with him at the Whisky A Go-Go. He burned up the place.

Bonzai: Did you ever work with Howlin' Wolf?

Taj Mahal: I never worked with him, but I admired him. Incredible guy, big influence. The sheer power that he could put out was unbelievable. What did he hear to make him sound like that? There was nothing you could do with him. You just got out of that man's way. A lot of those guys were raised on the plantation, but

Wolf's family, the Burnetts, had their own farm. We think of him when he was an older man, but when he was young, he was like a matinee idol.

Bonzai: Why is it that you have stayed with acoustic guitar?

Taj Mahal: Hey, you can unplug me, but you can't shut me off. Anyway,

**M**usic is expanding  
in my soul, and for  
someone listening,  
it is expanding  
in their soul, too.

with most of these guys, it's all effects. The real players have all they need in their hands. Jesse Davis used to play and record with me, and he had no effects on that guitar—except for a couple of songs. He was one of the few players who could really get a sound out of the instrument. He could take a Telecaster and make it

sound like pedal steel.

Bonzai: Did someone teach you guitar?  
Taj Mahal: The first guy I sat up alongside for guitar was about three years older than me. His name was Leonard, but we called him Linwood. He still lives up in my hometown of Springfield, but his family came from down South in the Carolinas. Linwood taught me to play a specific style of guitar—basic kind of Jimmy Reed, a little bit of Muddy Waters. He also played that ragtime shuffle stuff, but I couldn't figure out what he was doing there. I was about 13 and could mess around with chords on the piano, play the harmonica, and I was a good singer and a good dancer. I thought Linwood was the best thing since sliced bread, because he was so real.

Another neighbor was Ernest Nichols, and his brother was Billy Nichols, a producer in New York City who wrote "Do It 'Til You're Satisfied." Those boys were originally from Clarkdale, Mississippi, and they would be playing at the other end of my street—crankin' it up till the police came and shut 'em down. They had guitars that sounded like har-

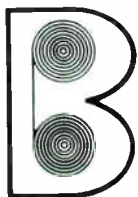
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monicas, playing the old blues. I was excited—this was real music.

**Bonzai:** You come from a very well-educated and cultured family and have a degree yourself, but haven't you cultivated a simple, homespun country image?

**Taj Mahal:** No, not at all. I just grew up in a small town going through urbanization that would cause it to decay. I hated the town because it was so provincial when I was growing up. It was hard for my parents—getting housing, dealing with it. It was a dumb little town, so set in their ways that they didn't see what was coming. I saw it.

**Bonzai:** How did you get out of town?

**Taj Mahal:** My father died, I got an education, and I've been on my own since I was about 14.

**Bonzai:** When did you change your name?

**Taj Mahal:** 1959, 1960. But I started thinking about it much earlier.

**Bonzai:** Why?

**Taj Mahal:** Because I knew that what I was going to do would be different, and I didn't want to do what everyone else did. I wasn't going to conk my hair and wear sequined suits and ignore my culture. Nor was I going to make my culture better by putting down someone else's.

Changing my name had to do with my disappointment with the world at large. I didn't have much faith in European-American culture. Our country was being destroyed; there was pollution. I used to lie in bed at night as a kid and wonder what was in the future for me. That's why I understand the kids today—I was worried about this in the '50s, and now there *is* less. Fortunately, the '60s rescued me with some real good energy. I started seeing that people could be human. I had grown up seeing that my ancestors were thought of as a laughing-stock, made slaves, treated as beasts of burden. All the psychological and spiritual insecurity led me to a confused state of mind.

But my father was very positive, and we lived in a neighborhood of many cultures. If your kids kept their noses clean and the old man wasn't drunk or beating his wife, you were good people, regardless of your color. My father spoke seven languages, and he learned them on his own. I speak five languages myself. If you learn to read, count, spell and

speak clearly, the world is your oyster. These are the kinds of things I was programmed with as a kid.

Music is expanding in my soul, and for someone listening, it is expanding in their soul, too. People tell me that if I stopped playing music, it would be like a drought.

Back to the name: Everybody was coming up with names that seemed very limited in terms of scope. My parents talked a lot about Ghandi, Nehru, Kenyatta, Paul Robeson. That energy was passing through my house. I never was at a loss for heroes. Other kids didn't have these kind of lights. It was what I made out of it myself. If I liked being a farmer in Indiana, fine, I don't need anymore than that. I unplugged, little by little, from the city.

A lot of people thought that the mythical blues were built and played only in the key of E, and sometimes in A. It was not true.

**Bonzai:** When you came out West in 1965, did that abruptly change your life?

**Taj Mahal:** Hmmm... Yes, it depressed the hell out of me. I guess I took friends for granted on the East Coast. But it's not the same out here. It's very distant—I could not feel people's soul out here. But toward '68, I had developed a group of friends. I said, "Okay, I can't keep comparing these people to the East Coast." I realized it was my problem, too.

**Bonzai:** Could you tell me a little about the Rising Sons, the group you had with Ry Cooder?

**Taj Mahal:** That was the reason I came out to California. Our record wasn't released at the time, but the CD recently came out, and you might give it a listen. It's clear that they just passed us by, just walked right by us. We were good—compared with what else was around, you know? I listen to it now, and the emotion is there—we really worked it up.

**Bonzai:** What would you tell a kid who came up to you and wanted to follow in your footsteps? What could help avoid some pitfalls?

**Taj Mahal:** If you have any way to clearly get back to an ethnic background that you have, go back and take the best from it, bring it forward and meld it with good music from the time in which you exist. ■

*Mr. Bonzai chose his nom de plume because Engelbert Humperdinck was already taken.*

settings in the Preferences window.

All in all, the MovieMovie/Screen-Edit combination provides an easy-to-use, admirably compact (216 KB) and thoroughly workable capture setup for QuickTime video. Given the low price of the package, it is no surprise that the cut-and-paste style-editing capabilities of the software are trivial compared to a full-blown editing application like Premiere. But aside from the omission of a 240x180 capture option—a point one hopes Sigma Designs will address soon—MovieMovie offers an excellent value for the modestly budgeted QuickTime enthusiast.

**ADOBE PREMIERE 3.0**

Whereas ScreenEdit exemplifies a lean, bare-bones approach to software design, Premiere 3.0 is nothing if not full-featured. A thorough exploration of the program's video capabilities is beyond the scope of this article. Instead, we will focus on its audio features.

In brief, Premiere is a complete QuickTime movie-making system and

offline video editing system in one. Using digitized video and audio source files stored on hard disk, the user can edit together movies using sophisticated transitions, effects and filters, as well as titling and rotoscop-

CMX, Grass Valley and Sony BVE) that will run in a traditional edit suite for broadcast-quality video.

There are a few things that Premiere does not do. The program does not support the text track or other "base media handlers" that are available—if rarely used—under QuickTime. Nor does it allow the creation of a single movie with multiple soundtracks—different languages, for instance—that can be accessed on playback.

Perhaps the most important thing to realize about Premiere in an audio context is that it does not support mixing in the full sense as it is known in the audio industry. Up to 99 tracks may be combined at user-defined levels into a composite mono or stereo audio track (more on this later). But the user doesn't hear the mix while setting the levels of the individual audio elements. Instead, a trial-and-error process is used in which the user goes back and forth between setting levels and previewing the composite track until the desired results are achieved.

This "mixing" process is far from intuitive and can be very tedious if

—CONTINUED ON PAGE 195

**As QuickTime's installed base and functionality have grown, the tools designed to take advantage of its capabilities have developed rapidly, as well.**

ing. The software provides extensive control over video and audio capture and output. It may be used to create finished QuickTime movies for playing back on computer or outputting to videotape. And it may be used as an offline editor to create an edit decision list (supported formats include



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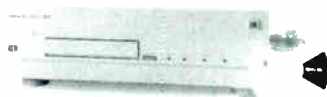
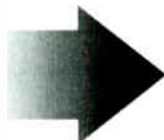


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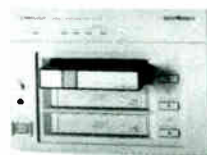
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by Dan Daley

# PROJECT ENGINEERING

## TWO SIDES MEET IN THE MIDDLE

The project studio has become as much a lightning rod for professional audio frustrations as it has become an entirely new market niche. For every ADAT, DA-88 or \$300 reverb sold, there's a wellspot of anger in the breast of anyone who's spent 20 years in the trenches of commercial facilities. It's an ongoing tension that's been much-reported but little-analyzed over the years. The complaints have been numerous from both directions, with commercial studios bemoaning the lack of professionalism and technical training at project studios, and project studios regarding traditional recording environments as high-tech dinosaurs.

What's happened, however, is that the economics of the market, not the technical specifications, have changed, and the change is not a function of what a reverb or a tape machine costs as much as it's a function of what consumers are willing to pay for what passes through the reverb.

### CLOSER TO THE ART FORM

Besides the decimation of the song demo market for commercial facilities, the project studio's major impact has been on the advertising and scoring aspects of the industry. Engineering has moved away from craft and closer to an art form. That's not to say that engineering has not always had its artistic component—it has and still does. The professional recording engineer remains the Fifth Beatle.

But this new generation of engineers—a moniker not all of them are willing to accept—have had to learn the craft as a component of their overall audio and musical upbringing. In a very real sense, from the moment musicians programmed their first drum machine or sequencer, they became engineers in the modern sense of the term. It may be frightening or dismay-



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# WATCHING THE DETECTIVES

## *Tracking Down The Vintage Stuff*

**I**t was one of those hot, muggy afternoons, the kind when, no matter where you turned, the air was a muslin sheet that hung on you like a cheap, damp suit. I was sitting in the office watching a cockroach race into the corner and preparing to reach down into the lower left-hand drawer for a hit of some of the high-octane cough medicine I keep around to ward off the weather and terminal malaise. Then she walked in.

My slinky assistant, Chiquita, came running behind her; her eyes had that look that told me, "I tried to stop her, and maybe if you actually paid me with checks that didn't double as basketballs, I might have tried a little harder."

Chiquita closed the door with a slam. It rattled the chipped, frosted-glass window whose fading letters read, "Mic Line, Vintage Detective." My visitor was an eye-ful—about as nice as a preamp gets,

and her appendages rivaled Chiquita's own. I thought for just a second about offering her a job; Chiquita was getting a little too assertive about the check thing anyway. But then my visitor sat herself down and crossed those aforesaid appendages, getting perilously close to revealing what I knew had to be a very attractive cannon receptacle. I lost my concentration as I felt pin three getting hot. Who was she? Was she here to check out my reputation as the Transducer Seducer? Then I noticed the tattoo—

"Mic"—stenciled lovingly across her sensuous upper ridge. She caught me eyeing it and said, "I need you to find him."

"Find who?" I asked, playing along. "There's lots of Mics out there. I'm one. Maybe you're looking for me and don't know it."

"Don't flatter yourself," she spat. "Neumann. Mic Neumann. Maybe you've heard of him."

BY  
DAN DALEY

\*\*\*

Illustration  
by  
Jim Pearson







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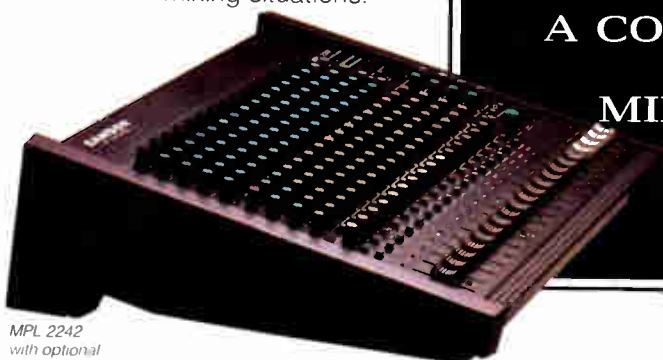
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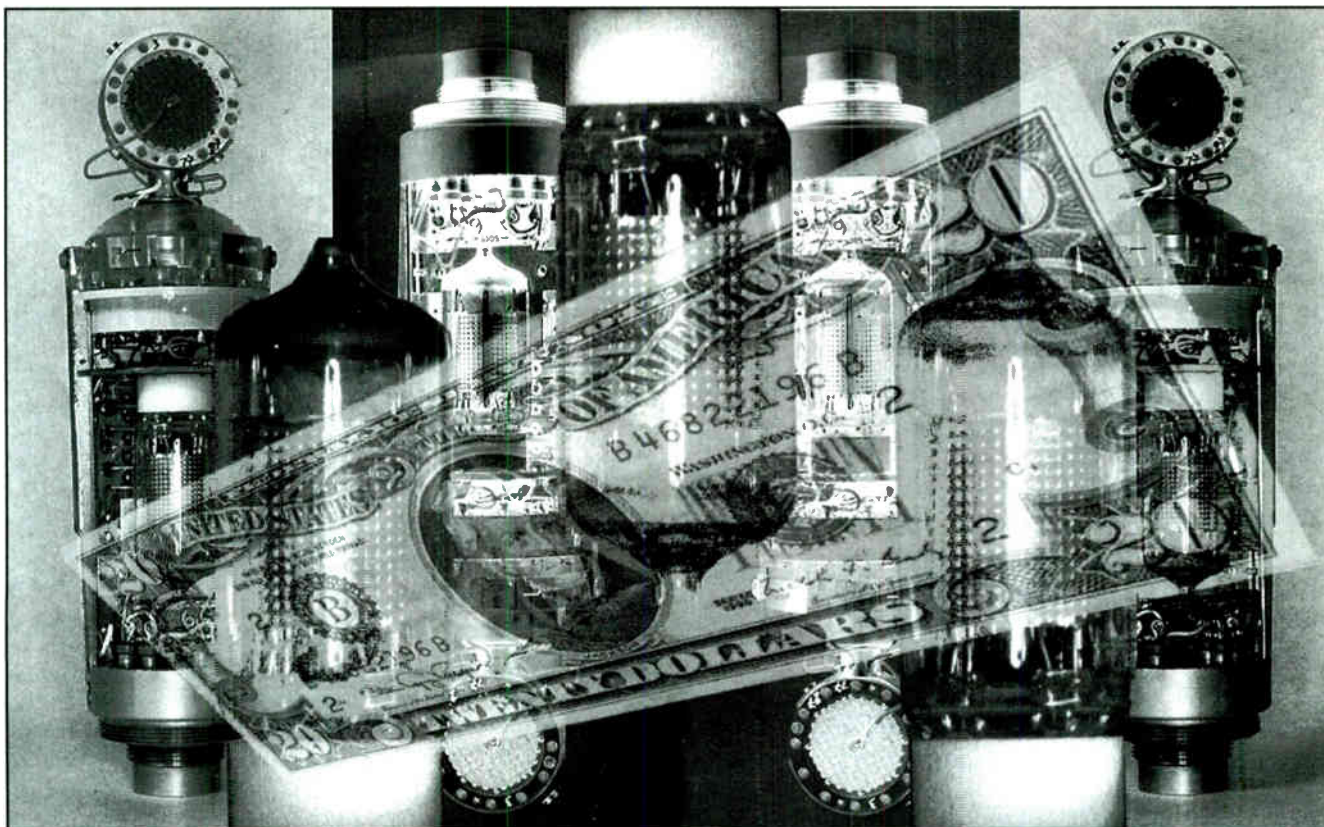


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World Radio History



## Tube Tales: Amassing A Vintage Mic Collection

by Allen Sides

I am a die-hard fan of great tube mics and have searched them out in every imaginable location. Needless to say, I have made some rather amazing buys over the years, and when I was asked to contribute to an article *Mix* was doing about the tracking down of these rare beasts, I said I'd be glad to relay some of my hunting experience.

My first big microphone deal happened around 1968 when a musician friend of mine called me up and said he had just purchased some Shure mics at a great price from a sound company that was going out of business in downtown Los Angeles. He also mentioned that they had a bunch of old mics with separate power boxes for \$20 a piece. When I asked him what kind they were, he said they had funny names like Telefunken and Norelco. Needless to say, I got the address and grabbed every dollar I could find

and took off for downtown L.A.

When I got there, I met an older fellow who escorted me to a room jammed full of equipment that had been the recording and P.A. setup for the defunct right-wing, Americana young people's singing group, "Up With People." Over in one dark corner of this room were dozens of microphones; among them were 18 AKG C60s and five Telefunken CM61s. I proceeded to make a deal and bought all the C60s for \$20 a piece and the CM61s for \$10 a piece, and the guy even threw in spare tubes, capsules and extra cables at that price. I kept eight of the C60s and two of the CM61s and sold off the rest for a substantial profit. (These mics are still in the Ocean Way Studios tube mic collection, which numbers around 500 today.)

Shortly after that, two more amazing mic deals fell into my lap. The first was the purchase of eight CINE church mics (modified U47s) and a Telefunken M-201 from Todd A-O in trade for some SAE Graphic EQs. These were the actual mics Todd A-O had used to score *Around the World in Eighty*

*Days* and *Oklahoma*. These microphones sounded so amazing that I had to readjust my concept of what "great" was.

The next purchase involved a small studio in Orange County. The owner and I had been friends for years, and I had sold him some of those first C60s. He had decided to close up shop and offered to sell me three of the cleanest Tele ELAM 251s I had ever seen. When I asked how much he had in mind, he said they wouldn't be cheap. Since one was lacking a case, I could have that one for \$150, but the other two with cases would be \$175 each. I gulped and said that's pretty stiff, but if you throw in the four C60s I sold you before for \$85 each, you would have a deal. He agreed. I handed him the cash and smiled all the way home.

Obviously, the days of finding 251s for \$175 apiece are long gone, but I never stop looking. It's wonderful that people finally realized how amazing these mics are, after years of dumping them in favor of convenient and reliable, but sonically inferior, phantom-powered transistor mics. ■

"There's a million Neumanns in this business. Maybe you should try the phone book. The Berlin phone-book."

Based upon the force with which her toggle switch hit me, I'd say she didn't share my sense of humor. By the time I came to, she was already rummaging around in my file cabinet. "Hold on," I said groggily. "I can see you mean business. Let's take a look through the files together and see how we can find your Mic."

**CASE STUDY #456:  
FROM RUSSIA WITH LOVE**

Perry Margouleff cut his investigative

teeth searching out vintage guitars. "I simply wound up finding vintage pro audio equipment using the same techniques," he says. "Ask everyone. I pull into a gas station, I ask the attendant if he knows anyone with a guitar for sale. You go to the bathroom, you look behind the toilet tank. You never know." A walk-in closet at his Long Island Pie Studios holds plenty of evidence of his successes over the years: It's piled head-high with vintage Strats and Les Pauls. Of course, Pie itself is a working museum of vintage audio gear, from the old Neve 8078 on up.

"I was recording a band in the So-

**T**hat's the thing about looking for vintage gear outside the usual channels: Value is a relative thing, and the currency that works is always the currency of the moment.

viet Union," he recalls. "This was before the fall, so to speak, back in '91. But in the back of my mind, I was hunting equipment. That's the only way to find this stuff. Anyone can troll through the classifieds. One part of your brain always has to be on the lookout."

The Moscow studio was typically Soviet: boxy, with two feet of fiberglass insulation padding the walls. The Soviets have always believed that fiberglass not only makes a great sound deadener but that it also has robust health-giving powers. If you listen to Soviet rock, you can tell they've been huffing the stuff deeply. Anyway, Margouleff was sitting in the tiny control room when the keyboard player, who was also an engineer, motioned towards a microphone. "He had long, dark hair and looked a little like John Entwistle," said Margouleff, who himself looks a bit like Eric Clapton, circa 1969. "But then, everybody in Russia looks vintage," he says.

The language barriers fell as Margouleff nodded conspiratorially in agreement. The next day, the Russian engineer returned, this time bearing a carefully wrapped Neumann SM-2 stereo microphone. Using a musician as translator, Margouleff started talking money, but the Ruskie was having none of that. Instead, he pointed toward Margouleff's outboard rack, past the Lexicons and Pultecs until his eyes settled on the prize: an Alesis MIDIVerb. "I felt relieved," said Margouleff. "But what do you want from a guy who's into Deep Purple? He had read about the MIDIVerb somewhere in an American magazine, and this is what he thought the Neumann was worth the equivalent of."



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**CASE FILE #996: HILLBILLY HELL**

Bruce Marshall is one of those guys who'll tell you whatever you want for the price of a drink. Enough

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Vodka Nikolai's and grappa at a little bistro on West Broadway, and he'll sing you a Puccini aria. Toss in a brandy, and he'll wear the Viking getup, too. In the course of outfitting Time Machine in Vermont last year, he and studio owner Mike Cordell were preparing to drive from Nashville to Atlanta when Sean Londin tipped them to an eccentric collector in Chattanooga. Repeated phone calls went unreturned. They took one more shot at it from the car phone as they were cresting Look-out Mountain on the I-24 (which was more than any Union army managed to accomplish).

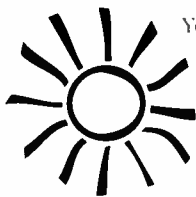
"He answered," recalls Marshall. "There was definitely something strange about him. He didn't want to give us his address. Instead, he told us to meet him in front of the Holiday Inn across from the Waffle House."

He was there, just as he said he would be. Marshall and Cordell followed his pickup truck down a series of winding streets until they came to a house they assumed was the place. But they had to go another hundred yards into a dense patch of forest, to the threshold of a run-down trailer, before the secret was revealed. "There, inside this truly funky trailer, was one of the most amazing collections I'd ever run across," says Marshall. "He was pulling microphones out of cardboard boxes from under the refrigerator. They were everywhere. He lives, eats and breathes microphones." Some were set up around an old Tama drum kit in the back of the trailer, running to a small multitrack deck set up atop a washer-dryer combination. "I figured he was getting some cool Leslie effects during the spin cycle," deadpans Marshall.

They thought about putting a hitch on the entire trailer but instead sat down to talk about a few choice microphones, which their host did for hours before he finally agreed to sell them a pair of RCA 10001s (re-built by Clarence Kane), a brand-new East German Neumann UM57, a Neumann KM56, two Sony C-37As and a Telefunken V-76M tube pre-amp. "He was calling the RCAs his 'pistols' and was afraid to part with them," says Marshall. "I was getting a little worried."

They cut the deal, and Marshall and Cordell drove to Atlanta, with Marshall returning the next day with a wad of cash and a case of nerves.

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"He started having second thoughts," recalls Marshall. "Whenever you're buying vintage equipment from someone who has a true affinity for it, it's never a straight business deal. There are emotions involved. He finally went through with it, but it shows you that you've got to be prepared to go more than the extra mile to get the real thing at a good price."

### CASE FILE #499: THE DOMESTIC DISPUTE

Jeff Kreines is a nice, soft-spoken guy, a filmmaker from somewhere down in Alabama. He found out that, just as video and audio are genetically interchangeable in the digital domain, so they are too in the demi-monde of vintage. "The U.S. government had sent over about ten Mitchell cameras to Russia during the Second World War as part of the Lend-Lease program," he says. "The Russians could never figure out how to work them, so they sat for the most part on shelves for fifty years, and now they're starting to find their way back. I got a hold of one and sold it to the company that made [director Tim Burton's] *The Nightmare Before Christmas*. The high-speed versions are great animation and scale-model cameras."

But Kreines regularly trucks in vintage audio gear, as well. He once drove 600 miles to barter for a microphone, and when he got to the house, had to stand in line behind another dealer who was screaming at the front door for whoever was inside to give him his money back. "I just turned around and went home," he says. Another incident was a little reminiscent of what happens when money and love try to mix, something my other files are full of.

"I was looking for a Fairchild 670, and a guy I know had found one at a government auction for \$45. (The military auctions have been pretty well cleaned out by now, though.) Thing was, his wife had no idea of how much the stuff he'd been collecting all these years was worth. So the only way he could sell me anything was to swap it. If he saw any cash from this stuff, she'd be on it—and him—in a minute. We had to keep all the deals quiet.

The only thing he'd take for it was a Neumann stereo SM69 tube microphone. And it turns out the only way I could get that was to swap someone else one of my AKG

C-12s for one."

That's the thing about looking for vintage gear outside the usual channels: Value is a relative thing, and the currency that works is always the currency of the moment.

### CASE STUDY #8076: WE FIND MIC

The British Airways 737 touched down on the runway at Cologne a little after 11 p.m. local time. Time Machine owner Mike Cordell was following a tip from a friend regarding a certain warehouse in a small hamlet between Cologne and Bonn. "You never know what you're going to find in this place," he says. "It's either empty or full to overflowing." He had his heart set on a Telefunken 76 mic-pre. The night before the transaction, he and a friend stopped in a local tavern, not realizing that Oktoberfest was in full swing. After an hour of trying to order a Margarita with no salt and getting nowhere, he settled for a beer and went native for the evening.

The next morning, they hit the warehouse. Instead of one Telefunken 76, he found 30 of them. "We hit the jackpot," he says. After doing some quick mental calculations, figuring in the trip cost and deducting the ones he would keep for his studio, he reckoned he could buy the batch for \$400 apiece.

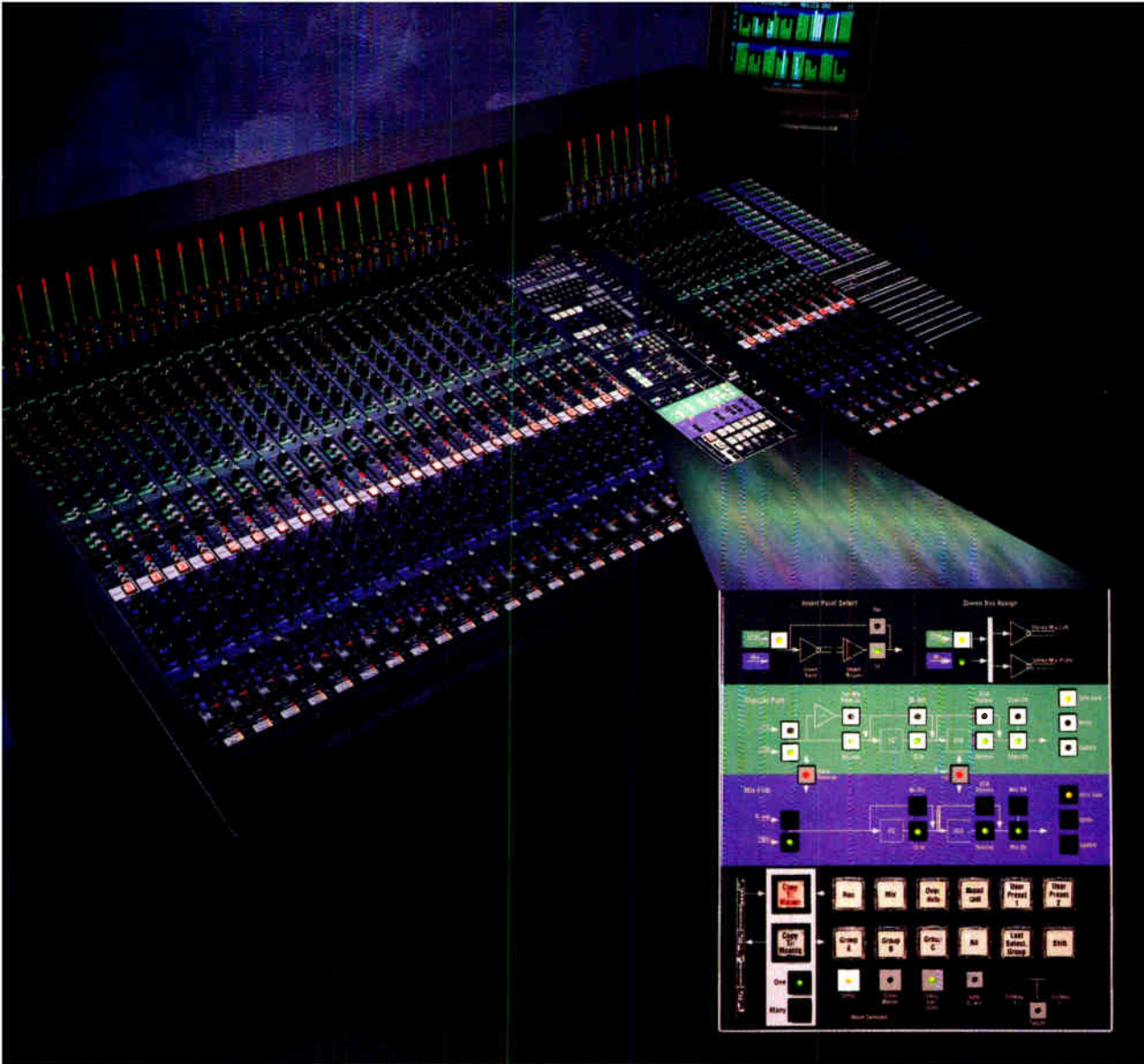
Then he saw it: gunmetal grey with a diamond patch on its side and the number 47 etched into its side—it was Mic Neumann. Mic was ready to leave, but only for a price: \$1,000 U.S. dollars. It was cheap, when you think about it.

Mic rode back to the States in a box along with 30 Telefunken mic-pre's. The customs people were suspicious. "Broken radio parts," Cordell told the uniformed guard at first. "Two hundred kilos worth?" the guard replied. "It's a hobby," Cordell countered.

### EPILOGUE

My client got her Mic. I didn't get my customary fee, but I did get a story, one that underscored the fact that if you're serious about vintage equipment, don't expect it to come looking for you. And speaking of vintage, there's a bottle of cough medicine, French, circa 1981, that keeps calling to me from my lower left-hand drawer...

Dan Daley is Mix's East Coast editor.



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## SOUND FOR FILM

**Turn It Down!****by Larry Blake**

The first movie to make its way down to New Orleans in Dolby Stereo was *The Last Waltz*. I remember not only how good a wide frequency response sounded but also being

trailers in mono, changing to stereo at the start of the feature. There is a separate level trim for Academy mono playback in many cinema processors, which allows a comfortable level to be set for trailers without affecting the main fader position (usually 7) for stereo playback.

Even with this precau-

the mono radar. If you think I'm advocating that theaters play trailers in mono, you're right. They are too loud, and we can't rely on projectionists at multiplex theaters (when there is one in the booth) to adjust the fader back and forth between trailers and features. This situation will change only

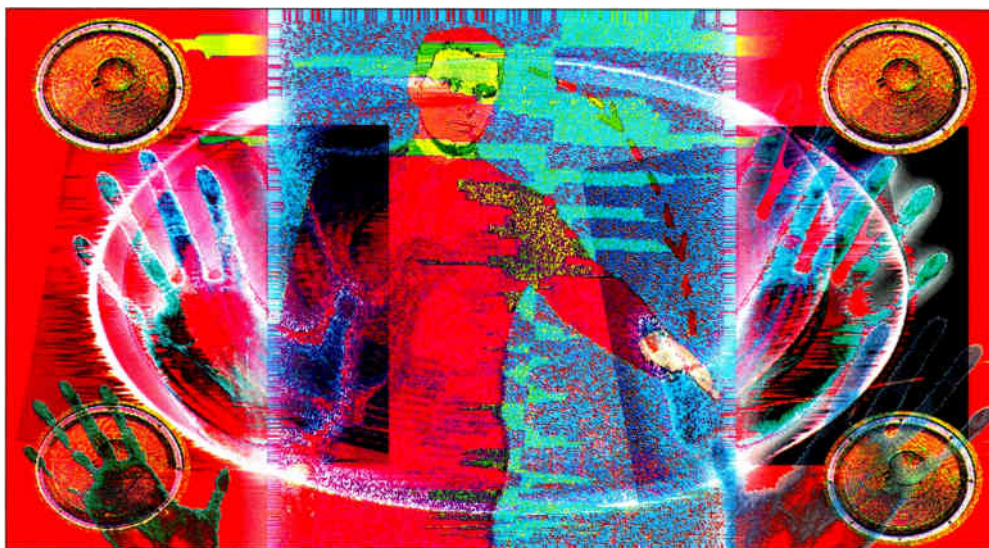


PHOTO ILLUSTRATION: TIM GLEASON

amused by the card printed at the head of the film: "This film should be played Loud!"

The filmmakers were clearly wary of the tendency of theaters to turn the fader down, and I'm sorry to say that the situation has only grown worse in the past 15 years of stereo mixing. What's happening here?

I think projectionists turn their faders down partly because of loud trailers, partly because too many films are TOO DAMN LOUD, and partly because that network of Little Old Ladies With Umbrellas have requested that they turn it down.

The trailer situation is already partly cured in many theaters by playing

tion, studios sometimes attach trailers to the head of features, and many times I have been completely blown out of my seat because a trailer flew in under

when the people responsible for trailers stop playing this "mine is louder than yours" game.

But the big problem, I

—CONTINUED ON PAGE 96

**Tell me, how many times in the past few years have you spent a quarter of the movie whispering to your companion "whadidhesay?"**



## Ry Cooder Helps Bring "Geronimo" to Life

by Blair Jackson

Although it was somewhat lost in the avalanche of films released just before Christmas '93 (including a made-for-TV spectacle dealing with the same subject), Walter Hill's *Geronimo: An American Legend* remains one of the finest westerns made in recent years—classic in its structure and visual approach, yet unmistakably contemporary in terms of its underlying themes and attitude. To tag it, as some of its detractors have, as merely a "politically correct," pro-Native American telling of the saga of the last days of the U.S. Government's efforts to subjugate the Apache people and one of its fiercest and most independent warriors, does the film a grave injustice, for Hill is much too subtle and skillful a filmmaker to paint with such broad strokes. Though packed with short, violent battles between the U.S. Cavalry and Apache fighters, as well as sweeping vistas of towering red rocks and endless prairies worthy of John Ford, *Geronimo* is ultimately a sad meditation on honor, betrayal and historical inevitability. The settings may be the wide-open horizons of a golden-lit West, but the interior drama of the film is darker, dealing as it does with confinement, *narrowing* horizons and cultural claustrophobia.

*Geronimo* marks the latest collaboration between director Hill and guitarist Ry Cooder, who has provided soundtrack

music for some of Hill's best films, beginning with *The Long Riders* in 1980 and including *Southern Comfort*, *Streets of Fire*, *Crossroads* and *Trespass*. It's a match made in heaven—Hill is a master at ex-



**Above: A scene from director Walter Hill's *Geronimo: An American Legend*. Right: Ry Cooder.**

ploring the connections between America's history and its collective psyche, and Cooder is a supremely tasteful musical colorist, deeply versed in almost any American music form you'd care to mention: folk, Tex-Mex, Hawaiian, country blues, gospel, R&B. Nearly every article that mentions Cooder refers to him as an "ethnomusicologist," but he is not merely some archaeologist unearthing dusty musical treasures. He possesses the even more valuable ability to synthesize brilliant, highly emotive, *new* music from the wealth of arcane knowledge that seems to be uniquely his. This guy is definitely in touch with some sort of transcendent and transcultural mojo.

All of Cooder's film

scores have been unorthodox by conventional Hollywood standards, and *Geronimo* is no exception. Within the 60 minutes of music on the soundtrack, you'll hear brass band music from the 19th cen-

music hep-cat. "It's a story about many different people and many different events, and the complexity called for a bunch of different approaches. Walter and I had a lot of discussions about how the



tury, Native American chanting, a traditional orchestra, solo guitar, ethereal flute, a remarkable Persian percussionist, seldom-heard instruments from America's past (cymbalum and euphonium) and present (the snakey I-beam), and even Hoon-Hoortoo—the amazing throat singers of Tuva (in Siberia, near Mongolia). This is not a showcase for Cooder as a guitarist, as some of his soundtracks have been (*Paris, Texas* being perhaps the best example), and that may be disappointing to some of his fans. But the music he's written and selected works beautifully in the film, and that's what is paramount.

"It was obvious to me from the beginning that this was not a guitar story, that it wasn't your lonesome guitar picker kind of deal," Cooder says in his gruff twang, which is part grizzled prospector, part

music would go in the service of the Indians on the one hand, and the soldiers and the other white folks on the other; trying to draw a contrast there, at the same time steering it away from anything like what the movies usually do in those situations.

"Walter was very clear that he didn't want anybody to think that this is what white folks think Indian music goes like," he adds. "We had to find a way to represent them musically, but it had to be interesting and it had to be cinematic. You can't just sit and chant Navajo and beat on a drum and expect to call it movie music. Sometimes that stuff is great—we did that in places, and it worked fine—but as color, rather than as the main musical element. It's evocative, but it's also esoteric, alien and strange, and limited in the ways you can use it. So

—CONTINUED ON PAGE 100



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# EXTREMELY SMOOTH



# FOLEY MIKING

by Tom Kenny

There's a reason Foley performers are called artists. The creation of a sound effect to match picture in sync requires imagination, skill and more than a little creativity. On the other side of the glass, engineers can help by employing a few simple miking tricks to capture the subtlety of a clothing rustle or the shattering crack of breaking glass.

*Mix* talked to a few engineers to find out what mics and techniques work best to capture Foley moments. Without exception, they said there are no real tricks, only preferences. Whatever works best, works, and it's usually dictated by budget, schedule and a dozen other factors. They also agreed that nothing beats a good Foley artist.

**Lanny Williamson, owner,  
THE BEACH, CALGARY, ALBERTA**

A lot of the time, when you hit something, you want people to feel it in their stomach, so you don't just want the smack of it, you want the wop of it. I think you'll find that a lot of the Foley sounds today are a lot like MIDI sounds—you layer a whole bunch of things to get a specific sound. It's not as simple as miking somebody crunching through the underbrush. You want more than that. To give it more character, to give it more pizzazz, to make it bigger, to make it wetter, to make it fatter.

It's really common to use a [Neumann] U87 if you want pristine bot-

tom end. The tube 67 is really nice because it gives you a much more solid bottom end. Since they are a little clumsy, sometimes you don't want to use those bigger mics, and you'll end up using like a 414, which is a little smaller and gets into places. An [AKG] 452 with an FS2 capsule is nice 'cause it has a little more air to it, and you can sock it into places and move it around quickly. The smaller mics, with a bit more brilliance, are used for some of the quick-and-dirty, high-frequency stuff—and being able to move around the Foley pits quicker. But for a really specific ID-type of Foley sound, then you go for your favorite mics, go for the ones that you know will capture the true essence of whatever you're after.

There are a couple of mics out now that are so good—the 4033, that new Audio-Technica. Holy mackerel. What a wonderful mic. It's terrifying. It's under \$1,000, and it sounds like...I think it outperforms a lot of the Neumanns. It's been used in music a lot. It has its own shock-mount built-in; it has a great overall sound, and it has a nice off-axis characteristic, which means that if you're moving around a bit, you don't get any weird coloration. They're also really nice and easy to set up as a coincident stereo pair because they line up really well. And it EQs really well.

**Rob Buhrman, chief engineer,  
LION & FOX RECORDING,  
WASHINGTON, D.C.**

We kind of just rely on our workhorses—the Neumann U87s and the TLM 170s. Those seem to work pretty well. If we're going to put something in a hazardous situation, sometimes we'll go with a cheaper mic—a Sennheiser 421 or a Shure SM57.

Awhile back, we were doing work with Children's Radio Theater, who were producing live radio plays at places like the Smithsonian Theatre. Well, they also come into the studio and do what's essentially a live show to 24-track, with everything going on at once. Music is iso'd off in one corner, and there's a Foley setup in another, with five or six actors in the middle of the room. Dave Taylor, a sound designer, sets up a Sennheiser 421 and walks the props up when they're needed in the show. He understands the engi-

—CONTINUED ON PAGE 194



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**I think you'll find  
that a lot of the Foley  
sounds today are a lot like  
MIDI sounds—you layer  
a whole bunch of things to  
get a specific sound.  
—Lanny Williamson**

—FROM PAGE 92, SOUND FOR FILM

think, is that films are too loud. Let me be more specific. It's really the music and sound effects that are over the top (even for me, a card-carrying sound junkie), especially if played back in 35mm Dolby SR, 70mm mag or a digital format. And when the projectionist turns the fader down, guess what disappears...oh yeah, that thing called dialog.

My colleagues and I have talked long and often about just why films are so loud. Deaf and stubborn clients are common reasons, and to that I can only say that after a certain point, we can only do what the

client wants. Another formula is short schedules plus long hours equals serious ear burn, turning otherwise sensitive mixers into gauss jockeys. Too bad one of the first things sacrificed in these cases often is dialog intelligibility. The mixers and editors know what the actors are saying; the director sure as hell knows what they're saying, but damned if I can figure it out. Tell me, how many times in the past few years have you spent a quarter of the movie whispering to your companion "whadidhesay?"

There are three distinct phases in film re-recording: premixing, final

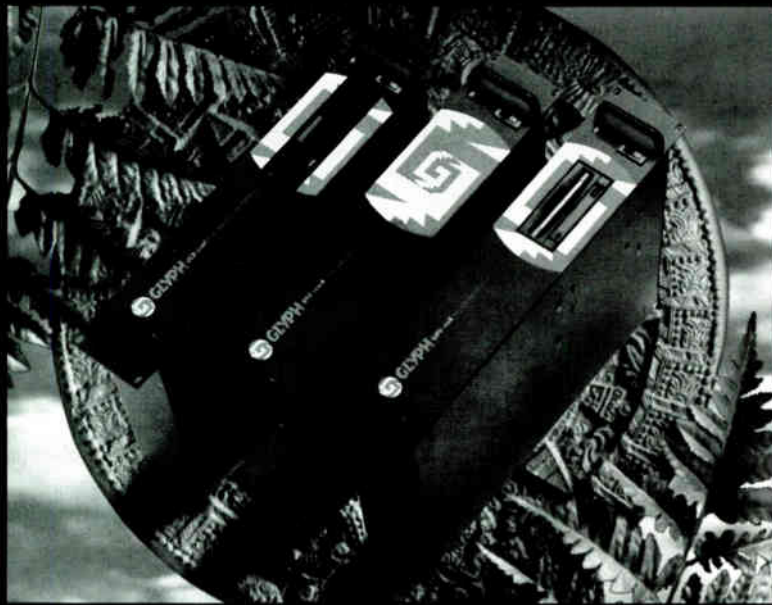
mixing and print mastering. During the premix, individual elements such as dialog, Foley, background effects, hard-sync effects, etc., get personal attention. Of course, it's hard to resist the temptation to make the explosions and gunshots really loud, knowing that everything will be balanced during finals. The final mix is composed of separate stereo recordings of dialog, music and sound effects that, theoretically, can be played by lining the tones up at unity, with no further moves, equalization, etc. necessary. That's the theory, anyway.

Further attention is paid at the final mix to fitting the track into the real world: the physical one on the optical track negative and the acoustic one at your local Hell Sixplex. Regardless of what has happened during the premix and final mix, the print mastering is the Moment of Truth, because from that point on, nobody is going to touch anything, or at least not until that assistant manager from Hell gets his hands on it.

The primary concern at print mastering historically has been to fit the final mix stems to the stereo optical medium. Depending on how much care was taken earlier to contain the mix, mixers can play the stems straight across, pull (lower) selected moments or use judicious limiting. During print mastering, the encoding unit (such as the Dolby DS-4) will place optical track simulation in the monitor chain to let mixers know when they've gone too far. It's always cracked me up that the classic complaint/non sequitur about optical track simulation is: "I don't like what it sounds like with that switched on." Talk about whistling in the dark.

Current practice often calls for two additional print masters in addition to the 2-track stereo optical print master: a home video mix with a tighter dynamic range, and a 6-track mix with the dynamic range of the universe, for digital theatrical release. The former mix is frequently used for videocassette release and the analog tracks of laserdiscs, with the theatrical stereo mix (after decoding the original A-Type or SR noise reduction) featured on the laserdisc digital tracks. If there isn't enough time (about a half-day) and money to do a separate home video mix, then usually a video-mastering

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 CREST AUDIO

# Crest Audio: Power and performance more sound companies trust.

by Henry Plankton

“When you wake up in the morning, you need to think touring, touring, touring!” Crest Audio President John Lee is speaking to a group of Crest division managers. Today’s meeting takes place in the top floor offices of Crest Audio’s manufacturing facility in Paramus, New Jersey. Elsewhere in the building, Crest power amplifiers, Gamble consoles and the new Crest Century mixing consoles are moving through various phases of assembly, testing and shipment to sound companies worldwide.

Founded in 1978, Crest Audio entered the tour sound industry with great impact. Crest’s first model was the P3500, a two rack-space, 475 watts per channel into 4 ohm amplifier. In those days, the P3500 was considered a major breakthrough, since high power amplifiers typically were three and four rack-spaces in size. The response was immediate, with Maryland Sound, See Factor and Ultra Sound all making purchases.

In 1980, the company relocated from California to New Jersey where greater resources and manufacturing expertise existed. During the 1980s, Crest continued to penetrate the tour sound market with high power, compact power amplifiers. In 1983, the 4001 was introduced, which provided 600 watts per channel at 4 ohms and 800 watts into 2 ohms. Said John Lee, “Right from the beginning it had been the Crest philosophy to over-design every portion of the amplifier so that we could provide sound companies with the utmost in reliability and better sonic performance characteristics at any load condition.”

The introduction of the 4001 opened the floodgates in the demand for higher power amplifiers. Many concert sound companies worldwide changed their amplifiers over to the Crest 4001, and Crest made great strides throughout the 1980s.

In 1987, Crest introduced the 8001, which remains the touring sound

industry’s most respected and recognized power amplifier. With the 8001, Crest became the first manufacturer to package 1200 watts per channel at 4 ohms and 1400 watts at 2 ohms in any size of amplifier. Its compact three rack-space chassis offered additional appeal for the size-conscious sound companies. Shortly after the 8001 was introduced, two rack-space versions of the Professional Series (7001, 6001 and 4801) were brought to market.

During this period, such companies as dB Sound, Electrotec, A-1 Audio and Maryland Sound switched to Crest. In fact, a survey conducted around that time showed that nearly 70% of the top sound companies in the U.S. had switched over to Crest amplifiers.

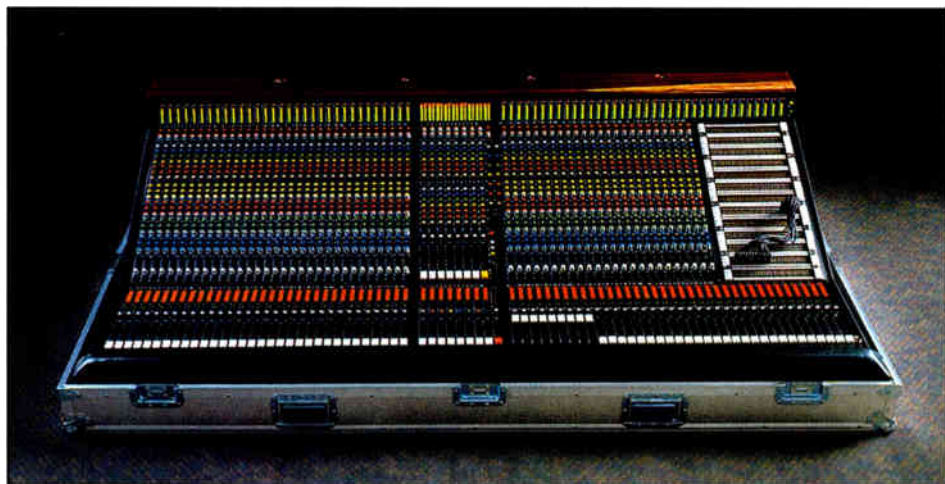
From its beginning, Crest Audio has made touring sound the company focus. It was the tour sound companies that literally put Crest on the map and every effort is made to insure that those customers remain in the company’s “family.” As further evidence of this focus, in 1989, Crest signed an agreement with Jim Gamble for Crest to manufacture the legendary Gamble Series EX mixing consoles.

Tour sound companies were asking

an optional 12 additional line level inputs can be installed for a total of 68 inputs in a single, compact mainframe. Stereo subgroups as well as an eight-way stereo matrix are standard as well as an on-board patchbay for total flexibility in signal routing. Says Lee, “we have always been a design-from-the-top-down company. With the Gamble, you couldn’t start any higher.”

## Crest Century Series Consoles

Recently, Crest Audio made a very bold move into the middle market of mixing consoles with the introduction of the Century Series. The ambitious launch included more than thirty models in four lines. These consoles have received immediate acceptance from touring companies as well as production personnel, and first year sales have been well into the hundreds. One of the primary forces behind the Century consoles is Chuck Augustowski, who stated “the first thing that we did was to talk to every sound company that we could to determine what their needs were. We took that information and developed products to fit those needs in the most cost effective way possible. From the beginning, the sound companies were “in the loop,” and in fact the first



Crest/Gamble Series EX Mixing Console

for more input channels in live consoles and the EX Series offered that plus much more. The consoles come standard with 56 input channels, and

Century GT board went on tour with Snow Sound and the band Phish. The feedback from both of those organizations was invaluable.”



*Crest Century GT Console*

The Crest Century Series consoles include three front-of-house boards: GT, TC and SP. All share common performance characteristics, high quality components and modular design. Each may be configured for up to 52 inputs with either four or eight subgroup outputs. The GT has been designed for high level touring and offers four-band sweep EQ, programmable mutes and matrix capabilities. The TC and SP consoles feature the same sonic characteristics but with cost savings achieved through fixed-band EQ on the SP and sweepable mid-frequency EQ on the TC.

### A Console Designed For In-Ear Monitoring

Running concurrent with the Century front-of-house console launch are two (soon to be three) boards designed for on-stage monitor use. Responding to a new demand spurred by the growing popularity of in-ear monitoring devices, Crest has introduced the LM Stereo Monitor board. Up to 52 inputs can be mixed into eight stereo mixes and four mono mixes. Until now, in-ear monitors required that the monitor console tie up two mix busses on-stage for every performer. The LM console eliminates this by providing stereo mix assignments via a pan pot located on the channel input and a stereo fader on the mix output bus. Thus, the LM stereo console is ideal not only for in-ear monitors but also for floor wedges that are configured for stereo monitoring. A 12 mix discrete mono mix version is available as well.

Crest Audio's venture into the live console world is a natural direction for

a company so committed to live sound. Said John Lee, "The fact that we had been manufacturing the Crest/Gamble boards, a highly complex product, proves that we can build consoles. Our goal is to provide the best possible products to sound companies. We are not a 100% amplifier company. We are a 100% customer company."

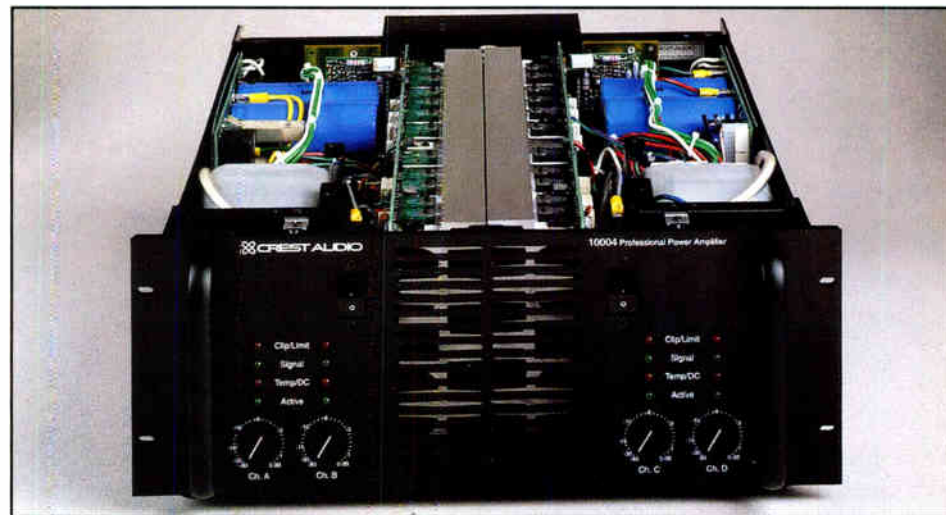
### Back At The Amplifier Ranch

With all of the recent excitement over the Crest console division, it would be easy to overlook the core of Crest

products, so it is natural that sound companies come to us with new product ideas and needs. Virtually every Pro Series product that we have introduced has been a direct result of listening to tour sound companies."

The new model 7301 is a compact two rack-space amplifier designed for use in bi-amplified systems. Channel A delivers 940 watts at 4 ohms with 240 watts from the remaining Channel B. The low frequency channel (A) utilizes a Class H operation which gives increased efficiency and higher output power on the low end, while the high frequency channel (B) uses a Class AB design which is optimized for precise reproduction of mid and high frequency signals.

How do you improve on a legend~ Combine two 8001s into a single four rack-space chassis, that's how. Again, heeding input from several sound companies, Crest Audio's engineering department came up with the 10004. As with the 8001, each channel of the 10004 delivers 1400 watts into 2 ohms and 1200 watts into 4 ohms—but does so in a four-channel configuration. Reduced rack space and weight have



*Crest 10004 Power Amplifier*

Audio's success: power amplifiers. Thus far, in 1993, four new models of high power amplifiers have been introduced. All are in the Professional Series of products and are a direct result of Crest's ongoing dialog with top tour sound companies. As Tour Sound Division Manager Greg McVeigh explains, "Crest has become synonymous with concert sound

made the 10004 attractive to several top sound companies, and units are now being used on major tours.

The two remaining new amplifiers from Crest Audio are the model 10001 and 9001. The 10001 has set new standards in "power density." Newly developed circuitry allows the 10001 to have one of the highest power-to-

ing amplifiers are only rated at 1 k. The bottom line is that an amplifier should sound great, and we feel the 9001 is one of the best-sounding amplifiers on the market.”

To some, it would appear that Crest Audio's plate is quite full with Crest/Gamble boards, Century mixing consoles, the 9001, 10001, 10004 and 7301 power amplifiers. In order to meet the increasing demand for power amplifiers as well as the new Century consoles, Crest Audio recently moved

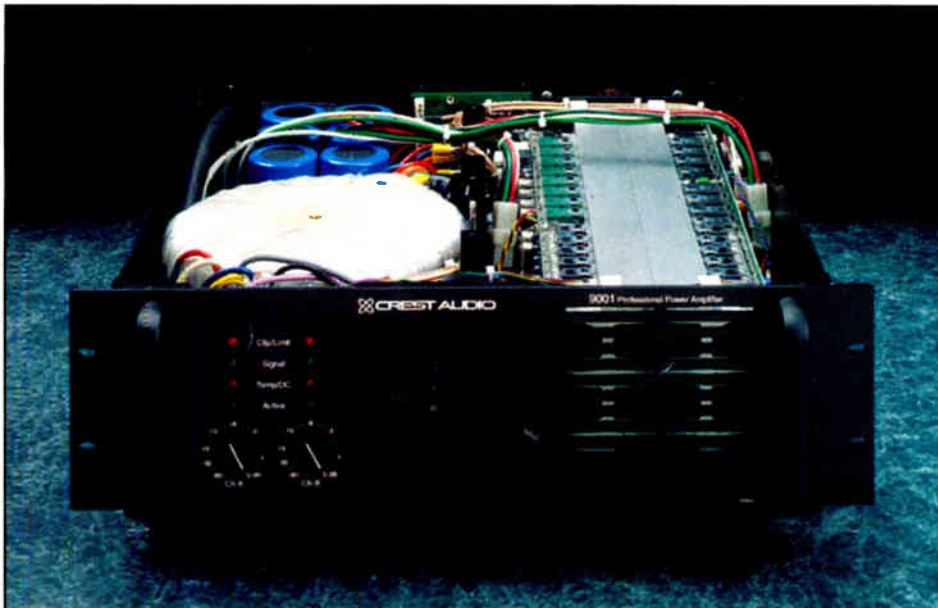
Ongoing R&D efforts have already netted many new products slated for introduction in the coming months. Crest maintains a dedicated team of engineers, both at the R&D and production levels, who are expert at transforming input from customers into real and useful products. Another significant arena that Crest Audio participates in is computer control of sound systems.

Crest's NexSys Computer Control System is a known entity in installed sound with many systems in use throughout the world, and is now poised to integrate into the touring sound market. Nexsys' unique "load monitor" capability makes this system perfect for systems that must be set-up and dismantled on a daily basis where component verification and maintenance is difficult.

So, why, in an era where most pro audio manufacturers are targeting "safe" growth markets to concentrate on does Crest Audio continue to work closely with sound companies? Lee sums it up this way, "companies grow and thrive by providing goods and services to markets that they love. At Crest, we still have a passion for concert sound and that passion carries through to our technologies and our products." If you don't believe those sentiments, just look for Crest Audio's President at any Grateful Dead concert, blues club or theater in the New York/New Jersey area!



Crest 10001 Power Amplifier



Crest 9001 Power Amplifier

weight ratios available at any price, while maintaining sonic performance. The four rack-space 10001 has been designed from the beginning to be a 2 ohm amplifier and, in a departure from traditional specifications, is rated at 2 ohms with a power rating of 3500 watts per channel and 1 ohm at 5000 watts per channel!

Crest Audio's most recent new power amplifier is the three rack-space 9001. The 9001 delivers 3000 watts per channel into 2 ohms at a rated bandwidth of 20 Hz to 20 kHz. McVeigh explains, "the most recent trend from other amplifier manufacturers is to sacrifice sonic quality for high power. At Crest we have always believed that power amplifiers can enhance or detract from the sound of a system. We pride ourselves on the high caliber of our designs, components and overall sound qualities. The 9001 has been rated full bandwidth, where compet-

into a new 56,000 square foot facility in Paramus, New Jersey. And to further support the tour sound industry, offices have been set up worldwide for Crest customers in Asia, Europe and Latin America.

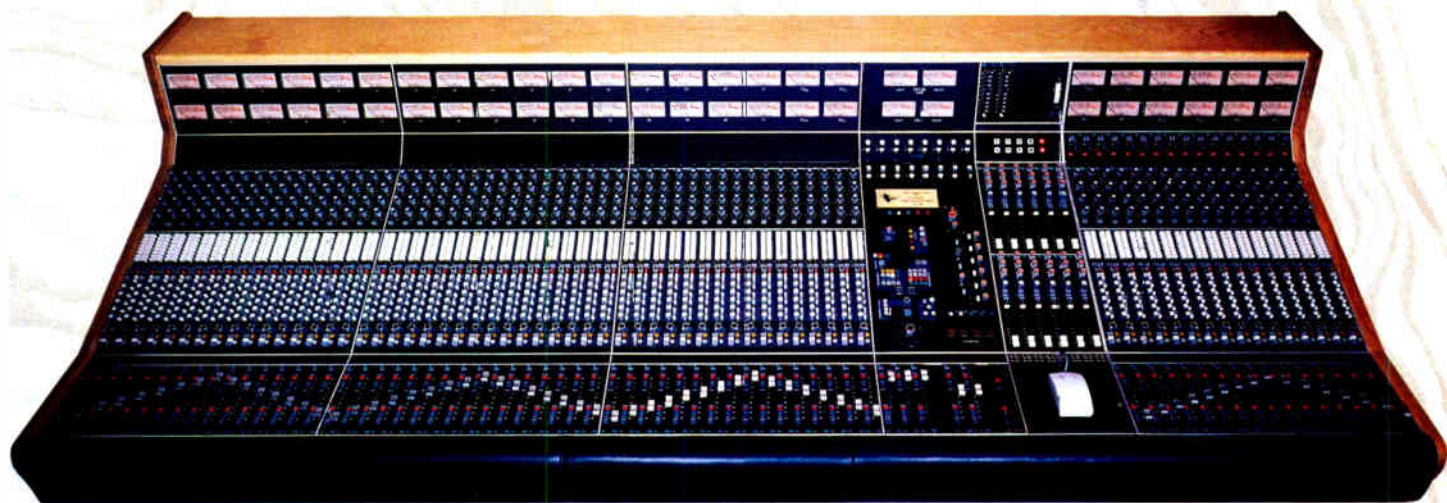


Crest NexSys Computer Controlled Automation System installed at the Gottlieb-Daimler Stadion, Stuttgart, Germany





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house will judiciously compress the theatrical mix. I'm sure this works well in the hands of competent mixers, but given my druthers, I'd rather do it myself, selectively. It is common for home video mixes to be monitored at a real-world lower level, with 82 dB considered a good compromise. The key thing is to make the film play at a consistently low level without requiring remote-control manipulation to hear low-level dialog or to prevent explosions from waking up the baby.

The digital theatrical mix is a different matter. It seems that all too often mixers feel compelled to use every single bit (pun not intended) of the 20dB dynamic range available on each channel. I hate to sound like a broken record, but what happens then is that dialog remains relatively the same as the stereo optical mix, while the music and sound effects push the pedal to the metal. Am I missing something, or is the dialog/music/sound effects balance obtained at the final mix being skewed here? Why is there such a disparity between sound formats when it's the same movie?

A friend told me of an interesting experience he had last summer when he went to see a film released in a digital format. He thought that the mix sounded like it was being played in stereo optical (although it was advertised as digital), and it was: The theater manager said too many people complained that it was too loud, and when they lowered the digital track even more, people complained that they couldn't understand the dialog. I should note that the dynamic range of the digital formats is pretty close to that of 70mm releases of days gone by; the only difference is that this year we are going to see the digital format expand into all ranges of films and not just expensive blockbusters.

My most memorable Dialog Unintelligibility Experience was a few years ago at the Chinese Theatre in Hollywood on opening day of a Big Movie. The topic of the day at the urinals in the men's room, after the movie, was "Could you understand a word of dialog?" No one even bothered saying that they liked or hated the film; the first (well, second) thing on these guys' minds coming out of

the movie was the dialog. I'd make a comment about how this was a representative sampling of the Great Unwashed, but...

There is no simple solution to this problem. We can't start mixing movies at a lower level because then they will be too loud when played at the nominal "standard" 85 level. We can only make sure that dialog is solid enough to withstand being turned down.

Oh, yes, I forgot to mention my solution regarding the Little Old Ladies With Umbrellas, who have been around since stereo films began. We could...no, that wouldn't be very nice.

In the next issue, I'll deal with setting up your monitors for film mixing. As always, direct any questions or comments to me at PO Box 24609, New Orleans LA 70184; fax (504) 488-5139. ■

*Larry Blake is a sound editor/re-recording mixer who lives in New Orleans because of reasons too numerous to mention, although a walk through the stand of live oaks in City Park would be a good start.*

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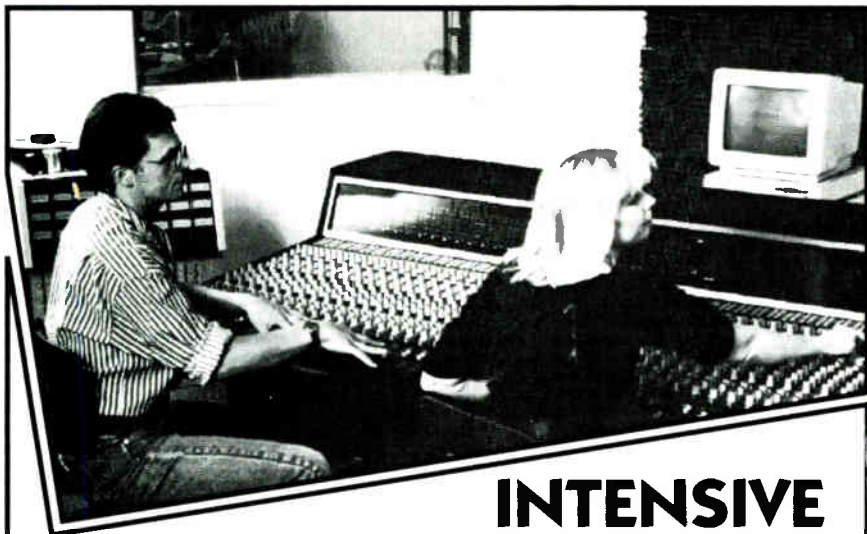
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—FROM PAGE 93, GERONIMO

we worked at ways of putting some other elements together to make something that made more sense as movie music. Accuracy alone is not of much use; it's got to *feel* good."

Cooder says the choice of the Asian Hoon-Hoortoo throat singers to help represent the spirituality of the Native Americans in the film was a surprisingly natural fit: "When the Tuvans played at some festivals in Canada, there was a lot of interest in them from Canadian Indians, who had them to a couple of pow-wows, and there were some Cherokee cats down here [in the U.S.] hanging with them. There seemed to be some sort of kinship going on. They have a similar religion, with the same sort of earth-centered, animistic beliefs. They're the same kind of rural people; they live in similar terrains, and the structures [the Tuvans] live in are almost identical to Navajo hogans. Some of the Indian people involved in the film really liked hanging out with them when we were in the studio.

"We also had to think about these white soldiers [in the movie]," Cooder says. "You don't want to represent them with just military music, because then it becomes the soundtrack for some kind of bloodsport—hunting and killing Indians—and it needed to be more subtle than that; that's critical to the story. So what was the music of white people in those days? It was religious music mainly, this kind of primitive shape-note music that's almost forgotten now, it's so archaic. A lot of that vocal music has really fantastic four-part harmonies—it's part of where hillbilly harmony comes from. So we worked up some instrumental versions of some of that stuff, and it fit real well. It has this edgy, fatalistic feeling to it."

Orchestrations were by George F. Clinton, who conducted a huge orchestra—sometimes fronted by a smaller ensemble featuring Cooder, fellow stringed instrument whiz David Lindley and a few others—on the big stage at Sony's Culver City studios. Veteran engineer Allen Sides handled the tracking and the mixing. Some cues involving smaller groups—including the wonderful, lilting music for the Governor's Ball sequence, arranged and conducted by Van Dyke Parks—as well as most overdubs, were recorded at Sides' Ocean Way Studios. Sides captured the 18-piece Americus Brass band, for example,

using just three mics, and his approach in general on the project was to capture the musicians in clusters with a minimal number of mics, rather than close-miking everything. The result is a full, ambient sound that really comes across like groups playing together unamplified in a room.

"Allen has superb chops for this kind of work because he's able to get both a big sound and a detailed sound," Cooder says. "He has great ears and great techniques, especially with big ensembles. But he also did a superb job on *Trespass*, where there were just two or three instruments, to get the same big powerful sound and detail. And on *Paris, Texas*, which could have easily sounded like nothing at all, with that puny little guitar and pump organ, he got it to be quite harmonic and resonant. And, of course, he's got all those great old tube mics," he adds with a chuckle.

Although the actual recording took about a month, with another three-plus weeks of assembling and mixing, Cooder's involvement in the project spanned from May to December of 1993. "That's because a lot of time was needed to prepare," Cooder says. "Also, there's a lot of music onscreen, so Walter needed that while he was filming—somebody sings at a funeral, a brass band plays, the string group at the Governor's Ball, stuff like that. So before he even started shooting, I was given a script, and I started jotting down some notes about what kind of things he was up to on-camera.

"Then, when he was shooting over at Moab, Utah, I went down a couple of times with some tapes of stuff for him to listen to. He'd say, 'I need to hear five or six typical military brass band tunes from the period,' so I'd dig up stuff I thought was good. He'd say, 'We're doing this Governor's Ball scene where you have a fancy-dress formal gathering and a little string band that plays—what's that gonna sound like?' So I'd bring him these other things. We've worked together so much. I have a pretty good idea of where his mind is going to want to go. In those cases, you're dealing with source material at the time, and there's a ton of it, so it was a question of going through it and gettin' the good stuff. The other [new] music was a whole different thing."

Indeed. In the case of the multi-

—CONTINUED ON PAGE 193

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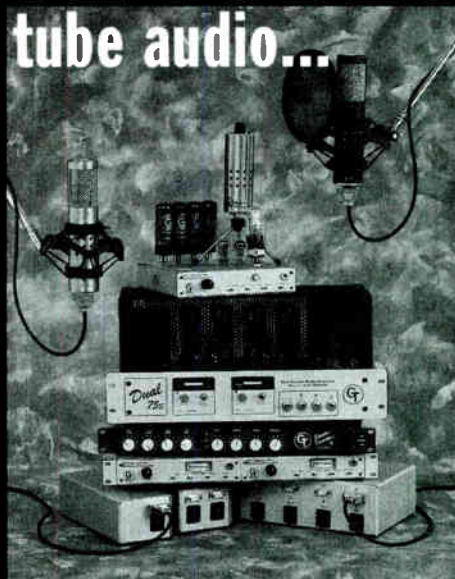
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## RAMSA ENG/EPF WIRELESS

The Ramsa WX-RP410/RP700 wireless microphone system from Panasonic Pro Audio (Cypress, CA) operates in the 800MHz UHF band. The system uses Phase Locked Loop (PLL) synthesizer circuitry with digital diversity



switching and 30-channel selection. The compact WX-RP700 receiver can be used as a stand-alone or camera/recorder-mounted. The WX-RP410 transmitter weighs seven ounces and operates for six hours on standard AA alkaline batteries.

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## NIGEL B. FURNITURE ►

Nigel B. Furniture (Burbank, CA) introduced a new line of modular furniture designed for audio workstations, MIDI studios and nonlinear editing systems. The pieces are built with steel and coated in semigloss black, with black or gray laminate tops. Custom configurations are created easily by choosing from a variety of standard modules.

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## BRAINSTORM SR-15+ TIME CODE DISTRIPALYZER

Brainstorm Electronics of Los Angeles updated its rack-mount, Time Code Distripalyzer. Like its predecessor, the new SR-15+ analyzes, identifies, reshapes and distributes incoming time code, but also adds: a parallel port (for connecting directly to a Centronics printer), a serial port for two-way communication to a Mac or PC (via forthcoming software), a color ID reference input (with BNC input and loop-through connections) and a 1/2-inch jack for identifying the exact SMPTE loca-

tion where an external event occurred. Retail is \$1,490.

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## NVISION NV3128

NVision (Nevada City, CA) offers the NV3128, a series of machine-control routing switchers designed for routing the machine-control data, allowing the remote control of multiple VTRs, DAT decks, editors and other devices conforming to the EIA RS-422A data standard. The unit can be set up to control up to 64 (or 128) machines and provides for dynamic configuration of the RS-422A pathway.

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## DENON CD CONTROLLER

Denon (Parsippany, NJ) offers the DN-1200C, a hardware controller for its DN-1200F 200-disc CD changer. Titles and other program information about discs can be stored in the internal memory for display on the unit's large LCD readout. Up to four DN-1200F changers can be controlled with one DN-1200C, providing access to 800 discs. The DN-1200C/DN-1200F system retails at \$4,000; units are also sold separately.

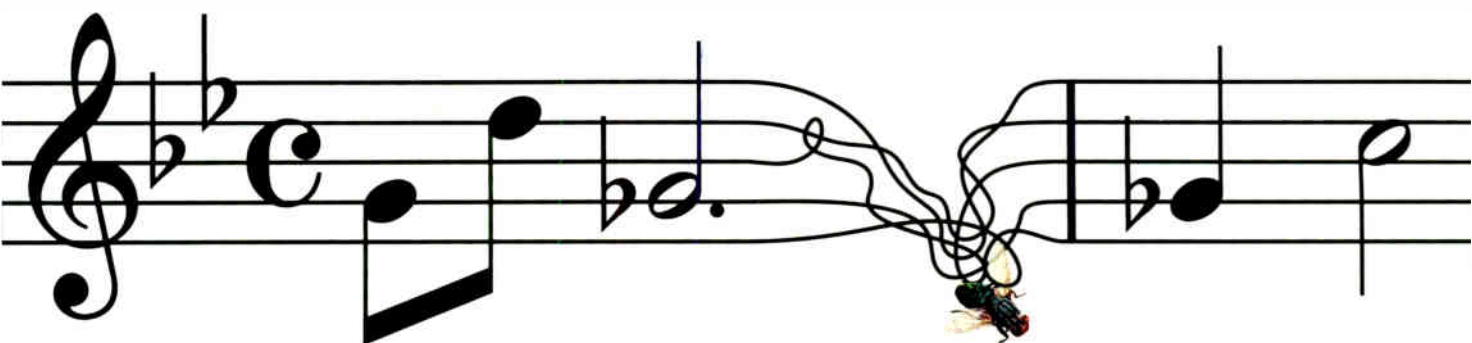
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## TEKTRONIX PROFILE

Unveiled at NAB by Tektronix, of Beaverton, OR, is the Profile Disk Recorder, a disk-based system for the storage and manipulation of video and audio. Said to offer the picture quality of Beta-cam-SP (with metal tape), Profile features bidirectional channels, multiformat I/O, internal combiner and mix effects boards. The system is built largely from standard components and is designed as an open platform available to third-party developers for application-specific software.

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# STUDIO VOCAL MICS

THE NEW  
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**F**rom a cursory view, the field of vocal mics may not seem to have changed much over the past 15 years. And more often than not, leading engineers and producers often cite various vintage models, such as Neumann U47s, AKG C12s, Telefunken ELAM-251s, RCA 77DXs or Sony C-37As, when speaking of their favorite vocal mics. Unfortunately, the performance of vintage mics can vary considerably—even between two supposedly identical models—as tubes, capacitors, diaphragms and ribbons all eventually succumb to the ravages of time.

by George Petersen





However, technology marches on, and many new mic designs offer lower noise floors and increased dynamic range capabilities to match the stringent requirements of digital and advanced analog recording systems. We decided to look at some new vocal mics in price ranges that anybody could afford, as well as a few that are...well, a bit less affordable. And for those of you who really MUST have that vacuum tube sound, fear not, we've included a number of modern "valve" mics to please every palate.

While many mics are "typecast" for their vocal reproduction abilities, this shouldn't imply that they are inappropriate for other applica-

**Left: The AKG C414B/TL II, or "VINTAGE TL." Right: The Audio-Technica AT4050-CM5. Below: The Peavey PVM T9000**



tions. In fact, some industry-standard vocal broadcast mics—the Electro-Voice RE20 and the Sennheiser MD-421—excel in instrumental applications, particularly on percussion and other high-SPL sources. Conversely, there are many singers whose sound is best reproduced by mics not typically associated with vocals, such as the small-diaphragm Bruel & Kjaer 4000 Series. Sometimes, rules are meant to be broken, and with this particular caveat in mind, here is a selection of new "vocal" mics, listed alphabetically by manufacturer.

**AKG VINTAGE TL**

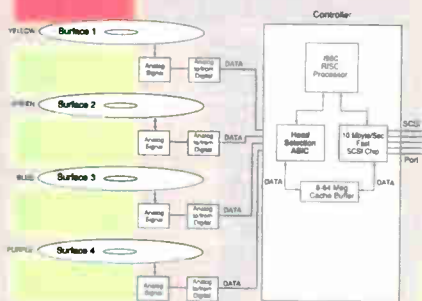
The C414B/TL II ("Vintage TL") combines the design of the trans-

# AUDIO STORAGE.

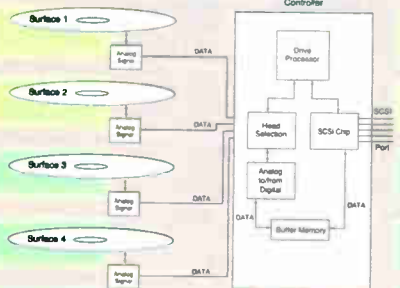
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formerless C414B/TL with a re-created capsule from AKG's classic C12 tube mic. The Vintage TL is a 1-inch, dual-diaphragm, pressure-gradient mic with four switchable patterns. A 12dB/octave low-frequency roll-off at 75 or 150 Hz and switchable -10dB or -20dB pads are also standard. Suggested retail is \$1,499.

#### AKG C3000

Retailing at \$695 (about half the price of the industry-standard C414), the C3000 is a large-diaphragm condenser mic with two selectable polar patterns (cardioid or hypercardioid), a switchable -10dB pad, bass roll-off switch and an internal windscreen. The mic uses a dual-capsule design, and both are floated in an elastomer suspension for optimum rejection of mechanical noise.

#### AKG C12 VR TUBE MICROPHONE REISSUE

Forty years later, AKG has reissued the C12, its classic tube vocal mic from the 1950s. The new C12 VR ("Vintage Revival") uses a re-creation of the original condenser capsule, with a large-diameter, gold-sputtered diaphragm and low-noise 6072 vac-



uum tube electronics. The unit includes a flight case, shock mount, windscreen and combination power supply/remote control, which offers a choice of nine polar patterns. Pricing was unavailable at press time.

AKG Acoustics Inc., 1525 Alvarado Street, San Leandro, CA 94577; (510) 351-3500.

#### CAD Equitek E-100

#### AUDIO-TECHNICA AT4050-CM5

Take the technology developed for Audio-Technica's popular AT4033 cardioid mic one step further, add multipattern capability (cardioid, omni- and bidirectional) and you have the CM5. Unveiled at last month's AES show in Amsterdam, this new studio condenser microphone has transformerless electronics, bass roll-off switch, -10dB attenuation switch and a gold-sputtered, large-diameter diaphragm, which is one-third larger than the AT4033's. Expected pricing is \$995—including shock mount—and deliveries are slated to begin this month.

Audio-Technica U.S., 1221 Commerce Street, Stow, OH 44224; (216) 686-2600.

#### AUDIX D6

First shown at last month's Musik-Messe in Frankfurt, Germany, the D6 represents both a new microphone series as well as a platform for new technologies that will be offered in future Audix microphones. The D6 uses "Sub Impulse" technology—combining an ultralow-mass diaphragm with very fine voice coil wires to emulate the transient response of a condenser capsule in a dynamic microphone. The D6 is built in a 5-inch barrel housing and is available in three models priced from about \$500 to \$800, depending on the amount of resolution desired.

Audix Corp., 19439 SW 90th Ct., Tualatin, OR 97062; (503) 692-4426.

#### ← BEYER MC 834

Priced at \$1,495, the MC 834 condenser mic is designed for vocals and instrumental music, as well as on-air announcing and voice-overs. The mic has a cardioid pickup pattern throughout the frequency range, allowing high levels of gain before feedback and a uniform off-axis response; frequency response is flat from 20 to 18k Hz. The MC 834 offers a three-position switchable LF filter, four-stage pre-attenuation and a blast filter for suppressing pops.

Beyerdynamic, 56 Central Ave., Farmingdale, NY 11735; (516) 293-3200.

#### CAD E-300

Just as we were going to press, we heard about the Equitek E-300 from



Conneaut Audio Devices. The E-300 is a large, side-address design; its 1-inch diameter capsule is fitted with dual 3-micron, gold-sputtered diaphragms. Three pickup patterns (omni, cardioid and figure-8) are selectable, as are a bass-cut filter and attenuator pad. The mic includes a separate, dedicated power supply; retail pricing has not been set.

#### Groove Tubes Model 2



### CAD E-100

CAD's Equitek E-100, based on its E-200 condenser microphone but in a more compact, single-pattern (cardioid) package. The E-100 uses high-speed, low-noise electronics, offering a wide frequency response (said to be usable down to 3 Hz) and a dynamic range of 132 dB. Retail is \$479.

Conneaut Audio Devices, 341 Harbor Street, Conneaut, OH 44030; (216) 593-1111.

### GROOVE TUBES MODEL 2

Groove Tubes showed the Model 2 at the January NAMM show. It's a cardioid mic combining an ultra-thin (3-micron), gold-sputtered diaphragm with modern vacuum tube electronics and transformer-balanced output. A variable polarization voltage control provides a -30dB to -50dB sensitivity adjustment, with a maximum SPL of 130 dB to 150 dB. The complete System 2 (with mic, shock mount, pop filter, power supply and cable) is \$1,375; the company also makes 2- and 4-channel power supplies, so the Model 2 mic is also available *sans* power supply for \$1,100.

Groove Tubes/GT Electronics, 12866 Foothill Blvd., Sylmar, CA 91342; (818) 361-4500.

### LANGEVIN CR-3A

Formerly available through Vacuum Tube Logic, the CR-3A is now part of the Langevin line from Manley Laboratories. The CR-3A is a cardioid condenser mic with a large, gold-coated, polyester diaphragm and all-discrete FET electronics. Two slide switches provide -10dB attenuation and a 100Hz bass roll-off filter. The CR-3A is priced at \$800, including shock-mount, pop filter and case.

Langevin/Manley Laboratories, 13880 Magnolia Ave., Chino, CA 91710; (909) 627-4256.

### MANLEY REFERENCE GOLD

Now in full production, the Manley Reference Gold Series is a line of studio condenser mics featuring 3-micron, gold-sputtered diaphragms and a full-gainblock electronics design using two triode vacuum tubes in cascade. Three models are available: the Reference Gold Stereo, a dual-capsule, multipattern model priced at \$8,000; the Reference Gold Mono, a \$5,500 multipattern model; and the Reference Gold Cardioid, a

single-pattern model priced at \$3,000. All prices include mic, shock-mount, power supply, cable and case.

Manley Laboratories, 13880 Magnolia Ave., Chino, CA 91710; (909) 627-4256.

### MICROTECH GEFELL UM92S

Now distributed by G Prime Ltd., the Microtech Gefell UM92S is a three-pattern studio condenser mic using the large-diameter, dual-diaphragm M7 capsule, similar to the one used in the Neumann U47. Basically, the UM92S is a tube version of the Gefell UM70 "Perestroika," in a larger body that houses its EC92 triode vacuum tube. Available in black or nickel finishes, the UM92S is priced at \$2,495, including mic, elastic shock-mount, AC power supply/remote pattern selector box, cable and



windscreen.

G Prime Limited, 1790 Broadway, New York, NY 10019; (212) 765-3415.

### NEUMANN TLM193

The TLM193 is a large-diaphragm condenser mic that combines the classic capsule of the U89i and TLM170 with the transformerless FET100 circuitry of the KM100 Series. It offers a frequency response of 20 to 20k Hz (below 10 Hz by removing an internal jumper), maximum SPL of 140 dB, dynamic range of 130 dB and self-noise of 10 dBA; the unit retails at \$1,295.

Neumann USA, 6 Vista Drive, Old Lyme, CT 06371; (203) 434-5220

### PEAVEY PVM 520I

Equally at home in vocal or instrumental applications is the PVM 520i, a cardioid dynamic mic from Peavey. The PVM 520i has a large-diameter, titanium-laminate diaphragm and a neodymium/iron/boron magnet structure, providing a hot output that is ideal for long cable runs. The mic retails at \$329, including swivel adapter, foam windscreen, carry case and 25-foot mic cable.

Peavey Electronics, 711 A Street, Meridian, MS 39301; (601) 483-5365.

### PEAVEY PVM T9000

Another new tube mic is Peavey's PVM T9000, a cardioid side-address design with a self-polarized con-





**Neumann TLM193**

denser capsule coupled to a tube preamplifier section. Other features include -10dB attenuator and 80Hz highpass filter switches, outboard AC power supply, 25-foot cable, 137dB SPL handling and a unique shock-mount that incorporates a finned heat sink. Retail is TBA.

Peavey Electronics, 711 A Street, Meridian, MS 39301; (601) 483-5365.

**SONY C-800G**

After five years in development, the Sony C-800G actually began shipping about a year ago. Designed specifically for vocal recording applications, the C-800G is a switchable-pattern (cardioid or omnidirectional) condenser microphone that combines a large-diameter, dual-diaphragm capsule with state-of-the-art vacuum tube electronics. The C-800G's radical look stems from its Peltier device, a thermo-electric cooling system that solves heat-build-up problems (thus reducing distortion) by flowing a DC current across a junction of dissimilar metals. Retail is \$6,240, including power supply.

Sony Business & Professional Group, 3 Paragon Drive, Montvale, NJ 07645; (201) 358-4197.

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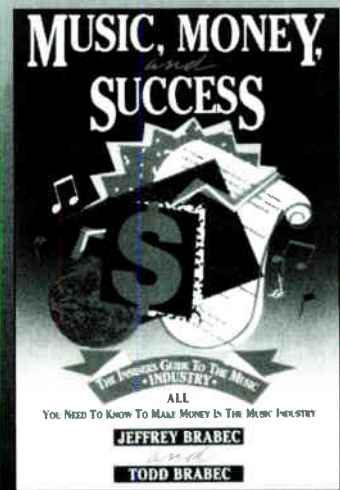
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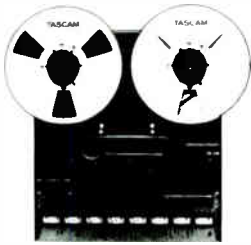
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SONY C-800G

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Stedman, 4167 Stedman Drive,  
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<sup>1</sup> EM, December 1992

<sup>2</sup> Sound on Sound, October 1992

<sup>3</sup> EM, September 1992

by Phil Cochlin

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## NONLINEAR VIDEO/AUDIO EDITING SYSTEM

**M**edia 100, from Data Translation (Marlboro, Mass.), is a Macintosh-based nonlinear online video and audio editing system designed to handle broadcast-quality, full-frame video at 30-frame, 60-fields-per-second (NTSC) or 25-frame, 50-fields-per-second (PAL). Up to four synchronized 16-bit, 44.1kHz audio tracks can be manipulated in real time.

The system includes two NuBus boards (the processor card and video card), an assortment of cables (two composite video, two S-Video and one audio cable assembly), four XLR-to-RCA adapters and software diskettes (including the third-party Anubis disk formatting and optimizing utility).

### SYSTEM REQUIREMENTS

The boards and software must be installed in a Macintosh Quadra 800, 840AV or 950 with at least 32 MB of RAM, 24-bit color graphics, a 13-inch, 16-inch (recommended) or larger RGB monitor, Apple System 7.1 or higher, and QuickTime 1.6 or higher. For storing digitized video and audio, you'll need at least one, and as many as six, external SCSI hard drives with at least 3.5 MB per second sustained data rate and 1-gigabyte capacity each. Data Translation recommends using separate drives for audio and video.

You'll also need a videotape recorder for playing into and recording the output from Media 100, an NTSC or PAL video monitor for monitoring the video quality in real time, and, of course, an audio monitoring system.

If, like me, you start thinking that these system requirements seem a little extreme, and that maybe Media 100 might work just as well in a lesser Mac, forget it. I spent more than a

week tweaking parameters, removing inits, etc., trying to get it to work in my Quadra 900 with 36 MB of RAM before giving up and renting a 950 to complete this review.

### INSTALLATION

Installing Media 100 is simple. The manual shows diagrams of each recommended Macintosh model, along with suggested slots for the two Nu-

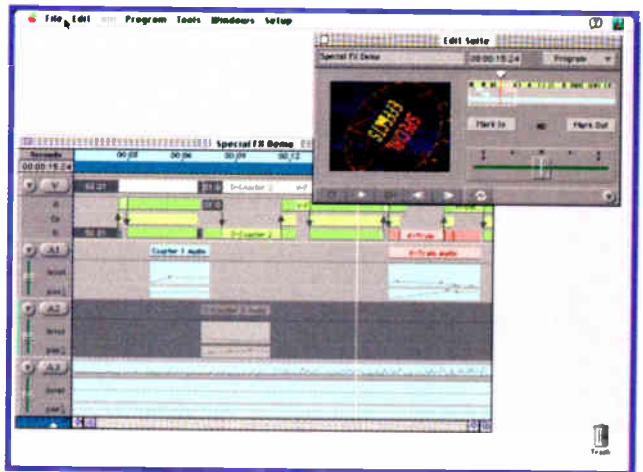


Figure 1: The Program and Edit Suite windows.

Bus boards; the boards are connected to each other by a pair of short ribbon cables. External cabling is likewise straightforward. On the Media 100 video card are connectors for composite and S-Video in and out, and the processor card has a 26-pin male D-shell connector, which, through the audio cable assembly, breaks out to four XLR connectors for two channels of audio in and out.

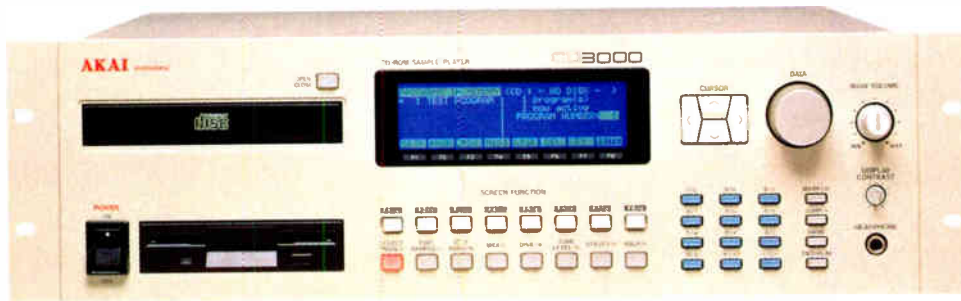
### OPERATION

Media 100's user interface is clean and uncluttered. It is divided into three windows: the Edit Suite, Clip



# CD3000

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Bin and Program windows. The Edit Suite window serves as the master control panel for the system and operates in three modes: digitize, edit clip, and program. The Edit Suite window contains a subsampled display of the video that is constantly being output on the external NTSC or PAL monitor. When digitizing source material, the user can check the appropriate boxes to enable video and/or audio channels (one or two). If video is enabled, you select a compression rate, which determines the image quality of the resulting clip.

The compression rate is specified in terms of kilobytes per frame, within the range of 20 KB to 60 KB per frame. At 20 KB per frame, video quality is poor (just good enough to make edit decisions), but disk space is conserved (used at an approximate rate of 1 GB every 27 minutes). This compression rate might be useful when you just want to export an edit decision list, rather than output actual video to tape.

At 60 KB per frame, Media 100 delivers video quality fairly comparable to Betacam SP, but disk space is gobbled up at a rate of about 1 GB every nine minutes—suitable for 30- or 60-second spots. An interesting point about Media 100's proprietary codec is that compression rates are adjusted dynamically to take advantage of the changing nature of the video signal. The compression rate setting reflects an average data rate. Note that audio data is digitized without compression and is not figured into these disk utilization estimates.

The audio channels have built-in 255-step, 1/2dB per step attenuation and mute at the input. However the current version of software does not support this feature. (It provides only a +4/-10 level switch.) So the user must have other means of setting appropriate audio levels for the Media 100's inputs. Audio level meters are provided in the Edit Suite window in digitize mode, but they are designed to look like VU meters (Fig. 1). The manual advises that the VU meter reference mark "should only occasionally be exceeded." No absolute indication of input overload is provided.

Digitizing at the highest-quality setting (60 KB per frame) from a Hi-8 source with stereo audio, I found the quality of the video image to be quite impressive. I digitized a famil-

iar track from a CD into the system's analog inputs to get a better idea of its audio capabilities. The results were surprisingly good. It won't cause any sleepless nights for the designers of higher-end digital audio workstations, but it'll give most professional video gear a run for its money. And it is certainly beyond the quality of most video playback environments. One caveat here: When digitizing video at 60K/frame along with audio tracks, the Media 100 pretty well uses up the available resources of the Macintosh. The system gives priority to video, audio and

user interface functions, in that order. It is possible to get an occasional pop or click in the audio when digitizing along with video at low compression (high quality) rates. However, I never had this happen when digitizing audio tracks by themselves.

Speaking of audio, users of Digidesign audio workstation products will be interested to know that Media 100 can import mono Sound Designer II format files (44.1k) directly, with no format conversion. This is the only way to transfer audio files to Media 100 in the digital domain, since no digital I/O is provided. (Other import/ex-

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port capabilities include PICT and PICT2 files, and QuickTime movies.)

While the system is marketed as an online, random-access video editor, it can function as a simple audio post system as well. As mentioned earlier, audio is limited to four 44.1kHz, 16-bit tracks, and the S/N ratio for audio is rated at a modest -80 dB. A maximum of two audio tracks can be recorded simultaneously (via analog balanced XLR or unbalanced RCA inputs), and playback of four tracks is mixed to two channels. Level and pan changes are implemented by drawing and moving "rubber band" lines on the audio track (Fig. 1), a method that does allow dynamic mixing but requires a trial-and-error approach, as opposed to a real-time fader automation system. Audio scrubbing of the waveform display is supported. Audio clips can be trimmed, cut and pasted the same way as video clips (see below).

As sections of source material (video and/or audio) are digitized into clips, they are collected in a Bin window for storage. (Clips can be stored in any number of bins, and multiple Bin windows can be opened simultaneously.) These clips can then be dragged back to the Edit Suite window for trimming.

Selecting Edit Clip mode in the Edit Suite window allows you to view the clips for the purpose of marking in- and out-points. Clips can be scrubbed back and forth or played via the transport controls. In- and out-points can be entered using time code or by clicking the Mark In and Mark Out buttons while viewing the clip. Digital audio levels and pan controls can also be made available in the Edit Clip mode by expanding the bottom of the Edit Suite window.

Trimmed clips are dragged to the time line in the Program window. Here is where the program gets assembled. The clips can be dragged to either the A or B video tracks in the time line. Butting two clips on the same track will cause a cut between those clips. Placing one of the clips on track A and the other on track B allows either clip to be slipped along the time line to overlap the other, thereby changing the in- or out-points. Two additional audio tracks (either mono or a stereo pair) can be added to the Program window and slipped around to fit the

video as needed. The time scale can be zoomed in and out, with the maximum accuracy for audio editing being one video frame. To change the sequence of shots in your video, simply rearrange the order of the clips in the Program window. (No tape decks to shuttle.) The Media 100 lacks one function that audio people will miss. You can't nudge audio around while looping a video segment; you can't do sample-accurate editing of pops and clicks; and features such as normalize and gating are missing.

Media 100 is surprisingly stable (as long as you don't try to skimp on the system requirements). I was able to digitize video and audio, trim clips, assemble a storyline and output it to tape without experiencing any major technical difficulties—pretty astounding, especially considering the fact that I was running Version 1.0 of the software. Once I installed everything on the Quadra 950, the software was very stable, despite my efforts to crash it intentionally. It did have a few quirks, as one might expect in an initial release. For instance, renaming a clip in a Bin window after that clip had been moved to the Program window would result in the new clip name not being reflected in the audio tracks associated with that clip. But, all in all, it's a very impressive piece of gear for the list price of \$11,995.

Data Translation has a number of options to enhance the capabilities of Media 100. For \$995, the Media 100 FX option uses integrated Adobe Premiere architecture to allow the user to insert sophisticated digital video effects in the transitions between clips. Effects include wipes, dissolves, page turns, squeezes, expanding stars, etc. The quality of these effects is remarkably good.

The Media 100 EDL option, \$995, generates edit decision lists in CMX 3400, CMX 3600, Grass Valley Group and Sony BVE formats, reads SMPTE time code and allows remote control of VTRs from within Media 100. And the Media 100 CG option, at \$1,495, enables keying of anti-aliased titles and credits over video programs created within Media 100.

Data Translation Inc., Multimedia Group, 100 Locke Drive, Marlboro, MA 01752, (508) 460-1600. ■

*Phil Cochlin had become very jaded about the computer industry until desktop video and audio came along to renew his flagging interest.*

by George Petersen

# SENNHEISER MKH80 CONDENSER MICROPHONE

**A**lthough the Sennheiser name is associated primarily with quality dynamic microphones for studio, broadcast and live sound applications, the company also manufactures the MKH Series, a line of top-notch condenser microphones.

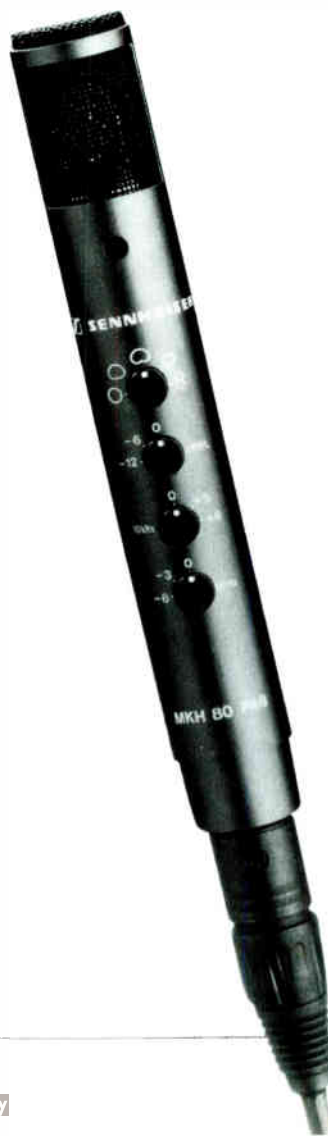
Introduced in 1986, microphones such as the MKH20 (omnidirectional) and MKH40 (cardioid) have received worldwide acclaim for their flat, uncolored response and extraordinarily low self-noise characteristics. The latest addition to the series is the MKH80, a versatile model offering a choice of five polar response patterns (omni, cardioid, wide cardioid, hypercardioid and figure-8), along with selectable LF and HF response tailoring and -6dB or -12dB attenuation.

The MKH80 shares a unique electronics design with the other MKH models, where the capsule is part of a tuned circuit in a radio frequency system. In traditional capacitive transducers, sensitivity is proportional to the polarizing voltage applied. So theoretically, a doubling of the polarizing voltage would double the mic's sensitivity, although such an action increases the electrostatic force between the backplate and the diaphragm, requiring additional diaphragm tension. This provides increased sensitivity while reducing LF response.

However, in the MKH Series, the capsule is charged via an RF voltage of approximately 10 volts, generated by a low-noise, high-frequency (8MHz) oscillator. By eliminating the polarizing voltage and using a symmetrical capsule design (with charged electrodes in front and in back of the diaphragm), the Sennheiser approach achieves high-sensitivity, low-noise

performance, which in the case of the MKH80, is a self-noise rating of 10 dBA. Combined with the mic's 136dB maximum SPL, this provides for a usable dynamic range of 126 dB—enough for 20-bit digital systems and far surpassing the puny 92 dB to 94 dB required by 16-bit technology.

The MKH80 is small—about an inch in diameter and just over seven inches long. Unlike the other MKH models, the MKH80's capsule is placed



in a side-address configuration, with the front of the capsule facing forward, transverse to the mic body. A bright red LED located between the capsule and the Sennheiser logo serves the dual purposes of marking the capsule's orientation, as well as indicating that the mic is receiving its required 48 VDC ( $\pm 4V$ ) phantom power. The MKH180's matte-black finish and compact size provide for an unobtrusive appearance in location recording applications.

Opening the MKH180's fitted wood-

en case, you'll discover another treasure: the MZQ80 mic clamp. I'm not often impressed by mic clips, but the

**Off-axis coloration was minimal. And noise was nonexistent.**

MZQ80 is an ingenious device—a sort of double-jointed affair with two hinge points that allow the mic to be placed easily in any direction. It really helps get the mic into tight places.

such as drum kits or close-up on instrumental soloists in ensembles.

I used the MKH180 over a period of months on every type of session, including pop, rock, jazz, new age and neoclassical. I was impressed with its ability to capture sounds without colorization. And when combined with a high-performance mic preamp—the Millennia HV-3, in this case—the results were phenomenal, providing a transparency that seemed to bring the performance right into the control room. On one session, I placed the MKH180 about three feet in front of and slightly above a solo cello, yielding a wonderfully rich, warm low end with a rosin-filled presence that aptly conveyed the bite of the instrument.

At that point, a couple things became clear. The first is that the MKH180 has a flat HF response that lacks the pronounced 10kHz to 12kHz bump commonly found in many other condenser mics. Of course, if you want that sound, you can use the +3/+6dB presence boost switch to bump up the top end, but I liked the way the mic sounded as it was, which was quite natural. Second, the mic's small-diameter capsule acted more like a large-diaphragm transducer, which afforded plenty of LF performance while maintaining transients. In many ways, this is the best of two worlds, and I like it—even on vocals, where a small-diaphragm condenser is not typically my first choice.

Polar response seemed to be fairly tight, and any differences in the mic's sound between the various patterns were minor. In the directional patterns—cardioid, wide cardioid and supercardioid—off-axis coloration was minimal. And noise was nonexistent.

Overall, the Sennheiser MKH180 is an excellent performer that would fit into nearly any recording situation. Obviously, the main drawback is its \$2,950 price tag, which may prove a formidable obstacle to many studios. Fortunately, for the \$5,900 price of two MKH80s, a studio could forego the multipattern convenience and purchase two MKH20 (omni) and two MKH40 cardioids, which, at \$1,250 each, offer most of the MKH180's sonic advantages at a more affordable price. Either way, you won't be disappointed.

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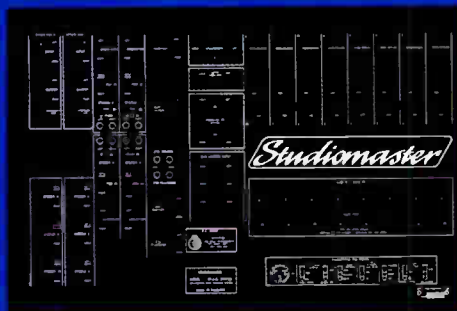
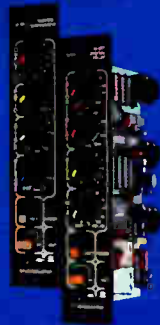
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by George Petersen

# NTI EQ<sup>3</sup>

## SOUND ENHANCEMENT SYSTEM

**A**t last fall's AES Convention in New York City, I stopped at a small booth from an unfamiliar company whose demonstration of a new approach to signal processing brought nods of approval from most of those who listened to it. The company was Night Technologies International, and I was among those who liked what I heard. However, in my mind, a five-minute headphone demo on a trade show floor is not irrefutable evidence. But I was sufficiently intrigued, and after the show, I decided to see if I could check out a unit in the more neutral turf of my own facility.

manipulation of a signal's amplitude," and the EQ<sup>3</sup> fits this perfectly. Unfortunately, the term "equalization" has been accompanied by jeers and boos from the illuminati in the audio community recently, and sometimes with good reason. "Equalized" tracks typically exhibit phase distortion, image smear and harshness, leading many engineers to seek tonal shaping in ways *other* than equalization, such as careful mic selection and placement. This is not to say that equalization is a bad thing—in fact, tools such as notch filters are invaluable additions to any engineer's bag of tricks.



But before we get too far, there are some things you should know about the NTI EQ<sup>3</sup> enhancer. First, it's an analog device. All processing takes place in the analog domain, and the inputs and outputs are analog—balanced transformerless XLRs with Pin 2 hot, although a second set of analog outputs (unbalanced, 1/2-inch jacks) are also provided for convenience.

Second, though Night Technologies prefers to refer to the EQ<sup>3</sup> as a "Sound Enhancement System," the device is an equalizer. The textbook definition of an equalizer is "a circuit that allows the frequency-selective

So the EQ<sup>3</sup> is an equalizer, although it takes an entirely different approach to tonal manipulation. In conventional analog equalizers, whether they are shelving, sweepable, graphic or parametric types, various sections of the audio spectra are boosted or attenuated by adding or subtracting bandpasses. In the EQ<sup>3</sup>, frequency shaping is achieved by summing bandpasses. There are five broad, overlapping, interacting bands: 10, 40, 160, 650 and 2.5k Hz, along with an "air" band. The latter is an HF boost-only control, while the concentric controls on the other five

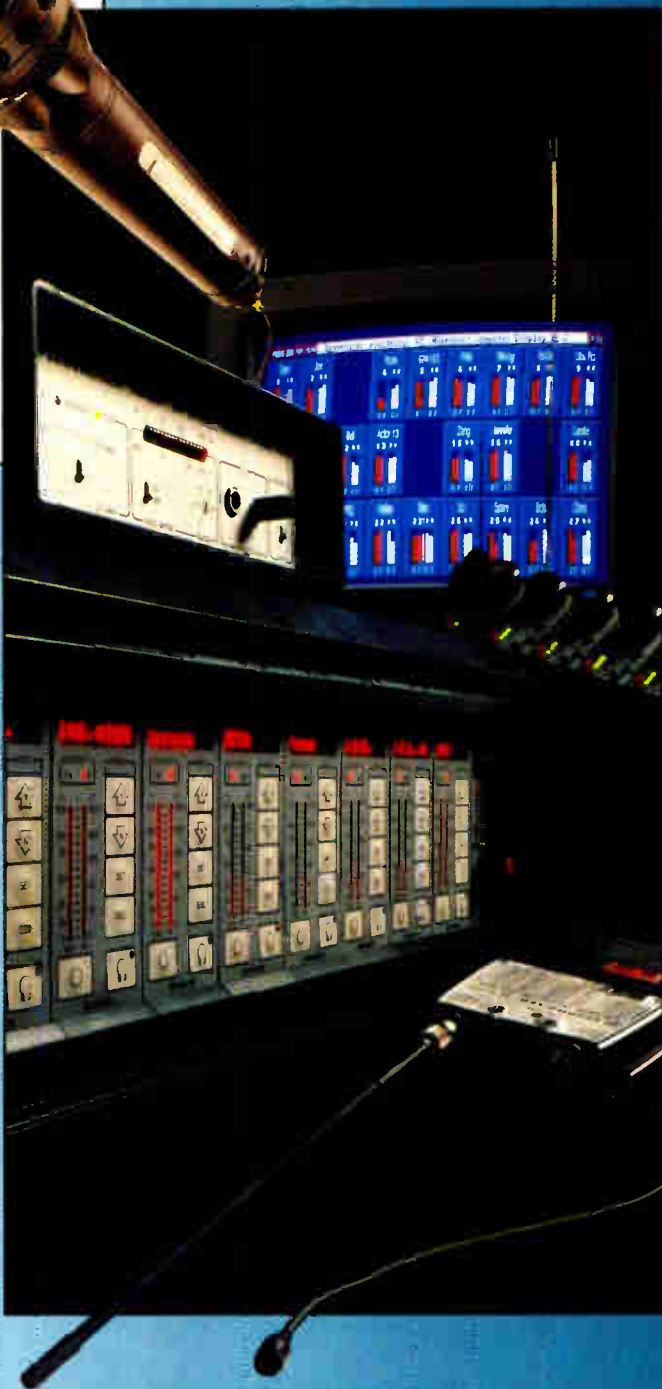


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bands provide  $\pm 15$  dB in five 3dB steps on the outer (coarse) control; the center of each concentric offers fine-tuning in  $\frac{1}{2}$ dB steps.

The front panel of the EQ<sup>3</sup> is about as simple as one could hope for in a pro audio device. However, there are a few things to keep in mind. A "flat" response is achieved by putting all the coarse band adjustments in the zero (12 o'clock) position and all the center (fine-tuning) knobs in the extreme clockwise position. These  $\frac{1}{2}$ dB/step fine adjustments are cut-only attenuators, so operation of the unit takes a little time to get used to. For example, achieving a +4dB boost at 2.5 kHz requires setting the 2.5k's outer knob (coarse adjustment) two clicks to the right (+6 dB) and then attenuating the inner  $\frac{1}{2}$ dB control eight clicks to the left. The "air" control is slightly different—it operates in Boost-Only mode, so in the "off" position, its coarse adjust knob is turned fully counterclockwise.

Also on the front panel are separate in/out (bypass) switches and channel-on LEDs for each channel.

There is no AC switch, although the unit can be set to operate at various voltages between 100 and 250 volts, 50 or 60 Hz.

One of my first tasks for the EQ<sup>3</sup>

**The EQ<sup>3</sup> sounds wonderful on just about everything—sort of the audio equivalent of Courvoisier: rich, sweet and smooth.**

was resuscitating a DAT of one of the recent Steely Dan reunion concerts that someone had recorded using a portable deck and a couple of hat-mounted mics. This particular tape had a couple of strikes against it: The show was recorded on some inexpensive mics in a boomy venue, and,

judging by the sound of the tape, it seemed that the recordist was fairly far off-axis to the speakers. I made several attempts with conventional parametric EQ, but the tracks just seemed to sound worse and worse—there was a lot of mush, and the snap was gone.

However, using the Night EQ<sup>3</sup>, I was able to make some corrective changes (-6dB at 10 Hz, -4dB at 650 Hz, +2dB at 2.5 kHz and a couple clicks of "air" boost) that made a major difference in the sound, without making it extreme or unnatural. Obviously, if the EQ<sup>3</sup> could help out these tracks, it would be ideal for minor tweaking of a well-recorded product in a mastering situation. As such, the EQ<sup>3</sup> is perhaps best thought of as a "program" equalizer—used to make subtle changes in sounds, rather than as a drastic tool for surgical correction.

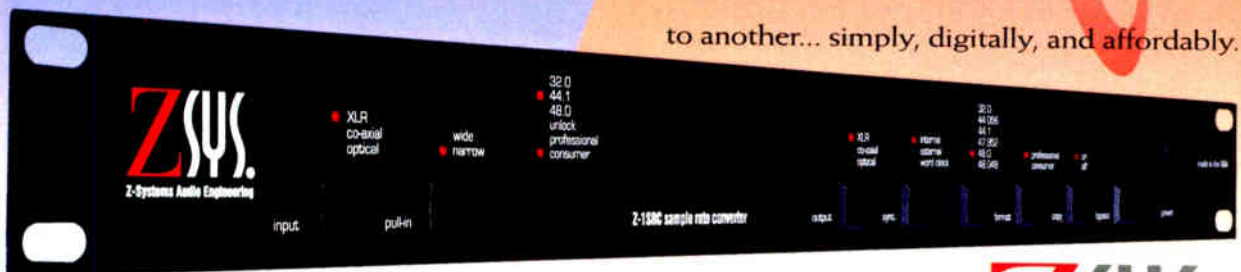
At this point, I wanted to get an idea of what the EQ<sup>3</sup> was really doing, so I checked it out using a Neutrik A-1 Test System. As promised, the EQ<sup>3</sup> had a frequency response that was flat from 20 to 40k Hz ( $\pm 0.5$  dB), with only a few minor +0.25dB

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bumps at the frequency centers. What surprised me more was that with *all* the bands set at maximum boost, the frequency-response curve was still linear—only exhibiting a boost in the gain from the equalization action. Total Harmonic Distortion + Noise measured out at 0.005%, which is the spec.

The 10, 10, 160 and 650Hz bands were centered exactly as indicated, although the band marked 2.5 kHz peaked in the 10kHz range. All equalization action fell into smooth bell curves, at gentle 2dB octave slopes, with the exception of the 2.5k setting, which had an ultrabroad slope of 0.25dB/octave. As with most other audio devices, my advice to any EQ<sup>3</sup> user is to go by what your ears tell you is right rather than getting hung up on the numbers.

My main complaints about the EQ<sup>3</sup> relate to ergonomics: the two bypass controls are about ten inches apart—too far for comfortable “one-hand” A/B switching—and the EQ controls are spaced on 1-inch centers, which is rather tight for a large outboard equalizer. But fortunately, the EQ<sup>3</sup> sounds absolutely wonderful on just about everything. It’s sort of the audio equivalent of Courvoisier: rich, sweet and smooth.

Aside from using the EQ<sup>3</sup> as a sweetening device on program material, the unit is equally at home in the studio for brightening percussion or acoustic tracks or adding some sheen to emphasize a vocal part. The EQ<sup>3</sup>’s tight phase response (generally within 10 degrees in typical applications) is excellent, and there was no apparent degradation or smear of the soundstage or imaging in stereo applications. With this in mind, the unit should prove suitable for video and cinema sound work, where the stereo tracks are destined for later matrixing in surround systems.

In addition to studio, mastering and post applications, the Night Technologies EQ<sup>3</sup> would also be a suitable choice in a variety of other pro audio applications, such as live sound, broadcast production and duplication chains. The unit retails at \$4,300, although an introductory pricing of \$3,600 is in effect until May 1, 1994; a leasing plan is also available, as are modular versions for rack and in-console installations.

Night Technologies International, 1686 West 820 North, Provo, UT 84601; (801) 375-9288, (800) 375-9289. ■

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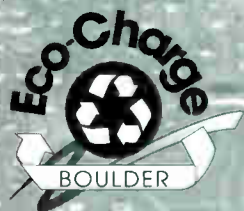
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# NEW PRODUCTS

## DDA AUTOMATION

DDA (dist. by Mark IV Pro Audio Group, Buchanan, MD) is now offering the microFILE VCA system, providing automation of all input and tape monitor faders on DDA's QMR and DMR-12, and of all inputs and the eight channel outs on the Forum Composer (packages of 24-56 channels are available). The system consists of 8-channel "motherboards" that connect to a proprietary computer mounted under the console. It offers a multistandard time code reader; color display of fader position, channel modes and time code values; real-time mix comparisons; and nine VCA groups, with one fader designated as master. Users can also write, update, isolate, read or mute individual input or monitor channels.

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## NEUMANN TLM170R

The TLM170R from Neumann USA (Old Lyme, CT) is the first microphone allowing polar patterns to be switched remotely via a standard 3-pin XLR cable. The five patterns also can be selected with a rotary switch on the microphone, as long as 48V phantom power is provided, and the N-18 R-2 phantom power supply/controller can control two microphones at a time. Older TLM170s must be modified for remote control.

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## SONY HR-MP5

Sony's (Park Ridge, NJ) new half-rack multi-effects processor has six processing blocks that can be rearranged in the signal chain. Retailing at less than \$700, the unit provides 48kHz sampling, twin A/D converters for each input, intelligent pitch shifting, a built-in tuner, a jog-shuttle dial, a large backlit LCD screen, 100 factory presets and 100 user-definable presets. Optional is the RC-5, an eight-pedal MIDI remote controller, priced under \$300.

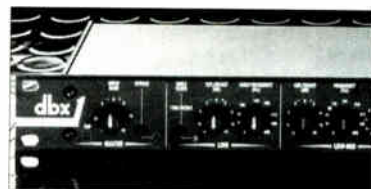
## DRAWMER 1961 TUBE EQ

Drawmer, distributed by QMI of Hopkinton, MA, unveiled the model 1961, a 2-channel equalizer incorporating a modern vacuum-tube design in a two-rackspace package. Each of the four bands has a separate tube section, providing "soft clipping" that is controllable by adjusting the input gain controls. Other features include overlapping  $\pm 18$ dB bands and two high- and lowpass filters, each with 12 dB of rolloff. Retail is \$2,699.

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## DBX 242 PARAMETRIC

dbx (dist. by AKG Acoustics, San Leandro, CA) added the 242 Parametric Equalizer to its Project 1 processing line. The 242 offers three bands of fully parametric peak/dip EQ and two bands of shelving filters, each with a switchable shelf slope of 6 or 12 dB. Each band provides 16dB boost at any band-



width, while a .05-octave minimum bandwidth allows the parametric bands to function as notch filters with over 40 dB of cut. Suggested retail is \$299.

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**TANNOY PBM MARK II**

New from Tannoy and distributed by TGI (Kitchener, Ontario) are the PBM Mark II monitors, which are refined versions of the company's original PBM series. Available as the PBM 8 II, PBM 6.5 II and PBM 5 II (with the number referring to the woofer size), all feature a two-way design, with a soft-dome HF ele-



ment, injection-molded cone materials, rear porting, five-way gold-plated binding post inputs and removable grilles. The PBM 5 II are priced at \$350/pair; the PBM 6.5 II are \$450/pair; and the PBM 8 II are \$795/pair.

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**CM AUTOMATION UPDATE**

CM Automation (Los Angeles) is now delivering its MX-816 and FX-100 Automation Control Console, a turnkey interactive automation system. The FX-100 controller (\$449.95) has eight long-throw 100mm faders with mute/solo buttons, global record in/out, and Update/Rehearse mode switches and tri-color LEDs on each channel to indicate automation status. Working with the rack-mount MX-816 simplifies the storage of automated mixes to any MIDI sequencer. Available in 8- or 16-input versions (\$489.95 and \$779.95), the MX-816 has gold-plated RCA audio inputs and outputs and uses dbx 2150A VCAs and low-noise 5532 op-amps for high-quality reproduction.

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**BEYER TG-X50 BASS DRUM MIC**

Beyer Dynamic (Farmingdale, NY) announces the TG-X50, designed for the close-miking of kick drums, floor toms and other high-SPL sources, such as horns and speaker cabinets.

The TG-X50 is a dynamic microphone featuring a neodymium magnet structure and a hypercardioid polar pattern for high output and improved directionality. Frequency response in close-miking is rated as 30-18k Hz; retail is \$399.

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**RSP TECHNOLOGIES CIRCLE SURROUND**

Said to be the first surround-sound system designed specifically for music production, Circle Surround from RSP Technologies (Rochester Hills, MI) also is compatible with theater-style surround systems. The Circle Surround encoder features full bandwidth and channel separation in the rear, providing complete freedom in assigning and sweeping effects within the 360° sound field; an active steering process directs information to its intended location in the soundscape. Other features include a remote four-joystick panner, +24dB maximum I/O, and balanced XLR and 1/4-inch jacks. A pro-quality, rack-mount decoder is also available.

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**DIGITECH TSR-12**

DigiTech (Sandy, UT) announced the TSR-12 multi-effects processor, designed to replace the company's DSP-256XL unit. Based on the S-DISC processor, the TSR-12 offers all of the basic effects of the TSR-24 at a lower price. The 33 preset algorithms include reverb, delay (up to 1.5 seconds), pitch shifting, chorus, flange, phasing, modulation effects and noise reduction. A servo loop continually locks in the digital bias to keep the signal reference point constant and minimize digital aliasing noise.

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**EBTECH HUM ELIMINATOR**

Distributed by Greysounds (Bandon by the Sea, OR), is the Ebtech Hum Eliminator. As an alternative to ground lifting, the device stops the AC hum that can occur when two pieces of audio equipment are interconnected. The Hum Eliminator also can convert balanced to unbalanced lines and vice versa. Two versions are available: a pocket-sized box with two pairs of inputs and outputs on 1/2-inch TRS jacks, and a pro 8-channel rack unit. The Hum Eliminator is said to have distortion of less than 0.0006% THD at 1 kHz and crosstalk of less than -97 dB.

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**MASTERFONICS TEST CD**

The Studio Test Disc from Masterfonics Inc. (Nashville) is a CD offering reference level tones for A/D-D/A calibration, analog tape deck alignment tones, spot and sweep frequency response tones, positive polarity pulses compatible with popular phase-checking devices, pink and white noise, phase tests and signals for testing digital meter accuracy. Also included are 45 original Wendel Jr. drum samples (digitally transferred from Roger Nichols' masters) and 30 minutes of SMPTE time code at 29.97 and 30 NDF. Suggested retail is \$25.

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**R/AUDIO COMP/LIMITER**

Manufactured in St. Petersburg, Russia, the PS-3010 from R/Audio (Pittsburgh, PA) offers two channels of full-featured compression/limiting for only \$129. The rack-mountable unit provides compression ranging from 1:1 to 1:infinity at threshold levels from +15 to -70 dB, with distortion said to be less than 0.05% and frequency response  $\pm 1$  dB (20-20k Hz). Also included is a sidechain for signal ducking.

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**MIDIMOTOR HUMBUSTER**

MidiMotor (San Diego) introduced the Hum-buster, a unit that can isolate ten separate pieces of equipment to eliminate ground loops. The Hum-buster contains an AC isolation transformer with ten secondaries and AC power receptacles with disconnected ground pins: four supply 60 watts (for most synth modules), four with 125 watts (for many effects units) and two provide 300 watts



(for mixers and power amps). Also included is a line conditioner/surge protector.

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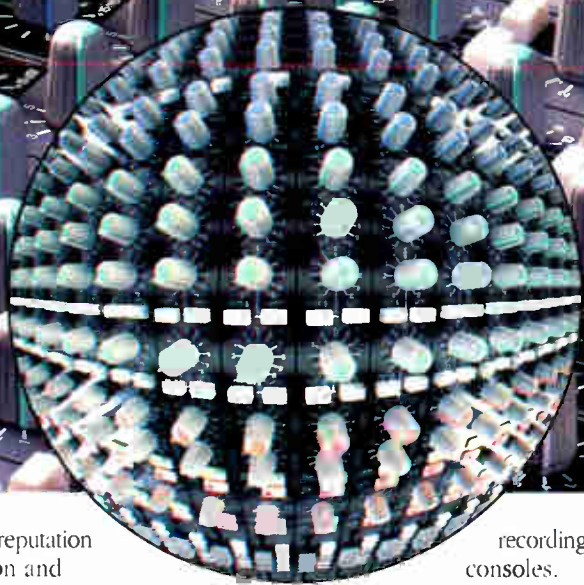
**HOT OFF THE SHELF**

An interface for the AT&T DISQ Digital Mixer Core now brings fully digital mixing capabilities to analog SSL E and G Series consoles. Call (919) 279-4826 for info...Premium Entertainment released a four-hour, two-part video series entitled "Adventures in Modern Recording." The videos feature producer Eddie Kramer and a visit to Les Paul's personal studio. Retail is \$99.95 plus shipping; call (800) 995-9664...Tone Enterprise's Dam-Pilo is a variable tone control and damping device for kick drums. Call

(800) 531-9446 or (415) 756-2312...FirstCom/Music House/Chappell introduced a four-CD sub-library called "The Nashville Sessions," featuring a wide variety of country music in the Action, Specialty and Underscores categories from Nashville's top composers and session players. The discs are part of 29 new titles being added to the Personal Music Library, ranging from hip-hop to acoustics. Call (800) 858-8880...New CD production music releases from Manhattan Production Music include "Corporate Culture," with 11 themes and 55 cuts for corporate

or nature visuals. "Under Siege" has 11 themes and 55 cuts of uplifting industrial orchestrations. Call (800) 227-1954 or (212) 333-5766...NetWell Noise Control has a new line of sound-absorbing 2x2-foot foam panels with an NRC value of 1.00. The panels come in 1-, 2- and 3-inch thicknesses, in standard and custom colors. Call (800) NET-WELL...Doc's Proplugs, now available for musicians and audio technicians, attenuate high frequencies while permitting conversation. Six preformed sizes are offered, at \$8 a pair; call (800) 521-2982. ■

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World Radio History

by Mark Frink

# SOUND CHECK



**Dave Lewty, Amek northeast regional manager, and David Scheirman (right), of Concert Sound Consultants and Lone Wolf, demonstrate the 40-channel Recall by Langley console at the 1994 Live Sound Reinforcement Workshop in Orange, CA, held January 17-19.**

## LIVE SOUND WORKSHOP

For the fifth year, the Live Sound Workshop, sponsored by Syn-Aud-Con and *Pro Sound News*, was held at Chapman University in the days preceding the NAMM show. Arriving a day early to observe the setup, I witnessed what seemed to be far too many pieces of equipment being loaded into the auditorium for a venue of its size.

The local crew consisted of volunteer students from the California Institute of Concert Sound Engineering, a part-time school in Anaheim that runs a 15-month program devoted to education for live sound applications. CICSE's unique program brings motivated students through five distinct levels of instruction, beginning with basic concepts, ending with troubleshooting and field maintenance, and emphasizing practical approaches for anyone contemplating a career in live sound. Any sound companies in the L.A. area needing a good intern should contact Jim

Paul, CICSE director who served as the Live Sound Workshop facilities coordinator and crew chief for the second year. His students were like kids on Christmas morning: All the gear was in place at lunch, and there was a feast of pizza and soda.

The next morning, having left the traditional double wake-up call with the front desk, I was surprised to feel the bed shaking in the wee hours. This was it, California at its finest: 6.6 magnitude. My room was on the 19th floor, and there were immediate regrets at having made "shake and bake" jokes at dinner with the sound crew the previous evening. The consensus at the workshop on the first day was that the attendees had already gotten more than they had bargained for.

Production assistant Rudy Trubitt helped redesign parts of this year's program, dividing it into two tracks: student and advanced. The sound system in the auditorium was set up using

three snakes and was fed downstairs to three control rooms, each with an Allen and Heath GL3 console, TOA monitors, Carver amps, and processing by dbx and Yamaha SPXs. These rooms were dedicated to vocal, drum and instrument instruction, and each received a split from the auditorium. Using a pre-recorded multitrack tape, instructors in each room began by presenting basic concepts of mixing and processing that would be used in the live practical on the third day.

Will Parry kicked off the workshop by discussing business strategies for profitability. He talked about the size and makeup of the sound services market. (It represents about 2% of the volume of the potato chip business in this country!) Later, in the small discussion groups, he had some specific pointers for economizing the cost of doing business, including annually shopping around for both

—CONTINUED ON PAGE 132

PHOTO: JOE SPIEGEL/PRO SOUND NEWS



# Todd Rundgren In the Round



faces and monitors from which Rundgren performed. Overhead was a 12-foot-diameter round video pod supported on legs from the stage, which held video monitors in banks of four. The show drew on Philips CD-I players for the visuals, in addition to live material from cameras. Other visuals were generated from a Video Toaster 2000. The lights were under MIDI control, and the lyrics were stored on a Macintosh PowerBook. Lyrics and other *bon mots* were displayed on overhead message boards during the performance.

Rundgren used a Peavey MIDI controller, on which songs or "scripts" were programmed on the first 25 keys. The next block of keys were mapped as "transport controls" for starting, stopping, looping and changing tempo. The remaining keys contained the sections of each song and special sound effects. The songs were stored on a Quadra

**T**odd Rundgren's interactive multimedia one-man show—dubbed TR-i, the "i" is for interactive—recently caught our attention since Rundgren has pioneered technological advances in the field of live sound production.

Presented "in-the-round" in "techno-rave" fashion, the show featured a 16-foot-diameter stage that supported a four-foot-high command center. The command center housed the control sur-

**Above: Rundgren's circular stage setup. Left: Larry Toomey, Rundgren, production manager Greg Guzzerta and Jollis Roger.**



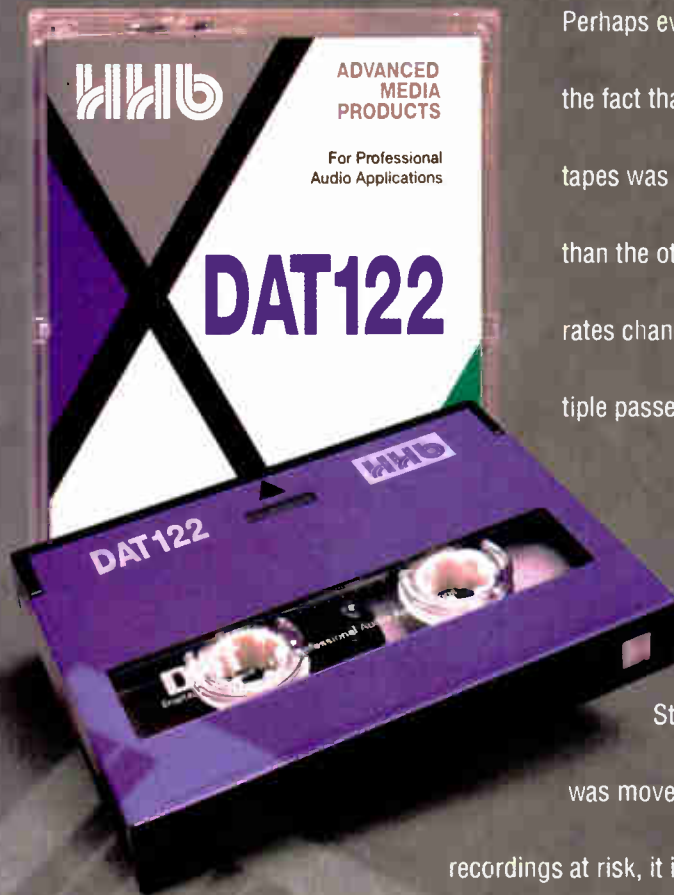
PHOTOS STEVE JENNINGS

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Three exhibited similarly low error rates with the others presenting error levels considerably higher. HHB DAT Tape was one of the leading three.



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650 running Opcode's Max software. The show used sound modules and samplers to generate the actual sounds from the record. These, along with Rundgren's guitar and headset mic, were mixed into 24 channels of Peavey program mixers. The speakers were Peavey DTH-4s in a four-corner configuration with subwoofers under the stage and small speakers mounted under the video monitors. A UREI compressor was used on the vocal mic to level out the vocals.

The show was entirely under Rundgren's control, using no sound from headset mics over the cue buses of the two consoles. Downstairs, dedicated technicians Larry Toomey and Greg Guzzetta operated several computers that enabled Rundgren to make this all possible. It will be interesting to see how the performance systems of the future take these concepts and incorporate them into a streamlined approach, but the big question is why.

Ten years ago Rundgren and his band, Utopia, pioneered the use of headset mics and in-the-ear stage monitoring—two plug-and-play technologies we take for granted today. At the time, there were no manufactured products for these purposes, and improvisation with Walkmans and lavalier mics mounted on "booklights" was the order of the day. The goal for the group was to travel with very little stage gear other than Willie's motorbike drum set and achieve consistent results. A second benefit was to free Rundgren to move around the stage and perform at much lower stage volumes. This was generally good for the performance, as many artists have discovered since.

Rundgren's current use of interactive technology frees the artist in a different way and opens up options as a performing creator. In the beginning of the concert, there are instructions to the audience and the introduction of an up-tempo musical theme: the show begins in a similar way each night. The

performance is nonlinear and can go off in any number of different directions musically, structurally and improvisationally. This type of show requires extreme amounts of pre-production, however, and that work is very detail-oriented, Rundgren warns. The performance is created drawing on thousands of sequenced musical segments and themes in addition to the live playing and singing.

There are a vast number of decisions to be made at any

moment during the show. There are also invitations to the audience to become involved as dancers on stage, as camera operators and as percussionists on pads in the set. In contrast to a typical tour, it is Rundgren's intent that the same show is never performed twice, nor is it likely that it could be. Due to the high degree of flexibility and the requirement for constant mental focus, there is little chance for the artist to become bored night after night. ■



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—FROM PAGE 128, WORKSHOP  
insurance and telephone services.

Mick Whelan, who spent 19 years with Showco and is now employed by JBL, gave an instructive talk on power distribution and an enlightening demonstration on speaker interaction in multiple-driver arrays. Dave Robb gave a talk on the points of permanent installation for multipurpose venues. Kenton Forsythe discussed the design and optimization of loudspeaker arrays in an advanced class.

For the second year, the system operator was Dave Revel, an independent engineer who also mixes Chick Corea and Eddie Eubanks. I can't think of a tougher audience to mix for, and my hat is off to him for handling multiple zones, wireless microphones, and the complex routing and mixing chores for this workshop. The sound system for the event was provided by Sound Image of San Marcos, Calif., which used it for Jimmy Buffet and recently on the Heart tour.

The workshop provided an opportunity to investigate the first touring sound system that used QSCControl, a QSC version of a MediaLink network. The network runs on fiber-optic cable, which connects each of the amplifiers via fiber-optic hubs and a central computer. A bridge, located in the house drive rack at the mix position, converts RS-232 from the computer's serial port so that it communicates with the devices on the network. This particular system had two racks per side, with a fiber hub in each rack. One of the amp racks had a second bridge so that a computer could also be set up simultaneously at the stage. A 300-foot, glass-fiber cable ran from the mix position to the stage.

The fiber cables and the optical ports on the equipment are all made by coupling the optical "windows" at the end of each cable together, using a hollow twist-lock coupler, which resembles a small BNC connection and holds the two windows face to

face. The optical connection eliminates the need for concern about ground loops.

Each port has two optical connections: a send and a receive; polarity must be observed. Each cable is actually two fibers, one transmitting in each direction. The amps inside the racks are equipped with plastic ports and are either short runs from the fiber hub in the rack or jumped from a neighboring device.

The small concert speaker system consisted of two high-packs and one sub per side. Although not all of the amps in the four racks were necessary, they were turned on to demonstrate the QSCControl system on the computer. The user accesses the devices on the network by running the Virtual Network Operating System.

On startup, VNOS does an inventory of the network devices and displays the "icons" or symbols for each in the inventory window. Our inventory window

displayed icons for the two bridges and 22 amplifiers. A control panel for each audio device can be opened in its own window by clicking the mouse on the icon. The Control Panel window has a display of the controls and metering associated with the selected device. The volume, mute and polarity controls can be manipulated with the mouse.

There is also an auxiliary audio in and out bus, which can be turned on at the control panel and can be used for test tones. The control panel also includes metering for input, output clip limit, gain reduction and temperature.

One of the major advantages to the user—beyond the real-time remote control and monitoring of the individual amplifiers—is the ability to control a variety of devices from different manufacturers in custom software configurations for specific applications. A simple example used in this setup was a matrix view of a concert array whereby

## Club of the Month

The Fenix Club, nestled between the Kingdome and Pioneer Square in Seattle, recently renovated their sound system. Rick Wyatt, who owns the club along with John Corbett (the DJ of *Northern Exposure* fame, is the club manager. With a capacity of 500, they now have four stacks of JBL SR 4700 Series. The system is four-way tri-amped with Crown MA 2400s on the lows and mids and a PSA-2 on the highs.

The club is a typical downstairs venue with a low ceiling. Since they can't hang the speakers, they have the stacks in an outside/inside arrangement, two at each of the walls and two at the dance floor at each side of the front of the stage. This allows them to evenly spread the sound around the club and bring the level up on the dance floor when things start cooking, according to Wyatt. The club also acquired a new Soundcraft Spirit Live! 24-channel console that has four auxiliary returns on faders. The club's engineer, Brad Gregory, who also works at RMS Sound, says this gives them enough inputs to accommodate a variety of support act situations.

*If you are a touring engineer and you have worked in a club where there has been an investment in equipment that makes it an exceptional place to mix please write to Mark Frink at Mix and enclose a photo of the equipment and the people responsible. ■*



the operator could adjust the volume, by rows, of individual lows, mids, highs and tweeters, or the entire row.

Other features include the ability to monitor amplifier temperature, audio levels and clipping through custom, system-wide windows, which can be programmed to pop up at specific, user-defined thresholds. In addition to supporting products from the growing number of MediaLink licensees, the network will have the ability to carry other data formats and protocols, including MIDI, SMPTE, SCSI, PA-422, MPEG and digital audio.

Problems associated with the network have all been related to the optical connections. An optical meter is used to measure the line loss of the cables, which is under 3 dB when working correctly. The common failures are due either to dirt contamination or abrasion to the window—causing transmission loss at the end of the fiber-optic cable—or malformation of the connector, which causes misalignment of the two windows.

The cables are supplied with small plastic covers for the connectors and the ports to protect them. The small size of the glass fiber-optic window means that it doesn't take a very large piece of dirt to interfere with it working correctly. An initial network problem with the workshop system was traced to the glass-fiber cable going cross-stage. It was surprisingly easy to troubleshoot. Once corrected, the network ran flawlessly.

A Yamaha PM4000 was used as the main console for the live performance practical on the final day. This is surely the yardstick against which all consoles will be compared for now. The FOH signals were split and sent to a Recall console by Langley (made by Amek). The Langley had most of the same features as the Yamaha, plus a couple useful and unusual ones.

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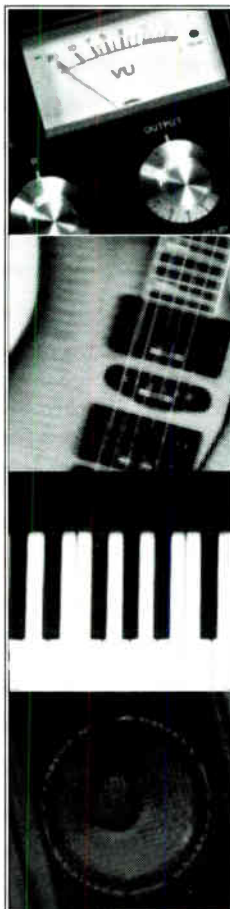
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forcement adaptation of Amek's Supertrue software, running on a 486 computer and allowing the eight VCA and mute groups to be assigned and controlled via 128 scenes in memory. All console knobs and switches could also be "charted" to memory automatically in 30 seconds. A display assists in quickly resetting each channel. Any modified knobs and switches are highlighted in red until they are reset, after which they gray out. In Auto Recall mode, these channels are found automatically. There is also a sampled voice prompt heard through the headphones (recorded in Rupert Neve's voice) that indicates the positions that need to be reset.

The second feature is access to the VCAs through "Virtual Dynamics," a software control package that emulates nine gate, compressor, limiter or auto-panner programs. They can be patched to each channel, running on the individual VCAs and eliminating the need for outboard dynamics processing.

The third day featured live music. During lunch, the band gear arrived and was wired up. The soundcheck practical, given by Craig Shertz, was run on the Yamaha, and there were pointers on line check and proper setup of equipment. Later, during the performance by R.B. Stone and his band, the outputs of the two consoles were switched back and forth every four minutes, giving attendees a chance to try out some of the ideas developed earlier in the workshop.

Dozens of headphones were available for others to listen in as David Scheiman and Shertz gave tips on headset mics over the cue buses of the two consoles. Downstairs, the live mics were routed to the control rooms, with more instruction available on vocal, drum and instrument applications.

One thing that impressed me with the system's sound was the ELF (Extra Low Frequency) processor used on the low end. This sub-bass processor works in conjunction with a long-throw

bass speaker in a sealed enclosure. In order to implement this technology, users must either use the Bag End speaker designed for it or build their own sealed enclosure. Ported or tuned subwoofers will have severe problems. The technology takes advantage of the fact that a sealed enclosure has a smoothly falling response and places an electronically rising response on the signal sent to the amp to achieve a flat response at a much lower level than is possible with a tuned enclosure.

All in all, it was a very intense half-week for live sound professionals and students. There was much more, and we'll bring you any developments that arise out of the workshop in coming months.

#### QUICKTIPS

Gary King of Scorpio Sound (508) 584-0080 in Massachusetts uses Velcro™ on all the company's cables, from microphones to AC to multicores. It allows for faster, easier strikes, can "loom" cables together, and saves on tape and time. Inside racks, it bundles, fans-out and ties-back unused pairs. It can be purchased in bulk spools of back-to-back "hook and loop," cut to length and then fastened to the cable using a "hardware store" grommet kit. U.S. Slide in Boston sells 25 yards of 3/8" for \$40, which is rated for thousands of cycles. Single-sided Velcro is used for attaching belt-packs and beacon lights to consoles as well as putting skirts on the backs of equipment. Higher-torque products are used for putting together pedal boards and grilles on speakers. Thanks, Gary. ■

*QuickTips should be 50 words or less, and if we use it you'll receive a mention of your name and phone number, as well as a Mix T-shirt. If you would like to share your road-worthy knowledge, or other sound-reinforcement-related announcements, contact: Mark Frink, 4050 Admiral Way #305, West Seattle, WA 98116; phone (206) 933-8404; BBS (206) 933-8478.*



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# The Dinky Diaries

## A Tour of Clubland

by **Dinky Dawson**

(Editor's Note:

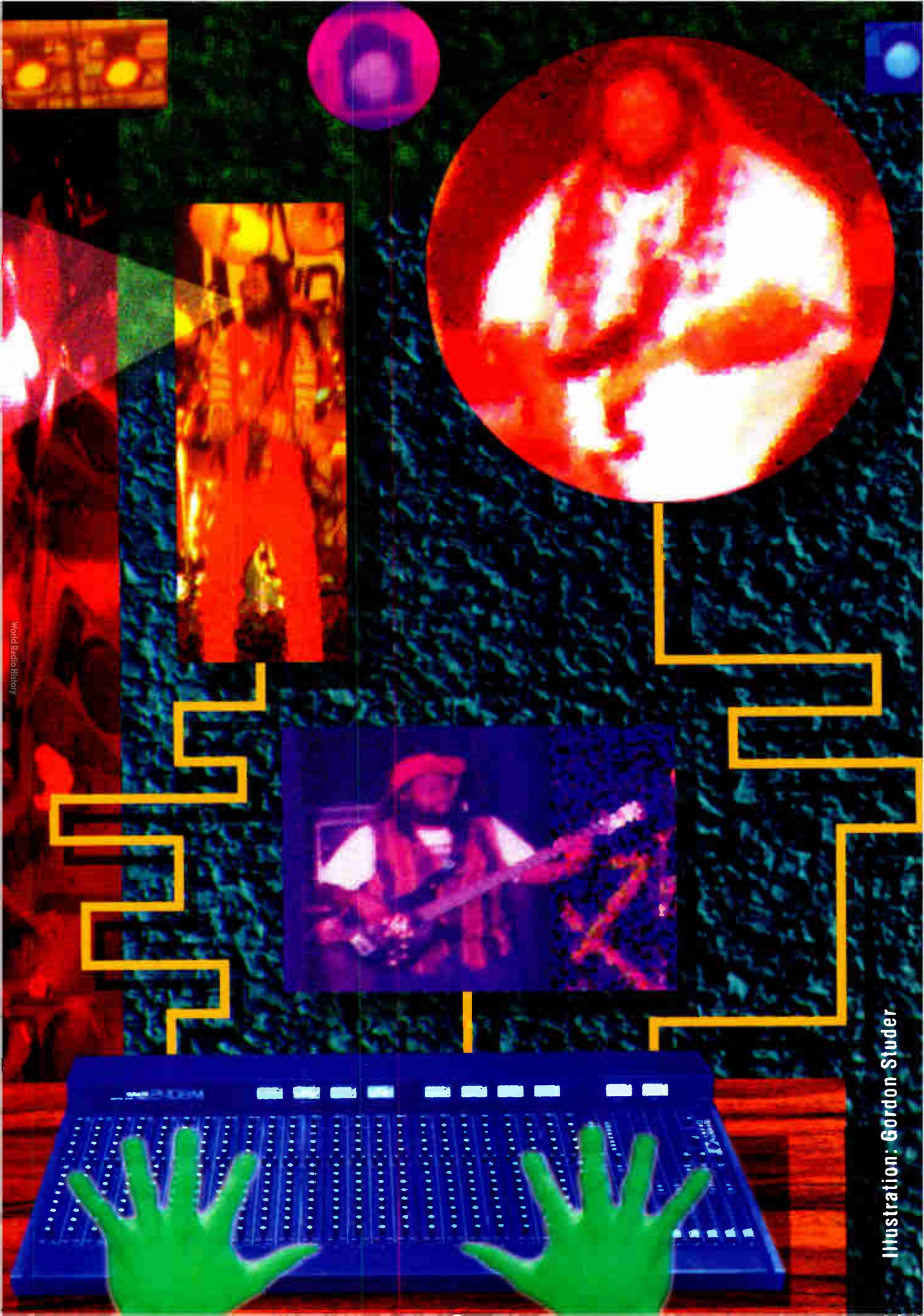
Stuart Dawson is from Sheffield, England. Here in the States we know him as Dinky, the man behind the board with the distinctive muttonchops. He's logged more than 25 years in the music industry, first as a DJ, then beginning in 1968 as live mixer for the original Fleetwood Mac. Tours with The Byrds, Joan Baez, The Kinks, Jonathan Richman and the Modern Lovers, Mahavishnu Orchestra, Lou Reed, Steely Dan, Linda Ronstadt, Orleans, Warren Zevon and Ambrosia followed in the '70s.

At the same time, he served as sound consultant for a number of studio and live albums, including the Byrds' *Byrdsmaniax*, Mahavishnu Orchestra's *Between Nothingness and Eternity*, Steely Dan's *Katy Lied*, *Royal Scam* and *Aja*, Lou Reed's *Berlin* and *Rock and Roll Animal*, Joan Baez's *From Every Stage* and J.Geils' *Live*.



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MEYER SOUND

With the help of Marshall Goldberg, Dinky developed the "snake cable," which joined the stage to the mixer and allowed him to mix from the audience—a first in live sound circles, he says. He also built a unique acoustic suspension stage system and developed a vocal P.A. rig separate from the stereo P.A. onstage.

Dinky took a break from touring in the '80s, concentrating on his business (Dinky Dawson Sound Company, Plymouth, Mass.) and doing consultant and system installation work in a number of clubs and venues from Boston to New York to Kiev. He returned to the national stage in the late '80s with New Kids on the Block—"deafening sound," he says, "to rise above the screaming girls."

This winter, Dinky was back on the road on an Asia-South America-Europe-North America tour, this time with Inner Circle, a Jamaican reggae band that appeared on the tail end of the roots generation and the cutting edge of the blend into pop. They're probably more popular in Europe and South America. Here, they are best-known for a TV theme: "Bad Boys," which introduces reality-based

crime show *Cops*. The album, *Bad Boys*, won the 1994 Grammy for Best Reggae Album.

Dinky called *Mix* from Miami on his way to Brazil, then from L.A. on his way back from Australia, then from Boston, his hometown, when he got a day off around Christmas. He's a self-proclaimed archivist who saves everything, so we asked him to send along tour notes from clubland. In abbreviated, diary form, here they are.]

#### DINKY'S LOG

Clubs are clubs. Some are better than others, but all have the same smell (stale beer), and not much has changed from the '60s: "Don't blast the bartenders," "You can't stack that here," "Not on the dance floor." However, even in the worst clubs, sound systems have evolved. All now have house mix positions out front and monitor systems that are independent from the house—and lots of electronic processing at the house board.

Our usual day of performance started with a 3 p.m. load-in and 5:30 p.m. soundcheck, but as in any rock 'n' roll tour, nothing ever happened as expected because of technical

problems. I never had to worry about, "Is this system pin 3 or pin 2 hot?" We didn't carry processing, so I never had to patch anything in. However, the opening act had problems every night patching in his rack, and, after the fourth show, he gave up trying. But his mixes got better!

**November 9, Characters, Greenville, S.C.** It's a boomy room, even when empty—a box turned into a kinetic playground and not good for live music. Lots of 200-250 cycle. Level of sound lowered from soundcheck. Vocals out in mix as instruments and monitors loud. Not much guitar put in house P.A. as volume onstage was hot.

New Crest Century GT 40x8x2 guest board. I'm the first engineer to use it with this system. Board gain stage good. Sound good from board to house. Processing has to be checked, as full dynamics of the board were not truly released. The monitor console was a Yamaha 2408, which I would end up getting my fill of on the tour. The wedges were nondescript 15s and a horn. Crew very helpful.

Late arrival, and airlines had dam-

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umn style), and we had to reset cross-over to compensate for speaker flap in the low-mid cabs. House board had modules blow up—instead of +17V, the power supply was giving out +36V. So Midas board was not too healthy. At 7:45 p.m., the house soundman went over to his house to get a 24-channel Spirit to salvage the day. Low-end sound muffled.

Still, the show went well as monitors supplied by Sterling Audio were just fine after we were able to get out the 60-cycle ground problems. The main power breaker blew up on the song "Bad Boys," probably due to

the low-end program from keys after hitting the power amps hard.

A very happening monitor system (40-channel TAC SR6000) and crew. P.A. needs to come off the stage to make this gig work. The venue could be a nice place if front-end system had been resolved from AC upward.

**November 14, Venus D'Milo, Boston** No dressing room. Sound okay for what we had to work with. The crew was very efficient—20-minute load-out! The only problem was setting up, as the production man never showed up. So the P.A. system that

was parted-out and in other clubs around the same street had to be built for our show, which took about two hours. Good sound for a generic system.

Efficient soundman Barry had the basic sound for the room within minutes of wiring stage. Room, again, had cuts at 400 cycles and 125, even 4,000 and 5,000 when empty. You can bring back the high end when the crowd's in. Also, the crowd blocks the system as it's set up on the floor, so your diction from vocals seems missing at mix position. Not too much reverb because of the obstruction problem; I tended to push up reverb and delay on the vocals, listening on headsets. I realized had too much on—near the point of effect-machine feedback (the worst!).

Another Yamaha 2408 on monitors, with EAW single 15-inch wedges and one pair of new Community wedges with a single 12-inch and horn that really sounded good. This is my hometown, and the crew are all friends of ours, which made the gig fun.

**November 16, MTV (Jon Stewart Show) and Chestnut Cabaret, Philadelphia** MTV: The best TV live sound captured on tape. Mixer John Harris, who is a subcontractor from Effanel Music, mixed the live group segment in a side of a studio room that used to be storage space. The room had packing blankets on the walls, and John's gear was set up in road cases—just like he was mixing a live concert with a TV monitor as his stage feed. Great mix and sound.

The best part of the show for the band was the monitor system. Ten mixes. All Meyer-matched cabs, even hanging sidefills. The mixer is up above the audience on scaffolding and has first-hand sound for the whole room, which is perfect for a TV studio. No shelving on monitors!

Chestnut Cabaret: Falling-apart box that has seen better days: This system needs big-time help. After replacing everything, we'll give it another go.

I arrived at 9:50 p.m. due to TV shows in New York. Tim Miller (monitor engineer) said he had all kinds of trouble with monitors and house. The main trouble was that turning a knob on either board got no reaction, but if you hit the board, the knob would activate. Opening act—who had a soundcheck—lost all their

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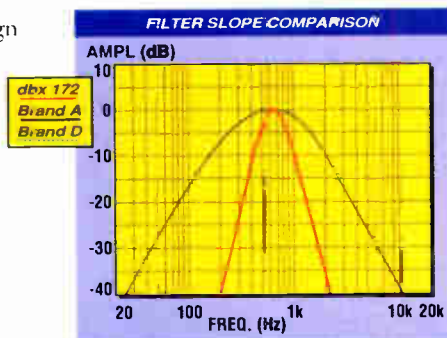
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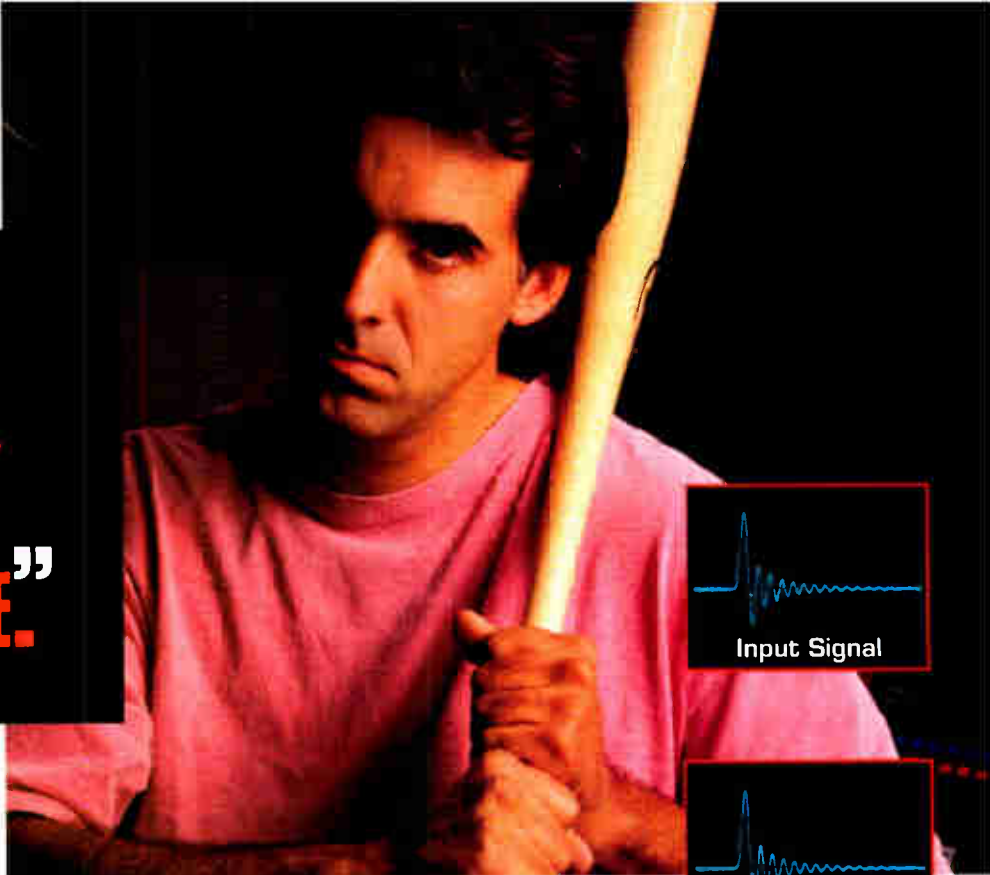
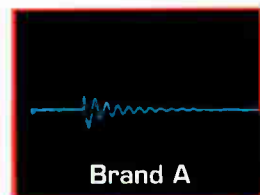
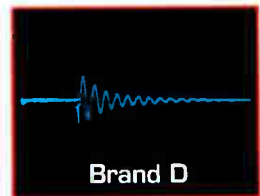
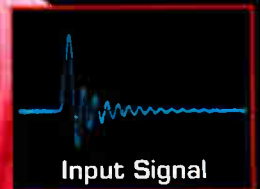
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## Inner Circle

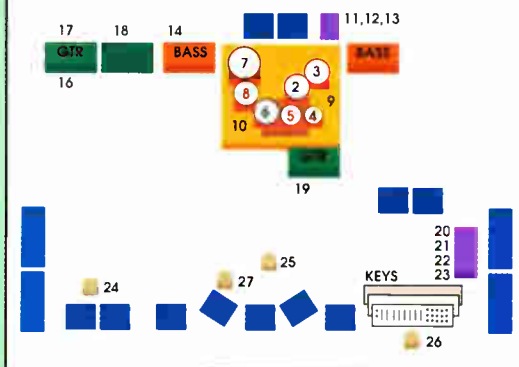
**Bass (Ian Lewis):** DI from the back of the SWR preamp since this is a powered preamp bass as well as boosted preamp. If you don't turn output knobs to unity, signal will blow out any input on any console—it's a trick every day to be sure nobody has touched that output. Fat low end boost 50 cycles up 125, cutting a bit low-mid, but from there on flat, or a bit of 4,000 added. Great-sounding for reggae. Also, blend mids from mic on bass speakers.

**Lead guitar (Michael Sterling):** Not much use for mic on the amp as there was in mono club days. Directs from his preprogrammed pedal board. This man has tasty sounds for blending into the straight reggae clink. Flat on the EQs except adding 250 cycles for some warmth in the mix.

**Rhythm guitar (Roger Lewis):** Fender amp and guitar reggae beat. He's like a metronome put in the mix right with the piano. No major EQ.

**Keyboards (Touter Harvey):** Piano dominant and high in mix. Kurzweil 2000 excellent. Stereo piano. Only thing needed for his stereo grand program was a touch of 200 to 250 cycles, and 4 to 5 k. From whatever board, this EQ always made the program. Alive. Keys: Well, I'm getting a mixed output of two keyboards and sampler's brass sections, strings, etc. So Touter had to program everything with the correct gain states. Touter is definitely one of the

### Inner Circle Stage Plot



CH	INPUT	MIC
1	Kick	M 88
2	Snare	57
3	Hi-Hat	451
4	Tom 1	421
5	Tom 2	421
6	Tom 3	421
7	FLR	421
8	Timbale	57
9	OH L	451
10	OH R	451
11	ddrum Kick	DI
12	ddrum FX 1 L	DI
13	ddrum FX 2 R	DI
14	Bass	DI
15	Bass	421
16	GTR SR R	57
17	GTR SR R	DI
18	GTR SRL	DI
19	GTR	57
20	Piano L	DI
21	Piano R	DI
22	Keys L	DI
23	Keys R	DI
24	Vocal GTR	58
25	Vocal Lead	58
26	Vocal Keys	58
27	Vocal Spare	58

best at level control, and his programs come through with full dynamics, even sampling the units all at once. No EQ required. Effects programmed just like lead guitar. Mix placement only required.

**Vocals (Carlton Coffie):** Backgrounds—both key and guitar vocals have the same effects as the lead vocal. All mixed and EQ'd according to each voice. But the standard effects for vocals for this band are concert hall 'verb or plate 1.4 to 6, room size again. Fat with low-cut in there on some P.A.s. Also, a delay of 300 ms, seven repeats blended in mainly on the lead vocal and, of course, emphasized on certain songs and words.

—Dinky Dawson

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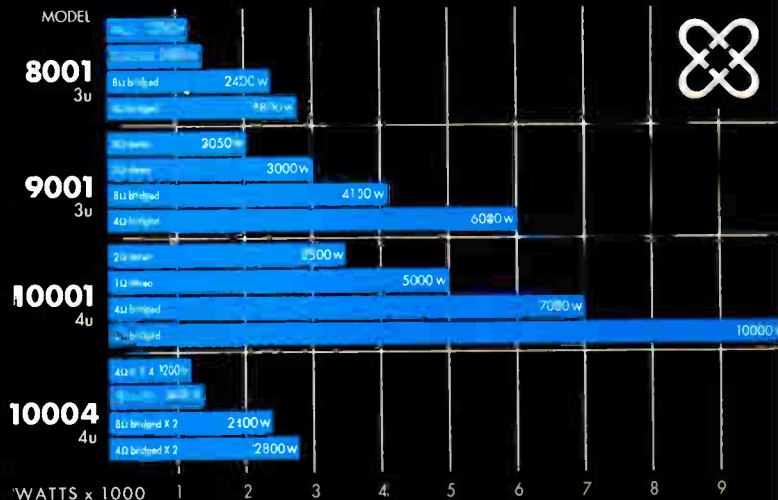
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THIS WEEK	LAST WEEK	WKS ON CHART	TITLE ARTIST	DRUM PRODUCTION	THIS WEEK	LAST WEEK	WKS ON CHART	TITLE ARTIST	CUSTOM
1	2	208	HONEST SNARE HR-16	ALL WOOD-BRASS RIM	302	NEW		RAW HIDE BRAND NEW D4	10" M
2	NEW		STUDIO TOM BRAND NEW D4	16" MAPLE TOM w/VERB	303	450	52	HI ROOM TOM SR-16	HALF OPEN
3	NEW		BIG "O" BRAND NEW D4	DOUBLE HEAD KICK w/VERB	304	NEW		WET HALF BRAND NEW D4	AF
4	5	52	RIM SHOT ROOM SR-16	BRASS PICCOLO w/VERB	305	327	52	RIM 2 CENTER SR-16	DOUBLE HEAD
5	10	156	BIG FOOT HR-16:B	SINGLE HEAD 26" MAPLE	306	123	208		
6	NEW		SLAM BRAND NEW D4	POWER TOM w/VERB	307	223	156		
7	23	156	COMBO SNARE HR-16:B	PICCOLO PLUS WOOD	308	401	52		
8	NEW		BIG BALLAD BRAND NEW D4	WOOD SNARE w/BIG VERB	309	NEW			
9	NEW		FAT CITY BRAND NEW D4	SUPER FAT SNARE	310	175	1		
			CLOSE TO OPEN	ARTICULATED HI HAT	311	NEW			
				FRENCH/FAST	312	171			



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vocals in the first song, so their engineer kicked the house board and out came the vocals with good quality. But it's dangerous. AC boxes set fire to drum monitor from low end of keyboards—15-inch burned to a crisp. Also, high end on the sidefill boxes was gone before we arrived.

**November 17, Tramps, New York City** Long enough room to have loud and quiet pockets of sound. A prototype sound system, and the best-sounding clarity of all shows so far in the U.S. Jack Weisberg system with TAD drivers is happening—small, but you can push the monitors. If changed completely to Weisberg, this system will be the best in N.Y. Needs a new monitor desk. Ramsa 5840 FOH.

Group was not happy this afternoon with the size of the physical system and wanted me to bring in a sound company. I stuck to my guns because I knew the system would be high-quality. When the show was over, everyone from agent to manager (all the big wigs were out—it's New York) came up and said it was fantastic—felt the sound with no ear ringing. Technically, I was mixing too close to the right-hand stack with the horns blasting me, but no problems hearing a full-blown mix. Bass louder on floor than in mix position. Baker, the house guy, and the staff made do with a small stage (25x12) and two bands pain-free. Met Mr. Weisberg. He knew of me, as I of him. He's spending his time on new speaker designs, which are very good—at least this system is.

**November 18, Metropole, Pittsburgh** Cold, industrial room. Lots of metal work. Good, loud sound system with dynamics. The PM4000 is a great complement for this turbo system. So much to choose from with the EQ. Very controlled. When this company (Hollywood) adds more front end for larger venues, I believe this system will be one of the best of the smaller sound companies in the country for a club environment. A real stadium/arena system, but small P.A. stacks. I would have liked to have arrived earlier at this show, as I could have played longer with out-board, etc.

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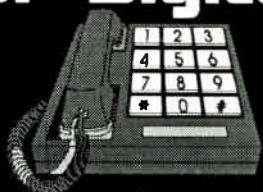


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**November 19, Draft House Music Hall, Cleveland** Big new barn. Clean and warm. A true modern-day rock club. Big monitor system. Big sound system. Full roadie crew. Best potential in Cleveland of surviving as a major venue. The only problem is the amount of cut needed on the house EQs to make the room and system sing, but that's what EQs are for—to be used! All cut drastically. When straightened out, still with heavy 400 and 125 cycle cut. 4,000 to 5,000 cut—smoothed out the rest around these frequencies—then the system kicked.

Bad mix position, but great for security watching and out of the way of clients. Great sound onstage. Overkill on keys' monitors tonight—had its own P.A. Probably the only stage on this tour without duct tape.

**November 20, Majestic Theatre, Detroit** Overall sound not bad, but if I could have doubled the system, this show would have really rocked. But you know promoter budgets: As in most cases on the club circuit, money determines what is brought in. Tough sound system to work with for this act, but for being an owner-designed front end, he's on the right track. He needs to double the gear for gigs of this type.

The Soundtracs Megas 40x8x2 had a summing master problem: The right-hand side of the P.A. was weaker than the left. I compensated with the master fader. But if I bashed the board with my fist, then the system would be balanced. (Maybe a dry solder joint?) Anyway, his prototype bass cabs weren't bad; mids and highs need some work. Another 2408 for monitors, but with DOD EQs! Patchwork system at best.

**November 21, Bogart's, Cincinnati** Long and narrow room. Well-visited. Old, familiar room with a tired old P.A. Thank goodness they're getting new stuff to start '94. The caliber of groups now at Bogart's can't use the system anymore. Right side of P.A. highpacks blown out. Also, components used in mids not matched with components in the left-hand side of the P.A. Same with the sidefill—stage right low-end speaker definitely blown out, just flapping like the wind. Personnel embarrassed about the system, but it's being changed. Nice people—house and guests. P.S. Another Yamaha 2408.

**November 22, Newport Music Hall, Columbus, Ohio** Old-style theater with seats removed. Overall sound a bit blurry. Midrange horns tough to control. Vocals did not hit you in the face no matter how I worked the sound—could have been the room as there wasn't much padding for the walls: 4,000 cycles to 6,300 cycles very bad. Engineer Troy was very good, but he said this is a tough room even before I started. Show was okay, but I would have loved to stack the system differently.

The equipment is good. Yamaha PM3000 40C for FOH; the parade of 2408s on monitors continues. Stage Tech sound system for the stage, so it was a worry-free evening for the monitor engineer. Stage-Tech cabinets: eight high/mids (EV 12X and JBL 2445 1-inch), four low-mids (EV 15DLX 2-inch), four sub-boxes (JBL 4050 2-inch). Great gear—just not stacked and tuned how I would like.

**November 23, Vogue Theatre, Indianapolis** Long, narrow balcony. Great gear, bad politics. I was impressed with Mid-America Sound's rig. Yamaha PM3000C FOH; Yamaha 2800 monitor console. Mains are six EAW KF850-T and six EAW SB850. Crown MacroTech amps—two 1200, two 2400, four 3600. Stage monitors are eight EAW 222, two SM500, one SB250 and two KF850-T.

The sound system was excellent for this room. The only problem was stacking. The system was not elevated to stage height, so mid horns were in direct line with the heads in the crowd. This is a dangerous practice because no matter how quiet you make it, it's still too loud. Also, the club owner was constantly coming by the mix position with a dB meter—100 dB at the board was the law, he said. This meant that down on the dance floor in front of the stage it was 120 dB. This guy wouldn't have a problem if he had the P.A. stacked on the stage. Could be one of the best clubs in the U.S. if these problems are solved.

**November 24, China Club, Chicago** Big old warehouse. High ceilings. Well-put-together system. Hanging location for the left side is a compromise so sound would not be directly blasting the bar. Sound can get very raspy if you go for too much volume. Back off and it sweetens up. You also have to watch for the bass



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end through vocal mics, as the 125-cycle focal point is dead centerstage in front of a pole. A basic monitor rig with a 2408. The flown sidefills are wasted as they're too far offstage and aimed too high.

Overall sound was good. Very practical club system. From the Ramsa WR-S8-10 (38-channel, 52-input), the club has set up sends off the matrix to other rooms in the building. Also a video hookup to all screens in other rooms with lots of different functions. The only negative is that for the size of the room, I would double the system for live

bands. Not for volume, but for high quality at less volume. The room has a very high wooden ceiling that eats up 4,000 cycles, and it hangs there. Also, the stage extension is hollow, so 100 cycles is a big problem. I had a low feedback from the bass end of the vocal at centerstage even with the roll-off and bass-cut on. This standing wave is a big problem—*noted by the designer, Todd Petersen, too.* But overall, excellent club system.

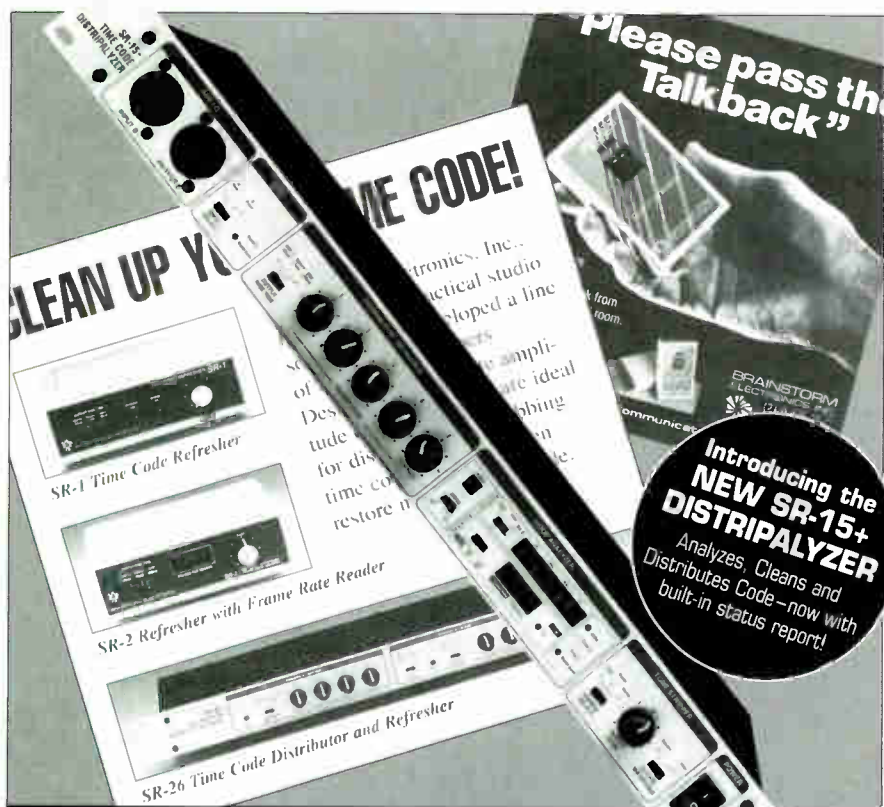
**November 25 (Thanksgiving), First Avenue, Minneapolis** Big, old industrial setup. Excellent night for

sound, band, etc. Everyone should have time to visit a place like this. The crew is the tops, crowd even better. Production by Southern Thunder Services—Soundcraft Delta 8 FOH, Soundcraft 400B onstage. House mains are 18s, 15s, 12s (2-inch and 1-inch horns), with four-way BSS 340s. Augmented house cabinets were also used, consisting of a 2-block, 10,000-watt system. Lows are EV-X 1,000-watt 15-inch cones (four per cabinet). Highs are H-38s (four horn-loaded EV 12s, with two 2-inch and two 1-inch JBL horns); all Crest-powered. Cabinets are by Southern Thunder.

Overall sound great. This system will kick. Very controllable. High-quality. Love the cone-horned cabs for low-mids in this configuration. The only bad thing with these cabs is 4,000 cycles, which easily can be fixed with a  $\frac{1}{2}$ -octave EQ. The crew was excellent, and the crowd was the most responsive and pleasant on the whole tour. Such a pleasure from load-in to load-out. Had the system loud with full dynamics and no ringing in the ears. Ultimate rock club for soundpeople! Some will say different, but what matters is that the people paying money are satisfied. It was Thanksgiving Day, with four inches of snow and 20 degrees, and still over 1,000 came out.

**November 26, Eagle Ballroom, Milwaukee** Devastating sound, but we did our best for a rowdy crowd. A Peavey 24x8 on a stage fashioned out of beer kegs just about sums it up. Worst gig on the tour. Promoter had booked three bands in the same building—George Thorogood, a Latin band and Inner Circle—in different rooms. We got bumped to the smallest room with a nondescript sound system that had five 15-inch JBL speakers blown in five separate monitors. No soundcheck. No quality. Not worth a bar band using it. Show was cut short due to fiberglass and dust coming down from the old ceiling. Everyone covered in dust. The stage was makeshift from beer kegs, and the system should have been rewired ten years ago. Bad day for gigging. ■

*Stuart "Dinky" Dawson runs his own consulting, sound design and installation firm in Plymouth, Mass. When not in the office, he can be found in a summer home overlooking the Atlantic Ocean.*



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# THE MAKING OF MD SYSTEMS

**HOW PERSEVERANCE—AND GARTH BROOKS—HELPED PUT MD SYSTEMS ON THE SOUND MAP**



**Garth Brooks, in concert at the Dallas Reunion Arena, helped MD Systems expand.**

**I**n 1980, John McBride borrowed \$6,000 from a Wichita bank to buy a 12-channel mixer, two mics, a pair of speakers, an amp, an EQ and some speaker cable. Enough equipment, he decided, to justify calling himself a "sound guy" in the small ad he placed.

Over the next few years, McBride did a lot of club work, accumulating "two-and-a-half club systems." By 1983, he was ready to make a proposal to the Small Business Administration for a \$75,000 loan in order to finance a concert system. "I thought that would be all the equipment I'd ever need," he recalls. As loan collateral, Mc-

Bride's father put up his house.

But seven years later, McBride went back to a bank to borrow "quite a bit of money." The loan was personally guaranteed again—this time by Garth Brooks.

## MAKING IT IN WICHITA

The first big concert for McBride's sound company, MD Systems (named for Modular Design), was New Grass Revival on the Wichita State University campus, with assistance from independent engineer Greg DeLancey.

"We tried to design the systems so that any piece could be traded out," McBride says. "Our

first real tour was in the mid-1980s with Steppenwolf and the Guess Who. After that, I kept trying to grow.

"I'm not the best businessman in the world," he admits. "I never made money until 1991. The work wasn't available in Wichita, but even then I tried to do the best I could on a budget. We had JBL speakers and good racks with a little resale value. I've always been lucky not to have invested in the 'Edsels' of speakers.

"I also got hooked up with Brad Wathne, who loved sound, and we starved together for

years," McBride quips. "He's absolutely the best craftsman in the world. There's no question. Brad can fix or build anything. He works on Garth's sound crew now and continues to build speakers for us."



THOMAS HOWARD IMAGING

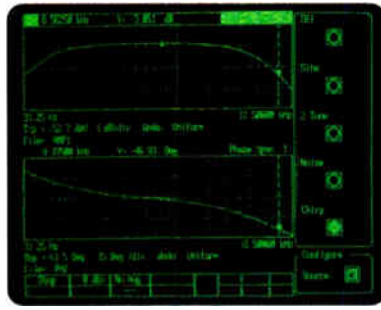


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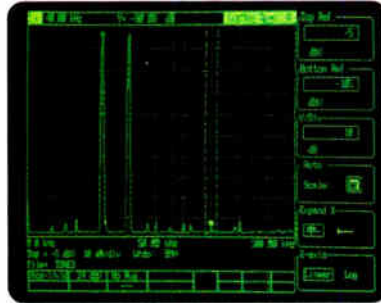
**MD handled the most recent tour by Dwight Yoakam (top). Pictured at the console are house engineer Ralph Mastrangelo (seated) and monitor mixer Scotty Schenk.**

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**THE GARTH THING**

McBride met Garth Brooks in the fall of 1989 when MD was asked by Little Wing in Tulsa to do sound for shows with Ricky Van Shelton. The middle act was Clint Black, and Brooks was the opener.

"That's really how we made the transition from doing regional stuff in Wichita to country music," says Dan Heins, MD operations manager since 1989.

"Back then we had a TAC Scorpion console for the house, Soundcraft 800B for monitors and our first JBL speakers," he says. "JBL has taken great care of us. We used 2240s and 2245s; we now use 2450s, 2241s, and we still use the 2123 10-inch drivers. We used 2225 monitors back then (the 15-inch cone), and now we use the 2226 vented-gap neodymium magnet."

"Perseverance is the key to success; you've got to hang in there," says the 36-year-old McBride. "The sound business is tough, especially in Wichita. Any accountant or lawyer who had seen my books as late as 1990 would have told me to get out of the business."

While Heins went on the road with Brooks, McBride was busy moving to Nashville, a change hastened so that his wife, country music singer Martina McBride, could pursue her career. "I did one free gig in January (1990), and by February, the phones were ringing, and we were working with Ricky and with Charlie Daniels, doing small rooms," McBride says. "Garth wasn't able to carry full production, but he rehearsed at our warehouse.

"By his second and third singles, in the fall, the Garth thing was starting to happen," he says. "We did ten to 12 shows with him. I even mixed monitors for him for three weeks in August. Then we brought in Brent Dannen on monitors, and by January 1, 1991, I was on full-time as production manager."

As Brooks' career took off and he started doing bigger arenas, MD grew, too, beginning

with the large Garth-backed loan in 1991. "The reason we were able to expand is Garth," says McBride. "His loyalty goes back as far as the back pocket, but instead of outgrowing us, he let us come along for the ride. It's really a nice compliment."

The funds enabled MD to build more cabinets and to change the design of their box. Heins says. "We went to some things more suitable for arenas—a tighter Q on cabinets so we could throw and cover distances. We had done flying shows in smaller college arenas and theaters, but we stepped up to the 'A' venues like the Palace at Auburn Hills in Detroit and the Rupp Arena in Lexington, Kentucky. We also switched to Crown amps—the 3600s and 2400. Now we're using the 5000s. We have all three."

Heins says the first big Garth Brooks concert he remembers was at the 24,000-seat Charlotte Coliseum with Trisha Yearwood opening. "Some of the band guys and crew and Garth were doing head-first dives off the stage onto the wheel plates," Heins says. "They were taking the wheel plates like sleds.

"We had so much stuff in one truck—this was definitely a country tour. We were jam-packed; you open the back of the truck, and the loaders fall out. Now there are six production trucks and one full-time T-shirt truck."

Heins says the major difference with country tours is the sound-quality change from stacking shows to flying shows. "It was a subtle change. It's nothing dramatic, but when you're used to flying them and then you stack it, you're usually disappointed. Flying seems to cover so much better and more efficiently. You don't have to fight the people on the floor."

Since MD couldn't pull anything from the Brooks tour, they had to keep buying more gear for their other commitments. "With Garth staying so busy, we sucked it up and we wanted to," Heins says. "That meant a lot of

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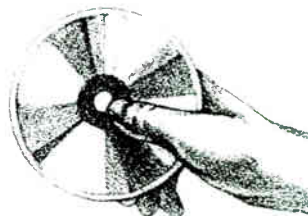
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seven-days-a-week times, and building. All of our stuff is really well-put-together. We documented a lot through our tech, Wally Bigbee.

"Right now we're capable of doing any of the country tours that are out. We don't want to sit on our rears for long, but we don't want to overextend ourselves either," he says. "With our Paragon consoles, our design and our good people, we feel like we can offer a good product

to our tour."

In 1993, with help again from the SBA, MD's inventory expanded into three complete systems: three touring systems and five monitor rigs. (In 1991, MD had a single concert rig, for Garth.) The company's current client roster includes Brooks, Tanya Tucker, Trisha Yearwood, Dwight Yoakam, Tracy Lawrence, Marty Stuart, Sound Check Rehearsal Studios and Stonehenge Rehearsal Studios (both Nashville), and Martina McBride.

MD also did the NARM show last month in San Francisco.

#### DWIGHT'S FIRST MONITORS

MD was hired for the Dwight Yoakam tour in April 1993 by Yoakam's house sound engineer, Ralph Mastrangelo. "I hired them based on the relationship that John (McBride) and I had," Mastrangelo says. "John's the kind of guy where I knew I could get world-class gear that was recently designed and built. In a bigger company, there's a notoriety factor. With mega-money accounts like Genesis and U2 on the road, a lot more can go out on those than on a smaller account.

"There was a concern in the beginning about MD and Garth, but Garth was off the road when I hired MD," he says. "And I let John know what I needed. I felt that MD would 'number two' anything I needed, over and above what was originally spec'd, ASAP, without budgetary problems. John is a straight-up kind of guy."

MD provided the Yoakam tour with Scotty Schenk (monitors) and Thornton Lee (flying P.A.), as well as Crown amps that were upgraded to 5000s for the tour and 30 boxes identical to the ones that Brooks uses. "We got Dwight wedges," says Mastrangelo. "MD custom-built a pair overnight to replace some Showco, early 1980s wedges Dwight had that went out. MD had them built overnight and drove them up to Memphis the next day." When Yoakam, known as a perfectionist, heard the new wedges, he told his monitor engineer, Scotty Schenk, "It's like I've never had monitors until now."

McBride admits that MD's success is like a dream come true. "I'm able to buy the gear that I dream about," he says. "But life is short, and I'll give 110 percent for any act I'm working with. We take it seriously, but it's not brain surgery. We're out there to do a concert, let everybody have fun, pack it up and do it again." ■

*Karen Mitchell is a staff writer and columnist for the Boulder Daily Camera.*

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# SOUND REINFORCEMENT NEW PRODUCTS

## NEXO PS15/PS10

Now distributed in the U.S. by QMI of Hopkinton, MA, is the Nexo PS15, a new family of compact, high-power speaker systems, with a 15-inch custom LF driver and a 3-inch throat HF system. The PS15 measures just 27x17x15, yet is said to be capable of SPLs of over 134 dB and a frequency response of 48 to 18k Hz. Made of baltic birch with a textured black finish, the cabinet is supplied with integral flying and stand fittings. Used with the supplied PSTD active controller, the system can be operated with



amps ranging from 550 to 1,200 watts; sensitivity is 101 dB (1w/1m). An optional LS15 sub extends system performance to below 28 Hz. Also available is the PS10, a similar system utilizing a 10-inch LF device and a 1-inch throat HF driver on an asymmetrical horn.

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## BEYER EXPANDS TG-X LINE

Beyer Dynamic, Farmingdale, NY, expanded its TG-X series with the TG-X 20/40/60/80, four new hypercardioid vocal mics for touring applications. All offer neodymium/iron/stainless-steel magnet structures and a high-impact rubber shock-absorbing system to cut handling noise and increase protection from drops and other road hazards. Retail pricing ranges from \$259 to \$469.

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## DAX 1520 DUAL-CHANNEL GRAPHIC EQ

DAX (div. of BNG International Inc., Portland, OR) updated its Model 1520 dual-channel graphic equalizer. It now offers two independent channels, with 15 ISO equalization bands and an EQ in/out switch for each. Also included are balanced and unbalanced jacks, a modular PC board for easy service and new low-noise ICs. The unit lists for \$358.

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## CMCI ORACLE WIRELESS SYSTEM

Circuits Maximus Company Inc. (Columbia, MD) introduced the C:MAX Oracle, an in-the-ear UHF wireless system that features wearer-control of volume and mix relationship. The 2U transmitter offers four balanced XLR inputs (main, C:MAX, left and right), effects loop send and receive, 16 selectable frequencies, an audio limiter and a headphone jack, while the receiver has an auto-mute circuit and separate left/right volume controls.

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## CROWN DRONE

Crown (Elkhart, IN) unveiled the Drone, which allows third-party systems or devices to interface with the Crown IQ System, as well as with external-stimulus devices within the control bus. The Drone can also "learn" to interpret physical inputs and control system components, enabling the computer to be removed from the system for daily operation. Transponder functions are also provided, as are two independent microprocessors on a module that plugs into the IQ Card Cage (multiple units can be used with a single Card Cage), four microphone inputs, four channels of processing, RS-422 and RS-232 interfaces and more. In Simplex mode, the Drone accommodates 16 switches, 16 pots and 16 status LEDs; in 16-bit bidirectional Multiplexer mode, it can control thousands of devices and functions.

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**EV SYSTEM 200**

New from Electro-Voice, Buchanan, MI, is the System 200™, a modular, compact and lightweight speaker system. System 200 is based around various combinations of the Sx200 portable loudspeaker, the Xp200 controller and Sb120a powered bass module, which can combine to create numerous configurations. The Sx200 is a two-way system with a 12-inch, 300-watt woofer and a 65x65-degree constant-directivity horn/compression driver combination that provides high sensitivity (101dB, 1w/1m) and a 25,000Hz bandwidth. Its trapezoidal cabinet has Neutrik Speakon connectors, molded handles and tripod-mount and safety-certified hanging points. The stackable Sb120a sub box weighs only 34 pounds including its internal 2.2-pound, 400-watt amp and long-throw 12-inch woofer.

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**YORKVILLE AUDIOPRO 3400**

Yorkville (Niagara Falls, NY) is now offering its most powerful power amp, the Audiopro 3400, which delivers 1,200 watts per channel average at 4 ohms. Features include an Energy Management System to regulate AC current, a toroidal power supply and switchable bass boost. Suggested list price is \$1,679.

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**RECALL BY LANGLEY**

Recall by Langley, distributed by Amek, of North Hollywood, CA, is said to combine the advantages of computerized recall (snapshot memorization of all critical controls) in a moderately priced live sound console. Available in 24-, 40- and 56-input frames, Recall is an 8-bus design that can be configured for FOH or monitor applications; other features include 4-band EQ, 12 aux sends, 10x8 matrix and eight fader-controlled VCA groups.

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**CELESTION CR-152/CRI-152 MONITORS**

The CR Series from Celestion (Holliston, MA) now includes the CR-152 and CRI-152 wedge monitors for large venues. The 8-ohm monitors each use a 15-inch woofer and a horn-loaded tweeter, producing 250 watts with a range of 40-16k Hz. Other stated specs include sensitivity of 97 dB (1 watt/1 meter) and maximum SPL of 122 dB. The CR-152 is constructed of pine and is carpeted for road protection, while the CRI-152 features birch construction and a black splattered enamel finish for permanent installations.

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**CREST AUDIO LOAD MONITORING OPTION**

Crest Audio (Paramus, NJ) offers a Load Monitoring option for NexSys, its computer control system for Crest amplifiers and MIDI-controllable products. The Load Monitoring function allows system operators to plot impedance-vs.-frequency curves and store them to compare to later curves, which can help identify load changes and possible driver failures. Each Load Monitor mainframe (two rackspaces) can hold 12 2-channel cards; each channel has two inputs, two outputs. In addition, more than one channel can be selected in a sequence, providing monitoring of speaker zones.

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Designed to meet professional needs is the MFA Series of power amplifiers from Ashly Audio (Rochester, NY). All MFA models are 2-channel, using a dual-monaural MOSFET design, and feature all-discrete power and gain stages, along with a built-in limiting circuit for protection from overload conditions and variable speed, thermally controlled, forced-air cooling. The MFA-8000 delivers 800 watts continuous into 8 ohms, 1,200 watts into 4 ohms or 1,500 watts into 2 ohms. The smaller MFA-6000 outputs 525 W/ch into 8 ohms, 750 W/ch into 4 ohms or 900 watts into 2 ohms.

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by Jeff Forlenza



**B-Real, Sen Dog  
and DJ Muggs of  
Cypress Hill**

# CYPRESS HILL'S DJ MUGGS

**S**low bass grooves with fat boom beats. Braying horns, screeching vocals and assorted sirenlike sounds. These are some of the sonic trademarks of hip hop-DJ-turned-producer Larry Muggenrud, known to other MCs simply as DJ Muggs. Muggs is one-third of the hard-rappin' hip hop outfit Cypress Hill and one of the hottest producers in rap.

Their 1991 Platinum debut, *Cypress Hill*, on Ruffhouse/Columbia, thrust Cypress and Muggs into the international spotlight. Since then, Muggs—whose production company is known as Soul Assassins—has been writing, producing and mixing tracks for the likes of the Beastie Boys, Ice Cube, House of Pain, Funkdoobiest, Daddy Freddy, Yo Yo and Mellow Man Ace. Muggs also has done remixes for a variety of artists, including Janet Jackson ("Because of Love") and U2

("Numb"). Incidentally, Cypress Hill's follow-up, *Black Sunday*, with its pro-herb and ghetto survival messages, went straight to Number One on the *Billboard* charts and sold 260,000 units the first week out of the shoot.

We caught up with Muggs when the Soul Assassins tour—including Cypress Hill, House of Pain and Funkdoobiest—stopped in San Francisco to give their hardcore rap some stage-diving life. When Cypress Hill takes the stage, Muggs works the turntables and DAT player, while rappers B-Real and Sen Dog work the crowd. Muggs can't stay behind the turnta-



PHOTOS: JAY BLAKE/SBERG

# INTRODUCING...

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bles at the back of the stage the entire show, however, and he frequently joins his homeys centerstage to "jump around."

The Soul Assassins tour is about friends. If they weren't touring, these guys probably would be hanging out. And it comes as no surprise that Muggs produced results when it came to producing his friends' albums: Listen to Cypress Hill's "Insane in the Brain," House of Pain's "Jump Around" and Funkdoobiest's "Bow Wow Wow Wow," and you'll hear an underlying thread that moves heads and sells records: the slow, loping drumbeat; sampled psychefunkadelia; and in-your-face gangsta rhymes—the Soul Assassins sound, courtesy of DJ Muggs.

DJ Muggs grew up in Queens, N.Y., and moved to Los Angeles at high school age. He got into rap music and break-dancing, which led to DJ'ing. In tenth grade, he bought a pair of Technics SP 1200 samplers and started producing his own funky tracks.

Through the DJ for Mellow Man Ace, Muggs met Louis Freese (B-Real) and Senen Reyes (Sen Dog)—brother of Mellow Man—in 1985. The four hit it off and formed DVX, a group that pioneered a rap style known as "Spanglish," or "Latin Lingo," where the Cuban-born Reyes brothers and L.A. Latino Freese varied rhymes in Spanish and English similar to the dialect of their barrio in South Central.

DVX didn't last, though. After less than a year, Ace left to find his own fame as Mellow Man Ace, and Muggs left to join rappers 7A3, with whom he released an album on Geffen and contributed a song to the *Colors* movie soundtrack. Sen Dog and B-Real hung out and continued writing songs featuring the complementary high nasal vocals of B-Real and the echoing low, guttural barks of Sen Dog. In 1988, Muggs left 7A3 and rejoined B-Real and Sen Dog to form Cypress Hill.

Muggs had worked with an up-and-coming engineer from Philadelphia named Joe "The Butcher" Nicolo on the 7A3 album and liked his way of working. The trio sent early Cypress demos to Philly, and Nicolo signed the band to his newly formed Ruffhouse Records, securing a distribution deal through Columbia.

"Ruffhouse is a cool scene,"

Muggs says of his relationship with the Philly-based label run by Nicolo and Chris Schwartz. "Joe taught me a lot. He's a hell of an engineer. Now, I go to mix with Joe. When we're mixing songs, he'll add an idea here and there, and he'll ask me if I like it or not. And some things I like and some things I don't. He doesn't mix my records, he engineers my records, and he'll add a few ideas in the mix. Me and Joe have a good vibe together; that's why I stick with him.

"We did [the song] 'Kill a Man' in 1989. We did 'Real Estate' in like '88," Muggs explains. "So our first album [*Cypress Hill*, 1991] was like two-and-a-half years' worth of work. The

**E**verybody's talking  
about blunts now  
since we came out talking  
about weed. And a lot of  
music I hear now sounds  
like my music.

second album was two-and-a-half months' worth of work 'cause we had to rush. But look out for our third one—that's gonna be our shit." Muggs says the third Cypress release will be done with "The Butcher."

Today, the influence of DJ Muggs and Cypress Hill is heard throughout the hip hop community, with many a rapper taking up the marijuana-stuffed Philly blunt cigar and rhyming over slow grooves. "Everybody's talking about blunts now since we came out talking about weed. And a lot of music I hear now sounds like my music," Muggs points out. "I respect Large Professor. I respect DJ Premier. I respect Dr. Dre. I respect Pete Rock. 'Cause they have their own sound. Half of the other people sound like them or me. I respect people who sound like themselves." Muggs traces his rap roots to early EPMD records and the first Ultra-magnetic MC's record.

Working with Cypress rappers B-Real and Sen Dog, Muggs doesn't have a set way of doing things. "Ev-

ery song's different. There's no formula," he says in his New York accent. "Sometimes I do the music first. Sometimes they do the lyrics first. Sometimes I give 'em a beat, and they'll do the song right in front of me. Sometimes they'll take the music home and work on the lyrics. It's always different. It's creativity—however it comes out. Sometimes we do a song and it's like I get a beat, and I say, 'Write a song about this.' 'Alright.' Or I write a chorus, like I wrote for 'Insane in the Brain.' I wrote the chorus for 'Jump Around.' It's like, 'I got a song idea, write the lyrics for it.'"

Aside from creating grooves and tracking vocals, most of Muggs' time is spent sampling and compiling drum beats, bass lines and horn bleats. "Whenever I have time, I make my own libraries of sounds," Muggs explains. "I'll find drum beats I like, then I'll find a bass line to match, then I'll find horns to go with that. I never finish a song 'til after the vocals are on it. I try to match the rest of the sounds on the song—all the little additive-type things to the vocals—and build around the vocals. So I'll get a track halfway done with a bass line and a drum beat, they'll write the lyrics to it, and then I'll finish it after they lay their vocals. We do it all to DAT usually. Although I use ½-inch once in a while, if the record label wants it when I do a remix."

Muggs still samples everything he can into his Technics SP 1200. He's constantly buying records—touring with Soul Assassins gave him access to stores in a number of cities. Samples on the recent *Black Sunday* album range from Black Sabbath to Dusty Springfield.

"Basically, I use the SP 1200. I got two of those. And a 4-track," Muggs explains. "My shit's pretty simple. I don't try to get too intricate with nothing. For live shows, I use a DAT and two turntables."

Humble as he sounds, DJ Muggs' drum programming is funky and fat—a good mix of off-the-record and drum-machine sounds set at just the right speed. "I program and loop up drums on the 1200. I use 808 drum sounds on the 1200," he adds, in deference to the Roland classic.

"Sometimes I'll find an old drum loop and I'll put new snare, new kicks and new hi-hat on it and make it sound like a whole new drum beat," Muggs explains. "I've used the



same drum beat on like eight songs, but you can't tell because there's different hi-hat, different snares, different kicks, different speeds. Sometimes I'll lay the drum beat and take all the bass out of it and add new kicks, and just use the snares and hi-hats; and then sometimes I'll take all the hi-hats out and just use the kick and snare. I used the same beat on "Hand on the Pump" [Cypress] as "Jump Around" [House of Pain]. You can listen to those two songs a hundred times, and you can't tell."

Muggs also manipulates horn and vocal samples to make them sound like everything from a horse whinny on one song ("Insane in the Brain") to a squealing car alarm on another ("Jump Around"). "I don't use sirens. It's a lot of vocals and horns," Muggs sets the record straight on the screeching drones that have become a signature of the Soul Assassin sound. "On 'Jump Around' and 'Insane in the Brain,' that was horns. It might sound like a siren, but I use people—like if you hear a singer and she goes, 'Aaahhh,' I'll just take that and stretch it out so it goes, 'Aaaaaahhhhhh, Aaahh.' I just did a remix for David Morales, and I used a siren on that, but that's the only song I ever used a siren on. I just use a lot of funky voices and horns."

As far as producing acts, Muggs often takes an active role in the creative process of songwriting and arranging. "I kind of guide them," Muggs says of working with Cypress Hill. "They'll write lyrics, and sometimes I'll make 'em change the lyrics. Sometimes I'll take one word out of the song and make that the hook. 'Cause I produce their shit. They don't just write rhymes and that's it. We change things."

Recently, Cypress Hill teamed up with Pearl Jam and Sonic Youth for the soundtrack of director Stephen Hopkins' film *Judgment Night*, which is loaded with interesting combinations such as Del The Funkee Homosapien and Dinosaur Jr. and Sir Mix-A-Lot and Mudhoney. Cypress collaborations on this rock-meets-rap score were "I Love You Mary Jane" with Sonic Youth and "The Real Thing" with Pearl Jam.

"That was something new. It was like an experiment for us," Muggs says of the project. "What I did was come up with a drum beat and went to the studio with Sonic Youth, and they played instruments. They asked me

what I liked. When they started playing riffs I liked, we laid 'em down, sampled a few things and then laid vocal. With Pearl Jam, they were recording their record in 'Frisco, so it was a lot harder. We sent them a drum beat, and they played on it and they sent it back. Then we did vocals and the mix."

Muggs has favorite studios on both coasts from his work with a growing list of clients. "When I do Cypress, I usually go to Studio 4 [in Philly] 'cause that's where we did our first record. I'm not trying to change our sound," he asserts. "In L.A., I

work at Image Recording with Jason Roberts—that's my man. When I'm in New York, I work at Soundtrack."


Being an in-demand producer and part of a worldwide phenomenon takes its toll on the reluctant star. "I just like doing music, man. I'm tired of touring, I'm tired of pictures. I don't like people saying, 'You're a star.'" Muggs considers his notoriety, "I just like making music. And all this other shit happened, so I guess I gotta go with it. I'd rather just stay home and make my music." ■

*Jeff Forlenza is a Mix assistant editor.*

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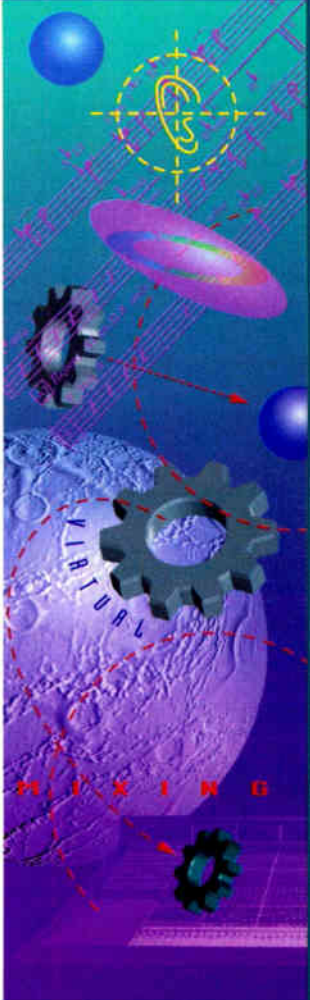
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## The Band Is Back (And Boy, Are They Good!)

It's been nearly two decades since The Band—once universally acclaimed as one of the best groups in America—put out an album of new music. And it's been almost 18 years since The Last Waltz, the epic (and very well-documented) final concert by the group's original line-up. Robbie Robertson, the group's guitarist, principal songwriter and the instigator of the original "retirement," has stayed true to his pledge to stay off the road and make his own albums.

But The Band didn't die at The Last Waltz. The remaining members have periodically regrouped to tour, augmenting their line-up with any number of fine players through the years. And though certainly Robertson's stinging leads and his sheer presence have been missed by Band fans, one sometimes forgets that the sound of The Band was so much more: It was the lead vocals of Levon Helm, Rick Danko and Richard Manuel; the rich keyboard textures of the group's true musical genius, Garth Hudson; the unique blend of voices; the snapping, crackling rhythm section of Danko and Helm; the incredible variety of instruments played by everyone—from fiddle to saxophone to accordion.

The Robertson-less Band first got serious about recording an album in the mid-'80s, but they suffered a series of setbacks that nearly iced the group for good: In 1986, pianist Richard Manuel killed himself while The Band was

on tour in Florida. Then, Manuel's replacement, longtime colleague Stan Szelest (who goes back to pre-Band days when the group toured as The Hawks, backing Ronnie Hawkins) died suddenly of a heart attack in 1991. But



**The Band (L-R above): Richard Bell, Levon Helm, Rick Danko, Jim Wieder, Garth Hudson and Randy Carlante. Top right: engineer/producer Aaron L. Hurwitz.**

Danko, Helm and Hudson plugged on, eventually bolstering their core with a second drummer, Randy Carlante, versatile guitarist Jim Wieder, and pianist Richard Bell (who'd joined The Hawks after The Band split off from Hawkins). Everywhere they played, this new Band wowed audiences by offering a tasty mix of the group's classics and old R&B and blues tunes straight out of their bar-band days as The Hawks. Eventually they signed a deal with Pyramid Records to make a new album, and after more than a year of work, the record,

titled *Jericho*, hit the stores late last fall.

And what a delightful surprise it is! All the trademarks of the rootsy and eclectic Band sound are very much in evidence, yet this is no cheap throwback to the group's glory days. It's 1990s Band music, and it feels *right*. With its punchy horns, wheedling keys and Levon Helm's backwoods vocal, the lead-off track, "Remedy," instantly shows the group's capability. Over the course of 11 more tunes, they confidently traverse myriad styles but never stray too

—CONTINUED ON PAGE 166

## Three's Company— The Making Of Rob Wasserman's "Trios"

The operative number is three. *Trios*, released in February by GRP Records, is the third album by Rob Wasserman, the extraordinarily gifted and innovative bassist whose supreme musicality has added such dimension to albums by everyone from Van Morrison to the David Grisman Quintet to Lou Reed.

Wasserman's first record consisted entirely of bass solos (*Solo*, 1983, on Rounder Records). It took the next three years to put together *Duets* (MCA, 1988), which found Wasserman's bass paired with the likes of Rickie Lee Jones, Dan Hicks, Aaron Neville, Stephane Grappelli, Bobby McFerrin and Lou Reed



PHOTOS: JAY BLAKESBERG



**Left: John Cutler (engineer and co-producer on *Trios*) and Rob Wasserman; above: Branford Marsalis,**

**Wasserman and Bruce Hornsby; left: Wasserman, Edie Brickell and Jerry Garcia**

(who then hired Wasserman to play on his *New York* and *Magic and Loss* records, and tour with his band). *Trios* completes the trilogy—as the name implies. This time it's Wasserman plus two, and what a cast he was able to assemble over the course of the nearly five years (no, not

—CONTINUED ON PAGE 172



## Ottmar Liebert: Flamenco's Wild Card

On the January afternoon I interview "nouveau flamenco" guitar sensation Ottmar Liebert, his Epic Records album, *The Hours Between Night & Day*, is lodged securely at the top of *Billboard's* new age chart, while another group that plays flamenco-based guitar music, the Gipsy Kings, hold down the top spot on the world music chart. When I ask Liebert what makes his music "new age" and theirs "world," he says with characteristic frankness, "Oh, it's all just marketing. I'm probably in new age because I was on Higher Octave before, and that's a new age label. I don't care what people call me. It's

all just music."

And what is it about this particular kind of music that has propelled Liebert, the Gipsy Kings and Strunz & Farah to such commercial heights? "It's the blues of the gypsy," Liebert replies. "In the '60s, it was American blues that took off, now it's flamenco. It's music that has a lot of personality and improvisation in it, and that directness is part of its appeal."

Liebert is the first to admit that he's no purist when it comes to flamenco, noting, "I'm not rooted in a pure tradition. I'm a wild card and can do pretty much whatever I

—CONTINUED ON PAGE 176

—FROM PAGE 164, THE BAND IS BACK!

far from familiar Band terrain—ballads and blues tunes and R&B-flavored rockers that paint vivid pictures of a real and mythological America.

Among the gems are Dylan's stirring story-song "Blind Willie McTell"; a definitive version of Bruce Springsteen's "Atlantic City" driven by mandolin, accordion and those sweet Band harmonies; "The Caves of Jericho," about a mine disaster, which is probably the closest to the classic Band style; a swinging spin on Muddy Waters' "The Same Thing"; the achingly beautiful, Danko-sung tribute to Richard Manuel, "Too Soon

Gone" (co-written by Szelest); and a lovely, heartbreaking vocal by Manuel himself on "Country Boy," cut less than a year before his death.

The Band co-produced the album with engineer/producer Aaron L. Hurwitz, with some early guidance from their frequent associate John Simon (who, through the years, has been sort of The Band equivalent of the "Fifth Beatle"). Most of the basic tracks and some overdubs were cut at Helm's home studio in Woodstock, N.Y., (site of their great early triumphs, before they moved westward in the early '70s). Additional tracks were cut at nearby studios

such as Bearsville, Neveva, Bear Tracks and NRS, which often serves as Hurwitz's home base and was therefore used for most overdubs.

Hurwitz, a 30-year veteran who has worked on projects with The Band since 1986, says that Helm's studio "is an amazing place—perfect for the way these guys like to work. It's a new barn designed in a very old way. Part of the room has a ceiling that's maybe eight or ten feet, but then it opens up into this giant room that's probably three stories high. It's all wood surrounded by these blue stone walls; it's a pretty live room. Then, above that, he has a separate control room [equipped with a TAC Scorpion console, a Stephens 821B recorder and Yamaha NS-10 monitors, supplied by Neveva Studios], but instead of having glass separating it, it's open, so the communication is really good. That's important with a group like The Band.

"You really have to be on your toes and cut as much as you can live," he continues. "When they're ready to go, they just start. It's not like, 'Here's take one.' They sit down and play, and it just happens; it's amazing. And I always have Garth on a separate send going live to DAT the second he sits down at the keyboard, because he does these improvs and you never know where they're going to lead, or whether a piece of it will be usable for something later.

"The most live session on the album was 'Blind Willie McTell,' which we cut at Bearsville [on their SSL 6000 and Studer A800]," Hurwitz adds. "On that one, everything was live: Levon and Randy playing drums; Levon's vocals while he was playing; Rick in an isolation booth singing and playing bass; the two keyboardists, and Jim Wieder singing and playing acoustic guitar in an iso booth. Actually, a lot of vocals on the CD are live, because that's the way Levon, especially, and also Rick, to a degree, like to work."

Later, some other parts were overdubbed onto "Blind Willie McTell" including piano fills and a solo by the late, great bluesman Champion Jack Dupree. Wait...how could they overdub a dead man's part later? "By the time we got to recording 'Blind Willie McTell,' Champion Jack had passed away," Hurwitz recalls. "But several years

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ago, when he was up in this area, he came in and cut eight or nine tunes with The Band. And at that time, Garth had the idea of having Champion Jack do some overdubs on a version of 'Blind Willie McTell' they'd done earlier—just put it on a slave reel; he didn't know what might come of it. Then, when we went to cut the song for this record—and it was one of the last two we cut—we took that old version, got the tempo map and put it on as the count up front and played it in the same key. Then I was able to take some of Champion Jack's parts, especially the solo, put them into Pro Tools and edit them into the new arrangement, which was quite a bit different. We brought it back up to 24-track and flew him back in. We even flew some of Garth's tracks from the old take in, too." Another bit of recording legerdemain used to spice up the track involved turning the tape of one of Garth's parts upside down and playing it backward. "It's almost inaudible," Hurwitz says, "but it's a great effect."

"Country Boy," the tune sung by Manuel, presented another set of challenges: "That was done back in 1985 at an 8-track studio [Sound Workshop 1280 console/Tascam 80-8 recorder] with Andy Robertson engineering," Hurwitz says. "At one point a couple of years ago, they took it over to Bearsville and bounced it over to 24-track and started working on it. Then, when we decided we were going to use it on the CD this time around, we redid the overdubs and brought it up to date with the new members. Over the last few years, Garth and I have been working on a lot of Richard's tracks, so it's almost like he's around with us all the time."

Hurwitz marvels at the spirit of cooperation within the group, noting that the players easily put their egos aside in order to make the best record they could. "They don't get in each others' way, and they truly act as a group," Hurwitz says. "It's not something you see that often, but they've been together so long it seems to be inherent in their personalities to work that way."

"A typical day would be John [Simon] would show up at Levon's around nine or ten in the morning, get things set up with the other engineer, Chris Anderson, and then they'd wait for everyone to show

up," Hurwitz chuckles. "Be there, be ready and *wait*. Of course, Richard Bell and Randy and Jim Wieder would be there pretty much on-time. Then the other guys would wander in around two or three and start cutting. I'd come in around then, too, and as Chris would finish his shift, I'd take over. John would usually cut out around nine or ten, and then we'd keep going until three or four in the morning, sometimes working on one song, sometimes trying to get something on a couple of songs. Levon and Garth are definitely night people."

When I ask Hurwitz if he and The Band felt any special pressure making a record that they knew would be seriously scrutinized and compared to the group's past work, Hurwitz says, "I felt as though I had to be on my toes all the time, especially when I was mixing, because I knew we had good stuff to work with, and if it had come out badly, or it wasn't well-received, it would have been awful, considering they have such a great reputation and it had been so many years since they'd made a record." In terms of the group's attitude, Hurwitz says, "We had endless discussions about how we could give it that Band sound that everyone loves but at the same time make it fresh and not sound like something that might have been outtakes."

When it came time to mix the record, Hurwitz flew down to Pyramid Records' studio in Lookout Mountain, Tenn., working for stretches of two and three weeks at a time on mixes that he then took back to New York for comments and suggestions from the players. "I used all the technology available to me to make it sound as good as it could," Hurwitz comments. "For instance, I used some of Bob Clearmountain's sampled [drum] sounds that he has on CD, triggered through the TC Electronic 2290. And I also used the Alesis D4, which is a great unit. But I never actually replaced any sounds; I'd just put a little bit behind Levon's and Randy's drums here and there. It makes it a little more modern maybe, and they were fine about it."

Pyramid Studios is equipped with a Sony MXP-3000 console, Otari recorders and Yamaha monitors. Hurwitz opted to use mainly stereo compressors—the Summit DCI 200 and Drawmer 1960 (both tubes), and

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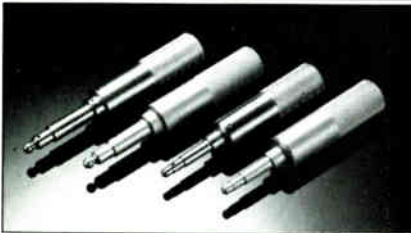
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the Neve 33609 and Massenburg 8900. Equalizers included the API 550A, Focusrite ISA, Neve 1081 and Pultec EQP-1A. "The best combination for Rick's and Levon's voices ended up being the API Lunchbox with the Summit compressors," Hurwitz says. "I was able to brighten it up and make it clear without making it too sharp."

Not surprisingly, Hudson was the bandmember most involved with making suggestions about the mix. "Garth is a master of overdubs and orchestrations," Hurwitz says. "He can really make something come together better than anyone I've ever worked with. His concern was that you can clearly hear every musical line, so we went back and took out a few things here and there. Even though they'd been lines I liked, taking them out did improve the tracks; he was right about that. Like on 'Too Soon Gone,' we made the arrangement a little sparser to bring the lyric

tory of The Band coming from Capitol that Hurwitz promises "won't be just a greatest hits, because they've done that already." Instead, it will feature rare live tracks, ranging from gritty R&B from the Hawks days to Garth Hudson's famous organ improv at the mammoth Watkins Glen music festival in 1973, as well as a wealth of previously unreleased studio material from different eras. Meanwhile, The Band is on the road, playing venues big and small, doing it like they've always done it—no fancy suits or sets, just great playing and singing. It worked way back when. It works now. ■

## Al Kooper: B-3 B. Goode

Everybody loves Al Kooper. Trust me. He's one of those guys who's respected by everyone he's ever worked with—and he's been in the music business so long in so many



PHOTO: JIM HERRINGTON

out more. The other thing Garth wanted was not too many effects. He really knows about all that and has a real good sense of when there's too much of something on a track."

*Jericho* has been selling briskly since its release, and it appears to be picking up momentum as the word gets around that this really *is* a Band album worthy of the name. Next on tap is a three-CD box set of the his-

different capacities, he's worked with a lot of folks. He's got a resume a mile long, with highlights too numerous to mention.

Okay, we'll tick off a few—founder of the Blues Project; keyboardist on Dylan's seminal folk-rock albums; founder and original leader of Blood, Sweat & Tears; author of songs for the likes of Gene Pitney, Carmen McRae, Ten Years After and Betty Wright; discoverer

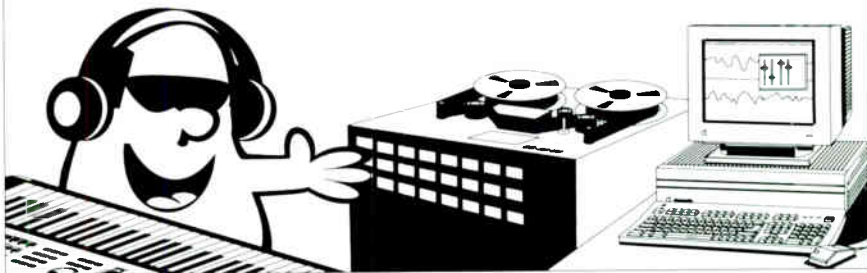
and producer of both Lynyrd Skynyrd and The Tubes; producer of discs for Joe Ely, Nils Lofgren, Dylan, Green on Red, the Staple Singers and others; session-man-for-hire with Hendrix, the Stones, B.B. King, Simon & Garfunkel, The Who and a whole bunch of other folks; composer of music for the late, great TV series *Crime Story*; bandleader and keyboardist at the Bob Dylan 30th Anniversary Tribute; and gifted musician behind some truly fine solo albums (nicely anthologized on a CD called *Al's Big Deal*), the most recent of which, *ReKoooperation*, has been out for a few months on the MusicMasters label.

*ReKoooperation* is a cool album, and I'm giving it a little ink because you probably won't hear it on your local radio station, but you *should* know about it. As Kooper writes in the liner notes, "This project is a closet one I've harbored for many years, 'cause I've always wanted to record an instrumental album that mirrored the heroes of my childhood—Bill Doggett, The Meters, Booker T & the MGs, Willie Mitchell, Bill Black's Combo, Duane Eddy, Ace Cannon, Hank Crawford, Jimmy Smith and others."

And that's what it is—an early '60s-style instrumental rave-up with Kooper in command behind his trusty Hammond B-3, and a core band consisting of New York jam-masters like guitarist Jimmy Vivino (currently in the band on *Late Night with Conan O'Brien*), bassist Harvey Brooks and drummer Anton Fig all charging through a fantastic assortment of different grooves and feelings. The material ranges from fresh takes on familiar old tunes by King Curtis ("Soul Twist-ed"), Bill Doggett ("Honky Tonk"), Chuck Berry ("Johnny B. Goode") and Otis Blackwell ("Don't Be Cruel"), to dynamic interpretations of newer songs, like Robert Palmer's frenetic "Lookin' for Clues" and Richard Thompson's "When the Spell Is Broken." There are a few Kooper originals, too. The Uptown Horns punctuate a few songs with blasts of soul, and alto saxman Hank Crawford, one of Kooper's aforementioned heroes, lets loose on three tunes. What a party!

The album was recorded in just two weeks, primarily at The Magic Shop in New York City's SoHo district, with Steve Rosenthal piloting the studio's old Neve 80 Series wrap-

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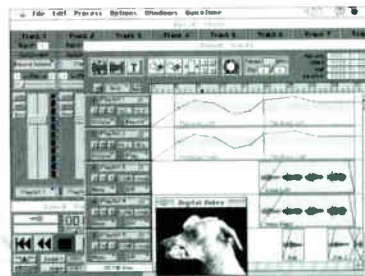
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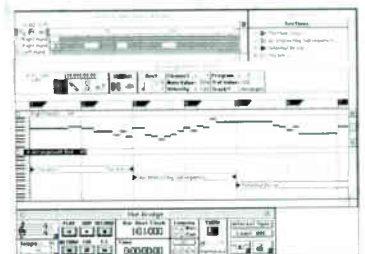
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around board (signed by Rupert Neve no less!). Three tracks were cut at the Sound Emporium in Nashville (where Kooper currently resides) with L. Clarke Schleicher engineering.

"I had no budget for rehearsing the band," Kooper says. "I was expecting really good musicians to pound it out as fast and as passionately as they could. I demoed everything on my home MIDI setup, so I had my conception of it on cassette, and I played the band that, but then we'd go from there and just see what happened."

"It was what I'd call 'jingle time,'" adds engineer Steve Rosenthal, "in the sense that it had to be done very quickly, but we had such great players, that didn't end up being a problem."

"We didn't beat things to death," Kooper says. "We'd try to get four songs a day if we could. My roots are three songs in three hours; that's what I was raised on. That's how I learned to be in the record business, so I understand that mentality, and I don't have a problem with it. I think the longest I ever worked on a record was maybe two months on The Tubes' first album, which was a pretty complicated record. But the rest of 'em—the first Lynyrd Skynyrd album was three weeks; *Super Session* [with Steve Stills and Mike Bloomfield] was two weeks; the first Blood, Sweat & Tears album was two weeks. But I think six weeks to make a record would be about perfect."

Kooper has nothing but praise for Rosenthal, who he says "miked my organ the most optimum way it's ever been miked." The secret? "If I tell you, then it won't be a secret anymore," Rosenthal jokes. "Actually, it's nothing too fancy. I used two 414s at opposite corners of the Leslie, and I used a D-12 for the bottom of the Leslie, for the bass response. Then I panned the two mics at the top hard left and hard right, and I put the bass up the middle, so when the Leslie actually spins, you get it going from speaker to speaker. It's a technique I've developed through the years." (Rosenthal has used it on organ-dominated records by Charles Brown, Ron Levy and others.)

The only other instruments that presented much of a challenge were the Uptown Horns. "We spent about an hour-and-a-half wandering around [The Magic Shop] trying to find the right position for the mics, which were just a pair of stereo tube mics,"

Rosenthal says. "Finally, we found this really sweet position in the room that I think helps give their tracks that sort of live, ambient, RCA Studio A quality."

One track, "Lookin' for Clues," is actually Kooper's demo, recorded with his living room MIDI songwriting setup: electronic keys (Korg 01/W), horns (Korg MIR), vibes (MIR), bass (Yamaha TX7) and drums (Alesis D4) through a Mackie 1604 mixer, directly to a Casio DAT. As he wrote in the liner notes, "It came out exactly the way I wanted it to, so I never bothered to re-record it."

Kooper notes that he's mixed all his own records since 1971: "I won't let anyone else touch it, and after doing it for more than 20 years, I've actually gotten pretty good at it. Being the artist and producer and having this be my first record in 12 years and having a limited budget, there are things I couldn't pay attention to. I couldn't get anal about the drum sound and the bass sound and all those things. It all sounded fine to me. If I had problems, I tended not to fuss over them too much."

Kooper admits that he's not exactly sure what the record-buying public will make of *ReKooperation*, but he clearly believes he accomplished what he set out to do. "It's not too derivative," he says, "but I'm also not really trying to compete in a modern way, either. I mean, there's no gating on the record! When it was done, I sent it to a bunch of friends of mine. Jerry Wexler [the legendary R&B producer] called me up and said, 'Al, I'm telling you as a friend, you've got to remix this record!' and he started telling me everything that was wrong with it. So I got all paranoid and I went back and listened to it again and it struck me: He missed the point. It's just a document—in that way, it's kind of like *Super Session*—a document of what happened in the studio. It's not an attempt to crash up the charts.

"Then another friend, [hard rock producer] Michael Wagener called me and said, 'How did you do this record? This is amazing! Did you mix it yourself?' Then I felt okay," Kooper says with a laugh. "What's funny is that what I was doing is much closer to what Jerry does than what Michael does. But Michael understood."

The Master of the B-3 sums it up perfectly: "They really *don't* make records like this anymore." ■



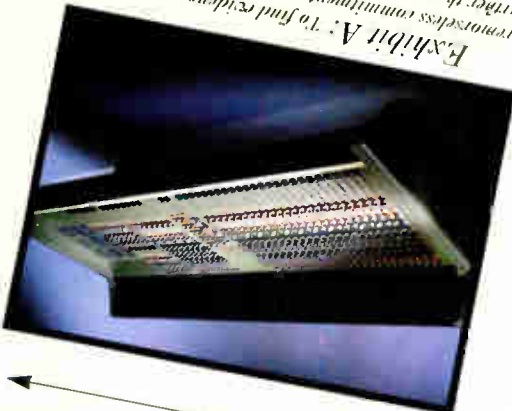
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PHOTO: JAV BLAISEBERG

Left to right: Les Claypool of Primus, Chris Whitley and Rob Wasserman

—FROM PAGE 165. WASSERMAN (three) it took to complete.

Over the course of 13 tracks, Wasserman mixes it up on a series of original tunes and improvs with Brian Wilson and his daughter Carnie; Neil Young and the Grateful Dead's Bob Weir; Jerry Garcia and Edie Brickell; Bruce Hornsby and Branford Marsalis; Elvis Costello and Marc Ribot; the late, great blues giant Willie Dixon and Al Duncan; Chris Whitley and Primus bassist Les Claypool; and Kronos Quartet cellist Joan Jeanrenaud and classical cellist Matt Haimovitz. In addition, Wasserman performed three of the trios himself, through the magic of overdubbing.

It's an eclectic record, to say the least, spanning a range of styles by touching on blues, jazz, pop, rock, gypsy music and whatever the hell you want to call the free-for-all Garcia-Brickell-Wasserman track that ends the 60-minute disc. It's no surprise that everything on *Trios* is as lively and interesting as its players. What *is* a surprise is that for some reason it all hangs together, that it works as an album, despite the disparity in styles.

The link, of course, is Wasserman—there really is no other player like him. Whether deftly fingering his Clevinger electric stand-up or bowing an acoustic double-bass, he brings an amazing finesse and sophistication to every song. "Each song is its own special thing," he says. "Each song is a record. They were spread out over a long period, and that let some of them sit and withstand the test of time." Wasserman is quick to add that the other

link is his engineer and co-producer on the project, John Cutler, a longtime tech wizard for the Grateful Dead, as well as co-producer of that group's two most recent studio albums and live sets by both the Dead and the Jerry Garcia Band.

"My involvement with this album basically began one evening when Jerry [Garcia] called me up at home and said, 'Hey Cutler, I need you over at my house. I'm having a rehearsal with Edie Brickell and Rob Wasserman for this thing we're doing—bring a DAT machine.'" Cutler remembers. "So I did. Jerry was living in this house that had a big living room with a grand piano in it, and Rob had his bass and a little amp, and they were just improv jamming: Jerry was playing piano and some acoustic guitar, and Edie was singing. They worked up several different things that night, and the next day we came into the studio [the Dead's Club Front warehouse space] to record. Nobody really had any idea of what was going to happen, and it was still pretty much all improv. So I miked a piano and a guitar and Rob's amp, and set up a vocal mic for Edie, and they did these long jams; I burned up a lot of tape. The one we liked best from all that was a tune called 'Zillionaire.' Jerry played piano on it, and I think he got a little self-conscious about it since he's not exactly known as a piano player, so a week or two later, he overdubbed a little electric guitar on it.

"At that point, I didn't know I was going to be so heavily involved—I was pretty much there because Jerry asked me," Cutler explains. "But Rob and I hit it off, and pretty soon he

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was asking me to do more sessions on it, and I ended up co-producing the record." Wasserman calls Cutler "my favorite engineer" and adds, "I also have to thank the Grateful Dead for allowing us to use their studio pretty much whenever we needed it."

"I tried to stay very basic with it," Cutler says of his approach to the recording. "I guess the concept, if there was one from my point of view, was that these people are in your living room with you; I was trying to capture that kind of intimacy. So I recorded essentially with no EQ, with a few really good microphones—some tube stuff. And I also have this mic I ended up using in a number of applications, a stereo shotgun mic made by Neumann—the 5190R—that I've found to be a wonderful mic. I use it as an overhead on drums a lot, and I tried it on a few things here. On Chris Whitley's track, I used it on his National steel guitar in stereo in M-S, and it really got this great, full sound, with no EQ or anything."

"Before that, we used it when we recorded the classical gypsy stuff [Haimovitz and Jeanrenaud] up at The Site [in West Marin County], which is this great place with the biggest old Neve I've ever seen—it's two 8078s made into one board with 80 inputs and GML automation," he adds. "I went up there with the three of them, and I set them up in a triangle facing each other, and I hung this mic, and then I also close-miked all the instruments and used contact mics on the cellos and recorded 24-track, 15 ips SR. When we took it back to Front Street [Club Front] to mix it last spring, we started eliminating things, and we finally ended up using only the stereo mic tracks, with no EQ, no reverb."

Nearly half the songs on the disc were recorded at Club Front, which features an automated Neve VR48 with Flying Faders in the same cavernous recording room the musicians play in—a fine situation for a band like the Grateful Dead, but perhaps not for everyone.

"Because I've been working this way so long, I'm probably more comfortable being right in the room with everybody," Cutler says. "However, I don't think you can do as good a job recording that way, because you can't really distinguish between what is leakage and what's going to tape. Over the years, I've

figured ways to compensate for it, and I sort of know how the sound I hear in my headphones will translate to tape. But if the control room [in another studio] is large enough and not one of those low-ceiling jobs, I'm pretty comfortable. For tracking, I probably prefer a real studio."

"For mixing I prefer Front Street," he adds, "because the room isn't an issue there—in fact, it's an advantage. I usually monitor on my Meyer 833s and my Realistic [Minimus] sevens, and I find that as long I'm near-field monitoring, the room doesn't affect it. And with a room that big, you don't feel cramped. Then, when you do crank up the big speakers, you can get 15 feet away from the board and take a listen to where the bass develops."

(By the way, Cutler was recently assigned the task of building the Dead a new studio in a different building. Cutler says he hopes to retain the huge control room concept and also have a separate, adjoining tracking room.)

Other studios used during the project included The Site, Ocean Way in Los Angeles (for the Elvis Costello and Brian Wilson tracks), Score One in North Hollywood (for Willie Dixon; these were his last sessions before he died) and Neil Young's Redwood Digital studio on his ranch in Los Gatos, south of San Francisco.

"The Weir, Young, Wasserman trio [on the song 'Easy Answers'] was interesting," Cutler says. "The three of us went down to Neil's ranch, and we stayed there while we worked on it. He has an old 8078 with no automation, and this smallish room, all wood, with an old pump organ in it. He has a great collection of vintage tube guitar amps. What was interesting to me was that Bobby went down there with just a guitar. You know, he's Mr. High Tech, but he had what I consider to be the right attitude, and he used the stuff that Neil had. He ended up playing through some old Fender tweed amp, and he got a great sound with no effects at all. From a production point of view, Neil was very heavily involved. He was using a lot of first takes, even on Bobby's vocals, instead of trying to make it cosmetically perfect. He went for the raw feel. That's his way, totally."

"We had a sort of handicap on that session," he continues, "because we were using a drum machine and

we didn't have all the equipment we needed to sync it up to tape, so all we had going was a really basic pattern, and that's what ended up on tape. Later, I took samples of much better-sounding drums and triggered them from the drum machine. The drum machine was a stereo track, so I had to go through all this convoluted equalizing just to extract the kick drum and the snare, to trigger the replacement drum sounds. It was worth the trouble, though, because it softened the drum machine sound quite a bit."

Don Was produced the Brian Wilson track, which began as a trio featuring Wilson, Wasserman and singer/songwriter Sam Philips. "It was an epic production from beginning to end," Wasserman says. "Brian and I first talked about doing something together about six years ago, and it just took awhile to get it to happen." When Philips dropped off the project (after writing and recording a version of the song the trio composed together—the beautiful, haunting "Fantasy Is Reality/Bells of Madness"), Wasserman managed to get Wilson's daughter Carnie, who'd been estranged from her father for years, to come into Ocean Way to complete the track.

It was, understandably, quite a cathartic event for both of them. And for the fragile Brian, the sessions had another level of resonance: "We recorded the song in the same room at Ocean Way where he'd done 'Good Vibrations,'" Wasserman says, "and so that was heavy for him. But it all ended up being really great. He was fun to work with, and it was great working with Don. Brian needed someone to look up to, and I'm no famous pop producer and neither is John [Cutler]." (Was is slated to work on an album Wasserman and Bob Weir hope to cut this year.)

Cutler mixed the entire record on the Neve at Club Front with help from Wasserman and editing assistance from Jeffrey Norman. "When we were all done with the recording," he says, "I was able to mix it using very little EQ and capture what I think sound like real sounds. When I make a rock 'n' roll record, as soon as I'm through tracking and I'm in a mix mode, I hook up through our Wadia A-to-D and our 1630, with its modified Apogee D-to-A, and I listen from the first kick drum beat through the digital loop because I don't really

like what it does, yet it's going to end up digital, so I figure I might as well EQ each sound based on the net result. Well, when I did that with this record, I hated it. I had this warm, SR, analog, old Neve, tube-mic-as-much-as-possible thing going, and when we started to do the first mix through the 1630, it sounded icy—all the negative stereotypes you hear about digital were there.

"So I decided to try an experiment," Wasserman continues. "I have an old [Ampex] ATR 104 half-inch analog machine that I recently had redone, and I put the mix on that, and while recording it, I played it back into the digital loop, and that's how I mixed the album—to compensate for the digital I was able to warm it up using this old analog machine. I had never done this in real time—a lot of people mix to half-inch and then go digital—but I didn't want to wait until I got to the mastering lab to find out if I liked it or not. Since we're lucky enough to have a 1630, I tried it that way."

Cutler also chose to use analog reverbs for the most part, opting to use an EMT-240 in a couple of applications. "What I've found is that when you take a mix and you use an analog plate on, let's say, a vocal, and then you go to digital, the reverb holds its own better than if you use a digital reverb and then go to digital," Cutler explains. "A lot of people say that if you go digital twice, as it were, some of the fineness of the decay goes away; that's a real phenomenon."

Because the timetable on the project was so open-ended, Cutler was able to spend nearly six weeks mixing—luxurious by any standard. But the hard work definitely paid dividends. There is a unity and immediacy to the sound of the disc that make it all sound like a casual—but still serious—jam session. The music breathes and swings. Still, it was a long road, and you can almost hear the relief in Wasserman's and Cutler's voices when they talk about the album in the *past tense*. "It was," Wasserman says with typical understatement, "quite an adventure." And in answer to your next question, no, there is no plan to make a record called *Quartets*. ■

*Blair Jackson is managing editor of Mix, and his trio at home recently became a quartet.*

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—FROM PAGE 165, OTTMAR LIEBERT

want, which is how I prefer it. Any music that's supposed to be alive, whether it's jazz or blues or flamenco, has to change, has to bring new influences into it. Otherwise, it just becomes a museum piece." And so, there are three songs on the new album featuring the koto of Osamu Kitajima, there's a cover of Fleetwood Mac's "Albatross" and even a Spanish version of Marvin Gaye's "Mercy, Mercy Me" sung by Jose Grillo.

The German-born guitarist lives in Santa Fe, N.M., but has recorded his last four records (including his most popular, *Nouveau Flamenco*) at Sound Design in Santa Barbara, Calif. with Domenico Camradella (the studio owner) engineering, co-producing and adding some keyboards. "It's a very nice studio, especially for acoustic instruments," Liebert says. "It's got a Neve with Flying Faders, and we've been using a Studer 24 with Dolby SR. Dom has some amazing mics there—old Telefunken and Neumanns. What we discovered early on is that there is no one mic that really reproduces the nylon-string guitar.

"I think it's one of the hardest instruments to record," Liebert says of the guitar. "I don't know why, but if you listen to old recordings of flamenco or classical guitar, they all suck. They don't sound like guitar. Even now, most recordings tend to make the guitar sound too bright. What we've been doing is using a combination of three mics—usually a Neumann, an AKG +14 and one of those big EV elephant dicks [the RE20]. If it had to be just one mic, though, the AKG C460 with the narrow capsule is the nicest sound for me." You might argue with his assessment of guitar recordings, but the fact is his guitar is very well-recorded, with a naturalness and presence that are rare.

The musical terrain covered by Liebert and his group, Luna Negra, is much broader than the nouveau flamenco tag might imply. There's a distinctive Asian influence running through several compositions. And this isn't merely a guitarist's showcase, either. Bassist Jon Gagan and percussionist Stefan Liebert (Ottmar's bro) give the music both grounding and kick. There is a delicate, layered feel to much of the music, but Liebert's soundscapes always have

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"I think it's one of the hardest instruments to record," Liebert says of the guitar. "Even now, most recordings tend to make the guitar sound too bright."

plenty of air in them, too.

"Part of that is the incredible TC5000," Liebert says. "On the guitar, it's mainly plate reverb—unfortunately, it's getting rarer and rarer to find a real plate in the studio. But another part of what gives the records their own sound is we decided that CDs can be too quiet, so we put very subtle little things in the background—little DAT recordings. My brother and I carry DAT recorders wherever we go, whether it's the streets of Singapore or a railway station in Europe, and we like to drop things in just to add a bit of color."

In true '90s fashion, Liebert is eager to use all the recording and performing tools at his disposal, even though the public's perception of him is probably that of just a soulful guitarist. For instance, one of the tools in his arsenal is a custom MIDI flamenco guitar designed by Eric Sahlin of Spokane, Wash. And try this on for modern composing methods: "One day I went to Dom and said I want to record a water drop and sequence that water drop into a drum loop, using almost nothing but the water drop; then I'd like to MIDI my guitar with a sitar sound, voices and strings. We probably took an hour or two to get that together, and then I just sat down and improvised something. The bass player came in and heard it and improvised something over that, and the song ["Lush"] was done."

Liebert says his next album will be live, recorded with his group somewhere up the road. But there's no real hurry. His albums, new and old, just keep selling, crossing format boundaries and reaching a wider audience with each passing month. "We can feel and imagine what we are striving for, what it might sound like in the future," Liebert told one writer. "We are not halfway there. We will continue." ■

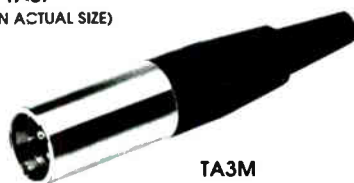
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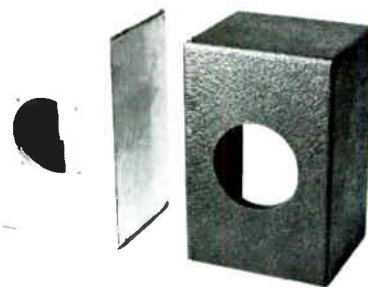
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by Philip De Lancie

# TAPE & DISC NEWS

## **S**ONY TO PRESS CDS IN OREGON

Sony Corporation of America announced plans to add a fourth CD-manufacturing facility in the U.S. The plant, to be located in Springfield, Ore. (near Eugene), will be Sony's first in the West. The company operates prerecorded music manufacturing plants in Terre Haute, Ind. (DADC), Pittman, N.J., and Carrollton, Ga.

Sony's plans call for a 250,000-square-foot facility on an 80-acre site. Slated to open in the second half of 1995, the plant will make optical products for the entertainment and information markets. Initial capacity will be 3 million discs per month. Sony's current combined optical disc capacity in the U.S. comes to about 20 million per month.

## **KODAK LAUNCHES PORTFOLIO CD**

While new consumer CD-ROM formats keep springing up like weeds, Kodak's Photo CD is unique in encouraging average consumers to go out and make their own CDs. Kodak, probably concerned by the effect of camcorders on the slide-viewing habits of its customers, bowed Photo CD two years ago to allow consumers to view their photographs on their TV screens via CD-I-compatible CD-ROM drives. The company enlisted its friends in the photo-finishing business so photographers would have places to process the film and record it onto CD-Rs.

Now Kodak has taken the next step in its Photo CD strategy with their Portfolio CD. The new format, playable in Photo CD and CD-I machines (as well as Photo CD-compatible CD-ROM drives hooked to computers) allows text, graphics, interactive menus and CD-quality sound (no video) to accompany the photos as they display onscreen. The company released two software packages that

allow consumers to design and prepare their Portfolio CDs at home on a Macintosh (Windows version coming). The software creates a "script" for the disc, which is then taken to a Portfolio CD "photo finisher" for recording onto CD.

Though consumer response to Photo CD has been disappointing so far, the discs have found favor as an image storage and distribution medium in professional multimedia and pre-press applications. Similarly, Portfolio CD may be most attractive initially in presentation and catalog ap-



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plications for business. But to the extent that the format encourages individual participation in—and experimentation with—multimedia, Kodak's efforts provide a welcome alternative to the dominant corporate vision in which "interactivity" means choosing among 500 shopping channels.

#### **HYPERCARD TO GO CROSS-PLATFORM**

Apple's HyperCard was among the first computer applications to widely disseminate many of the basic concepts and approaches that underlie current interactive multimedia practices. While competing authoring tools have gotten more sophisticated, HyperCard languished, leaving many to question the tool's continuing effectiveness. But two new developments signal a renewed commitment to the program by Apple.

Version 2.2 of HyperCard, introduced at January's MacWorld Expo, makes it much easier to incorporate color graphics, which are not native to the application. Further components are available to translate a HyperCard stack into a stand-alone application that does not require the HyperCard player for playback.

According to Apple's Tom Hamner, developers will be able to translate their stacks into ScriptX, the cross-platform scripting language due in June from Kaleda Labs (an Apple/IBM joint venture company). ScriptX is designed to facilitate multimedia playback on multiple platforms, including Windows, which is the biggest part of the CD-ROM market. So if the pieces all fall into place as planned, HyperCard will have the potential for cross-platform development, a crucial feature for any media integration tool.

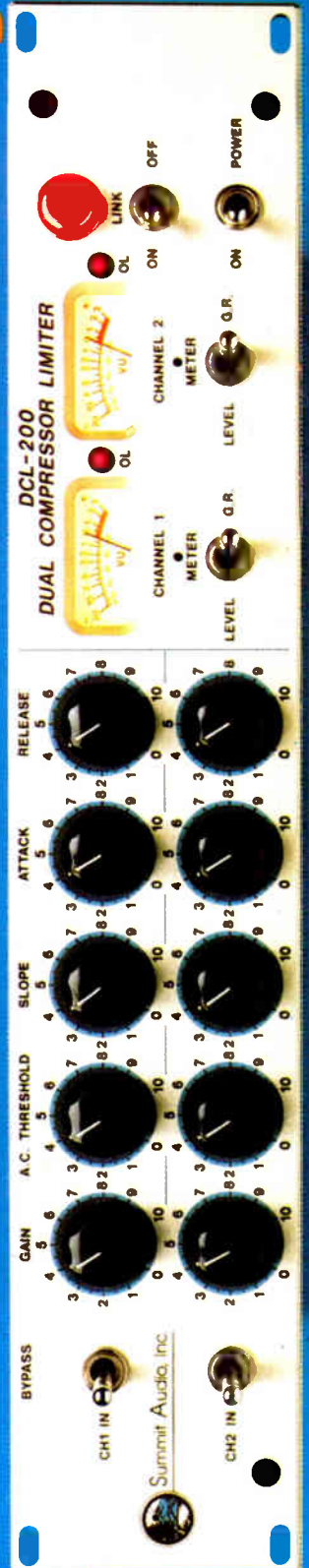
#### **SPLICES**

Philips Key Modules Group (San Jose, CA) announced a licensing program for equipment manufacturers interested in marketing the company's multicassette duplication unit for DCC. Philips markets its MDU as a low-cost, low-volume system for short-run DCC duplication. The license entry fee is \$13,000, with an additional charge of \$65 per slave sold...Versadyne (Campbell, CA) announced sales of its 1000 Series high-speed audio cassette duplicators to Audio Visual Communications Inc.

(King of Prussia, PA) and Cassette Express (Santa Ana, CA)...Emerald Technology (Lincoln, NE) added the JC76 to its line of accessories for the JC7000 cassette-inserting system. The JC76 is an in-line conveyor system with passive cassette-orienting stops. Emerald also reports sales of the JC7000 to Mission Communications (Sierra Madre, CA), Blue Jay Records (North Hollywood, CA), Forge Recording (Valley Forge, PA) and Alpha Records (Plantation, FL)...Rank Video Services America (Northbrook, IL) expanded its plant by 30% and added another Otari T-700 MkII TMD high-speed video duplicator. With 17 TMD machines now online, Rank is the largest TMD facility in the world...Gene Sakasagawa, founder of Saki Magnetics, has retired from the company after 25 years. The company, now owned by TDK, makes duplication and studio magnetic recording heads...Electro Sound (Sun Valley, CA) sold Series 9000 high-speed audio cassette duplication systems to three companies in India: Sorex Sound in Madras and Texla and Shree Raghunath in Dehli. Sister company Gauss, meanwhile, sold duplication gear to M.G. Records and Brawo, both in Warsaw, Poland...The Filam (Paramount, CA) line of Norelco boxes has been expanded with the addition of the CSB Series—available in clear, black and white in smooth or ridged styles...EIT Instrumentation Products (Sterling, VA) introduced the CD Stack Counter. The device edge-counts spindled stacks of CDs to a claimed accuracy of .01%...dCS (Cambridge, UK) sold a 900B reference A/D converter to Masterdisk in NYC. Gateway Mastering, meanwhile, bought two dCS 980 SDIF-2 distribution boxes and one 988 AES/EBU distribution box...Rocket Lab (San Francisco, CA) completed mastering *The Grammy's Greatest Moments* for Arista Records. Paul Stubblebine and Ken Lee worked on the project, which includes performances by Bonnie Raitt, Sting, Marvin Gaye and Eric Clapton. ■

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# C O A S T

## L.A. GRAPEVINE

by Maureen Droney

I stopped in for a chat with the Black Crowes at their new tracking hideaway in Hollywood. "Johnny Wong's Tiki Hut" (known to the uninitiated as Conway's Studio A). The studio has undergone an atmospheric redecoration with neon, '60s and '70s music memorabilia and a wet bar complete with leather bar stools. Engineer Jim Mitchell

—CONTINUED ON PAGE 182



Chris Robinson of the Black Crowes and engineer Jim Mitchell give props to slide-master Duane Allman in their tracking hideaway at Conway's Studio A in L.A.



PHOTO: MAUREEN DRONEY

## SESSIONS & STUDIO NEWS

by Jeff Forlenza

### SOUTHEAST

At the famed Muscle Shoals Sound Studios in Sheffield, AL: Melissa Etheridge was in Studio A with producer engi-

neer Hugh Padgham tracking a single for Island Records; and Sawyer Brown was tracking their latest Curb Records release with producers Mark Miller and Mac McAnalley and engineer Alan Schulman... Michael Johnathon recorded his latest "techno-folk" release for Poetman Records USA at Nashville's

*Below: Industrial-innovator Trent Reznor and engineer Alan Moulder recorded and mixed the latest Nine Inch Nails album, the downward spiral, at Record Plant/Hollywood. From left, engineer Sean Beaven, NIN's Trent Reznor, assistant engineer Brian Pollock and mix engineer Alan Moulder.*



Nightingale Studio with engineer Joe Bogan. Described as "Dylan meets the Moody Blues" by the *Associated Press Review*, Johnathon's music on *Dreams of Fire* features a 61-piece symphony conducted by Carl Gorodetzky, a rock band and a choir. The album was mixed at Dunlop Digital Studios in Lexington, KY... At Nashville's Sound Emporium, Arista artist Pam Tillis was working with producer Steve Fishell and engineers Mike Poole and Ed Si-

—CONTINUED ON PAGE 183

# C O A S T

## CHICAGO LOOP

by Jeff Forlenza

There seems to be a music revival in Chi-town. Everyone knows of the town's indigenous blues talent, but Chicago also boasts world-renowned musicians in other genres: alternative rockers like Smashing Pumpkins, traditional jazzbos like Von



**Above right:** *Rocker Lou Carlozo (right) recently recorded vocal overdubs with engineer Thom Fiegle (left) at Paragon Recording in Chicago.*

**Right:** *Southport Records president Sparrow sets up Neumann M49 and U47 mics for another music session at Chicago's Sparrow Sound Design.*

Freeman. R&B crooners like R. Kelly, as well as the young lions of the blues community, are all selling records worldwide and tracking in town.

Hank Neuberger, operations manager of the 16-room Chicago Recording Company, reports an increase in music and album projects. "There's a tremendous amount of vitality in the record business right now," Neuberger says. "Chicago artists have never been hotter in alternative rock, gospel, jazz and especially R&B." One Chicago R&B sensation that has been tracking at CRC is R. Kelly. Kelly recorded his latest Platinum release for Jive Records, *12 Play*, in Studio D. Other sessions at CRC included Blind Melon overdubbing and mixing their new single, and Frankie Knuckles working

—CONTINUED ON PAGE 185



PHOTO: CAMILLE PALATIS

## NY METRO REPORT

by Dan Daley

Tempest in the Apple Barrel: Feelings at several New York studios are ranging from anxious to upset at what they assert are more aggressive marketing tactics at Sony Music Studios. Though no one would go on the record, the allegations boil down to acrimony over Sony's apparent attempt to garner clients other than those signed to Sony Records, for whom the facility was ostensibly built. One ex-

—CONTINUED ON PAGE 186

**At Sear Sound in Manhattan,** *Sonic Youth finished their latest for DGC/Geffen Records, Experimental Jetset Trash, with producer Butch Vig and engineer John Siket. From left: studio owner Walter Sear, Siket, Vig and Sonic Youth guitarist Lee Renaldo.*



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—FROM PAGE 180, L.A. GRAPEVINE

explains, "recording with these guys is all about vibes."

In between discussions of Three Dog Night and other musical esoterica, producer and lead singer Chris Robinson talked about the new directions in the band's sound. The Crowes stretched out for this album, using more percussion and touches of orchestral instrumentation. They also experimented with guitar tones, using very few Marshalls this time around. Instead, they used (among others) Fender Deluxe, Fender Tremolux and the rather rare Supro amps for sounds that guitarist Marc Ford calls "heavy without the weight."

The drum sounds were also tailored to the individual songs, with the kit being moved back and forth between the big recording room and the iso booth. During our visit to the studio, Jellyfish members Roger Manning and Andy Sturmer dropped by to add some guest backing vocals. Robinson sums up the project by saying, "Our last two records were kind of like one person screaming at somebody else... This one is more like two people actually having a conversation." Oh, and you didn't hear it here, but the rumor is that Conway owner Buddy Brundo is going to keep the bar, put up some velvet ropes, hire a rude doorman and try to make some real money. (Just kidding, Buddy!)

Siemens Audio Inc./Neve/AMS is expanding its Hollywood offices and phasing out its Bethel, Conn., branch in a move to streamline service and customer communication. Housed in the Mercedes building at 6357 Sunset Blvd., the Hollywood facility is doubling its floor space to include a demo room for workstations and consoles. Also added will be a large stock of on-site inventory. Neve will be able to sell parts regionally, eliminating those dreaded delivery delays. The enlarged staff will consist of twelve when complete, including a couple of Connecticut transfers: commercial manager Vincent Pietrorazio and sales administrator Nina Lowe. Vice president Ray Niznik comments, "In these tough economic times, this expansion is a big step for us. It demonstrates our strong commitment to the Los Angeles area." Service manager Nigel Toates adds, "Our response time is going to be

much faster now. We are focusing on improved access and enhanced customer support."

Things are jumping at Signet Sound these days. After its fading glory years as Motown/Hitsville Studios and the rocky transition time as Soundworks West, the multiroom complex at 7317 Romaine in West Hollywood finally has found its niche (or niches!). The schedule board has been full ("Don't say we're full," protests general manager David Dubow, "people will think they can't get in, and they won't call!") with projects ranging from albums for Walter Becker and Branford Marsalis to soundtracks for *The Fugitive*, *Sleepless in Seattle*, *Tim Burton's Nightmare Before Christmas* and numerous Disney projects.

Signet's Studio A, with a Flying Faders Neve VRP-72 is equipped with LCRS film post capability and video projection for scoring and ADR. Studio A can accommodate scoring sessions with up to 40 musicians. Studio B, with another 72-input Neve VRP, is a THX dubbing stage with large-screen film and video projection. Studio C is also set up for film and TV with a Sony Superbright BVU 800 system. The Studio C console—at press time a Neve 8078—was scheduled to be upgraded to a Neve VR-60 in March.

Signet is well-prepared to deal with multiple format demands. They offer a full transfer service: digital, analog, video and mag, almost all formats in either direction. Headed by Signet president Andrew Golov, the company also provides full-service audio post-production as it did on the fall '93 feature film and soon-to-be miniseries *Gettysburg*. In the complex are several sound design studios, along with a spotting area, numerous lounges and an outdoor patio.

Signet manager Dubow, who suffered through parking wars in his former position as head of Richard Perry's Studio 55 on Melrose, is especially proud of his enclosed, secure parking lot and the complimentary valet parking he provides for scoring sessions. Signet also offers 24-hour maintenance (some of you out there may remember what that's like!), courtesy of chief engineer William B. Johnston.

Expanding markets in the wake of NAFTA: ProMark International is a newly created division of Van Nuys-

based ProMark Professional Marketing Services. Hector Martinez, former JBL sales and marketing manager, teamed with Bob Gartland of ProMark to form a subsidiary that will serve music and pro audio dealers throughout Mexico. The farsighted duo realizes that Mexico's vast music market is blossoming and relatively untapped, and has sought to provide service to manufacturers there. Unlike the traditional manufacturer's rep, ProMark International offers complete marketing services, including design, production and distribution of literature, manuals and advertisements, in both English and Spanish. Martinez was also actively involved in the startup of the Spanish-language version of *Mix* magazine. We wish him luck and are sure his venture will be successful. You can contact ProMark International at (818) 904-9390.

The SPARS Digital Audio Workstation Conference is set for May 21-22 at the Beverly Garland Holiday Inn in North Hollywood. Contact Shirley Kaye, SPARS executive director, for info at (800) 771-7727.

Got L.A. News? Fax me at (310) 472-8223. ■

—FROM PAGE 180, SESSIONS & STUDIO NEWS  
 monoton on an album project...Blind Pig recording artists Jimmy Thackery & The Drivers completed tracking their latest album at Wally Cleaver's Recording in Fredericksburg, VA, with producer Jim Gaines and engineer Peter Bonta. Thackery is the blistering guitarist formerly with The Nighthawks, and Gaines is famous for his productions of Stevie Ray Vaughan, Santana and Steve Miller...Master vocalist Julio Iglesias was at South Beach Studios (Miami Beach, FL) recording his latest album, *Crazy*, with producers Albert Hammond, David Foster and Ramon Arcusa for Sony Music. Humberto Gatca and Carlos Alvarez engineered the Platinum-potential tracks for Iglesias with Leo Herrera assisting...King's X recorded their latest Atlantic Records release, *Dogman*, at Atlanta's Southern Tracks Recording with producer Brendan O'Brien...

#### SOUTHERN CALIFORNIA

At North Hollywood's NRG Recording Services, Thomas Dolby was working on his latest album and a variety of interactive video projects with engineer Daniel Clements and assistant John

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Ewing... Priority Records artist Ice Cube was recently at Westlake Audio in L.A. editing remixes of his latest release, *Letal Injection*, on the Digidesign Pro Tools system. Andrew Padgett was the music editor for the sessions... 4 Non Blondes were at Hollywood's Brooklyn Recording tracking a cover of "Misty Mountain Hop." New Red Hot Chili Pepper Dave Navarro stopped in to add his guitar and co-produce the track for the Led Zeppelin tribute album on Atlantic, which was engineered by Eddie "Buffalo" Delena with Brooklyn assistant Tom Banghart... At Valley Center Studios (Van Nuys), hard rockers Mesheen tracked and mixed their latest album for BMG Australia with producer/engineer Paul Sabu... Hunt Sales (Tin Machine) was at Hit Wonder Studios in North Hollywood, producing the debut release from Daucus-Karota, entitled *Shrine*...

#### NORTHEAST

The Brecker Brothers were at Manhattan's Skyline Studios recording their latest release for GRP Records. Michael and Randy Brecker co-produced the sessions with George White, while James Farber engineered with the aid of an SSL 4060 console and a Sony PCM-3348 recorder... They Might Be Giants were recording their upcoming Elektra release at Bearsville Studios (Bearsville, NY) with producer Paul Fox (10,000 Maniacs, XTC) and engineer Ed Thacker... The Smithereens were tracking and mixing their latest for RCA Records at The Magic Shop in Manhattan with noted producer Don Dixon. Lou Giordano engineered the Smithereens sessions with assistance from Joe Warda... Def Mix producer David Morales was at Manhattan's Quad Recording's Studio B working on remixes for INXS, Sounds of Blackness and Brand New Heavies with engineers John Poppo and Pavel de Jesus... English blues guitarist Otis Grand was at Boston's Sound Techniques Inc. tracking with producer George Lewis and engineer Bob Kempf... German funk/hip hop band Plan B were at Manhattan's Looking Glass Studios tracking and overdubbing their latest project for BMG Records with producer/engineer Mark Plati and assistant Dante DeSole...

#### SOUTHWEST

Luminous Sound in Carrollton, TX, has been quite busy: Randy Travis and Larry Gatlin were doing ADR for the

Harstad-Lund Productions movie *The Legend of O.B. Taggart*, and composer Paul Loomis recorded a theme song for the Miami Dolphins TV show with creative director Jon Fox... At Dallas' Big Time Audio, vocalist/pianist Joe McBride was recording an album for Heads Up Records. Saxophonist Kirk Whalum appears on two tracks on McBride's latest, which was produced by label president Dave Love, and engineered by Martin Walters and Steve Browne... Houston's Rivendell Records had the Galactic Cowboys in with engineer Brian Garcia recording a song for a Kiss tribute album... Justice Recording artist Tab Benoit completed his latest album at Pedernales Studios in Spicewood, TX, with producer and president of Justice Records Randall Jammal... Country singer Greg Mainus was doing overdubs and final mixes for his Lunacy Records debut, *Finish What You Start*, at Studio Seven in Oklahoma City, OK, with producers Dave Copenhaver, John Collins and Ron James...

#### NORTHWEST

Epic artists Screaming Trees were at Bad Animals/Seattle tracking and mixing their new release with John Agnello producing and Sam Hofstedt assisting... A&M artists the Neville Brothers were at San Francisco's Coast Recorders mixing their upcoming live album with senior mixer John Cuniberti and engineer Mike Napolitano... Huey Lewis & the News were at Studio D Recording (Sausalito, CA) working on their new CD for Elektra Records with producer Stewart Levine, engineer Darren Cline and assistant Jim "Watts" Vereecke... Bay Area producer Scott Matthews was at Adam's Habit (Salem, OR) tracking vocals from the group Terra for their debut recording... Powerhouse punk/pop band Green Day recorded their Warner Bros. debut at Fantasy Studios in Berkeley, CA, with producer Rob Cavallo and engineer Neil King...

#### STUDIO NEWS

B&J Studios in L.A., owned by Barbara Streisand and John Arrias, recently completed a new room featuring the Euphonix digital control studio system making it a full-service audio house... Engineer Malcolm Phillips recently opened Wellspring Audio Corporation, a 32-track digital studio in Houston, which features a D&R Orion 32-input console, four Tascam DA-88 digital multitracks and various Stage Accom-

pany monitors and amplifiers...**Right Track Recording** (NYC) added an 84-input SL 4000 G Plus console with Ultimatum to its Studio B recently...**At Music Annex Recording Studios** (Menlo Park, CA), Studio B was upgraded with a complete 8-track digital system: Pro Tools 2.0, two Alesis ADATs and a Yamaha CD-Recorder are now available for audio productions...**New River Studios** (Ft. Lauderdale, FL) recently purchased a Korg Soundlink digital multitrack system to be used for post-production, narration and ADR...In New York City, **National Video Center/Recording Studios** celebrates its 35th anniversary this month.

Send nationwide sessions and studio news to Jeff Forlenza, c/o *Mix*, 6400 Hollis St. #12, Emeryville, CA 94608. ■

—FROM PAGE 181, CHICAGO LOOP

on his upcoming dance album. CRC is expanding its SSL 6000 E/G in Studio 5 to 64 inputs to go along with the VR 72 Neve in Studio D.

Another busy music house in town is Sparrow Sound Design. Run by Bradley Parker Sparrow (or Sparrow for short), SSD opened in 1977 as a garage 4-track. Since then, Sparrow started his own label, Southport Records, and formed a partnership with his wife and production partner Joanie Pallatto. All of the staff at Sparrow/Southport are engineers as well as musicians, and they know how to handle the talent on the other side of the glass. "We don't tell artists what to play or how long a song should be," Sparrow says. "Basically, we try to protect their art and their music, since we're both musicians." Recent Southport releases from Chicago artists include saxophonist Von Freeman's *Walkin' Tuff*, trumpeter Bobby Lewis' *Inside This Song* and pianist Don Bennett's *Sleeping Giant*. Incidentally, Sparrow and Pallatto each have their own solo Southport releases, *The Desert Rat Suite* and *Whisper Not*, respectively.

At Seagrape Recording, music sessions are on the rise: Rappers DVS Boys came in to record for Profile Records; Darryl Horton produced, and Tom Haban engineered. The El Dorados (doo woppers from the '50s) recorded an album for St. George Records with drummer Jim McCarty (The Yardbirds) and guitarist Dick Taylor (Pretty Things,

Mekons) guesting; Tom Haban engineered, and George Paulus produced. Chicago bluesman Big Mojo tracked an album for St. George with the same engineer/producer tandem.

Chicago Trax Recording specializes in recording music for commercial release and advertising needs. Artists recently working at CTR: Al Jourgensen and Paul Barker (a.k.a. Luxa/Pan Productions) produced their new Revolting Cocks album *Linger Fick'en Good* for Sire/Warner Bros. with engineers Critter, Steve Spapperi and Paul Manno. Also at Chicago Trax, Grace Productions (the production/engineering team of H. Beno and Critter) produced and remixed Grace Jones' single "Sex Drive" for Island Records.

Producer/engineer/musician Marty Feldman founded Paragon Recording Studios in 1967. More than 25 years later, Paragon has recorded music for every major label. Recent Paragon sessions: Laurie Madfield recorded her latest jazz project with producer Terry Charles and engineer/studio manager Marty Feldman; and R&B/funk artist General Crook recorded and mixed songs for Japanese Record label,

Blues Interaction Inc.

Downtown at Jimmy Dolan's Streeterville Studios: Guitarist Son Seals tracked his latest for Chicago's own Alligator Records with label owner/producer Bruce Iglauer and engineer David Axlebaum. Studebaker John & the Hawks mixed 12 rocking blues cuts with producer Jerry Delugidice and engineer Michael Freeman for their latest Blind Pig release, *Too Tough*.

It may be cold during Chicago winters, but one studio owner feels the warmth of the Chicago recording community. Gary Khan, whose Pegasus Studios had a devastating fire in January 1993, was overwhelmed by the support of fellow studio owners. Khan especially thanks Jim Rasfeld of Acme Recording, and Jeff Malesky and Chris Seaver of Soundworks Recording (where Smashing Pumpkins often record) and the local NARAS chapter for their help: Some Pegasus clients, like Stone Witness, had projects in progress when the fire hit and continued sessions at Acme and Soundworks who adjusted their schedules to help out. Chicago musical instrument retailers and musical talent banded together

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to put on a benefit concert for Pegasus at a local nightclub. With all the help, Pegasus was back in business within six weeks of the fire. ■

—FROM PAGE 181, NY METRO

ample cited was an arrangement that began last fall with John Alberts, best known as the sound mixer for *Saturday Night Live*, whose sound design company is located in the same building as Sony's studios. However, Alberts pointed out that he'd had similar relationships with other studios in the past, notably Teletronics and Howard Schwartz Recording.

"I'd have been competition regardless of what studio I was based out of," said Alberts, who has three 16-channel Pro Tools systems at his new location. Sony also recently hired Ian Huckabee, formerly studio manager at Soundtrack.

Sony Music Studios director of technical operations, Nick Balsamo (formerly of Power Station), said he was aware of the sensitivities but pointed out that Sony Studios often has to fight even for Sony Records artists, and that non-Sony artists have used the facility in connection with MTV *Unplugged* projects.

"It was built to serve the record company," Alberts said of the studio. "Right now, we have no mechanism to solicit outside business, and there is no intention to do so as far as I know. We don't have any more Sony equipment here than any other studio, and we have to pay for our service contracts like anyone else."

The situation on the audio side mirrors a similar row on the video production side that began several months ago. According to a December 3, 1993, front-page story in the production weekly *Shoot*, a number of video houses went on record complaining that Sony Music Studios was violating a putative agreement that Sony would not compete against area post houses, and representatives of several houses voiced threats of boycotting Sony equipment.

One owner who did go on record is Lou Gonzales, owner of Quad Recording, who said that Sony Studios had approached one of the producers who uses his studio on a regular basis and tried unsuccessfully to get him to switch (which Balsamo denied). "Look," he said, "I wish mine was the only studio in town



and that I had no competition. Sony didn't do a great job of being competitive from the start, and now they're trying to correct that. This is capitalism, and they're not doing anything except trying to compete."

In other news...Chung King Recording is planning to open a completely new facility in lower Manhattan later this year, according to owner John King. The two existing rooms on the edge of Chinatown will remain, with one converted to a large MIDI studio. The new facility, to be designed by Frank Comentale, will feature the first 80-input Avalon console with Flying Fader automation in one of its three projected rooms; the others will have the SSL G Series desk from the original studio and probably a Neve VR, according to King.

Unique Recording, long noted for being the first on the block with any new MIDI gear, regressed a bit and put in a Hammond B-3. "Hey, even we have to get back to the basics," quipped studio manager Tony Drootin. Unique also added a Sony 3348 digital multitrack and upgraded its 6000 G Series SSL in Studio C to 64 channels with automation. And all the studio's SSL consoles were retrofitted with high-density 3.5-inch floppy drives. Studios B and C got new Tannoy double-15 monitors. On the MIDI side, Unique added a Roland JD 990 rack-mount module and a Pro Tools 4-track system with Diner dynamic noise reduction.

Willbur Systems Ltd. is designing and building a for-hire facility for guitarist Chuck Thompson. The large-live-room, one-room facility, called Star Base, will be open sometime this summer on the corner of West 20th Street and 11th Avenue. Star Base will have a Neve or an SSL console, with Tannoy monitoring and Otari and Studer tape decks. Construction will be handled by Liam McGrath's company. It will be connected to a photo and video facility.

Power Station rearranged its audio post room, integrating existing equipment, including an AMS 16-track Audiofile, a Synclavier Post Pro and a Logic One console, according to director of audio post Bill Ivie. In addition to some cosmetic changes, the room also got new patch bays and outboard gear, as well as an Adams-Smith synchronizer to enable tape as well as tapeless operations.

Fax your New York Metro news to Daley at (212) 685-4783. ■

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# NASHVILLE SKYLINE

by Dan Daley

Treasure Isle Recording closed its B room in October and will re-open it sometime in March with a new and as-yet-undetermined console and multitrack deck. The Tascam M700 was removed, according to co-owner Fred Vail, because the leasing company refused to lower the APR below double digits.

"What we're trying to do with the B room is create a good, solid, utilitarian \$350 to \$500 overdub and mixing room designed to bring back some of the people going to garage and home studios," said Vail, who also acknowledged that, though business remains good overall, Nashville may be close to peaking to the extent that the local studio scene is tied to country music sales.

Additional pressure is being brought to bear through producers' studios and the emergence of triple-scale musicians in town. Vail also set up the Debut Artists Group, a CD periodical compilation as a tool to

market new artists and the studio beyond Nashville.

Engineer Marty Williams has developed a sideline over the past four years of using digital systems for vocal pitch and timing correction, and now he is basing this service out of Masterfonics. The service, as yet unnamed and used regularly by major Nashville producers, uses Williams' own combination of Pro Tools and waveform-editing programs to bend pitch and shift timings on vocals. A stereo music-minus-two mix is made as a reference, and lead and background vocal tracks are processed in comparison to that.

Although the process is not unusual on pop records, Williams is aware that country music might be more sensitive to the idea that vocals are "fixed" after they're sung. "Mostly it's a word here or there, although sometimes they'll take a chorus they like and paste it in other places," he explained. "It's an enhancement: a tool that allows a good singer not to have to knock their brains out."

Speaking of Masterfonics, they plan to set up a booth at Austin's

South by Southwest music festival. "The clients are there, and only two other studios will do this, and they're both in Austin," said studio manager Lisa Roy.

Sixteenth Avenue recently upgraded its Studio A in pursuit of more tracking dates. Acquisitions included four new Neve 1073 Brent Averill-modified mic pres, ten new API modules of various types, upgraded sampling time for the H3000 and Crest's Mod Factory upgrade. The room also was reshot by Acoustic Sciences, and tube traps were installed. The moves are paying off, said studio manager Preston Sullivan, citing the tracking and overdub work for the next Restless Heart record with producer Josh Leo.

The Castle is redoing its basic electrical wiring and audio signal path, according to studio manager Mike Janas. "It doesn't quite date from Al Capone's time," he joked, a reference to the studio's former life. Studio Supply is doing the audio wiring upgrade and will supervise Vetter Electric's electrical work. The studio also will be doing structural upgrades to the building over the course of the year. ■



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43	002	Acoustical Solutions
174	003	Advance Recording Products
113	004	Akai
28	005	AKG
IFC	006	Alesis (QuadraSynth)
6-7	007	Alesis (Monitor 1)
63	008	Alesis (AI-2)
146	009	Alesis (D4)
9	010	Ampex
196	011	AMP Services
13	-	AMS/NEVE
154	012	Aphex Systems
97	013	API Audio Products
68	014	Ashly
133	015	ATM Fly-Ware
182	016	AudioForce
98	017	Audio Precision
184	018	BBE Sound
41	019	Behringer
150	020	Brainstorm
187	021	Brother International
161	022	Bryston
81	023	Burlington Audio/Video Tapes
156	024	Business & Industrial Trade
182	025	Caig Laboratories
177	026	Cal Switch
163	027	California Recording Institute
60	028	Carver
168	029	CCS Printing
151	030	Celestion
133	031	Century Music Systems
115	032	CM AUTOMation
75	033	CMCI/Circuits Maximus Company
135	034	Community
175	035	Conservatory of Recording Arts & Sciences
166	036	JL Cooper Electronics
145	037	Crest Audio
88	038	Crown
171	039	D & R USA
134	040	The DAT Store
143	041	dbx
43	042	Demeter Amplification
90	043	DGS Pro Audio
42	044	DIC Digital Supply
18-19	045	Digidesign
IBC	046	DigiTech
176	047	Disc Makers
26	048	Dolby
51	049	dynaudio acoustics
54	050	EAR Professional Audio/Video
123	051	Eco-Charge
167	052	Educational Video Systems
159	053	Electro-Voice (EV)
111	054	Ensoniq (DP/4)
83	055	Euphonix

PAGE	READER SERVICE NUMBER	ADVERTISER
183	056	Europadisk
174	057	First Light Video Publishing
140	058	Full Compass
37	059	Full Sail Center for the Recording Arts
80	060	Furman Sound
95	-	Future Disc Systems
51	061	Future Sonics
65	062	Genelec
96	063	Glyph Technologies
149	064	Gold Line
53	077	Golden Ears
169	065	Goodman Music
54	066	Grandma's Music & Sound
101	067	Groove Tubes
144	068	Group One/xta Electronics
130	069	HHB Communications Ltd.
61	070	Hinge
155	071	The Hollywood Edge
101	072	I.D.T.
110	073	Institute of Audio Research
89	074	InVision Interactive
147	075	JRF/NXT Generation
148	076	KABA Research & Development
172	078	Klarity Cassette
94	079	KRK Monitoring Systems
172	080	Leo's Professional Audio
70	081	Lexicon
109	082	Lightwave systems
100	083	Los Angeles Recording Workshop
141	084	Littlite/CAE
89	085	MacBeat
39	086	Mackie
170	087	Markertek Video Supply
138	088	Meyer Sound
197	089	Mix Bookshelf
191	090	Music West
59	091	The Microphone Company
193	092	N.A.R.A.S.
21	093	Neumann/USA
55	094	Neutrik
79	095	Night Technologies
10-11	096	Opcode
71	-	Optical Laser
139	097	Optical Media International
35	098	Optifile/Sascom Marketing
169	099	OSC
91	100	Otari
31	101	Peavey Electronics
106	102	Pinnacle Micro
90	103	PolyQuick
116	104	Premium Entertainment
118	105	Professional Audio Systems (PAS)
196	106	Progressive Music
141	107	QCA
34	108	QSC Audio
38	109	Rane

PAGE	READER SERVICE NUMBER	ADVERTISER
149	110	The Recording Workshop
110	111	Rhythm City
123	112	Rich Music
176	113	Rock & Roll Music
82	114	Rocket Lab
17	115	Roland (JD-990)
47	116	Roland (SN-550)
40	117	Ross
67	118	Sabine
147	119	Sam Ash Professional
86	120	Samson Audio
194	121	SAS Industries
194	122	Selco Products
121	123	Sennheiser
77	124	Shape
69	125	Shure
142	126	Simon Systems Engineering
1, 114	-	Solid State Logic (SSL)
25	127	Sonic Solutions
BC	-	Soundcraft
49	128	SoundTech
127	129	Soundtracs
46	130	Spatial Sound
153	131	Stanford Research Systems
167	132	Stedman
3	133	Studer
186	134	Studio Consultants
119	135	Studiomaster
173	136	Studio Sound
179	137	Summit Audio
73	138	Sweetwater Sound
74	139	Sweetwater Sound #2
76	140	Symetrix
109	141	Schirmer Books/Macmillan Publishing
2	142	Tannoy
14-15	143	Tascam
27	144	t.c. electronic
30	145	Tech 21
148	146	Thoroughbred Music
103	147	3M Corporation
184	148	Thrifty Electronics
50	149	Turtle Beach Systems
99	150	Uptown Automation
185	151	USCO Audio
48	152	Valley Audio
58	153	Vega
168	154	Vertigo Recording Services
29	155	Westlake Audio
100	156	West L.A. Music
66	157	Whirlwind
175	158	Whisper Room
186	159	The Woodwind & The Brasswind
22-23	160	Yamaha
131	161	Yorkville
122	162	Z Systems

—FROM PAGE 101, GERONIMO

layered main title sequence, for example, the orchestrations were, obviously, written out, but most of the other textural elements—the Tuvan singers, the percussion, the flute lines, Cooder's I-Beam work—were improvised to picture, and changes on the picture end required a series of cut-and-paste modifications by Cooder and Sides.

"In this case [the main titles], you can't quite write it," Cooder says. "You can't say to the Tuvans, 'Hey, I've written you a tune to do.' You go with what they know. We showed them the picture and talked to them—through minimal interpretation. They'd come to the scoring stage in Culver City and sit in the cavernous room and watch the picture. And then we pretty much relied on their instincts, which turned out to be really good. We had some flute that Carlos Nakai played, and some chanting and so on that we did separately, and then we mixed them all together and shaped it, almost like a collage or montage sort of thing. Allen was real good at that. So it ended up being a little bit the way they cut film: We'll use the Tuvans as our reference here, then we'll change the emphasis to this and then this. Walter had ideas about what he wanted and would give us clues along the way."

"We had a string orchestra base," Sides elaborates. "Then we had two sets of flutes that were originally played to picture that we put across in stereo on the new cues. Then Ry played some additional low-end [I-Beam] stuff to fill in and make the whole thing flow. We had this amazing percussionist [Madjid Khaladj] who we were able to put across different spots to fill out the sound even more. But we tried to hit all the cues and spots so it seemed like it was actually played to picture."

The mixing setup at Ocean Way was, understandably, complex. "We recorded on two 48-tracks and did all the music editing and mixing simultaneously, onto a third 48-track," Sides says. "We would mix to anywhere from three to 12 channels on the 48-track, and then we'd D-to-D and assemble it all in the correct order, so you'd have two film reels for each reel of 48-track. We made an A set and a B set. So we'd send [the dub stage] a full set of A's, and they would play the 48-track in sync with all the mag machines and dub from an orig-

inal 48. Then, as soon as they'd recut the film, they'd send that back and we'd reconfirm the B set to fit the new picture, and they'd send us back the A set and we'd reconfirm it to match. So the reels were going back and forth continually. They must have recut the picture five or six times while we were mixing, but we were never more than one D-to-D away from the original master. Doing the music editing and mixing simultaneously—as well as having Bunny Andrews, our music editor, in there with us for the whole show—made it easier, and the dubbing stage was never delayed."

Sides laments that some of Cooder's best music ended up on the cutting-room floor as the film was whittled down from a little over four hours to three hours to just under two. ("You should hear this fantastic mariachi material that got cut!" Sides raves.) But what is in the film is used very effectively, and it's played *loud*. "You just have to be able to let go of stuff that doesn't make it," Cooder says philosophically.

"I like the way it came out, in the movie and [the CD]," he concludes. "It sounds like you're goin' somewhere, that you're on some kind of journey." ■



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—FROM PAGE 95, FOLEY MIKING

neering side, so he knows that he has to perform differently for a balloon filled with BBs vs. rattling kitchen utensils. And then we have doors miked and various other things. But everything is going on at once, and it's quite fun engineering.

### Hill Swimmer, chief engineer, VIDEO POST & TRANSFER, DALLAS

When you're recording something that is really going to be low-level, that you're going to have trouble chasing after the sound without getting lots of room, you want to use as big a capsule as possible so you don't have to turn your gain fully up. And you want to make sure it's in a dead part of the room.

Rubbing of clothing is a common Foley event, and it's very difficult to capture on mic because it's basically just the rubbing of fabric. If you use a large-capsule mic like a U87, you'll be able to catch more of that without having to turn your gain up more than you would with a dynamic like a 57. On the reverse of that, you would use a dynamic mic when you have something that is very loud or has a lot of sound pressure. For example, taking a hammer and hitting the wall really hard—you wouldn't want to put a mic right on top of that because you would damage the element. You would use a dynamic. Or maybe for breaking glass.

We record Foley direct to Screen-Sound, and the thing you have to account for in the digital domain is that you've eliminated tape hiss, and you've also eliminated any type of analog coloration, which usually was taken from the microphone, through the preamp and then whatever equalization you're using. Here we're using tube preamps and limiters to give it more of that analog feel, even though we're going straight to digital. Before, people used to complain to get rid of the hiss—"Let's gate it"—now it's like, "Can you make it a little dirtier?" We may use a little more distant miking in our application, and we're a little more reliant on outboard gear to recreate environments.

### Lydian Tone, sound editor, CHACE PRODUCTIONS, BURBANK, CALIF.

We're using a Sennheiser 416 shotgun mic for Foley, and then for

voice-overs we use a U87. We seem to get a really good sound with the Sennheiser. Primarily what we use the Neumann for is when we do voice-overs for recaps for Disney. Like a narration track. With just a little EQ. We get a round, full-bodied sound, and I'm not really sure if that's the talent or the mic. Probably a combination of both.

We do music and effects tracks for Disney in this room. Right now, we're working on *Herman's Head*. We'll strip out all the dialog, and of course when we do that, all the production effects go away. So we'll put in all the pats, all the cloth movements, all the glasses up and down, any time they tap a desk, or anything like that.

We record to 8-track, 1/2-inch analog, and because of the limited space we have on our Foley stage, we have no option but to close-mike everything. Things kind of sound in-your-face, but we use reverbs and a little EQ to gain back some perspective on the Foley tracks.

### Tom Mudge, senior engineer STUDIO M, ST. PAUL, MINN.

I like to stick something in that would be easily made thinner rather than thicker, so I might stick with an 87 or something of the like that would be a good, solid sound right out of the gun—not necessarily too bright, not necessarily too fat. Then it depends on what I'm recording. For voice, I would stick with an 87, depending on the voice. It's my favorite. If I need it to cut through, if the texture of the scene I'm doing is very, very thick, I might go with a little brighter-sounding mic, or I might just EQ the 87. It depends on how fast I'm moving. A lot of the sessions that I've done have been driven by monetary terms. "Can you hear it? Yep. Okay, let's move on."

For high transients, I'd probably use something that handles the SPLs a little better, something I can put a pad on. I like Bruel & Kjaer 4011 cardioids—nice-sounding mic, has a pad built in to the front end, a nice fat thick sound, yet transparent at the same time. The more things I hear lately that are done direct-to-digital have a tendency to sound so thin and wispy. I like things to sound a little more meaty. And I like to get that sound from the mic and the mic preamp. We use the Neve V Series, usually to tape. ■



—FROM PAGE 71, DESKTOP VIDEO

more than a few tracks are used at any given moment. Also, the inability to make changes to audio while it is playing back precludes using those 99 tracks like a multitrack recorder for overdubbing. But Premiere is certainly not the only hard disk recording/editing software with these limitations.

Premiere's strengths come from the advantages of integrating audio and video editing functions into one environment. The program allows the user access to and control over video, audio and still graphic source elements at all times. That means there is no need to choose between building a soundtrack to a finished video or editing video to a finished soundtrack. The user can take whichever approach is appropriate at any given moment.

Before getting into the process of building a movie soundtrack, it is important to note a couple of points about using Premiere that can save a lot of grief and hair-pulling. (The program runs under System 6.0.7 or higher, but System 7 is assumed here.) First, if your computer has 8 MB of RAM (probably a minimum for effective use of the program; 32 MB is optimum), set the minimum memory size in Premiere's Info box to 4 MB and the preferred size to 5 MB. Next, in the Mac's Memory control panel, set the disk cache size to 128K or less and turn virtual memory off. Finally, it is preferable to quit all other applications while Premiere is in use.

#### CAPTURE AND IMPORT

The source elements used to produce a movie do not become Premiere documents. Rather, Premiere creates a document known as a "project" that incorporates the elements by reference, accessing them by file name from the hard drive. Because the access is random, there is no time spent shuttling around on tapes searching for desired segments. Once the segments are incorporated into a project as sound or video "clips," they are instantly accessible in the Project window (see upper left corner of Fig. 2).

The two main methods of getting a clip into a project are importing and capturing. My experience with capturing video using the MovieMovie card was that for a given set of capture preferences, the resultant frame

rate was significantly higher capturing with ScreenEdit than with Premiere, but the image quality was higher within Premiere. I have not verified that finding with other users. Sound and video may be captured together in either application, which creates a movie with "linked tracks." Premiere, however, supports audio-only recording, and ScreenEdit does not.

Used with Apple's Sound Manager 3.0, Premiere allows users to select the audio input source from the Mac's own input (if it has one), an audio input on the video board (if it has one) or a dedicated audio card such as Audiomeia II. Depending on the capabilities of the input hardware, audio may be captured in mono or stereo at 5.5, 11, 22 or 44.1kHz sampling rates with 8- or 16-bit resolution. Premiere also supports Apple's MACE audio compression scheme, though the manual warns that "in most cases, compressing audio is not advisable."

Audio may be captured as QuickTime sound in the Movie Capture mode (with video off) or as AIFF (Audio Interchange File Format) under Audio Capture. Unfortunately, if you change any of the default settings in the Audio Capture window, Premiere may crash, depending on your machine model and other INITs you have installed. Adobe alerts users to this bug in the Read Me file that comes with the program, but it doesn't tell the foolhardy or forgetful how to recover from this error. After restarting the computer, trash Adobe Preferences in the Preferences folder (found within the System Folder) before trying to use Premiere again. Ten demerits to Adobe for failing to include this information in the Read Me document.

Because the choice between QuickTime and AIFF has no practical effect on the movie-making process, and QuickTime audio clips can be exported from Premiere as AIFF, the best advice may be to steer clear of Audio Capture altogether. Choose Sound Input from the Movie Capture menu to specify audio preferences, then press the Record button in the Movie Capture window to record to disk.

When working with material that already has been digitized, the source elements are imported, rather than captured, into Premiere. AIFF, QuickTime, .SND and SoundEdit files may be imported. In addition, users with Apple 300 CD-ROM drives may import tracks from an audio CD directly over the SCSI bus into Premiere.

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(You must have QuickTime Version 1.6 and Sound Manager 3.0 to use this function.) For those who have CD-ROM drives from other manufacturers, Optical Media International just came out with its Disc-to-Disk program (see "Auditions," Jan. '94), which accomplishes the same task and offers greater format interchange options.

**EDITING CLIPS**

Once the desired elements are available as clips in the project window, the process of building a movie can begin. Most of the work takes place in the Construction window or in the Clip windows for each of the individual clips. In general, the Clip windows (bottom of Fig. 2) are used to examine and edit clips in detail, and the Construction window (upper right of Fig. 2) controls the process of arranging the clips into a finished movie. Many editing tasks, however, can be accomplished in either window.

The basic operations for editing video and audio are the same. If the two are linked in one clip, an edit in the audio will affect the video and vice versa. (Linked clips may be unlinked in the Construction window.) The Clip window for a given element gives the user access to the entire clip as it was captured or imported. Unfortunately, stereo audio clips are displayed as a combined waveform, with no possibility of editing or balancing the individual channels.

A clip may be played, scrolled through or advanced through one increment at a time. One frame is the default increment, though increments of 1/100th and 1/600th of a second are available for detailed editing work in audio clips. 1/600th second, of course, provides the greatest detail in the waveform display, but it is hard to tell what you are hearing when scrubbing with the jog control. I found that the 1/100th setting provides a good balance between scrubbing and waveform detail. Switching back and forth between levels of detail would be a lot easier if these close-up settings were accessible directly from the Clip window's waveform control rather than by going through a menu and then a dialog box.

Editing in the Clip window is largely a matter of setting in- and out-points and markers. The in- and out-points (see the "I" marker toward the left of Fig. 2's audio clip) deter-

mine which portion of the clip will be available in the Construction window. Because the editing is nondestructive, material outside of the in/out points is not lost, and the points may be revised at any time.

Markers are reference points that allow clips to be "snapped" together in the Construction window. Markers may be placed on-the-fly or when a clip is stopped at a specific frame. Each clip may contain up to 1,000 markers, ten of which may be numbered. Numbered markers are handy as locate points within a clip using the Goto control. You can also go to a given time code address in a clip by entering the number in the frame indicator.

A number of filters also may be applied to audio clips, including Backwards, Boost (compressor), Fill Left/Right (mono combine to left or right channel) and echo (don't expect usable reverberation). The playback speed of a clip may also be varied.

**ALIGNING AND MIXING**

Once edited, clips may be dragged into the Construction window for placement relative to other clips. A linked clip will show up on video and audio tracks. In Fig. 2, for instance, the thumbnails of the "Yoshie-Deutsch" clip on video track A are linked to the waveform in audio track A. The audio-only clip "Industrial.audio" is a music bed on audio track B, while the video-only clip "Parasol.movie" is on video track B. Shown on the transitions track between video tracks A and B is one of more than 60 transitions such as Dissolves, Peels, Wipes and Zooms that may be chosen from the Transitions window (not shown).

The Construction window has a number of tools (lower left) that control the placement of clips on tracks, the splitting of clips into multiple clips (razor blade editing on computer!) and other functions. A time unit selector (1 frame to 2 minutes) controls how much of the movie is visible in the window. A horizontal scroll bar is used for gross locating, though the lack of a time code display showing where you are before you release the scroller can be frustrating. Instead, the program forces you to use a menu/dialog box combination to get to a specific code address. You can, however, locate to numbered markers simply by pressing the desired number on the keyboard.

Tracks may be aligned by simple dragging or by snapping to markers in the clips, which show up in the Construction window as well. In Fig. 2, the start time of the transition and the clip on video track B are snapped to marker 2 in the first clip on track A. The start of the second clip on track A is snapped to marker 3 at the end of the clip on video B.

Fig. 2 also shows how the levels of the audio tracks are mixed in the Construction window. Below each audio track's waveform display is a "rubber band" representing a mix level between 0% and 200% of the clip's original level. Any number of "handles" may be created by clicking on the rubber band; pulling on the handles changes the level. An info window (not shown) that appears when a track is selected gives a numerical readout of the number as the handle is moved. In Fig. 2, the music on track B comes up as a voice on track A is ducked, then comes back down as the second clip on track A begins.

Once the settings are made, Premiere offers a variety of options for viewing/hearing a preview of the whole movie or a specific "work

area." The longer the work area, the longer it takes to build the preview. One or more tracks may be "disabled," like muting on a console. (There is no equivalent of soloing.) When concentrating on an audio mix, previews will build faster if video tracks are disabled.

If what you see/hear is what you want, the project is ready to be output. You can compile the project into a QuickTime movie or "print" the project to video (provided you have the appropriate video-output hardware). The specific settings by which the movie is compiled are controlled in the Output Options dialog box.

If the intended use of the movie is CD-ROM playback, the movie should be compiled with the CinePak compression algorithm, an asymmetrical compressor that can take a long time to process (one hour for a three-minute movie, for instance). Adobe recommends a 240x180 frame size at 15 fps, a "normal" quality setting and a 90 kilobytes/second data rate. The manual also suggests an 11kHz audio sample rate. This may be more compromise than an audio lover can bear, but the trade-off is that it yields

better video quality. When processing is complete, the project will be a stand-alone QuickTime movie, importable into any QuickTime-compatible application.

The preceding evaluation is far from comprehensive, but it gives a taste of the depth and power built into this program, which is nonetheless fairly easy to use. Premiere lacks some of the fine points built into audio-specific hard disk-recording programs, but the interplay between Clip and Construction windows makes for a very flexible working environment. In fact, paired with appropriate audio input/output hardware, the program could serve well for many audio-only production tasks, including recording, editing, sequencing, crossfading and outputting CD-quality sound. These audio capabilities are particularly remarkable because Premiere was conceived primarily as a video production tool, neither designed nor marketed with audio production in mind. ■

*Philip De Lancie is a mastering engineer at Fantasy Studios in Berkeley, Calif.*

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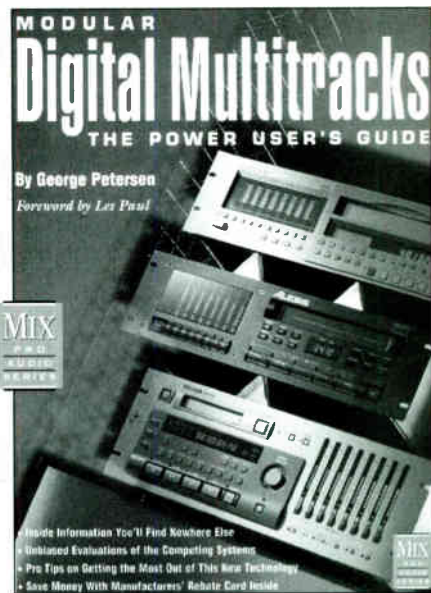
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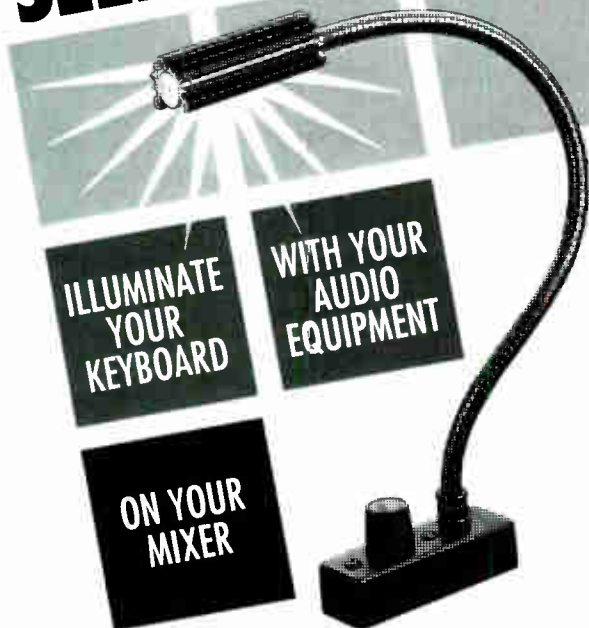
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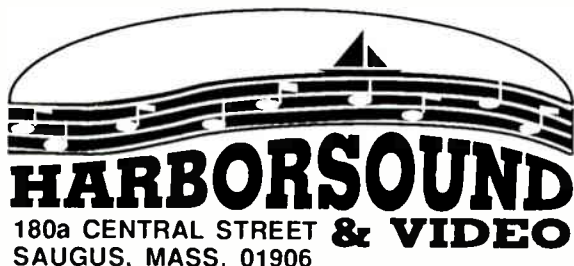
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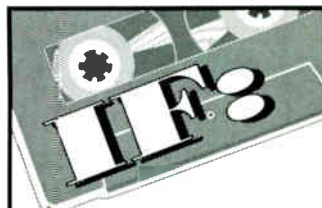
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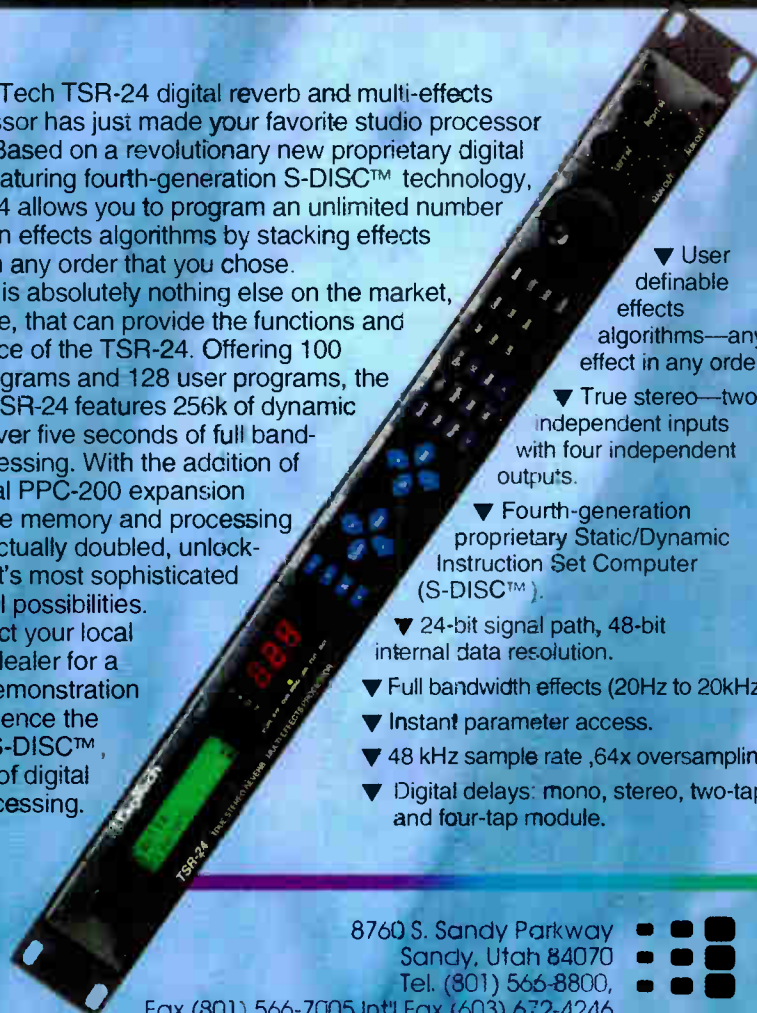
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