Making The John Lennon Anthology · Producer/Songwriter Glen Ballard · All Access: Garbage

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# MIX®

PROFESSIONAL RECORDING SOUND AND MUSIC PRODUCTION

## Project Studio Design Tips

## Getting the Most From In-Ear Monitors

## Top Composers On Scoring For Film

## CREATING THE SOUNDTRACK FOR THE THIN RED LINE

# The Birth Of A Legend

**The Diaphragm**

All GT Electronics AM Series mics use a super-thin 3-micron, gold-evaporated mylar diaphragm for the ultimate in sensitivity and transparent response. Over 1" in diameter, the extra-large diaphragm is precisely tensioned by hand to ensure perfect accuracy.

**The Tube**

The GT AM61 and AM62 maintain an all-tube signal path for preamplification. The tube, a military-spec GT5840M, is the most advanced audio vacuum tube ever made. It offers incredibly low self noise, a long life and nearly non-existent microphonics. The result...classic, warm, rich tone that you demand from a legendary tube mic.

What turns a studio microphone into a legend?

Natural **warmth**. Rich character. Crystalline clarity that perfectly captures the fine details of every **nuance**. Most importantly, it provides an indescribable intimacy that makes listening a deeply emotional experience.

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**GT**. The new legend has arrived.

*Fixed Cardioid*

AM51
CLASS A FET

*Cardioid, Omni, Figure 8*

AM52
CLASS A FET

*Fixed Cardioid*

AM61
TUBE

*Cardioid, Omni, Figure 8, Super-Cardioid*

AM62
TUBE

# 5.1 Surround Sound...

## It's a jungle out there

Mixing six or more discrete channels of audio for film is already well established but the scope afforded by 5.1 surround for music and broadcasting has yet to be realised. There are no rules. There are challenges, there are opportunities - but there's only one certainty - it's on the way.

Before venturing into the unknown, be comforted to learn that Solid State Logic consoles are already equipped to tackle the surround sound future - in all current and envisaged formats, including DVD. And, come the 5.1 revolution, the enormous advantages of proven SSL technology such as snapshot and dynamic automation, instant reset and unparalleled audio quality will be even more apparent.

Clear your path through the surround sound jungle with cutting edge technology from SSL, the world's leading console manufacturer.

**SL 9000 J Series** - The ultimate analogue console that's become the benchmark for the internationall recording and film scoring communities.

**Axiom-MT** - The in-line digital multi-track console with a control surface so intuitive it could be analogue.

**Aysis Air** - The digital broadcast console for studios and mobiles, designed for a painless transition to the era of DTV.

**Avant** - The digital film and post production console which mixes in all formats from stereo to 7.1 surround.

## Solid State Logic


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# For those days when the road ahead seems a bit bizarre.

# Like every day.

There's no way to know what's on the road ahead. You can't predict when lightning will strike. Or whether it will result in a windfall or an extraordinary challenge.

In our fifty years, we at Studer have learned that there's really no such thing as an ordinary session. And even in the best planned situations, hardly anything goes according to plan. For these times there's the new D950, the Studer of digital consoles.

The D950 grows from Studer's heritage of unparalleled excellence in sound. Synonymous with Swiss precision, its design is a blend of astonishing capabilities, meticulous construction and renowned reliability.

A refined design... that allows you to change the console's configuration in minutes. With a huge digital router that truly eliminates the need for external patchbays. With self-healing DSP that can instantaneously replace itself should a failure occur. And complete 5.1 (and beyond) surround capabilities, including frequency and room-dependent panning algorithms. A design that is scalable to meet your needs effectively and efficiently today and down the road.

Considering the unpredictability you face every day, surprises are the last thing you need from your console. And for all the D950's remarkable achievements, perhaps its most comforting is Studer's unfailing lack of surprises.

So if the road to the future of audio is confusing, let us offer directions— The Studer D950. Built for the road unexpected. The one you travel every day.

Introducing The D950.
The Studer of Digital Consoles.

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professional audio equipment

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# 5.1 SURROUND

The unique Tannoy Dual Concentric point source technology offers the professional recording engineer a strategic advantage when mixing and creating effects for film and music in the 5.1 surround format.

True surround sound is a virtual 3-dimensional sound stage that demands linear phase and amplitude response vertically as well as horizontally to be convincing. The smooth, conical dispersion of the Dual Concentric propagates a naturally holistic wavefront in all directions into the mixing environment, empowering the engineer with accurate 3D spatial imaging for superior results.

Unlike stereo which only has to create an accurate image between and somewhat to the sides of the mix position (usually a small sweet spot), convincing 5.1 surround mixing and scoring demand much more from your monitoring system. The environment must be transformed into a totally 3-dimensional sound stage to be done effectively. This relies on a linear response from the loudspeaker both on and off axis in both the horizontal and vertical planes.

This is simply not possible with conventional multi-driver discrete loudspeakers, which pose a plethora of problems with amplitude linearity, especially off-axis in the vertical dimension. While they might work fine in a fixed position for stereo music production , they just cannot compete with the Tannoy Dual Concentric's ability to reproduce accurate imaging and placement in a 3D stage requiring a linear response on all axis.

If you're interested in superior results when scoring, producing and mixing 5.1, you should know what the best in the business have known for years. Tannoy Dual Concentric point source constant directivity driver technology can accurately steer your next surround project into the big time.



*Please contact TGI North America for more information.*

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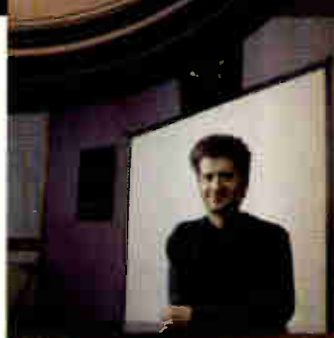

*Whether I am creating a pounding action cue or a subtle mood piece, it is essential that I know how the music truly sounds. The detail and accuracy of the Tannoy Dual Concentric gives me complete confidence that my score will bond seamlessly with the scene and the characters and not clash with the dialogue or the sound effects.*

**Brad Fiedel**

**Credits:** *Terminator II • True Lies • Striking Distance • The Accused • Tom Hanks 'Earth to the Moon" • Blue Steel*

*For my Music, Sound Design, Editorial, ADR, Foley and 5.1 Surround Film Mixing, Tannoy Dual Concentric Speakers deliver transparent, meticulous quality throughout all the studios. This contributes to a seamless audio environment from room to room without the listening fatigue associated with other designs. I can trust my results from Tannoy on all my projects.*

**Frank Serafine**

**Credits:** *Orgazmo • Field of Dreams • Hunt for Red October • Flight of the Navigator*

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FOR THOSE WHO KNOW


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FEBRUARY 1999, VOLUME 23, NUMBER 2

## AUDIO



## THE PROJECT STUDIO



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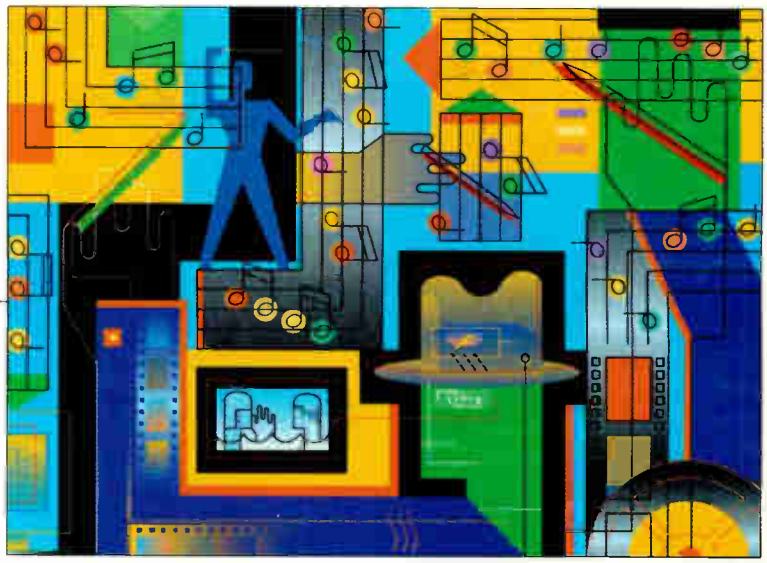
## SOUND FOR PICTURE



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## LIVE SOUND



## PRODUCTS



## DEPARTMENTS



**Check out Mix Online!**
**http://www.mixonline.com**

**On the Cover:** The Gentlemen's Club, songwriter/producer Desmond Child's Miami home studio, is equipped with a Mackie console and three 24-bit, 64-track Pro Tools systems. For more, see page 114. **Photo:** Donna and Mel Victor. **Inset:** Merie W. Wallace.

# Digital Control With the Human Touch

The Spirit 328 represents a **new way of thinking** in digital console design, bringing all the functionality and sonic excellence of digital mixing to all audiences. With its unique **console-based interface**, the Digital 328 finally bridges the gap between analog and digital mixers, retaining the **spontaneity and ease of use** of an analog console yet providing all the advantages of digital, such as instant Total Recall of all digital parameters, Moving Fader Automation and Onboard Lexicon Effects.

Simply put, the Spirit **Digital 328** is the most advanced analog 8-bus you have ever seen combined with the easiest digital console you have ever used.

## 328's E-Strip may be configured as...

...a horizontal input channel with full EQ, Aux and Pan facilities..

...or a row of 16 Auxes or FX Sends for the 16 faders below the E-Strip...

...or a set of rotary level controls for the Tape Returns.

## All the Digital I/Os you need as standard

Most digital mixers don't include digital multitrack I/Os, which means that to get digital recording and mixdown you have to buy extra, expensive I/O options. In contrast, Digital 328 includes **two Tascam TDIF™ and two Alesis ADAT™ optical interfaces as standard**, allowing you to record 16 tracks entirely in the digital domain, straight out of the box. As you would expect, we've also included a pair of **AES/EBU and SP/DIF interfaces** assignable to a wide range of inputs and outputs, including group and auxiliary outs. In addition, a third optical output may be used as a digital FX Send or as eight Digital Group Outs. All in all, there are 28 Digital Outs on 328 plus 20 Digital Returns, providing enough flexibility for the most demanding applications.

## 2 Onboard Lexicon Effects Units

Only 328 can offer the world's premier name in studio effects onboard - Lexicon. Two separate effects units are included, offering a full range of reverbs, choruses, delays and flanges, all with fully editable program and parameter settings.

## 42 Input/8 Bus Configuration

For a mixer with such a small footprint, Digital 328 packs an extraordinary number of inputs. Sixteen full spec. analog mono mic/line channels – each with its own balanced XLR connector, dedicated insert point and access to phantom power – come as standard, along with five stereo inputs.

With the 16 digital tape returns on 328's TDIF™ and ADAT™ optical interfaces, there's a maximum of 42 inputs. Every input is fully routable to any of the 8 groups and has access to the full complement of 328's parametric EQ, signal processing, onboard effects and auxiliaries.

## As easy to use as your current analog console

Although most digital mixers offer an amazing array of functions, it can often be a nightmare to access them.

In contrast, we've designed Spirit 328 to operate like your old analog 8-bus console, and not like a computer with faders. You can practically take it out of its box and get started without even opening the manual! Unlike other digital mixers, there's instant access to any channel, group or master feature with one button press, and you can see that feature's status from the front panel without having to rely on an LCD display. Access is so immediate that you could even use 328 as a live console.

The key to it all is Spirit 328's unique "E-strip", the lighter-colored bank of encoders and switches that runs across the center of the console. Simply select a channel and the E-strip immediately becomes a "horizontal input channel" with instant access to all that channel's EQ, aux sends, channel pan and routing. Alternatively, press any button in the rotaries section above the E-strip and the encoders change to become a channel pan, auxiliary send or Lexicon effects send for each channel.

Select a fader bank to display mic/line input faders, tape returns faders or group and master faders and that's it; no delving through level after level of LCD menus to find the function you want, no delays in making alterations and no need to study complicated EQ curves. With 328, everything you need is immediately accessible from the front panel of the console - giving you the freedom to let your ears decide.

If you want the functionality of a digital console but the usability of your old analog 8-bus, then Spirit 328 is for you.

## Onboard Dynamics

Digital 328 includes two mono or stereo signal processors which can be assigned to any input, output or groups of ins or outs. Each processor provides a choice of compression, limiting and gating, as well as combinations of these effects.



digital

three two eight

## Comprehensive EQ

All of 328's mic/line, tape return and stereo inputs have access to three bands of fully parametric EQ, designed by British EQ guru and co-founder of Soundcraft, Graham Blyth. A man with over five million channels of his EQ designs in the field, Graham has brought 25 years of Soundcraft analog EQ circuit experience to bear on Digitol 328. If you want the warm, musical sound of real British analog EQ, with proper low, mid and high frequency bands (rather than the low resolution 20Hz - 20kHz bands found on some consoles), look no further.

## Unparalleled Sonic Spec

Garbage in, garbage out! It doesn't matter whether the console is digital or analog – if you have poor mic preamps, your sound will be compromised. That's why 328 includes Spirit's acclaimed UltraMic+™ padless preamps, giving your input signals the cleanest, quietest start of any digital mixer on the market. With 66dB of gain range and a massive +28dBU of headroom, they offer an extremely low noise floor and are virtually transparent. Spirit 328 is 24-bit throughout, with 56-bit internal processing; your signal hits the digital domain through state-of-the-art 24-bit ADCs with 128 times oversampling, guaranteeing that it maintains its clarity, while 24-bit DACs on all main outputs equal this sonic integrity should you wish to return your signal to the analog world.

## Moving Fader Automation

All of Digitol 328's 100mm faders (including the master) are motorized to allow current channel, tape return, group and aux master levels to be viewed at a glance.

## All Parameters Instantly Recallable

In addition to level automation, every other digital parameter of 328 is instantly recallable, allowing snapshots of the entire console's status to be taken. Up to 100 of these "scenes" may be stored internally and recalled either manually, against MIDI clock, or against MTC or SMPTE. Alternatively, every console function has been assigned its own MIDI message allowing dynamic automation via sequencer software.

## Easy To Edit - Direct From The Control Surface

The majority of 328's input and routing parameters may be edited from the control surface without resorting to the console's LCD. Settings and levels may be copied and pasted from one channel to another with just two button presses and, using 328s query mode, the routing or assignment status of every channel on the console may be viewed instantly simply by selecting the function (such as Group 1 or Phase Reverse) you want to question. In addition, with 328's Undo/Redo function located in the master section, editing is entirely non-destructive, allowing you to A/B test new settings with previous ones.

## Grows With Your Needs

Two Digitol 328s may be digitally cascaded, giving you up to 84 inputs at mixdown and 32-track digital recording capability.

## Full Metering & Monitoring Options

All of the mic/line inputs, tape return inputs, group and master levels may be monitored per bank via Digitol 328's 16 10-segment bargraph meters. Additionally, 328's onboard dynamics processors may be monitored using the console's master meters. Any input may be solo'd using AFL, PFL or Solo-in-Place.

## Timecode & Machine Control

Digitol 328 reads and writes MTC and reads all SMPTE frame rates, with a large display instantly indicating current song position. Store and locate points are accessible from the console's front panel, with 328's transport bar controlling a wide range of devices including Tascam and Alesis digital recorders.

## Software Upgradeable

328's open architecture means that any functional improvements and software upgrades can be made easily available off Spirit's website. 328 Mixer Maps for popular sequencing software packages are also available free of charge.

## Add-On Module Options

To meet the needs of a variety of users, there are three module options:

### 8 Channel Analog I/O Interface

Connecting to the TDIF ports, 16 phono connectors provide eight analog group or direct outs and eight analog inputs for tape returns 17-32. Two interfaces may be connected, allowing 16 track analog recording or access to 16 more sequencer/keyboard or sampler inputs.

### AES/EBU interface

Four pairs of AES/EBU connectors allow optional digital interfacing to hard disk production systems such as Pro Tools. A maximum of two interfaces may be connected.

### Mic Pre-Amp Interface

Each interface provides eight XLR mic ins with UltraMic+ preamps. Connecting two interfaces turns 328 into a 32 mic input, 8-bus mixer for PA or theatre applications.

**Suggested Retail Price:**
**$4,999.95**


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CIRCLE #004 ON PRODUCT INFO CARD

# FROM THE EDITOR

### THE PROJECT STUDIO TURNS 30

The modern project studio can trace its lineage through a number of technology breakthroughs. Without a doubt, the introduction of MIDI in 1983, the popularization of modular digital multitrack recorders a decade later and the current wave of affordable digital consoles all mark significant milestones.

Yet, 30 years ago there was no home recording market. In 1969, the first 24-tracks were becoming available, but choices for musicians were few—either go the full pro route or limit home recordings to stereo reel-to-reels. A few brave souls experimented with "sound-on-sound" decks, layering new elements while recording over original creations, but this "no-undo" process required persistence and luck. At the same time, 4-channel consumer reel-to-reel decks for the quad market arrived; yet, with no provision for listening to earlier tracks while adding new tracks, overdubs were impossible.

Among those companies making quad recorders was TEAC, and in 1969, Dr. Abe and a small team of audio pros founded the independent Technical Audio Systems Corp (TASC) America in a small office in Marina Del Rey, Calif and offered mods for transforming TEAC 4010 quad decks into the overdub-capable simulsync TCA 40 Series. By 1973, TASC America becomes Tascam with the debut of the Tascam Model 10 mixer at AES. In 1975, TEAC acquires Tascam—becoming TEAC's MI/pro audio division—and over time, tens of thousands of 2340 and 3340 4-tracks sold to a growing market of musician-recordists, almost single-handedly launched the home recording revolution.

Tascam gear provided a learn-by-doing sort of self-guided audio apprenticeship, and countless pro engineers honed their production skills on products such as Tascam's Model 3, Model 5 and Model 15 mixers. And as small-format 4-, 8- and 16-track recorders emerged, a new industry of garage recording was born, with hundreds of today's large studios starting out from such humble beginnings.

Of course, many other companies helped shape the home recording boom in the early years, including Dokorder, Akai, Otari and (later) Fostex on the multitrack side, and Biamp, Soundcraft, Sound Workshop, Studiomaster, Tangent and Tapco on the mixer end. However, Tascam defined the market, from its first simulsync 4-tracks, to coining the term "project studio" in 1989. Other Tascam-developed formats include the 1-inch 16-track, the hugely successful Porta-Studio™ 4-track cassette/mixers and the DA-88/38/98 Hi-8mm MDMs.

Today, the innovations continue, with products such as the world's first 24-bit DAT recorder (the DA-45 HR), but over the years, Tascam's impact on the way an entire industry makes music has been lasting and significant. Not bad for a company that started off as a custom shop. And this month, as I'm walking the NAMM show floor, I can't help but wonder which tiny booth showing product in the basement hall will become the electronics giant of tomorrow.

I'll let you know in about 30 years...

George Petersen
Editor

BPA International SPARS ABP American Business Press

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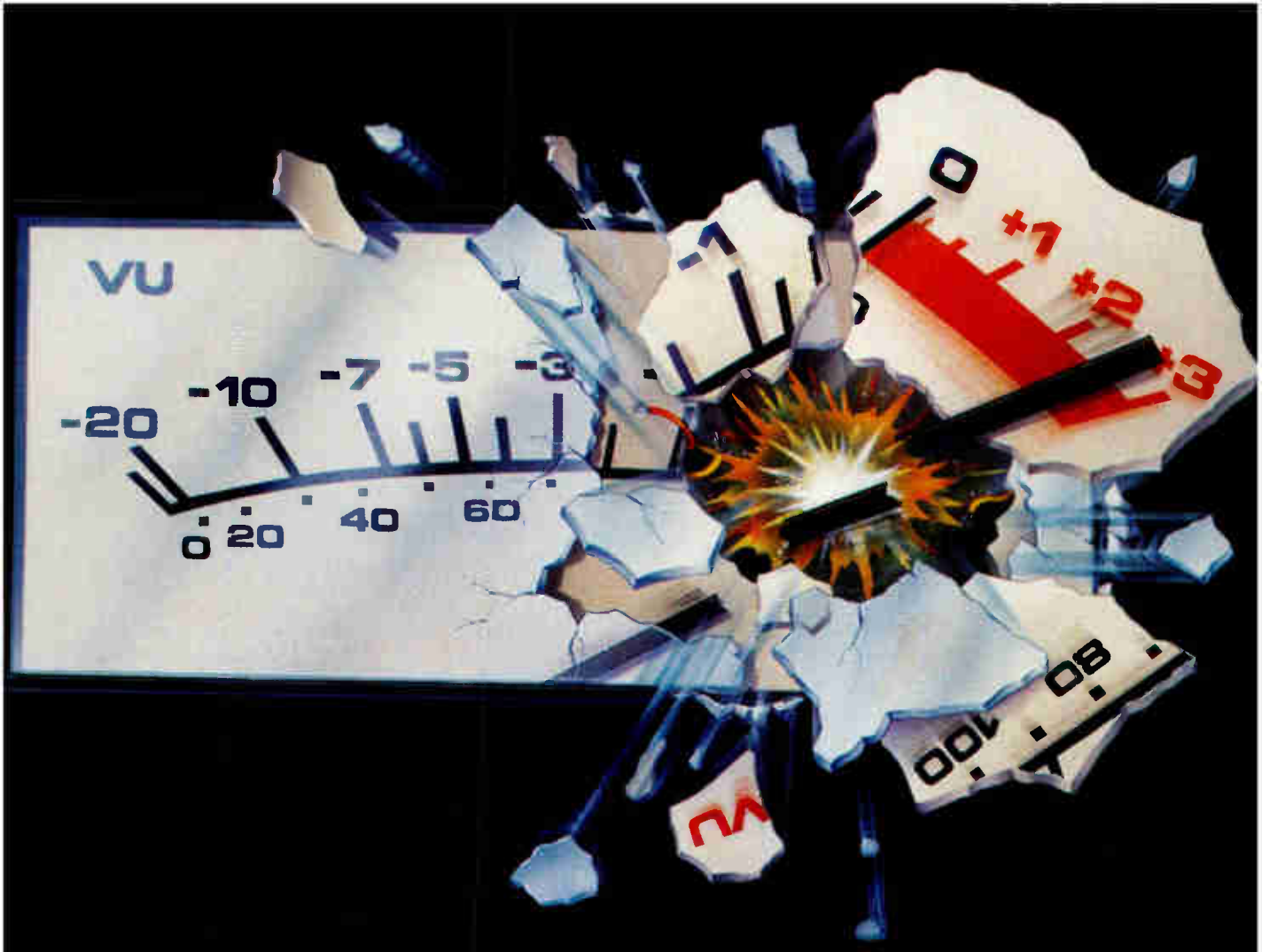
Founded in 1977 by David Schwartz and Penny Riker Jacob

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# FEEDBACK

### NO TIME FOR TEARS

Just thought I would write in response to Paul D. Lehrman's article on "Future Docs, Part II" ("Insider Audio," Oct. '98). First of all, I didn't read Part I, and I'm glad for that. I wish I hadn't read Part 2. What's with the whining? Why does *Mix* need to take up space with articles about how the Internet is not perfect? This whining has become nothing but tiresome.

I, for one, would rather be reading about interesting gear, studios or techniques than listen to one more guy whine about his Internet experiences and the difficulties of multiple media options. Take it like a man, Lehrman. If you have to, cry in your pillow at night. But how about devoting what magazine space there is to recording topics.

*Sean Blosl*
*osis@speakeasy.org*

### HATS OFF

The ticker winds down to 1:50:17, and I am watching the online updates for the original Rocket Jockey, John Glenn. Strange enough the first person to come to mind has nothing at all to do with space, but is rather a pioneer of a different sort. George Martin, who recently announced his own retirement, has drawn little fanfare among the American public after giving so much to the world of music. Martin has said that when the Beatles came to him, the best thing they had was a little ditty called "Love Me Do." He proceeded, of course, to turn them into one of the more influential bands ever, and it saddens me that he will be leaving us. For this wonderful man, my hat comes off. Thank you, George. Thank you so much.

*Bill Greene*

### FROM THE MASTER

I read your review in the December '98 issue of the Microboards DSR-8000 Desktop CD Duplicator. When we tried this unit at Gateway Mastering Studios, we sent it back as not meeting our specifications. I was surprised that three of the crucial items a CD-R duplicator must have were absent from your otherwise great review:

1. Does it make bit-for bit clones at all speeds? (Yes, the DSR-8000 does.) 2. Do the 4x speed copies sound any good? (No. On the unit we tried, they sounded brittle, like badly duplicated glass-mastered CDs.) 3. Do the error rates on the discs produced by the machine meet Red Book specs? (No, none of the bays on the DSR-8000 we tried could make a CD-R without very poor BLER. Many had E32 errors.)

We called Microboards, and the CD-R blanks we tried were the very ones they recommended. They could not explain why our unit was so poor, so we sent it back. I hope that all future reviews of CD-R machines check for the above items.

*Bob Ludwig*
*Gateway Mastering Studios*
*www.gatewaymastering.com*

### SHELF LIFE, AND THEN SOME...

Regarding Larry Blake's well-composed article on archiving in the December issue, I applaud Larry's approach to high-bit-rate digital audio but would like to issue a word of caution to those working in the digital domain: Digital magnetic tape (a generalization) has an estimated shelf life of five to 15 years, depending on the formulation. Hard drives, removable and otherwise, are expected to have a shelf life of 15 years or so.

My point is that at present, we are beginning to trust our very expensive masters to media that is not proven to survive the test of time. Without going into a lot of boring technical data here, I would suggest that interested parties contact the National Technology Alliance at http://oldsite.nta.org/Publications/#MediaStability and order some of the publications. Happy Reading!

*Corey Bailey*
*General Manager,*
*NT Audio Video Labs*

### IF IT WORKS...

I really appreciated "The Ups and Downs of Upgrades" in the December '98 issue of *Mix*. I am the proud owner of Scalawag Sound, a small project studio in the Indianapolis area. We currently use a Mackie 32-channel, 8-bus board, a score of vintage and not-so-vintage effects and mics, both JBL and Auratone monitors, and three Alesis ADAT machines.

I have felt inundated by many industry publications' articles and advertisements, pressured to invest and make the "leap of faith" into computer-based recording, but I just can't find a good reason to abandon what is working so well for me. This "all digital" sector, while growing in power and ability, seems to me to be riddled with enough confusion and lack of direction to make our government look organized by comparison. While the potential power and sophistication of computer-based recording systems is obvious, I believe I'll hold onto what has proven dependable and highly effective to this day. Hopefully, the day will come when the Ups will outweigh the Downs so I can make the leap!

Thank you for making such relevant comments. The reality check is refreshing.

*Tom King*
*Scalawag Sound*
*Lapel, Ind.*

### BASED ON A TRUE STORY

I'm in total agreement with the overall concept of Stephen St.Croix's "Three Nano-Stories From the Book of Life" ("The Fast Lane," October '98). Stephen, I too have an 11-year-old daughter who hits me with those kind of threaded questions that make you shake your head. I also think I met that same "tropical white sand beach young girl" in St. Croix (or was it St. Martin, Orient Beach?) just as a 12-inch mix that I did almost 20 years earlier, and had forgotten about, played in the distance from the French-speaking Tiki beach bar.

Indeed, you are so correct. "You experience life as you hear the music, and so it becomes a living part of that experience—forever. What amazing stuff is music." Great records can be ten times greater when they are glued to reality. Stephen, excellent writing, and I could not agree with you more. Thanks!

*Gene Leone*

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

# When you've outgrown a PC

## Professional audio post-production

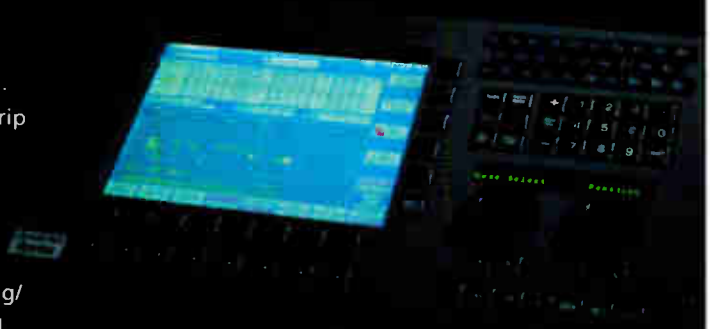
**AMS Neve's Logic 3 provides a complete audio post production suite in a single powerful system. Unlike PC-based products, the Logic 3 is purpose-designed for audio post. Its award-winning control surface provides rapid access to all recording, editing and mixing functions. Your clients will appreciate the improved performance – and so will your billings!**

### Logic 3

- 32 channel (mono or stereo) digital mixing console
- Unrivalled AMS Neve sound quality
- Full dynamic automation of console functions
- Automation integrated to AudioFile editing
- Output in multiple surround formats
- Menu-free, tactile mixing
- Integral multi-machine control
- Project management integrated with AudioFile

### AudioFile 98 ▸

- Up to 24-bit recording
- Realtime DSP
- Multitasking architecture. Including background 'strip silence' and waveform generation
- High Speed Graphics
- Reads OMFI directly
- Optional off-line archiving/ project management and multi-system networking



# Digital First

AMS NEVE

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# CURRENT

### SECURE DIGITAL MUSIC INITIATIVE ANNOUNCED

During a recent Webcast press conference, leaders from the worldwide recording industry announced the formation of the Secure Digital Music Initiative (SDMI), a framework to work with the technology community to create a voluntary digital music security specification by this fall.

The open specification will protect copyrighted music in all existing and emerging digital formats and through all delivery channels. The initiative, which has been in planning for some time, was announced by Strauss Zelnick, president and CEO of BMG Entertainment; Ken Berry, president of EMI Recorded Music; Thomas D. Mottola, chairman and CEO of Sony Music Entertainment; Doug Morris, chairman and CEO of Universal Music Group: Bob Daly, chairman and co-CEO, Warner Bros. and Warner Music Group; Terry Semel, chairman and co-CEO of Warner Bros. and Warner Music Group; Hilary Rosen, president and CEO of the Recording Industry Association of America; and Jason Berman, chairman-elect and chief executive of the International Federation of the Phonographic Industry.

Spearheaded by the SDMI Forum, the initiative hopes to achieve three objectives. It will answer consumer demand for convenient access to quality recordings, ensure copyright protection for artists' work and enable technology and music companies to build successful businesses.

The SDMI will be an open forum for all commercial companies significantly involved in technologies relating to digital music. Participating companies will be encouraged to bring their approaches to digital music security and to work together to establish and document an open architecture and specification for protecting music.

Aside from major and independent record companies, many technology companies declared their support for the initiative, including AOL, AT&T, IBM Lucent, Matsushita, Microsoft, RealNetworks, Sony Corporation and Toshiba. More information about the SDMI can be found on the RIAA's Web site at www.riaa.com.

### SPARS "TRACKING THE LEGACY" PROJECT

The Society of Professional Audio Recording Services announced plans to produce a series of video programs documenting the history of SPARS and the development of the recording studio industry in North America. The series of programs coincides with the 20th anniversary of the creation of SPARS.

The project, entitled "Tracking the Legacy...20 Years," will be released on DVD and premiere during the AES convention in the year 2000. It will feature interviews with key figures in the industry, including many past presidents of SPARS, and recent footage of other personalities central to the evolution of the recording industry.

Quantegy Corporation is the Cornerstone Platinum Sponsor for the series, allowing SPARS to begin immediate production. For information on Platinum, Gold, Silver and Friends of SPARS sponsorships, contact SPARS executive director Shirley Kaye at 800/771-7727.

### UPCOMING SHOWS

The 33rd SMPTE Advanced Motion Imaging Conference takes place February 25-27 at the Omni Rosen Hotel in Orlando, Fla. The conference theme is Innovation, Implementation and Operation: The Challenges of Change. There will be two days (Feb. 25-26) of program sessions headed by Clyde D. Smith, Speer Worldwide Digital Consulting. A seminar by Oliver Peters on Systems Interfaces, Networking and Connectivity will conclude the event on Feb. 27. For further information visit www.smpte.org or call 914/761-1100.

POST/LA 99, a seminar and conference focusing on post-production, visual F/X, Digital TV, HDTV and DVD, will be held February 25-27 at the Santa Monica Civic Auditorium. The conferences will be chaired by Paula Parisi. For exhibit information call 323/654-6530. For information on conferences and registration forms visit www.hollywoodreporter.com/postla.

Musikmesse Prolight and Sound, an international trade fair for musical instruments, sheet music, lighting, sound and event technology, occurs March 3-7 in Frankfurt, Germany. For information about seminars, lectures, workshops, exhibits and events visit www.musikmesse.de.

Canadian Music Week takes place in Toronto from March 3-7. Now in its 16th year, CMW includes a live music festival occurring in 35 different venues over four days, a conference (this year's international spotlight is on Europe) and an exhibition featuring new technology and services for the music, multimedia, Internet and recording markets. Call 416/695-9236 or visit www.cmw.net.

Get ready for the best breakfast burritos in the world, when the 13th an-

—CONTINUED ON PAGE 16

### MIX L.A. OPEN HAS A NEW LOCATION

The Mix L.A. Open has moved! The fourth annual outing is set for Monday, June 21, at the beautiful Malibu Country Club. Space is limited, so make your reservations early. For information about sponsorship or entry fees, please contact Terry Lowe, tournament director, at 310/207-8222.

### TEC AWARDS SCHOLARSHIP APPLICATIONS

Applications are now available for the 1999 TEC Awards Scholarship Grant. For an application form, please send your request to TEC Awards, 1547 Palos Verdes Mall #294, Walnut Creek, CA 94596, or e-mail KarenTEC@aol.com. No phone calls, please.


# There Is Only One Neumann

The M 147 Tube embodies all that is Neumann. From its time-honored tradition of precision manufacture to its classic sound, only Neumann ensures that your investment today will continue to yield superlative results in the future. Simply put, Neumann mics never become obsolete.

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**CIRCLE #007 ON PRODUCT INFO CARD**

**SEE US AT NAMM BOOTH #701**

# NEVER BEFORE HAS SO MUCH POWER BEEN SO AFFORDABLE.

It's time for you to make the move to digital mixing. Analog mixers just don't offer the performance, features and sound quality required for today's digital recording and 5.1 surround mixing environments.

The Panasonic DA7 digital mixer gives you 16 mic channels with up to 24 channels of analog or digital I/O in ADAT, TDIF or AES format; 24-bit audio quality; moving faders and automation for less than you thought possible.

Quite a remarkable feat, but it's what you have come to expect from the company with more digital experience than anyone. In fact, Panasonic set the standard for digital recording years ago with the SV Series of DAT recorders.

So if you're still on the fence about digital mixing, we're certain the DA7 will convince you that now is the time to make your move.

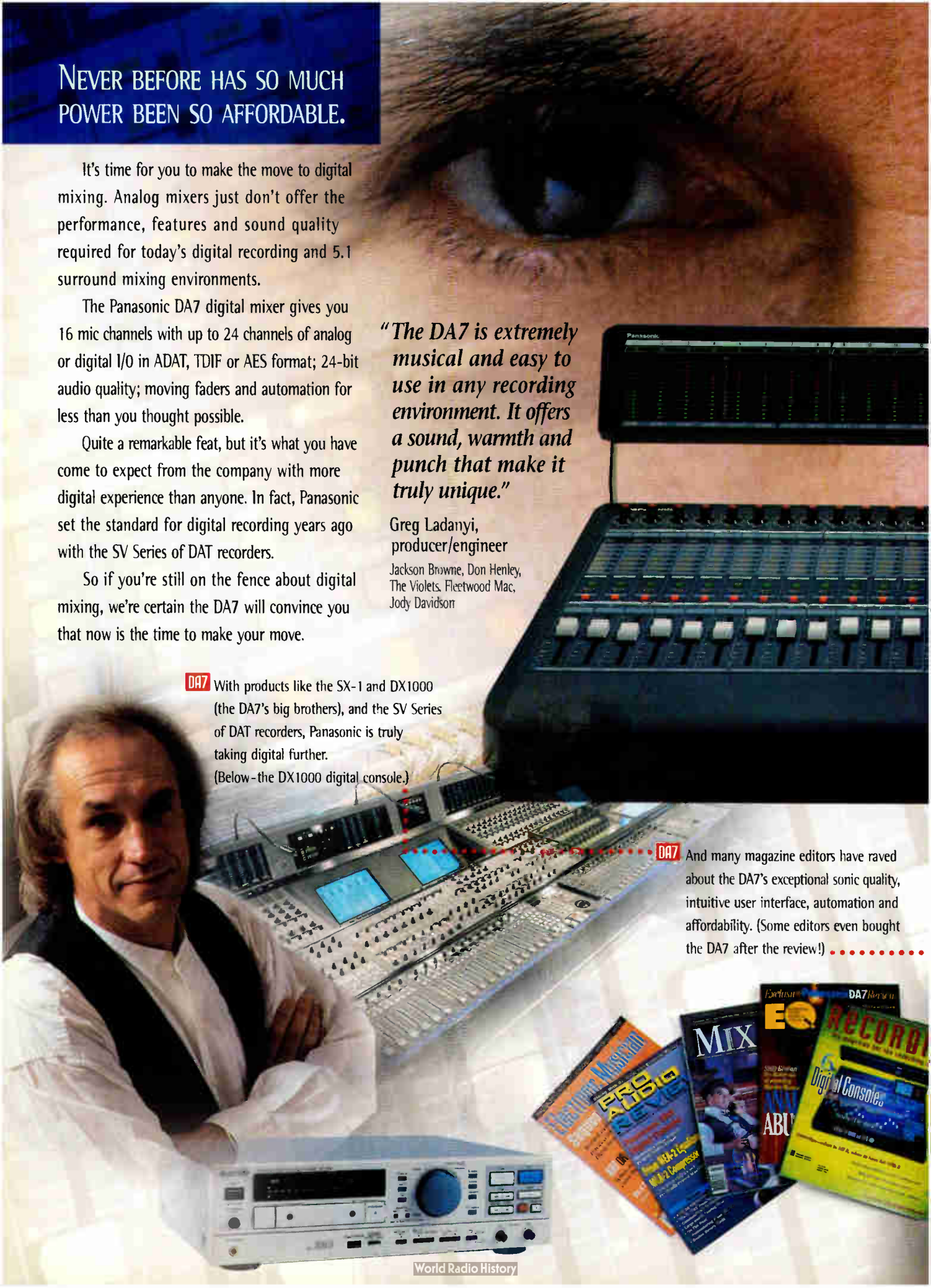
*"The DA7 is extremely musical and easy to use in any recording environment. It offers a sound, warmth and punch that make it truly unique."*

Greg Ladanyi,
producer/engineer

Jackson Browne, Don Henley, The Violets, Fleetwood Mac, Jody Davidson

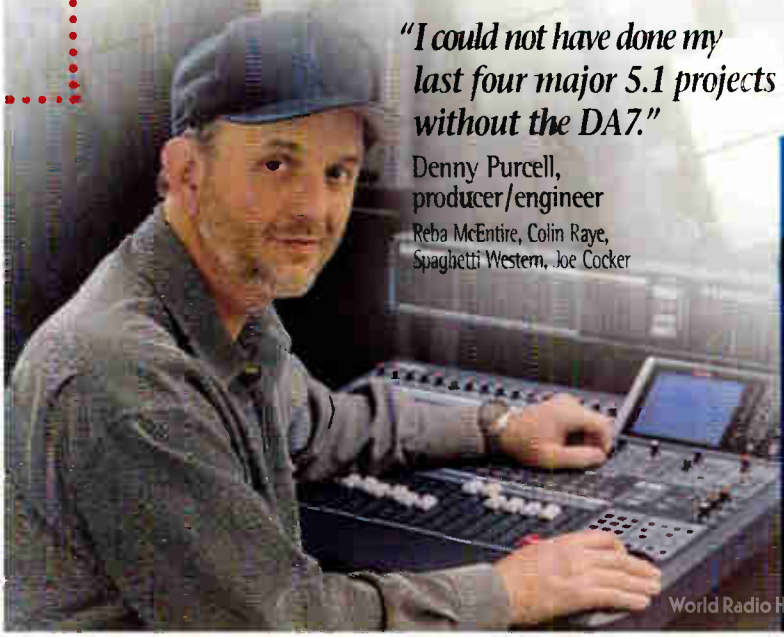
DA7 With products like the SX-1 and DX1000 (the DA7's big brothers), and the SV Series of DAT recorders, Panasonic is truly taking digital further. (Below-the DX1000 digital console.)

DA7 And many magazine editors have raved about the DA7's exceptional sonic quality, intuitive user interface, automation and affordability. (Some editors even bought the DA7 after the review!)



# RIGHT PRODUCT.
# RIGHT TIME.
# RIGHT PRICE.
# RIGHT NOW.
# THE DA7 DIGITAL MIXER.

DA7 Don't just take our word for it. World-class producers, including Greg Ladanyi (pictured left) and Denny Purcell are using the DA7 for their high-profile projects.



*"I could not have done my last four major 5.1 projects without the DA7."*

Denny Purcell,
producer/engineer
Reba McEntire, Colin Raye,
Spaghetti Western, Joe Cocker

THE ASSOCIATES

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DA7 We've made it affordable. Now you can own a DA7 with our incredible 36 month, no money down, $170/month lease-to-own program.* See your dealer for details or call The Associates at 1-800-526-8638. Make your move to digital now.

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CIRCLE #008 ON PRODUCT INFO CARD

# INDUSTRY NOTES

**Summit Audio Inc.** (Soquel, CA), a leading manufacturer of vacuum tube-based audio equipment, celebrated its 20th anniversary in January. Founder Mike Papp started the company in his garage and began full-scale production of the TLA-100A tube leveling amp in 1985. The company relocated ten years ago and recently expanded its manufacturing facility...**Laura Walter** joined South San Francisco-based **TOA Electronics Inc.** as marketing communications coordinator...**Christine Marra** was appointed technical coordinator at **Solid State Logic**'s (Oxford, UK) East Coast location. **John Herman**, SSL's digital and analog product specialist, will assist in specifying consoles. **Joshua Coleman**, SSL's service engineer, will assist clients in installing and maintaining digital audio systems. On the West Coast, **Michael Freas** was named SSL inventory controller/service engineer...**Jane Wilke** was named general manager of international sales and development at Evanston, IL-based **Shure Brothers**. Wilke, a 25-year veteran at Shure, will direct the activities of the company's newly created international market development department. Industry veteran **Greg Augspurger** joined Shure as executive vice president and chief operating officer. He will oversee and guide Shure's engineering, manufacturing and quality control efforts, as well as the development of the company's software programs and customer service operations. **David Doll** joined Shure as chief financial officer. He previously served as CFO and VP of finance at Teccor Electronics...**MARS**, Music and Recording Stores, formed an education partnership with **Full Sail Real World Education** (Orlando, FL). MARS Superstores will offer specially designed courses taught by teachers from Full Sail. Topics include recording engineering, interactive media, MIDI and computer music technology...**Burlington A/V Recording Media** (Oceanside, NY) announced that **Jan Alan Schwartz** will relocate to the West Coast to oversee existing accounts...Santa Monica, Calif.-based **Alesis** announced that **Peter Chaikin** joined the company as director of marketing. Chaikin, a 25-year industry veteran, came to Alesis from Yamaha Corporation of America, where he served as product manager of professional audio products...**Mari Berman** was named marketing communications coordinator at **Otari Corporation** (Canoga Park, CA)...**Telex Communications Inc.** (Minneapolis) announced the appointment of **Willy Dahlskog** as broadcast sales manager for Europe, Africa and the Middle East...**Dieter Horn** was appointed regional sales director at **Quantegy Europa B.V.** (Nijmegaen, the Netherlands). Horn assumed responsibility for Quantegy branded products in Germany and Austria...**Quested Monitoring Systems** (London, UK) appointed a new U.S. distributor. The Madison, WI-based agency, **Q. USA Inc.**, will be headed by Brian Anderson, formerly the Quested product sales manager at Audio Independence...**Rorke Data Inc.** (Eden Prairie, MN) opened a West Coast office at 553 N. Pacific Coast Highway #447, Redondo Beach, CA 90277; phone 310/378-4459; e-mail: apegus@rorke.com. The new office will be managed by **Andre Pegus**...**Ron Marin**, the new public relations manager at Scelba, Scelba, DeTitta & Wolfson (Montville, NJ), represents the **Maxell Corporation**'s Professional Media Products Group. He can be reached at rmarin@ssdw.com...**Novation** (Berkshire, UK) announced the formation of Novation USA, which will function as the company's U.S. distributor. **Margaret Kelly** was tapped to head the new company...**DPA Microphones** (Kitchner, Ontario) appointed **Lyd Systemer** as its distributor in Norway...Boston-based **Rosati Acoustics + Multimedia** announced exclusive dealership for **Studer** pro audio equipment in New England. ■

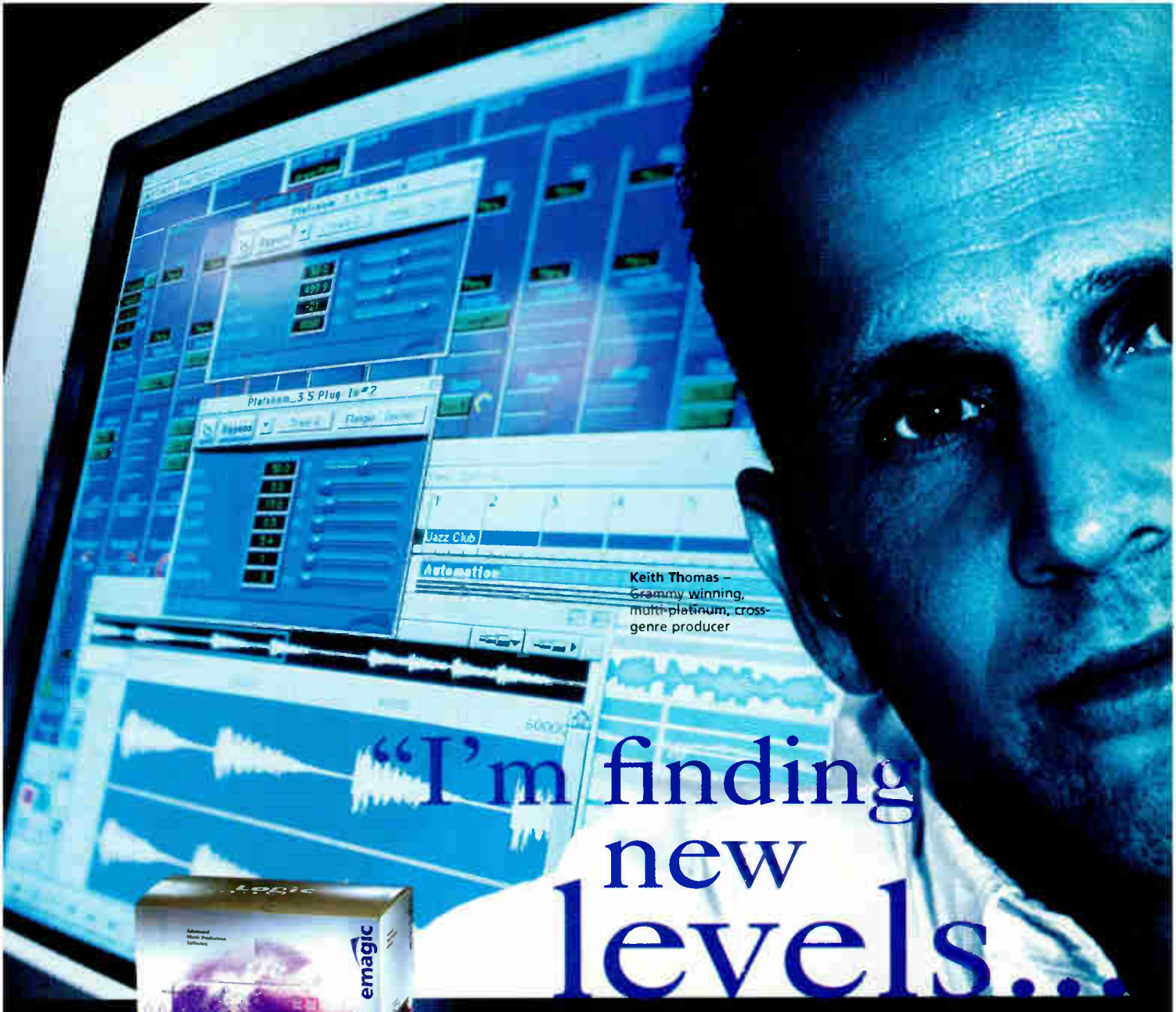
—FROM PAGE 12, CURRENT

nual South By Southwest show opens in Austin, Texas. The Film Conference (March 12-16) and Film Festival (March 12-20) feature a three-day industry trade show, plus panels, workshops and the screening of 150 films from around the world. The Interactive Festival (March 13-16) features keynote speakers Mark Cuban, Michael Wolff and Philip Glass, an Open House allowing attendees to visit Austin multimedia production facilities, panels and more. The Music Conference and Festival (March 17-21) features more than 80 panels on all aspects of the music business, a keynote address by Lucinda Williams, a trade show and performances by hundreds of bands at Austin's nightclubs. For registration information and other inquiries visit www.sxsw.com.

The International Recording Media Association Executive Forum takes place March 10-14 at the Ritz Carlton, Amelia Island, Florida. The forum, entitled Management Strategies for the Future of Digital Entertainment, offers a DVD production midyear update, executive skills workshops, European Recording Media Symposium and more. Visit www.recordingmedia.org or call 609/279-1700 for more information.

Synergetic Audio Concepts Inc.'s Sound Training Seminars are happening across the country now through November. "A Week of Audio Training" is divided into three seminars: System Setup, System Design and System Operation. For more information call 800/796-2831 or visit www.synaudcon.com.

From the producers of LDI, the ExpoLatina tradeshow combines cutting-edge technology and up-to-the minute entertainment industry information. The workshops are from May 4-7 and exhibits run from May 5-7 at the Miami Beach Convention Center in Miami Beach, Fla. Attendees will have the opportunity interact with professionals already involved in Latin American projects and receive first-hand reports from the front lines of the Latin American entertainment industry. For information on events, seminars and how to exhibit or register, visit www.etecnyc.net or call 303/741-2901. ■




**Keith Thomas** – Grammy winning, multi-platinum, cross-genre producer

# "I'm finding new levels...


...of creativity buried deep within the multitude of functions in Logic Audio."

Jazz, rock, fusion, blues, country, hip hop, rap, R&B, pop, techno, remix, film scoring, jingles, TV no matter the genre Logic Audio is the tool of choice.

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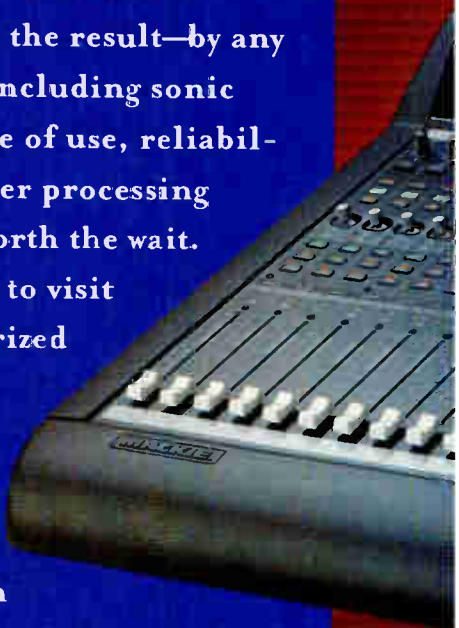
CIRCLE #009 ON PRODUCT INFO CARD

# TOTAL CONTROL. TOTAL CREATIVITY.

**MORE CAPABILITY** 72 channels, 56 inputs • **MORE SENDS** 8 mono and 2 stereo aux sends per channel • **MORE PROCESSING** 48 channels of digital parametric EQ, compression, and gating, plus reverb, delay, and chorus • **MORE AUTOMATION** More dynamic and snapshot-automation parameters than any comparably-priced digital console • **MORE INTUITIVE** One-touch commands and an analog look and feel make the D8B easy to use • **MORE CONNECTIVITY** Ethernet port and connections for optional mouse, keyboard, and monitor • **MORE STORAGE** Internal hard disk for saving scads of automation files for instant session recall • **MORE OPTIONS** Open architecture for adding more I/O, "famous name" effects, and software upgrades • **MORE CONTROL** The Mackie Real Time OS™ automates nearly every D8B function and all are accessible from the console and optional monitor • **MORE CREATIVITY** Put all of these features together and you've got the Digital 8•Bus—a creativity powerhouse

**EASIEST TO USE** *"It acts, walks and talks very much like an analog console."* – Bruce Nazarian, Virtual Post. Burbank Ca • *"With some digital consoles, you feel like you're working on a computer. The [D8B] feels just like working on a regular, analog console. Right out of the box, it's so easy to use, I couldn't believe it."* – Brian Foraker, Recording Engineer for Yes, Heart, and Oingo Boingo • *"With the Digital 8•Bus, you just go for it. It's very much like analog boards—not a lot of pages to step through. You can keep your mind on the music and the task at hand."* – Steve Boyce, Audio Dept. Manager, Redmond, WA • **MORE D8B DETAILS** 12 discrete high- definition mic preamps • Support of all SMPTE frame rates and MIDI Machine Control • Full 5.1 and 7.1 surround sound capabilities • **SUPERIOR AUDIO QUALITY** 24-bit, 128X oversampling A/D and D/A converters • 32-bit internal processing • Apogee UV22* Super CD Encoding


Instead of doing digital first, we did digital right. All along, our goal has been to create the first affordable *no-compromise* digital console. We designed the D8B to sound as pristine as the finest analog consoles—and to perform automation tricks even $500,000 digital desks can't do. We believe that the result—by any standard—including sonic quality, ease of use, reliability, and sheer processing power—is worth the wait. I invite you to visit your authorized Mackie Digital Systems dealer for an in-depth demo and our 36-page tabloid brochure. Call us for your local dealer and a free video.



Greg Mackie. Founder

# THE MACKIE DIGITAL 8·BUS IS HERE.

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# THE BIGGEST NATURAL DISASTER OF ALL TIME

## A TRUE STORY ABOUT MAINTAINING...


ILLUSTRATION DAVE EMBER

### THE ULTIMATE TAN

As millennia upon millennia became hazy history, life on Earth finally evolved into a single utopian society—countless species living together within one closely networked collective. The primary citizens eventually took to life at sea, with floating communities stretching over hundreds and sometimes thousands of square miles.

Earth was literally *teeming* with life. Trillions of beings happily snacking and napping in the sun, enjoying their beautiful, lush neo-tropical paradise, spending their days surfing geothermally warmed oceans. Hedonistic sun worshipers, all.

With more energy and food available than could ever be used, motivation eventually atrophied and was replaced by the most simple of primal drives. Growing as fat as possible became the primary goal, and having as many offspring as possible the second. Beyond minimal protection required for the sun's now dangerous UV rays, no clothing was worn at all.

With nothing to do and nowhere to go, these communities became so populated that it was literally *impossible* to go anywhere—each citizen simply stayed at home for their entire life, while everything that was needed just arrived.

BY STEPHEN ST.CROIX

### SAUERSTOFF

The citizens were totally clueless, so of course things eventually went sour. They just weren't careful enough to avoid the old sci-fi cliché becoming a reality. As a result of their lack of interest in protecting their environment, they methodically destroyed their own atmosphere with pollutants. They blindly introduced such massive amounts of a lethal new gas that it literally burned them alive. They did such extensive damage that there was no way for the Earth to ever recover. In the end, all were dead and forgotten.

And so it was. They killed themselves and almost all other life on Earth with toxic waste. No war, no

PROFESSIONAL RECORDING EQUIPMENT

# MANLEY

# Langevin


**COMPANY PROFILE:** Manley Laboratories, Inc. in recent years has expanded and thrived under EveAnna Manley's leadership. Our 11,000 sq. ft. building houses our own machine-shop, printed circuit board manufacture, audio transformer winding, engraving, and silk-screening facilities. All custom design, R&D, assembly, testing, and quality control processes are performed with precision and pride at the Manley factory, located just 35 miles east of Los Angeles.

**NEO-CLASSIC: MANLEY ALL-TUBE GEAR**

We take a purist approach to everything we build; refining, executing, and expanding upon Manley's legacy of vacuum tube design philosophies proven over years of real-world experience, using high quality modern components, many of which are fabricated in-house. This attention to detail delivers the rich, present, and natural sound our vacuum tube designs are renowned for. Never small, sterile, or boring.

Beyond this, Manley means reliability, real technical support, and a company attitude that professionals depend on.

**BIG BANG FOR THE BUCK: LANGEVIN**

**LANGEVIN** is a legendary marque of premium electronics whose lineage goes back to World War II. **MANLEY** acquired the **LANGEVIN** brand name several years ago. With these products we offer you the different sonic flavor that **ALL-DISCRETE CLASS A CIRCUITRY** brings using fresh, original designs built alongside and to the same exacting standards as the Manley equipment.

We believe that good music and those who create it deserve the finest gear.

The choice is yours.

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CIRCLE #011 ON PRODUCT INFO CARD

# Now Accepting Applications

# Make Your Guitar Scream

## Use the DDP to get the tone you've always wanted

### Try this for a great guitar sound:

**Gate:**
- Threshold at -42dB
- Ratio at 1:4
- Attack at .1 mSec
- Hold at 40 mSec
- Release at 54dB/Sec
- TCM Time at 3 mSec

**Compressor:**
- OverEasy knee #3
- Auto attack and release - On
- Threshold at -10dB
- Ratio at 4:1
- Gain at 6.5

**Parametric EQ:**
- Band 1: 200Hz Boost 3dB
- Band 2: 8kHz Cut 2dB
- Band 3: 4kHz Boost 5dB
- Tape Saturation Emulation: Warm

**Limiter:**
- Threshold at 0dB
- Attack at .1 mSec
- Release at 130dB/mSec

### Use the DDP to:
- Bypass the inferior A/D converters found in computer based recording cards
- Improve the quality of your tracks by recording "hotter"
- Gate noisy guitar rigs


# Smooth Out Your Vocals

## The DDP lets you set em on top of the mix, or blend em in

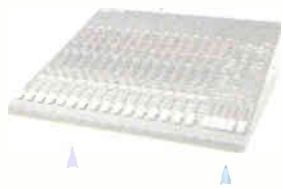
### On your next vocal session try this DDP setup:

**Parametric EQ:**
- Band 1: 100Hz Cut 3dB
- Band 2: 25Hz Cut 12dB
- Band 3: 20kHz Cut 11dB
- Tape Saturation Emulation: Light

**Compressor:**
- OverEasy knee #4
- Auto Attack/Release: On
- Threshold at -17dB
- Ratio at 2:1
- Gain at 3.5

**Gate:**
- Threshold at -50dB
- Ratio at 1:2.6
- Attack at .1dB/mSec
- Hold at 38 mSec
- Release at 88dB/Sec
- TCM time at 1mSec

**De-Esser:**
- Frequency at 4.6kHz
- Amount at 45%



### The DDP improves vocals by:
- Taming those harsh "esses"
- Controlling vocal levels
- Gating out background noise
- Providing comprehensive vocal processing in a single unit

Save The Planet  It's The Only Market We've Got

# Apply Within.

## Fatten Up Your Drums

### Get that "fat track" sound you're looking for

**Try this for a great kick sound:**

**Gate:**
- Threshold at -32dB
- Ratio at 1:15
- Attack at .4 mSec
- Hold at 12 mSec
- Release at 92dB/Sec

**Compressor:**
- OverEasy knee #3
- Auto attack and release - On
- Threshold at -9dB
- Ratio at 5:1
- Gain at 6.5

**Limiter:**
- Threshold at 0dB
- Attack at .7 mSec
- Release at 120dB/mSec

**DDP is better for drums because:**

- Type IV™ allows you to capture the incredible dynamic range of a drum kit
- TCM™ Transient Capture Mode allows more accurate dynamics processing on percussive sounds
- Using the ultra-fast Gate improves drum track separation

## Mix It Down

### Bypass the on-board converters on your DAT or DAW, and add sensible processing at the same time

**When you're ready to finish it off:**

**Gate:**
- Threshold at -60dB
- Ratio at 1:3.5
- Attack at .1 mSec
- Hold at 18 mSec
- Release at 100dB/Sec

**Compressor:**
- OverEasy knee #1
- Auto attack and release - On
- Threshold at -10dB
- Ratio at 2.4:1
- Gain at 7.0

**Limiter:**
- Threshold at 0dB
- Attack at .1 mSec
- Release at 160dB/mSec

**During Mix-down the DDP can:**

- Help you mix hotter with no "overs"
- Dither to your final format-16, 20 or 24-bit
- Preserve your stereo image using True RMS Power Summing™
- Add transparent processing to your entire mix


## DDP

Let's face it. Til now there were some audio processing chores (like compression) that just had to be done analog to sound right...right?

Please welcome to your rack the dbx DDP. It's the world's first 2 channel compressor/limiter that has all the warmth, life and mercy of an analog box with the precision converters you, (the modern recordist), MUST HAVE for your digital recording applications.

Finally, a 24 bit digital box that glows with the classic characteristics of dbx® compression that has been processing the hits for over 25 years. Take a run through the parameters, it's REAL easy... you'll see all the standard controls you'd expect, plus quite a few more. 10 steps of OverEasy® on the compressor, not just on/off. Transient Capture Mode™ (TCM), a fully parametric EQ, De-sser and Tape Saturation Emulation™ (TSE) are all standard on the DDP.

All this is hitched to world class 24 bit converters; converters that are found in boxes costing thousands more. Speaking of which, you can pay thousands more, but unless you get a dbx DDP you won't get the dynamic range afforded by our patented TYPE IV™ Conversion System.

Try the DDP on your toughest dynamics applications and see for yourself. Analog sound, Digital tracks, we're taking applications!

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CIRCLE #012 ON PRODUCT INFO CARD

killer virus, no meteor shower, no alien invasion—just toxic waste. Truly the biggest natural disaster of all time. And though they are lost forever, their legacy of lethal gas remains to this day, still burning, still destroying.

### THE NEW AGE

The hackneyed sci-fi saga continues down its inevitable path. Sure enough, after even more time than it takes to solve an IRQ conflict under Windows, exotic new mutant life-forms eventually came to be. These incredibly complex creatures had special pumping organs that actually allowed them to *live* on this burning gas. They could literally breathe the stuff and, ironically, exhale as waste the very substance that the original inhabitants so desperately needed. Oh, well. What'cha gonna do?

Yes, of course *we* are the weirdo mutants that evolved in the post-apocalyptic hell that is now our norm. Those forgotten tiny algae-like primitive creatures breathed in carbon dioxide and literally poisoned themselves with the very gas that they exhaled—oxygen. Kind of brings a new meaning to "bad breath," doesn't it? Their bad breath became the life-supporting gas in our atmosphere.

And even as we now require that exhaled oxygen for our very existence, it *still* hurts us, and we still fight it. We endlessly devote technical and financial resources to devising ways to protect ourselves and our stuff from this nasty but necessary gas.

**Oxygen? It oxidizes. Damned near everything on Earth.**

### THE HUNGRY O (NOT TO BE CONFUSED WITH LARRY THE O)

Oxygen eats every cell in our bodies. It reduces iron to a gritty red dust (look what it did to Iron Butterfly), magnesium to a soft white powder. It eats rubber as a casual snack. It attacks everything it can get to. It never rests. It even eats our food. Sometimes it makes an alliance with water, when it is *really* in a hurry. Let it eat hydrogen and it makes its *own* water. It *always* wins.

Too little and we die, too much and we die (unless we are Michael Jackson or some other star who sleeps in chambers pressurized with the stuff). Oxygen? It *oxidizes*. Everything. Well, damned near everything on Earth. And then there is that even more violent rebel oxygen: ozone. But that's *far* too scary to go into in a family magazine like this.

### SLEEPING WITH THE ENEMY

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—CONTINUED ON PAGE 249

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CIRCLE #015 ON PRODUCT INFO CARD

# THE LAST WORD ON UPGRADES

## A PERSONAL JOURNEY INTO THE HEART OF DARKNESS

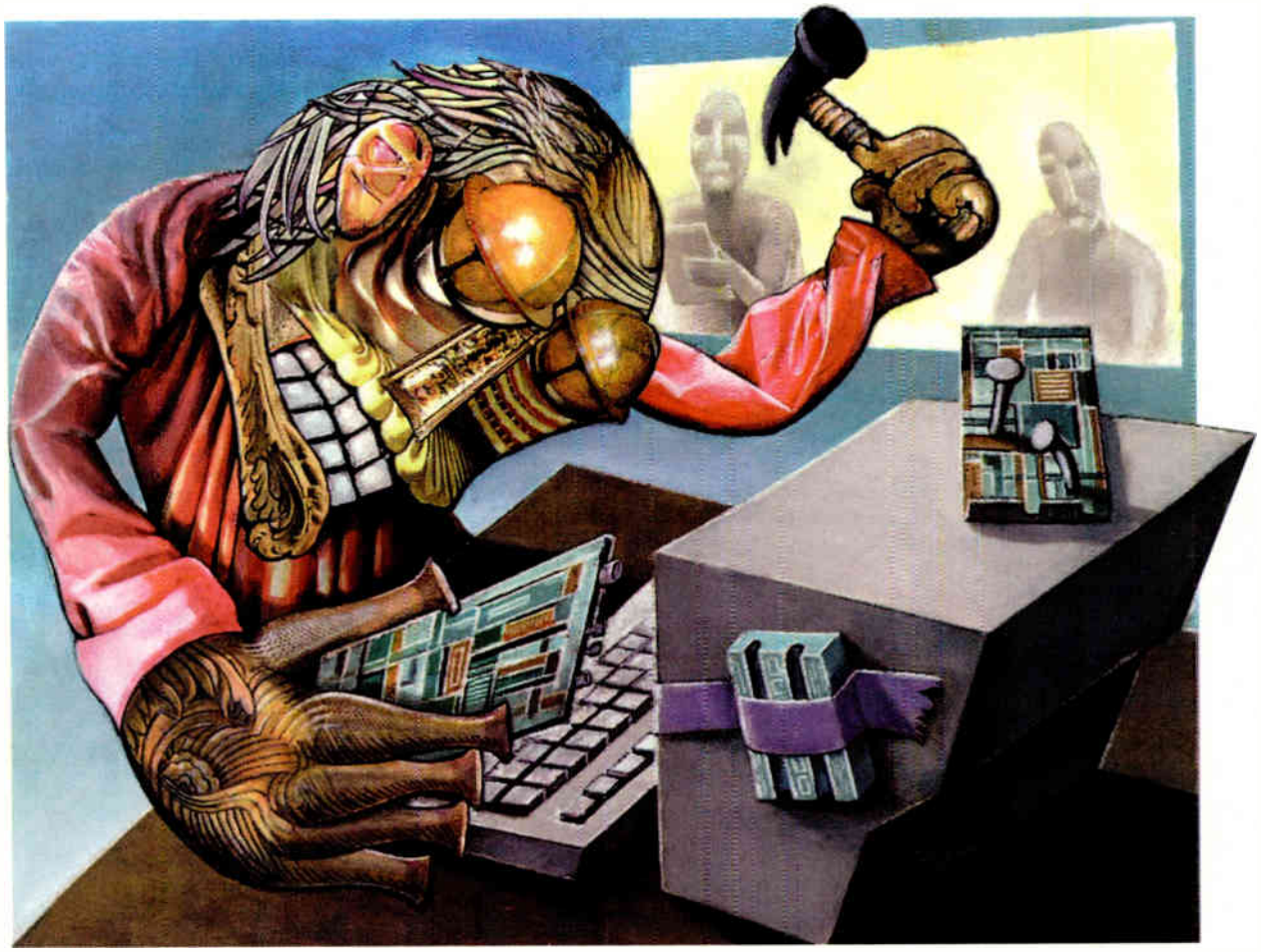

ILLUSTRATION DAVID BALL

BY PAUL D. LEHRMAN

You might be relieved to know that this is going to be my last column about dealing with upgrades—at least for a while. It's not a subject that's going to go away, but we need to pay attention to some other aspects of the recording and production life, not just how we're going to keep our tools working, even though that concern is taking up more and more time every year.

In this third and final installment, I'm going to relate a very recent—in fact, it's not over—horror story that illustrates so much of what I've been talking about. This is not Grumpmeier's story; it's mine.

For about three years, my main computer has been a Power Computing PC100, the very first Macintosh clone, a 100MHz Power PC 601 machine, equivalent to a Macintosh 8100. I got it because in spite of my great affection for and loyalty to the Macintosh operating system, I've never been a fan of Apple's hardware. Even in the Apple II days, I owned a clone—a Franklin ACE, it was called—that was better built, easier to service and performed better than anything Apple was making at the time. (Soon after I bought it, Apple, of course, shut the company down.) So when the first authorized Macintosh clones appeared, I jumped. Of all the computers I've owned, the PC100 has been my favorite: It's reasonably quiet, well laid out, easy to get stuff like cards and RAM and hard drives in and out, built like a truck, and has never needed service.

But since Apple pulled the plug on its licensees, it's been an orphan. And by last year, it was beginning to feel like an old and feeble orphan. While it was still just fine for writing, MIDI composing and most of the desktop publishing work I do, some newer applications, like Macromedia's Dreamweaver, which I use to create the pages on the Mix Online Web site, crawled like the Long Island Expressway at 5:30 on a Friday afternoon. And it was getting a little hairy reconfiguring it six times a day so I could work on Web stuff one hour and hard disk audio editing the next.

So I decided it was high time I

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REMEMBER THE NOT-SO-GOOD OLD DAYS? Like way back in early '97, when capturing that perfect vocal — the one with emotional power **and** rock-steady pitch — still often meant hours of frustrating retakes. Or the time-consuming process of comping a track from many separate takes. Or both.

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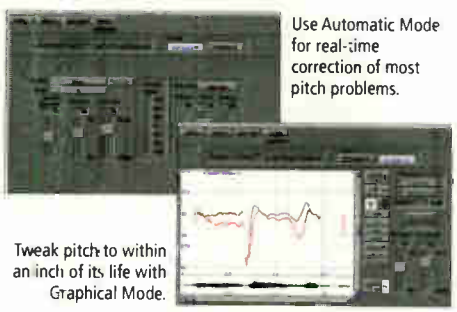

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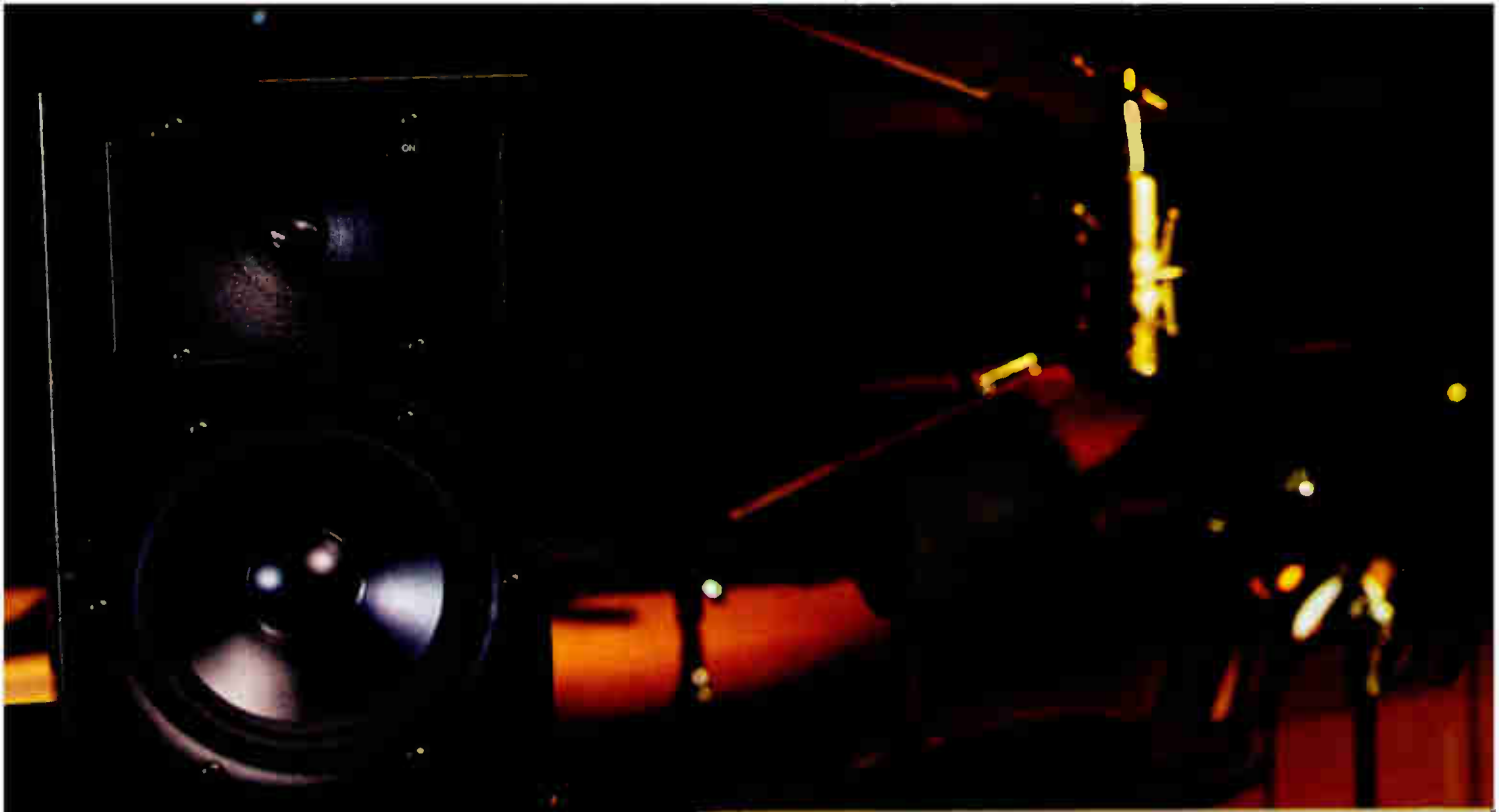

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got a second computer. I have a heavy investment in NuBus-based audio hardware and didn't feel like replacing it all with PCI-based stuff, so I thought I'd dedicate the old machine to music, while I could use the new computer (an Apple G3) for writing, graphics and Web stuff. At the same time, I thought, I could speed up that old machine and extend its productive lifespan by a year or two, with one of the relatively inexpensive G3 upgrade cards now available.

The first snag I ran into was the fact that said accelerator cards *weren't* available. Between the time Newer Technology announced their G3 cards for 601-based Power Macs and the time I got mine installed, approximately nine months elapsed. These babies were so hot that most dealers weren't even taking orders—just names. One dealer said they'd put me on a "guaranteed" waiting list, but only if they could charge my credit card first. Another dealer put me in the queue, and then three months later lost my order. Another dealer told me they'd have one for me in three days, and then two days later went out of business.

Meanwhile, I was learning from reports in print and on the Web that some of the G3 upgrade cards and some of the Power Computing machines didn't get along very well. Some reports said there were ROM conflicts. Others said, no, there were just conflicts over where to put the video card. You see, the accelerator card goes into the machine's PDS slot, where, ever since I bought the computer, there has lived a video card with four lovely megabytes of VRAM, enough to drive a 19-inch monitor at millions of colors. For people like me who don't want to sacrifice their video cards (and be forced to use the onboard video circuits, which can only drive a 17-inch monitor at low resolution), the upgrade cards are available with a little piggyback system into which you can plug your video card. The problem was, I heard, that the Power Computing chassis was not laid out the same as the equivalent Mac that the card was designed for, and that in my machine there was physically no room for the video card.

"Exactly how much room did it need?" I asked Newer Technology, which was very good at answering the phone, even if they couldn't deliver any product. "Three-quarters of an inch clearance between the card slot and the chassis wall," was the reply. I measured my computer, and it was about ⅛ inch short. But I looked again and realized that on my particular computer (a tower configuration—apparently quite rare even by orphan standards!), you could actually *remove* one of the chassis walls, thereby creating essentially unlimited clearance for the card. I told this to a tech at Newer, and I could practically hear him shrug. "Might work," was all he'd volunteer. He had no access to a Power Computing machine for testing, so I was on my own.

Finally, the card came. And it was immediately obvious there was no way the video card was going to fit. The "piggyback" was connected to the G3 card with a thick copper strip, which bent over, but only one way—*into* the chassis. So no matter how much clearance I could make on the outside of the chassis, it wouldn't help.

**I started searching for an appropriate video card. If I couldn't find one, I decided, the accelerator was going back to the dealer—certainly there were hundreds more suckers waiting in line for it.**

Now I had a choice. I could use the processor card without a video card, and rely on the PC 100's built-in video—which would mean my 19-inch monitor would become a doorstop—for sequencing and audio editing. Or I could forget the upgrade and hobble along with what I already had. Or I could unload the PC100, and in a desperate attempt to protect my investment in audio hardware, buy a used Apple 8100. (By now I was getting dangerously close to spending enough to buy a brand-new machine.)

Or...I could sacrifice the video card and its lovely RAM, and instead find an old-style video card for the machine that fit into one of the NuBus slots. It would mean I couldn't expand my current Pro Tools system (which requires two slots, and the machine only has three) or put in SampleCell, but at least I could keep using my large monitor.

At this point I realized that Newer Tech was hiding a nasty truth even from owners of Apple-brand NuBus Macs: When you use the video piggyback card, the video card has to go somewhere, and that somewhere is the middle NuBus slot. It's not actually connected to the slot, but instead hangs upside down in it, sort of like a three-toed sloth. But if you are familiar with Pro Tools III systems, you know that this arrangement cannot possibly work: Digidesign requires that the two Pro Tools cards reside in adjacent slots. So the computer-swapping scenario was out. Furthermore, anyone using Pro Tools on an 8100 (or 6100 or 7100) was similarly hosed.

I started searching for an appropriate video card. If I couldn't find one, I decided, the accelerator was going back to the dealer—certainly there were hundreds more suckers waiting in line for it. I wasn't even going to test it—I was that scared of blowing something up and not being able to get my money back. At the school where I teach, our resourceful tech director found an old card made by Radius that had been bundled with some monitor we'd bought long ago and was no longer needed. I called Radius, and they said it would need a ROM upgrade to run with a Power Mac, but the resolution would be no better than what the computer provided from its built-in video. And the upgrade would be $100.

I scoured the back pages of the Mac magazines and the Internet, and I found a company called Radius Vintage (actually a division of some other company with no connection to Radius), which would sell me a high-resolution, Power Mac-compatible refurbished video card for $200. They wouldn't guarantee that it would work in my orphan machine, and oh yes, all sales are final and no returns are allowed.

I found a Mac reseller, MacResQ, which had the exact same card for $100, and yes, they'd take it back if it didn't work, subject to a 15% restocking fee. I sighed, then went ahead and ordered it. It didn't work at all—the computer wouldn't even boot. The ROM on it clearly said it was made in 1992, which led me to think that perhaps it might have problems with a computer made in 1995. I called MacResQ and they told me, "The card works according to the specs when it was first released. If there have been subsequent upgrades, we are not responsible." Which meant if I wanted to use the sucker, I'd have to find a new ROM chip on my own.

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Back to Radius Vintage. Yes, they had the ROM chip. It cost $100. No, still no guarantees or returns. And $17 for two-day shipping. So now, if this didn't work out, I was out $132, instead of $200. I decided it was worth a shot.

A week later, a very slim package arrived. Inside were eight pages of documentation: two on how to install the ROM chip, and six on how to use the enclosed antistatic wrist band while installing the ROM chip. There was also the antistatic wrist band, a folded square of paper with some copper foil wrapped around it. There was also an invoice, carefully explaining the no-return policy. What was noticeably absent, however, was a ROM chip.

I called up Radius Vintage and screamed. I got a very apologetic operator, who said they may not have any more in stock, and could she call me back later? I told her she could not and I would hold while she checked. On my nickel, she searched her database and in 15 minutes found that there was indeed one more in stock. She promised to send it to me overnight.

A week later, after two more screaming phone calls and several e-mail messages demanding my money back and threatening them with everything from bad publicity to Ken Starr, another slim package arrived. This one had an actual chip in it, along with an invoice telling me my shipping charges would be refunded.

I installed the chip onto the video card in less than a minute. Following some rather arcane boot-up instructions one thoughtful support person had given me, I got it to work. I installed the software drivers for the Newer Technology accelerator, and then put the G3 card into the PDS slot. It worked, too. Most of my software is fine with the new processor, and my sequencer loves it—it's never felt so snappy. But Pro Tools has stopped working. I guess I'll have to check into that one of these days.

And now, as I sit typing on my new computer while my old one idles quietly in the next room, awaiting the next visitation of my muse, I vow never to go through anything like this again—but of course, in a year or two, I undoubtedly will. ■

*Paul D. Lehrman, editorial director of* Mix *magazine's Web site, www.mixonline.com, is not looking forward to replacing his analog console with a digital one.*


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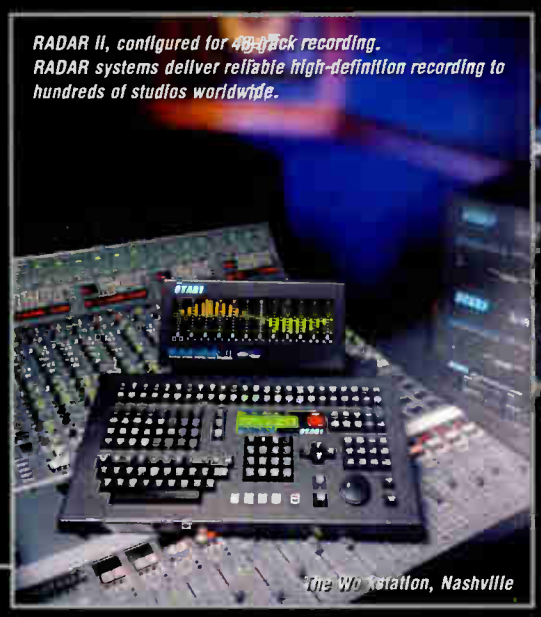


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CIRCLE #021 ON PRODUCT INFO CARD

# Project

by Bob Hodas

# SPEAKER SETUP AND ACOUSTIC TIPS FOR THE FINANCIALLY CHALLENGED

When *Mix* asked me to write an article on acoustic fixes for small home studios, I said, "No problem. I've analyzed plenty of small rooms." Then they asked me to write it from the perspective of someone who couldn't afford an analyzer, and I said, "Oh shit." Although there are very few rules of thumb, I'm going to try to give you some guidance in solving some of your acoustic problems on your own. This process requires some intensive listening at times, but, hey, there's no time like the present to hone those skills. Make your ears your analyzer. Because this article is aimed at the "do it yourselfer," the acoustic solutions are the cheapest I could think of and some assembly is required.

## SPEAKER SETUP

It is very important that you become completely familiar with the speakers you are going to use. Take a good look at the manufacturer's frequency response charts, but remember that these are anechoic measurements. As soon as you put your speakers in a room with boundaries (walls), the bass response will start to change significantly. Bass response will build up even more when you place a speaker against the wall (half-space loading) or in a corner (quarter-space loading). But the response

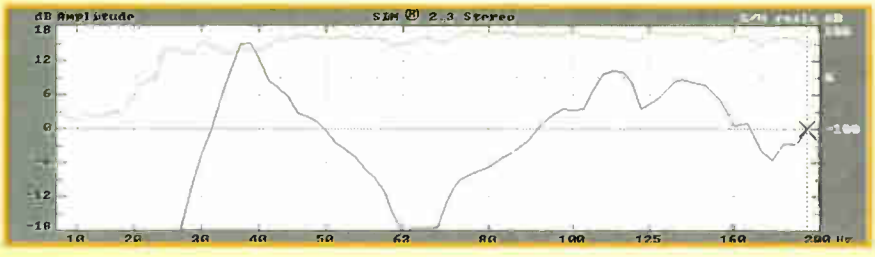


*Figure 1: Bass response of speaker placed along the short wall.*

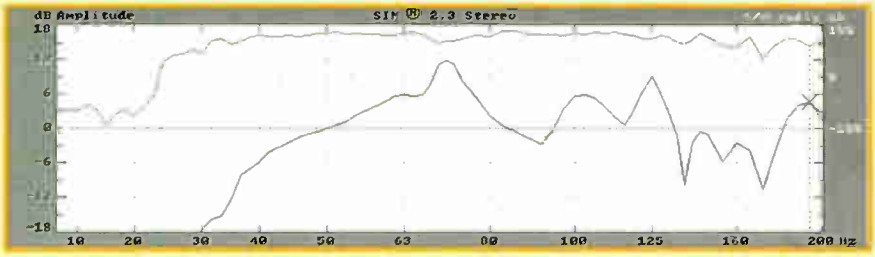


*Figure 2: Response of speaker placed along the long wall. Note more contiguous bass.*

# Studio Design

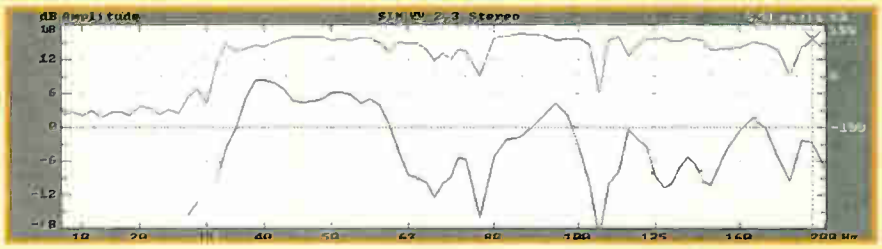


*Figure 3: Frequency response with left speaker asymmetrically placed in room.*

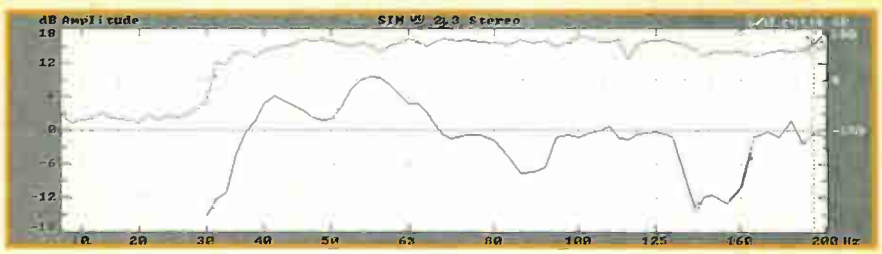


*Figure 4: Response with right speaker asymmetrically placed in room. Note significantly different response from Figure 3.*

charts are useful for knowing what the limitations are. For example, an NS-10 will roll off dramatically below 125 Hz, so you don't have to be too concerned about deep bass problems when positioning this speaker. You also want to pay close attention to the recommended position for proper phase alignment. You want to make sure that this alignment point intersects your ear level. For some speakers it's directly aligned with the tweeter. For others it's a point between the woofer and tweeter. It depends on the design, so check the manufacturer's literature.

Before even thinking about acoustic treatments, we need to optimize the speaker positions in your room. Step one is to determine which wall your speakers should be on. If your room is square, it doesn't matter. If your room is rectangular, it all depends on the dimensions. To figure out which wall to use, place one speaker on each wall and at listening height in approximate position. Run a mono send from your CD player to one speaker at a time and do some serious listening to the bass. You should be able to get a feel for which speaker has a flatter bass response. More bass is not necessarily better. Listen for smooth and connected bass from mid down to low. Figures 1 and 2 are examples of just how different the walls can be and what you should listen for. This room measures 15x9 feet.

For Dustin Hoffman, the word was "plastics." Well, I have just one word for you: symmetry. If you do just one thing right, it should be to set your room up as symmetrically as possible. What does this mean? Your speakers must be placed symmetrically in the room or they will have different frequency responses. This means that your music will sound different in the left and right speakers, your center image will be off-center and your product will not properly collapse to mono. Don't believe that old wives' tale that near-fields are not affected by room acoustics. That goes against the laws of physics. So your mission, should you choose to accept it, is as follows: Get a tape measure and make

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sure that the left and right speakers are equidistant from the side walls and from the front wall.

Why is the above true? Below 200 Hz your speakers are fairly omnidirectional. The signals that bounce off the front and side walls are going to mix in with the direct speaker signal. This delayed bounce will cause comb filtering. The time delay, and thus frequency, of interaction is dependent on the speaker distance from the walls. If the left and right speakers are different distances from the walls, the cancellations will occur at different frequencies. This is also true for first-order reflections above 400 Hz, which I will address later. Figures 3 and 4 give you a demonstration of what happens to the bass when speakers are placed asymmetrically in a room.

Now we need to determine how far out from the front wall the speakers should go. This will require more listening tests. Listen to both speakers in stereo. You should move the speakers six inches at a time forward or back. In a small room, these increments can make a big difference. Once again, you are trying to find the smoothest response. I realize that there may not be much space, but do the best you can. Believe it or not, sometimes the best place for a speaker is even up against the front wall.

At this point I want to mention the evils of console reflections. Figures 5 and 6 show why your speakers are better off several inches in back of the meter bridge. Now, I realize that you can't do this if you have one of these all-in-one workstation pieces of furniture, but you should be aware of these tight reflections bouncing into your face. If you have the freedom, move the speakers back. I have a 2x2-foot plastic mirror that I like to lay on top of the console surface. If I sit at the console and can see the tweeters in the mirror, I know I'm in trouble. Time to move those speakers back so there's no reflection in the mirror.

Your speakers and mic should also be set up in an equilateral triangle in order to get good stereo imaging. Measure the width of your room and place a microphone stand in the center, two to three feet back from the console arm rest. You want a nice wide sweet spot, so the width of your console or workspace will determine how far back you place the stand. The measured distance from tweeter to tweeter should equal the distance from each tweeter to the mic stand—the distance will depend on your room size and the width of your console (see Fig.7). Remember also that the typical small monitor is designed to be used at a distance of no more than six feet. Adjust the distance between your speakers remembering that each speaker needs to be the same distance from the side walls. Now aim the speakers at the mic stand, keeping in mind the proper phase alignment.

Doors are an important factor in your workroom. The bass can vary radically depending on whether the door is open or closed. More often than not, doors are in corners, and have a greater effect on one speaker than another. You want to avoid that, so I recommend keeping doors closed. You can do some listening to figure this out.

## ACOUSTIC ISSUES

Now that we have the speakers in place, we need to address the first-order reflections. These are the reflections that arrive at the mix position within the first 19 ms of the direct signal. (That's about a 21.5-foot path length difference.) Your brain cannot tell the difference between a direct and a reflected signal in this short space; you think it is all coming

from the speaker, which is the closest path. The result is that the reflection is convolved into the direct signal, just like a delay line. Of course, this causes comb filtering and thus cancellations in the frequency response. That results in imaging problems as well as phase problems. Bad boogie.

Identifying these reflections is quite easy. Above 400 Hz, sound acts a lot like light, so simple geometry (ray tracing) can be applied. Use that plastic mirror I talked about above. Have a buddy sit at the mix position and place the mirror flat against the left wall. Move the mirror around until your buddy sees first the left and then the right speaker reflected in the mirror. Have your buddy cover the entire mix area when looking in the mirror. Mark each area so you can treat them. Do the same for the right wall, the ceiling and the back wall. If you set your room up properly, the treatments for the left and right walls should be fairly symmetrical. Now measure the distance from the speaker to the mix position (direct path). Then measure from the

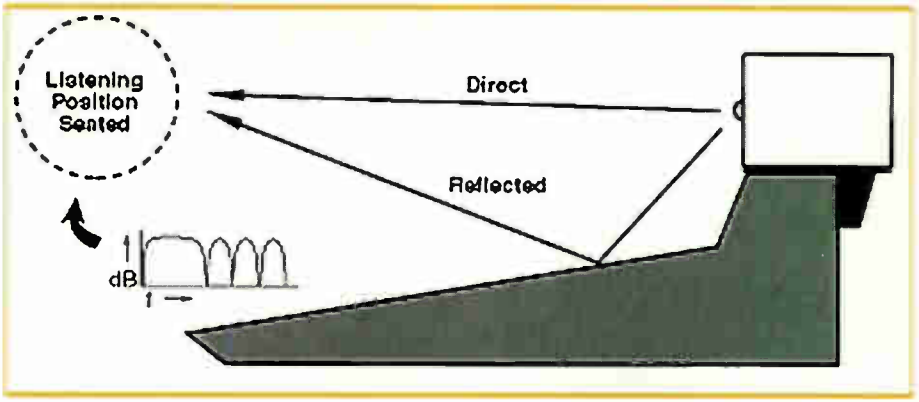
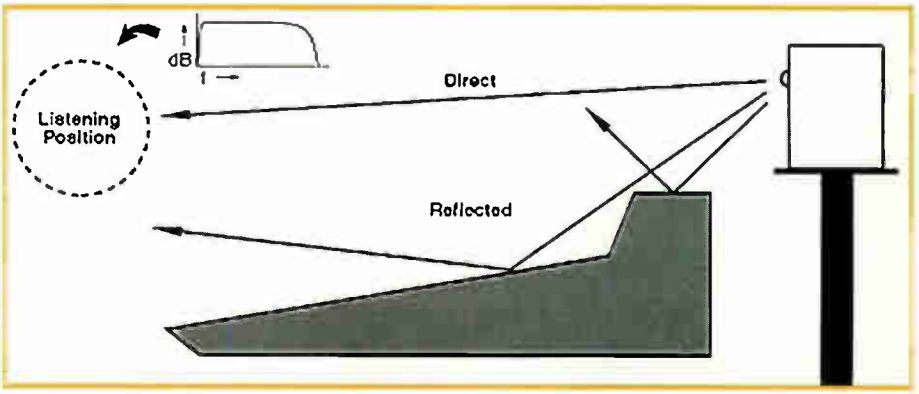



*Figure 5: Reflections interact with listener (causing comb filtering) when speaker is placed on console top.*

*Figure 6: Reflections redirected (and frequency response smoothed) by moving speaker back.*



speaker to each marked area and back to the mix position (reflected path). Subtract the direct path from the reflected path. If it is less than 22 feet, you should apply treatments.

There are two choices for treating these reflections: absorption and diffusion. For the side walls and ceiling, I like to use absorption, and here's why. An absorber removes the energy, but a diffusor spreads out the energy in space and time. This means that the diffusor creates many smaller reflections of lesser energy. If I do an impulse response of a side-wall reflection, both diffusors and absorbers appear to eliminate the reflection. But if I take a reading of coherence, the absorber gives a good reading because the offending reflection has been removed. The diffusor's coherence reading is not so good, because the reflection energy still reaches the mix position, albeit reduced and spread out in time.

For the side walls and ceiling, an inexpensive solution is 6-pound-density, 2-inch compressed Fiberglas, sometimes called spinglass. (It comes in 2x4-foot sheets and is available in many large building supply stores.) Cut the panel to fit the marks you made earlier. I often make the treatments a little larger than the area of reflection. The Fiberglas should be covered with a fabric that is acoustically transparent. Go to your fabric store and pick out something with a very open weave. You should see some light pass through, and if you hold it over your mouth, you should easily be able to blow through it. For neat looking panels, build a 1x2-inch wood frame around the panel and stretch the fabric over it. Don't do entire walls with these types of panels, however; they will disproportionately damp the high-end reverb time. Just treat the areas that are problematic—take a surgical attitude. There is nothing worse than the chesty sound of an over-absorbed room.

For the back wall, I prefer diffusion over absorption unless the back wall is closer than five feet to your head. I find that diffusion at the back opens a small room up more, and the back-wall energy does not mess up the coherence much. The cheapest diffusor I know of is to take a piece of ¼-inch peg board and bend it to form a curve. The greater the curve, the more diffusion you get. Hold the curve shape in place with some 1x2-inch strips. Another cheap method is to use PVC or ABS pipes of varing diameter, cut in half lengthwise. Mount these vertically so that the different diameters will give you some variance.

If your speakers are very close to the front wall, try the pipe diffusors mounted on the wall in between your speakers. This can sometimes give you more front-to-back imaging (depth) as it breaks up that solid reflection. Remember that most small monitors are meant to be used in free space.

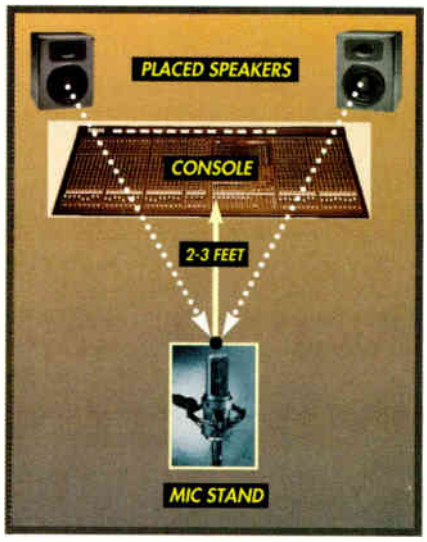


*Figure 7: Equilateral Speaker Placement*

Once the walls and ceilings are treated, put on some music that you know well. Listen while standing in the corners to hear how much the bass increases. If you get a large buildup, you'll want to trap the corners. Make the same kind of absorptive panel as explained above, using the full 2x4-foot size. Place it vertically across the corner with the top near the ceiling. Seal the bottom off with some window screen and fill the corner cavity with loose R-19 insulation. (Don't pack it tight.) This is a general broadband type of trap and hopefully will help your situation, although properly controlling the bass is difficult without measurements.

If, after these treatments are applied, you feel that your room is still too live, some additional treatment may be needed. Try a 1-inch layer of bonded polyester. This will take down the liveness without the heavy-handedness of Fiberglas.

These tips and methods should help you improve your listening environment. Most of all, the critical listening you do during this process will improve your engineering skills and give you a good understanding of your room's personality. Now go and make good music! ■

*The "Room Tuning With Bob Hodas" video will be distributed by Hal Leonard starting this spring. Further audio enlightenment can be found at www.bobhodas.com.*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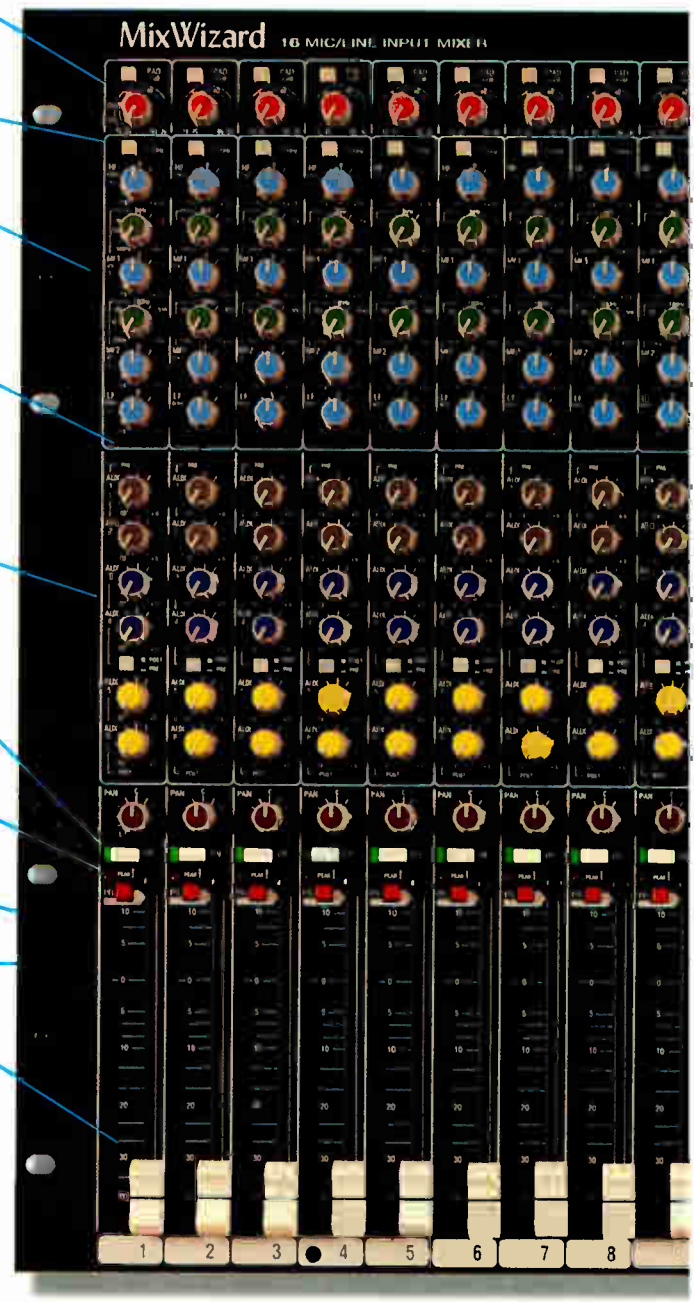


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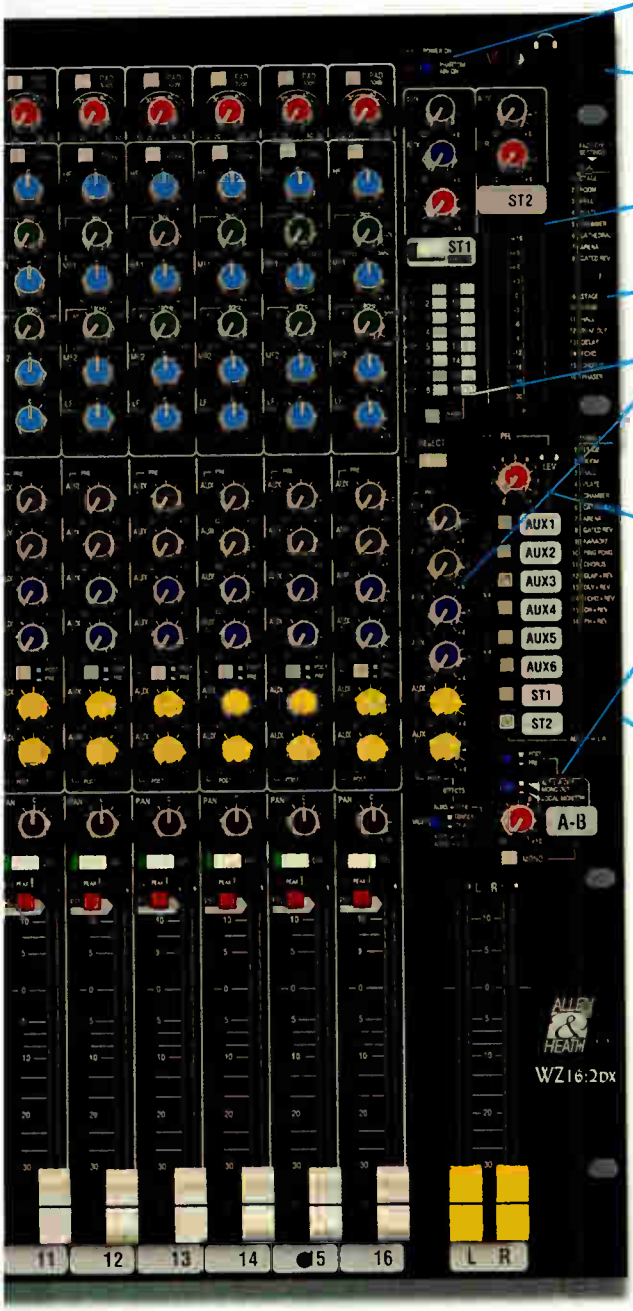


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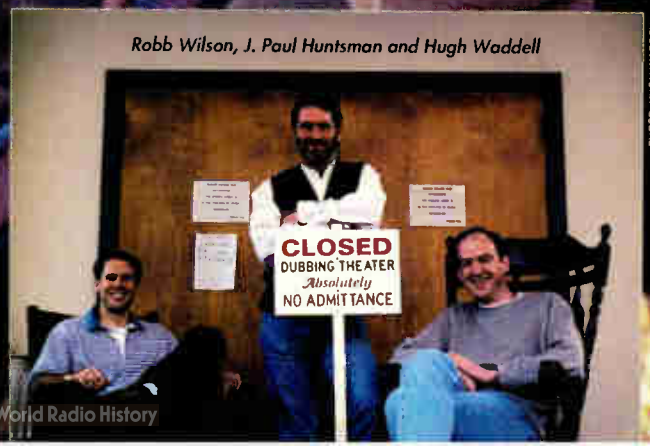
# The Delicacy of War

## Creating the Soundtrack For Terrence Malick's "The Thin Red Line"

Something special occurred in Hollywood during the last half of 1998, something only a handful of people will truly appreciate because most of it was orchestrated behind closed doors at Warner Bros. and Fox. Terrence Malick, the reclusive director of *Badlands* and *Days of Heaven*, had returned to filmmaking after a 20-year absence. It was as if the Prodigal Son had come home, and the town was buzzing about his new project: *The Thin Red Line*.

The World War II drama is based on the raw and gripping James Jones novel about C-for-Charlie Company and the siege of Guadalcanal.

**by Tom Kenny**




*Robb Wilson, J. Paul Huntsman and Hugh Waddell*

PHOTO: HUGH WADDELL

Once word began trickling out, it became clear that Malick had made a different kind of war movie, one that is highly impressionistic and personal. Composer Hans Zimmer explained, "I said to Terry at the beginning that the one thing I'm not interested in doing is yet another war movie where you go, 'War is horrible, war is terrible.' That's been said millions of times, and I have a feeling Steven [Spielberg] just said it better than anybody else [in *Saving Private Ryan*], so let's not go there. Terry wanted poetry, not prose."

The challenge from the start, it seems, was to make a "delicate" war movie: what Malick would often describe as "oceanic," "flowing," constantly moving, in picture and in sound. It was especially true for the sound crew because reels 5 to 13 (it's a 17-reel film, nearly three hours) are one long battle, complete with light weapon fire, ricos, mortars and howitzers. The key, according to supervising sound editor Paul Huntsman, "was to look at the film itself. The way it was shot and edited asked nothing more than to simply be expressed in some beautiful, soft way that forced you to think in simplistic scenarios. And that funnels right into Terry's sense of a minimalistic approach to sound: Only the things that you really need to hear, and just make damn sure they're the appropriate sound."

# The Delicacy of War

## ON LOCATION: PRODUCTION MEETS POST

"Minimalist" sound does not mean few sounds, or the absence of sound. It's more about the appropriate effect; or the single, long, dynamic note; or the right breathing on the battlefield. In fact, the crew at Warner Bros. Post-Production Services, the core of which has worked on Huntsman's five most recent pictures, had mountains of material. Ships, landing craft, additional weapons and winds were recorded in and around L.A. by John Fasal and Jayme S. Parker. But the bulk of the material, about 250 hours worth of elements on DAT, was sent from location in Australia in what Huntsman calls an "absolutely novel" collaboration between production and post.

Production sound mixer Paul "Salty" Brincat, an animated 25-year veteran from New South Wales, and second unit mixer Greg Bergmann proved to be the unsung heroes of the film. At every spare moment, they recorded backgrounds, vehicles, birds, soldiers walking through grass, you name it. They even went so far as to spend two additional weeks on the Solomon Islands recording birds (Malick, an ornithologist, was particular about getting the birds right), ambiences and specific effects. Indigenous music was recorded in coordination with Claude Letessier, a colleague of Zimmer's at Media Ventures. When production wrapped, Salty spent additional days recording light weapons and howitzers. All this was in addition to turning over "excellent, excellent dialog work, the best I've heard in a long time," says ADR supervisor Hugh Waddell.

And it couldn't have been easy. More than a million feet of film were shot, according to reports, and principal photography took place over about six months in Australia, including 12 weeks on a hill for the battle sequences: actors on the run, diving down, leaping up, screaming, whispering, in rain, in wind. "I went in thinking this would be a pretty standard feature," Salty recalls. "But as we started to get into the shoot a couple of weeks, I thought, 'Boy, I gotta change my ways here.' I started thinking that I had to get back to where I was when I was put into the field to do docos [documentaries] and put in situations to capture sound as simply as I could and be sure to get what I could get. Obviously, I needed to get feature sound for them but approach it in a documentary way. [Terry] kept the pace moving. He kept it zooming and he kept rolling. My best choice, I gotta say, was when I decided to have two boom operators."

PHOTO: HUGH WADDELL

*J. Paul Huntsman fed the final mix from his Fairlight station on the Zanuck stage.*

Rod Conder and Gary Dixon ran the hill with the actors day in and day out, carrying Sennheiser 816s and 416s on the end of 18-foot fishpoles. It was tiring work, and Salty sang their praises. "These guys really did work it," he says. "They were using Steadicams and running through battles. That's why we had to use booms. You can't put body mics with full webbing gear and thick terrain. You might get slightly tighter, but at the same time I would have lost more by getting rustle, getting thumping, possibly getting a mic ripped if one of the actors dives down because of an explosion effect, then gets up and charges, then dives down to do their dialog. It made sense for us to radio-mike the booms themselves and just run free. And I mean run free—they could run up to 200, 400 yards away in a sequence. And they'd be running up hills. It was pretty demanding on the guys, and they did fantastic.

"It's funny," he continues. "I hadn't used the 816 for quite a while, but I tell you what, she's back in the truck and she's staying with me because she worked it out. I guess it's getting back to docos, 'cause in the old days you used an 816 when you didn't know your distances. And you were always ready."

Because of the terrain, Salty didn't have the luxury of a cart, so he scaled back his rig considerably. About three years ago, because he works extensively in the tropics and around sand, he converted an esky (what we in the States would call a cooler) into a portable sound-protection unit. The preamps are housed in a custom-fitted lid, a fan was built into the side, and inside he keeps an Audio Development 206 4-channel mixer, a Fostex PD-2 DAT machine (primary recorder), a backup Sony TCD-8 DAT Walkman, a Comtek to feed the timecode slates, and a feed for the director and whoever else wanted to hear program. That esky, plus a mic bag, plenty of HHB DAT stock and batteries, and a "brelly" to shield the sun and rain, was all he carried.

When Salty and Bergmann went out to record effects, atmospheres and weapons, they usually took more equipment, including a 6-channel Pico mixer, AKG C-552 stereo mics (atmospheres, in an X-Y pattern), AKG 568 and 300SBs Blue Line condensers (interior tents), and Nagra 4.2 and stereo recorders (gunshots and explosions). Bergmann even borrowed a Sony PCM-800 8-track from the picture-editing department for recording vehicles and aircraft. Two weeks were spent in the Solomon Islands recording the landing scene on Guadalcanal. They also went on a four-hour trek into the jungle to record atmospheres and choirs, the most stunning of which was a 60-voice Melanesian ensemble recorded in a church that the art department built. Various themes, as well as original material, were brought back by Letessier and wound their way into portions of Zimmer's hypnotic score.

The need to record authentic, period weapons—both small arms and heavy artillery—was obvious. Producer Grant Hill arranged for Salty to spend a day (which, because of wind, turned into two days) with the Australian army on a firing range outside of Sydney. After faxing mic plots back and forth to Huntsman, mics were set up all over the 400-yard-long field, especially near the impact points, where they fired into sand and grass walls.

A couple of weeks later, Salty took

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Conder with him to record the howitzers, the 105mm cannons, in Victoria. He was expecting one gun and got 12. The regiment set him up in a camouflaged truck in the middle of the range and fired over him. Then they offered him the unique opportunity of recording as the troops rolled the cannon up a hill and fired into a dirt mound a kilometer away. "You see the round leave the gun," Salty explains. "You see it hit, you see the white flash, you see the dirt rise up, and about 15 seconds later—an unbelievable amount of delay—you hear this huge crack that comes back at you. Absolutely fantastic.

"We chased and got live rounds," he continues. "The crack in the air was just fantastic. I've never been able to get that involved in post. I gotta say, that excited me to run around and be able to record all the gear. And the director gave me the time and direction to do it. It's one thing for a director to say, 'This is what I want.' It's another thing for a director to say, 'Hey, there's the time, go get it.'"

"I have never seen this kind of work done on a film," Huntsman says of Salty and Bergmann. "And I've never seen such dedication and concern about it. Good record keeping, great recording work and an enthusiasm that absolutely shows in their work. A lot of what this movie is about in terms of how it sounds has to do with the care and deliberate nature of the way these guys went about their job."

*Paul "Salty" Brincat, on location in Queensland, was constantly asked about "coldies" in his "esky," but inside his cooler were an Audio Development mixer, Fostex PD-2 DAT machine, preamps and a built-in fan.*

## BACK IN HOLLYWOOD

Huntsman and his crew were finishing up *Deep Impact* in late spring, but every couple of weeks they received anywhere from six to 20 DATs from Aus-

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tralia. First to come were backgrounds, then vehicles and aircraft, then weapons. At the same time, Huntsman, an avid reader, was poring over World War II literature and diaries. One of the most valuable, *Touched With Fire*, was recommended by Malick and included first-hand reminiscences of the siege on Guadalcanal.

During the last week of June, in the midst of assembling libraries, the film was turned over and the sound team had a rare opportunity to view the rough 4.5-hour cut. Huntsman called the experience "mesmerizing, a treat beyond any, and a wonderful place to start out as a crew." Right before they began editing, the crew lobbied to divide the work according to effect—one for guns, one for vehicles, one for BGs, etc. Huntsman, who typically turns over whole reels to editors, agreed.

"Two things swayed me," he says. "I knew Jayme Parker would be the perfect individual to cut backgrounds on this movie. He is a quiet, hardworking, well-read, extremely focused guy. The other thing was that we had recorded this gigantic gun library—the entire, legitimate arsenal of what the American and Japanese armies carried into Guadalcanal—from three different shoots, and I needed somebody to construct that library of material. And Chris Aud became that guy." John Bonds took on heavy weaponry, meaning anything that exploded, and Andy Sommers handled vehicles, aircraft and miscellaneous elements.

While Huntsman spent the last three-and-a-half months of the process on the dub stage, his co-sound supervisor Robb Wilson managed the crew back at Warner Bros. "with aplomb and a genuine sense of inspiration." Dialog and effects were edited entirely on Fairlight MFX3 Plus systems; Foley and ADR were recorded directly to Fairlight drives. Foley was supervised by Jeff Rosen, walked by John Roesch and Hilda Hodges, and recorded by Mary Jo Lang. Dialog was cut by John Reynolds, Patrick Foley and Virginia Cook McGowan.

"My first thoughts were, 'How do you make a battle movie soundtrack work that is long and has sustained portions of gunfire?'" says Huntsman. "How can you keep an audience sitting in their seats and still play guns, mortars and ricos and not drive them out of the theater? How do I control the dynamic so that it doesn't become an offensive wall of material after a while? Easy-on-the-ear gunshots was the concept I came up with originally. I knew I wanted something that had power in the weaponry but not the kind of edge that would wear on your ear. There's a couple of moments in the movie where you're close to a soldier firing an M1 rifle and you can practically feel the kick of the gun, but it's not hard to listen to. It doesn't hurt your ears. It just feels solid.

"Then Terry's first conversations with me were about dynamic range and perspective," Huntsman continues. "We never really talked about the sound of the movie as much as the structure of the sound of the movie. There was always the necessity of having something in the foreground so that whatever played in the background had even more weight and perspective. It's the equivalent, I guess, of the deep-focus shot. There are always these layers of imagery, and I think that's what Terry wants to hear. He wants to hear the whole scene. He believes, and I agree with him, that having the appropriate material in the foreground acts as a lens that allows you to see more deeply into

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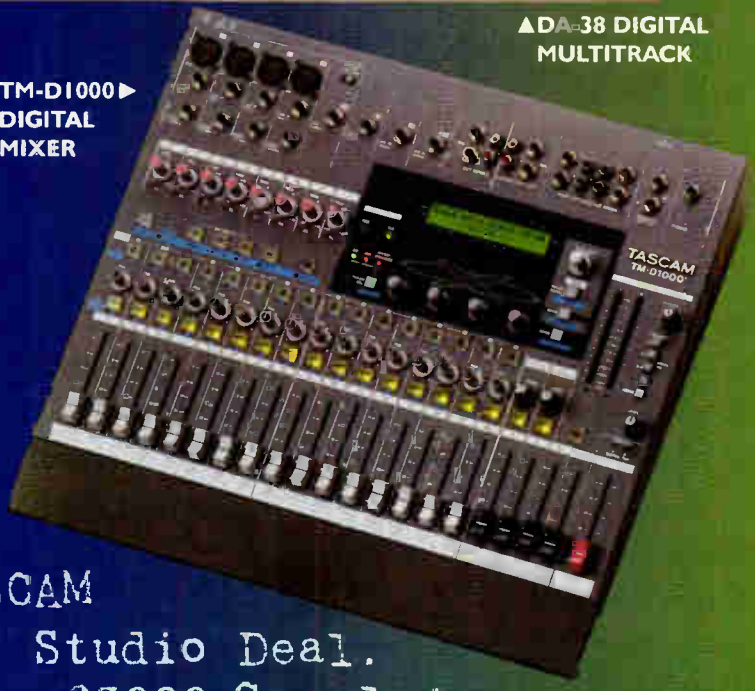


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the background. Group ADR and the vocal nature of the battlefield would be a good example."

ADR Supervisor Hugh Waddell also worked on *Titanic*, so he was not intimidated by the amount of material needed, most of which was alternative readings and offscreen changes. But he did find the edit a bit tricky in that Malick demanded such a natural feel to the dialog. "You can't just present him with wall-to-wall loops and hope to get away with it," Waddell says. "You have to literally use two or three words from production, then maybe three words from loops, then back to production. You really have to piece it together. It's very difficult to tell what's looped in this film because we have mixed it up so much."

Most of the ADR was recorded at Warner Hollywood with mixer Tom O'Connell. A military adviser and Japanese interpreter were present at all times to ensure period authenticity. The bulk of the work involved generalized, wild recordings of group ADR by an all-male cast from L.A. Mad Dogs. Specifics were avoided until the "dying gasps" of the premix, according to Waddell, so that they didn't overshoot.

PHOTO MERIE W. WALLACE

*The sounds of the grasslands form a key element in the naturalistic and delicate effects tracks.*

"We were going for a documentary feel," Waddell says, echoing the production process. "We came up with a way for the loop group actors to say lines in a way we called 'nondescript dialog.' They said lines, but they didn't say the actual words. If you put it behind people speaking, you just think it's people talking offscreen, but your ear isn't drawn to it. It would just lie there as a bed, and you can play it relatively loudly and it just fits in with the scenes.

"So we put those nondescript lines in the background," he continues, "but in the foreground, especially during heavy battle sequences, Terry had us record a lot of very close-up, very per-

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*Photo by Bill Schwob*

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sonal, intimate kinds of sobbing and moaning and sighing. When you're looking at a field full of men dying, suddenly you'll hear a moan or just a sigh—very up close and very personal, and it sort of pulls the whole scene toward you."

Breathing, another element used to personalize scenes, was recorded for every character. And 80 to 100 hours of voice-over/narration were recorded; some of it was in place for the final but most of it was expected to be added during the last week of the mix.

Foreground/background was also dealt with in effects, perhaps most notably in scenes of soldiers crawling, diving or running through grasslands. Using the library of material from Australia, the crew might spread rather broad M-S recordings of 50 soldiers moving through grass, coupled with an X-Y version of the same track, somewhat offset, along with Foley and production. In the background, then, rests a deep, rich, hypnotic wind. The result, Huntsman says, is the "*crème brulée* of sound effects."

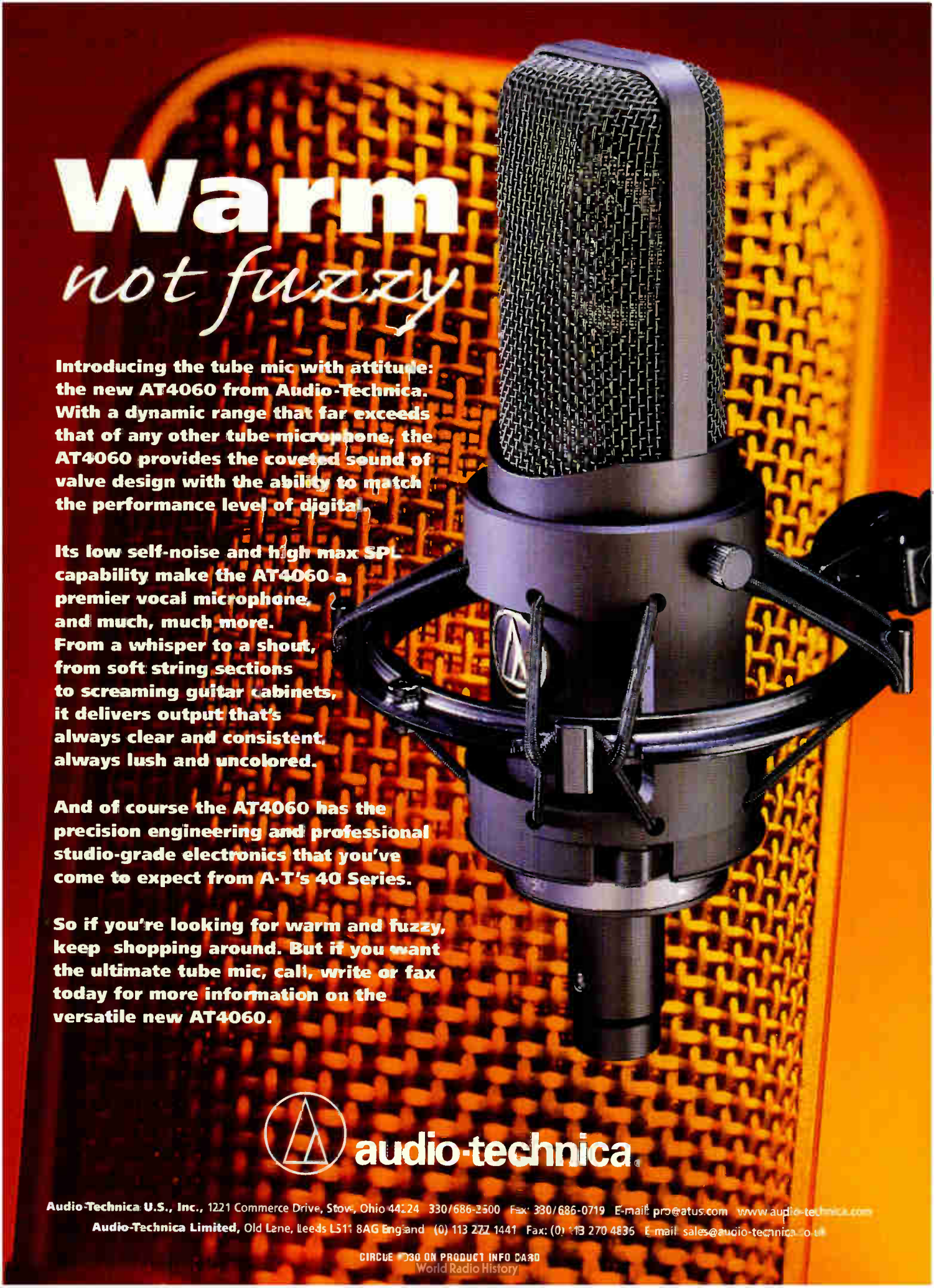
"[Once we started listening] we could all see a way to make this movie delicate," Huntsman says. "[In] one of my favorite shots in the movie, you see maybe 100 or more Americans hunched over and moving through very tall grass. You're looking up this hillside, and the lieutenant in the foreground stops and does a hand signal, and all these men drop down behind him. These guys literally disappear in the environment where they're probably going to die. And it's so allegorical to the thoughts of these men and what might lie in store for them. At the same time it's absolutely descriptive of the environment that these men find themselves in. If you don't get it when you see that shot, it's because you're thinking about popcorn or something. It's just a wonderful moment. There's not a lot of sound there, but what sound is there is really appropriate and you just get caught up in it. Then it's gone."

Still, for all the delicacy, for all the times the term "oceanic" was used to describe the tracks, it is a war movie with an all-male cast. Malick often spoke to Huntsman in terms of "the fighter." A fighter moves quickly and jabs, often so that you don't know where the punch came from. But the jab, Huntsman cautions, is not effective if you do it all the time.

"There's a spot where a mortar shell comes in all by itself, over a long period of time, and it lands close to one guy," Huntsman explains. "We put a little treat in there toward the end of it so that it's almost as if you hear ringing in your ears. And it goes away before you can quite figure out whether it was ringing in your ears or a ringing on screen. It crosses a line and internalizes the experience on the screen if it's done effectively. If it's a little overdone, then it becomes just a very obvious sound effects ploy."

## MUSIC AND TRUTH

The final weeks of the mix were not for the faint of heart. Picture changes occurred almost daily. Recordings done in the morning would be shuttled to the stage that afternoon to play against picture. Alternate lines were flown in. Composer Hans Zimmer was perhaps, under the most pressure, despite having spent roughly seven months on the film. Up until the end, he was writing new orchestral cues, recording taiko drums and sitting beside Malick in the editing room with picture editors Billy Weber, Leslie Jones and Sara Klein, and he handled it all with grace.




"We never really had a spotting session," Zimmer explains. "The way it started, which seemed like a good idea at the time, was that I would write the music first and Terry would cut the picture to the music. We are doing that sometimes, and sometimes we are not. It's been intensely collaborative, and it's been wrought with frustration because you're striving for that level of excellence and simplicity and truth.

"The question of truth always hangs over my head," he continues. "After about the first month, I realized that I have never been a composer, and now I'm slowly learning to become a composer. I think I had about 25 very good themes that will never make it into this movie because they're just not appropriate. It's been a lot of that—writing things, putting them up against picture, and having the picture just reject the most beautiful piece of music. You try to find what's appropriate, and things have gotten pared down to become more and more simple. There's one piece now that has for the last few months been my cornerstone. It's just an 11-bar phrase that's stretched over eight minutes. If I played you the music, you would never know this is a war movie. All I'm doing is playing subtext and trying to find humanity, trying to find brotherhood, trying to find comradeship. That's what I'm writing about."

For the first time, Zimmer, a known gear hound, recorded strictly orchestra—no samplers or synths. The score was recorded on the SSL 9000J at Fox and mixed on the Euphonix CS 3000 back at Media Ventures by Zimmer's longtime engineer Alan Meyerson. The music is not fast, Zimmer says, yet it is very concentrated and poses challenges for the orchestra. "I don't know if people realize how difficult it is to play one long note beautifully, as opposed to lots of fast runs," he says. "The detail of going from different dynamics to different dynamics within one note is very difficult."

The film's music moves from the intimacy of the orchestra, to the rolling thunder of taiko drumming, to the explosion of the "cosmic beam," essentially a large wooden horizontal beam strung with piano wire and played with a metal bar. Francesco Lupica, a Long Beach performance artist, has been playing the instrument for more than 25 years.

"The first recordings we did of it were terrible," Zimmer admits. "Nobody knew how to tackle this thing. You can't just walk up to it and put your ear next to it because you wouldn't have any ears left. The first recordings wouldn't translate [to the mixing stage], especially the bottom end, because it's not just a matter of shoving it in the subwoofer and hoping it will live there. It has enormous range. Basically, you need a lot of Bruel & Kjaers because they're the only mics that can handle the volume. We were in a 26,000-square-foot space so that the bass could really develop. And Alan [Meyerson] was hanging mics from the rafters of a 40-foot ceiling. I think he had 14 mics on it, and we would just walk around and find where the sweet spots on the stage were. There's a certain corner of the building where the bottom end will stay pure."


PHOTO: HUGH WADDELL

*Adam Smalley, left, and Alan Meyerson surround Hans Zimmer.*

## THE FINAL, FINAL MIX

Nobody on the film was surprised by the fact that they never really had locked picture. They knew going in that Malick preferred working that way and developed schemes around it. For the sound crew it meant limiting the number of times they conformed the audio tracks to fit the picture changes. Working on Fairlights, editing across 24 tracks and making use of the macros, sped up the process and freed them to think creatively.

"Andy Sommers is a really creative guy who understands the workstation like he built it," Huntsman says. "He and Jayme Parker figured out that if one of them sat down and conformed the stems from one version to another, or in any one project, and recorded all their moves, they could then export that macro to other machines and use it to do an autoconform, in essence. Now what works for backgrounds doesn't necessarily work for gunshots, but you can quickly change the reel from that and then go back and fix any bad edit. You'd have to fix it anyway. But the machine 'resunk' the material. The most

## THE AUDIO POST-PRODUCTION CREW

Huntsman prefers to work with a small, tight-knit crew, regardless of the size of the film. At Warner Bros. Post-Production Services, that crew, most of which will be working on Renny Harlin's *Deep Blue Sea* as you read this, included:

**Sound Design and Sound Supervision:** J. Paul Huntsman
**Co-Sound Supervisor:** Robb Wilson
**Sound Effects Editors:** Christopher S. Aud; John V. Bonds Jr.; Jayme S. Parker; Andrew M. Sommers; Mark Mangino, M.P.S.E.
**Foley Supervisor:** Jeffrey Rosen
**Foley Recordist:** Mary Jo Lang
**Foley Editor:** David Horton Jr.
**Sound Designer:** John Fasal
**Dialog Editors:** Patrick J. Foley; John F. Reynolds; Virginia Cook McGowan
**ADR Supervisor:** Hugh Waddell
**ADR Editors:** Lee Lemont; Karyn Foster
**Conforming Editor:** Hugo Weng
**Assistant Editors:** Jeff Cranford; David Werntz; Todd M. Harris

From Media Ventures:
**Music By:** Hans Zimmer
**Scoring Engineer:** Alan Meyerson
**Music Editors:** Adam Smalley; Lee Scott
**Sound Designer:** Claude Letessier

From Fox:
**Re-Recording Mixers:** Anna Behlmer; Andy Nelson; Jim Bolt
**Assistant Chief Engineer:** Denis St. Amand
**Recordists:** Bob Renga; Craig "Pup" Heath

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mundane, mechanical thing we do is re-sync material we've already made work once. It's nice to have that kind of flexibility with your tools; it frees up the creative side.

"I've always maintained that movies only have to be in sync a few times," Huntsman continues, "namely, whenever they are being screened for temp mixes, premixes and finals. And if you chase changes between those points, it's not about making the film sound good. We conformed once to get ready for the premix, then again for the rehearsal mix, and we're going through another huge conform from that rehearsal mix to the final mix. Three times on a film that's changing every day. As a result, I think my crew has been able to think more about what the movie should sound like as opposed to where any particular audio event occurs."

The film was mixed by the "A Team" of Anna Behlmer (effects) and Andy Nelson (dialog and music) at the Daryl Zanuck Theatre on the Fox lot. The stage is centered around an SSL 5000M console with a Harrison SeriesTwelve sidecar, for a total of 224 inputs. Playback was from a variety of sources, including Fairlight DaDs, multitrack, DA-88 and Pro Tools. At any one time, up to 11 workstations were available on two stages, including Huntsman's MFX-3 Plus system (plus five more Fairlights) and Pro Tools for music editors Adam Smalley and Lee Scott. The film was recorded to 6-track mag with Dolby SR.

Crucial to the process was re-recording mixer Jim Bolt, who labored largely alone upstairs on another Harrison console. He incorporated fixes and updated the premixes in order to feed the main stage and keep the movie current. And, according to Huntsman, the film would never have gone so smoothly without the first-rate work of assistant chief engineer Denis St. Amand (along with recordists Bob Renga and Craig "Pup" Heath in the machine room), who kept all the systems running.

"Anna is dubbing this movie—with enormous amounts of changes going on—with no, what we affectionately refer to as 'binkies,' which are cheat sheets that say, 'This predub contains these things at these footages,'" Huntsman explains. "The movie is so straightforward in its execution that she can set up almost every reel exactly the same on her console. When somebody says, 'I want to lose that offscreen explosion,' it doesn't matter what reel you're in, it's the *same* fader you take it down with."

The making of the soundtrack on *The Thin Red Line* was at times enlightening, stimulating, frustrating, demanding, invigorating and enriching to those involved. Certainly it was challenging,


PHOTO: HUGH WADDELL

*Re-recording mixers Andy Nelson, top left, Anna Behlmer and Jim Bolt*

both to their skills and to their concepts of what film sound can be.

"In terms of my involvement on this movie," Huntsman concludes, "somewhat even beyond my wonderful experience of working with a guy as interesting as Terry, I'm really pleased with the way my crew has just socked themselves into this film and responded with absolutely splendid work. I feel blessed and fortunate to work with these people, and they have done both the craft that they work in and this movie a tremendous credit in their professionalism and their dedication to executing the concept that we've come up with. We've stuck with it and stayed true. When I say I've been enriched, I suppose to a degree a good part of that is the sense of working with a group of people who are all dedicated to something that is a little outside themselves." ■

*Tom Kenny is the managing editor of* Mix.

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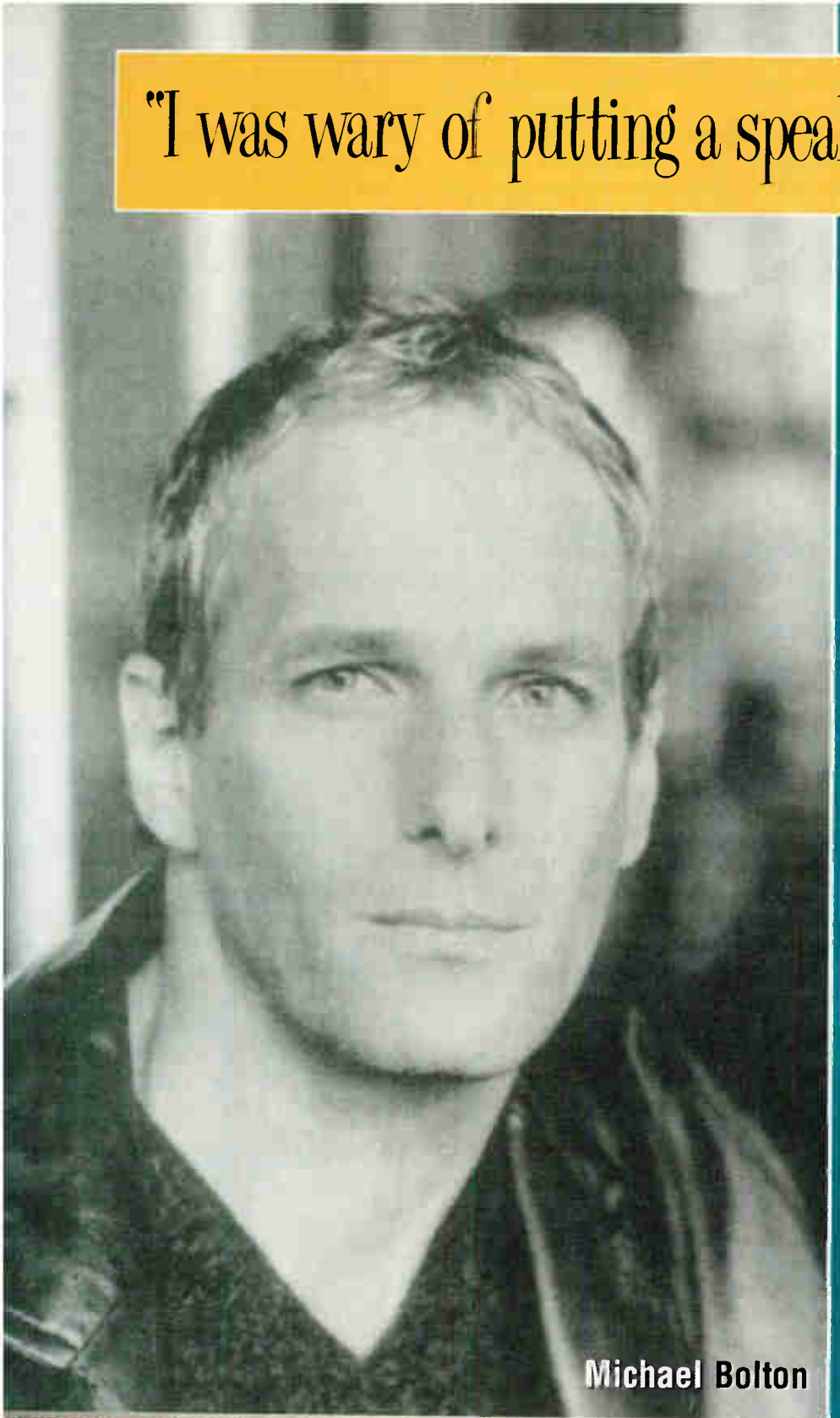


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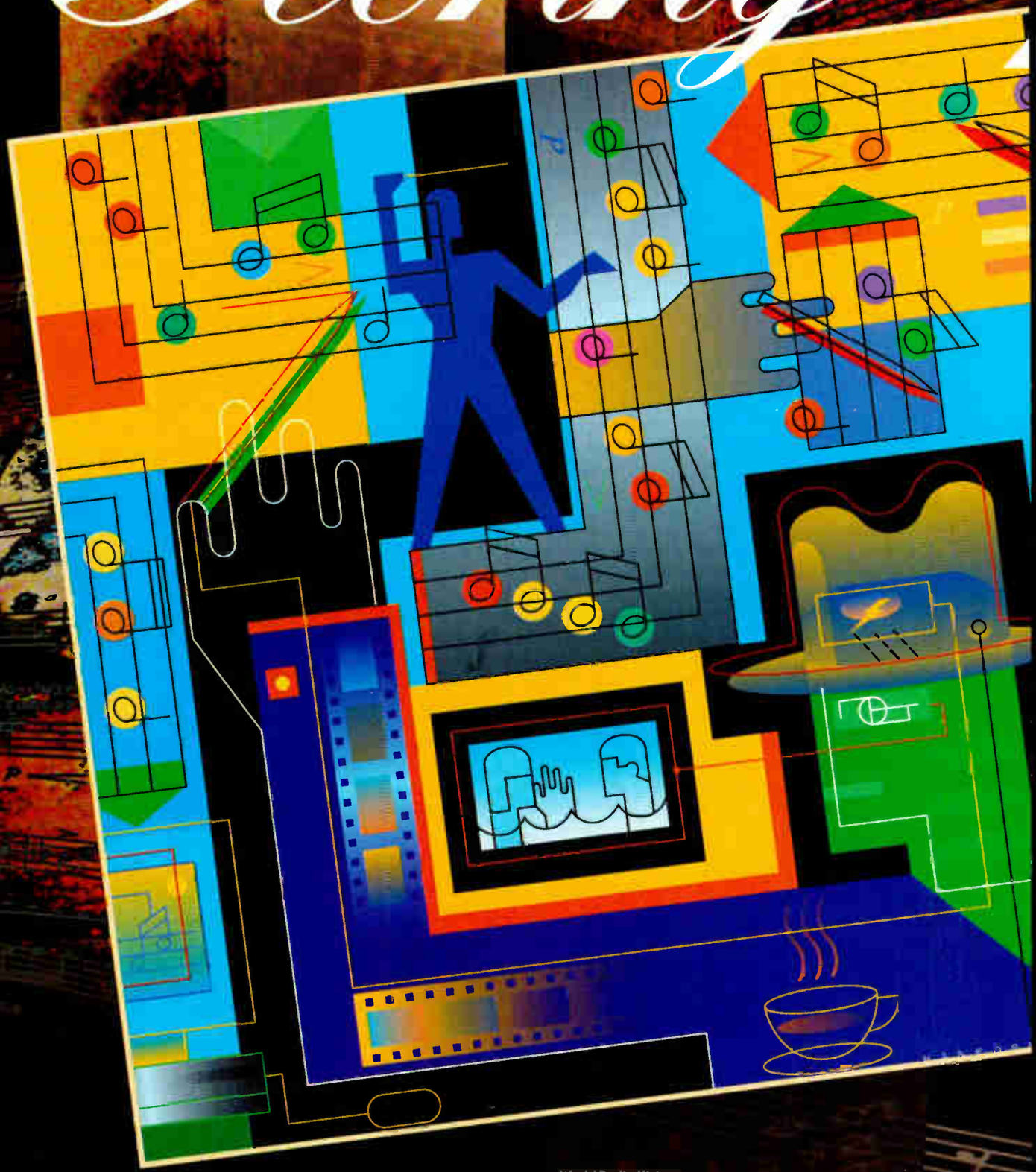

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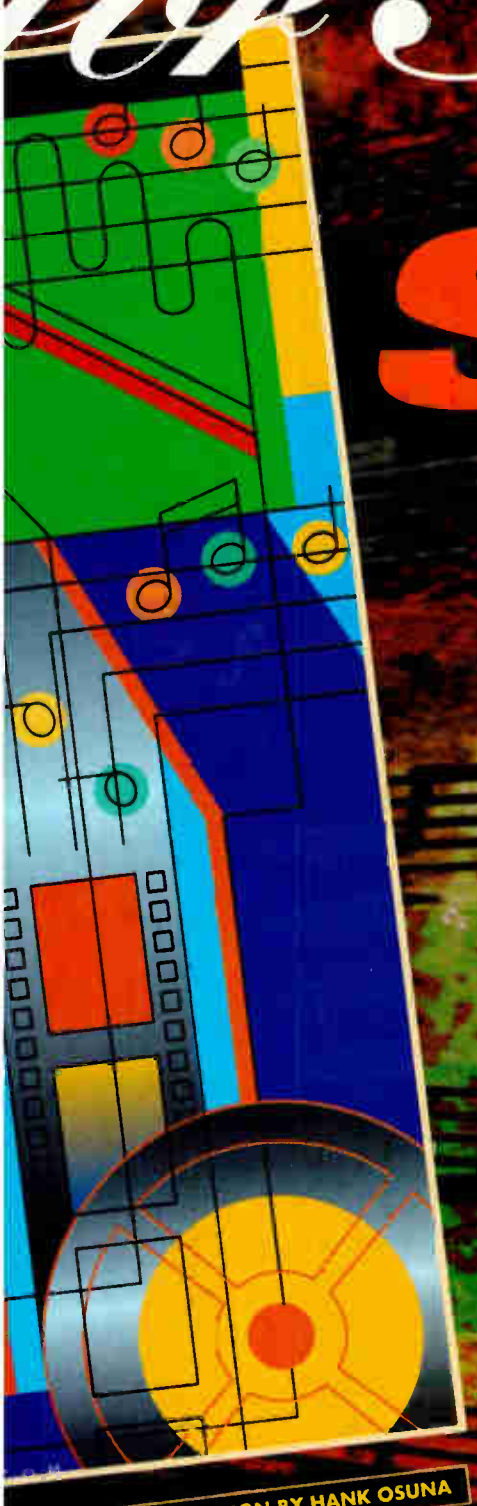


ILLUSTRATION BY HANK OSUNA

BY RICK CLARK

Some of the greatest themes in film music—like "Lara's Theme" from *Dr. Zhivago* or "Also Sprach Zarathustra" from *2001: A Space Odyssey*—have cemented key cinematic scenes in movie-goers' minds, helping to elevate the films to classic status. How would *The Godfather* resonate without Nino Rota's memorable score, or how would *Jaws* play without John Williams' terrifying hook?

**Four of today's top composers divulge their technology choices, what inspires them, and how to work with directors.**

It has been said that music is the great manipulator in film, bringing an emotional pull to pictures. But composers are not puppet masters. What they add, what they enhance, begins with what's on the screen.


To offer some insight into the way today's composers approach their film projects, *Mix* interviewed Danny Elfman, Michael Kamen, John Ottman and Trevor Rabin. As would be expected, these artists have had years of formal training, but it is noteworthy that three of our contributors also came from rock careers.

### DANNY ELFMAN

*Before Danny Elfman began scoring films, he was the front person for the quirky eight-piece L.A.-based pop band Oingo Boingo. In the mid-'80s Elfman began what has been an ongoing body of soundtrack work with director Tim Burton. The first movie they did together was* Pee Wee's Big Adventure, *followed by* Beetlejuice, Batman, Edward Scissorhands, Batman Returns, The Nightmare Before Christmas *and* Mars Attacks! *Other Elfman soundtracks include* Men In Black, Mission: Impossible *and* Scrooged.

I've found that trying to come up with ideas from the script has always backfired. The score, for me, is dictated by the way the images are laid out. The movement, the pacing, the timing and how the cameras are positioned

# CLASSIC SCORES

## RYKO REISSUES MGM SERIES

Over the past few years, a number of labels have begun using the soundtrack album to push their latest priority pop acts. These "soundtrack" albums are often packaged as "music from and inspired by the movie *fill in the blank*." Fortunately, there is also a growing awareness of and market for releases that feature the film composer's music, and many labels have begun restoring and repackaging classic scores. Recently, Rykodisc, a label known for its integrity and commitment to quality, began reissuing a series of primarily '60s and '70s soundtracks from the United Artists vaults in a joint venture with MGM.

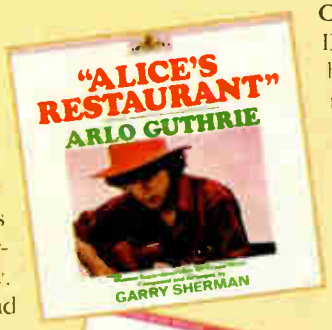
This seven-year project, which offers approximately 100 soundtrack titles, covers everything from symphonic to pop and children's music to jazz. Among the titles are classics such as *Never On Sunday, Last Tango in Paris, Some Like It Hot, Equus, Lenny, Carrie, Man of La Mancha, The Pink Panther Strikes Again*, and chestnuts including *Here We Go Round The Mulberry Bush* (with the Spencer Davis Group and Traffic) and Duke Ellington's music for *Paris Blues*.

"We have worked very hard to track down the very best source we can, and sometimes we have gone to great lengths to do that," says Northeastern Digital Recording's Dr. Toby Mountain, who remastered the lion's share of the titles with assistance from Malcolm Addey. "I think we have focused our efforts on projects that do have better source material. In some cases, we have some very good sources, including original 3-track tapes."

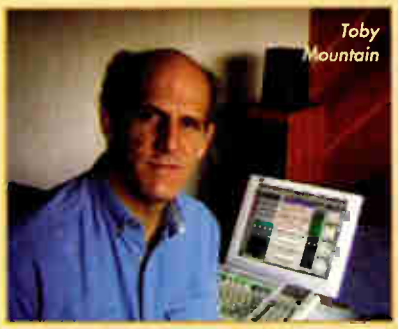
One of the soundtrack releases that seemed to elicit the most pride from those involved is a three-CD set of Alfred Newman's Oscar-nominated score for the 1965 George Stevens-produced film *The Greatest Story Ever Told*.

"Disc One is actually the original score album, and, as was the fashion in those days, it was a re-record done for the record. That is sonically superb," states Ryko MGM product manager Ian Gilchrist. For Disc One, Ryko had the original 3-track, but for Discs Two and Three (which feature never-before-released versions of the original film recordings), he obtained second-generation tapes from the library of Newman's assistant and orchestrator, Ken Darby.

In organizing the presentation of that music, Ryko employed the services of film music consultant Ray Faiola, whom






Gilchrist described as "very knowledgeable about this film. He adored it and he helped us put it together. What we were trying to do was to take this music from the original scoring reels and make the cues flow together, so that it sounded like you were listening to a symphony."

One of Ryko's more recent MGM releases is the soundtrack to Arlo Guthrie's classic, *Alice's Restaurant*. "MGM sent me all of the tapes that they had, and in most cases, they were 1-inch 8-track," says Mountain. "I had to go through all of the material and weed out the bonus material and decide what was actually used on the soundtrack and remix it. It

—CONTINUED ON PAGE 72

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help dictate this. Other than the common denominator of whether it is going to be a romance or an action film, or a fantasy, you can take the same script and make 20 different movies out of it, and that, for me, would require 20 different scores.

What works best for me is to look at my first rough cut of the movie with absolutely no preconceptions of what I'm going to do. In other words, the more blank I can make my head, the better it is going to be for the project.

So the first level of my process is the initial impression of a musical piece. Now I've got something—a theme, or motif, or rhythmic feel—that I think is going to work. The next part is really hard because it is about really applying it to the film, and that involves watching it a lot.

I will take half-inch viewing cassettes to my bedroom, to my studio, watch them in my den. I start coming up with lots of ideas and recording them and trying them out and moving them around and coming up with more variations. It is kind of a maddening process, because then I get to a point where I have too many ideas and I have to see how this idea will fit next to that idea, and how they can go together. I can't start actually writing the score until I'm very confident that I have all of the pieces to the puzzle laid out. Now, I don't know how they are going to fit together exactly, but getting those components all ready and laid out and knowing that A fits next to B and that fits next to C is the hardest part of scoring to me.

It is good to know that the technical stuff doesn't make the score. It helps with the presentation, and directors really want that nowadays, but it still hasn't changed the fact that the art is still the art, and it is still about capturing tone. And capturing the tone is probably the most important thing you are going to give the film.

In a way, writing a good score is the easy part of scoring. Convincing a director to let you write a good score, and to actually use it, is almost more work than writing it.

I would say that it helps these days to be equal parts composer and psychologist. The reason I'm so loyal to people like Tim Burton and Gus Van Sant is simple. They just let me do my work. I have done some wonderful work with Tim. Why? Because he lets me. If [a director] tries to micromanage every bar of music, you don't get a brilliant score. Period. If you make the composer spend all of their time trying to mimic what you are hearing in your head, you don't get a brilliant score.

Many directors have a tendency to look at their movies scene by scene, and not as a whole movie with a beginning, middle and end over the course of two hours. If you looked at the whole film, as opposed to every three minutes being a world unto itself, that you have to push to its maximum, the film would be better served. I don't blame the sound design for creating too many loud effects, one after another after another, any more than I should be blamed for too many

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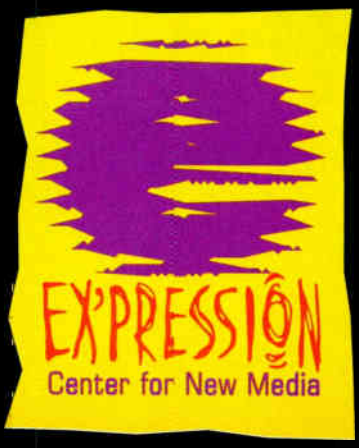


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crescendos or big musical cues, one after another.

**MICHAEL KAMEN**

*During the late '60s, Kamen was part of the New York Rock & Roll Ensemble, a group that was pioneering the synthesis of rock with classical elements and could count people like Leonard Bernstein and Jimi Hendrix among its fans. Since the '70s, Kamen has enjoyed an incredibly successful film scoring career, including unusual works like Terry Gilliam's* Brazil *and* The Adventures of Baron Von Munchausen, *and action blockbusters like* Die Hard *and the* Lethal Weapon *series. Recent credits include* What Dreams May Come, 101 Dalmatians *and* Mr. Holland's Opus, *which was a special project for Kamen, as it resonated deeply with his own experience with a teacher-mentor. As a result, Kamen founded the Mr. Holland's Opus Foundation, whose aim is to raise money and acquire instruments for school music programs.*

I had a teacher in high school, the High School of Music and Art, who was my model for Mr. Holland. His name was Morris Lawner, and he gave me one word that was the greatest music lesson of any. He said, "All great melodies share one feeling, and that is a sense of inevitability; the 'inevitable' result of the phrase that came before it." That word 'inevitable' has never left me to describe an unerring sense of correctness to brilliant pieces of music, and why a melody works. I apply that every day, when I sit down with my Bach and my Brahms and try to be "inevitable."

Another key lesson came from Manos Hadjidakis, who wrote "Never On Sunday." This man was an uncommon musician. He had really stupendous talents of creating very elegant, ethereal and deeply beautiful melodies. He understood music. One time, he admonished me after listening to a composition that I was working on. He said, "You must never write on the piano." I was disappointed, because at that point, I was always writing on the piano. I said, 'Why not?' And he said, "You'll become a prisoner of your technique." And that phrase has stuck with me every day. If you can only write what you can play, you're going to really be limited.

I do a lot of work on an Apple Powerbook G3, and I have a desktop G3 as well. I love the new flat screen. I still use Performer, but when I do a major work for an orchestra, I tend to do it with paper and pencil. I still believe that the brain is more comfortable manipulating that kind of data that way.

This is a very complicated commercial business, and if you are trying to make "art," you have to recognize that you're making art as commerce and decide for yourself if you want to pay attention to it, or just make "art." I started out in *Robin Hood*, for example, insisting on using 12th-century instruments. To me, that seemed to be a really imaginative idea—that we could be a wonderful noise that way. But the company's view of 12th-century music was that it was probably too light to support a film like that. So they said, "If we see any crum horn players heading into the Warner Bros. lot, we are going to shoot them on sight." [Laughs] I'm certainly walking the line between art and commerce—I feel I'm an artist, and I love the result of the commerce.

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Music, when it communicates anything at all, is communicating emotions. Very often, it appears that films allow music to become kind of a commodity, like a sound effect, and you watch sort of generic music for action-adventure movies or even love stories, and you realize that the thing that is missing is the real heart of the score, the piece of music. I feel responsible to the overall legacy of music that I come from, to make music that's real and well-intentioned and is actually trying to express some little corner of a human being, if not the whole person.

**JOHN OTTMAN**

*John Ottman is in a unique position: He is also a film editor, which allows him a lot of control in helping shape the musical elements of the films he scores. Ottman's scoring and editing credits include* The Usual Suspects, The Cable Guy, H2O, Public Access *and* Apt

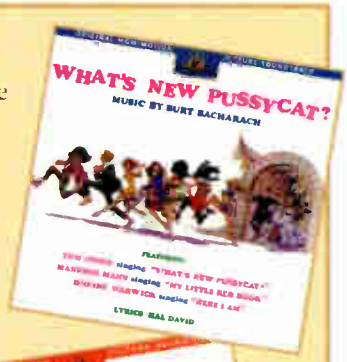
*John Ottman*

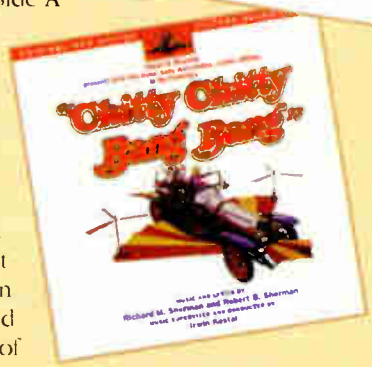
PHOTO MARK COOPER

*—FROM PAGE 66, CLASSIC SCORES*

took several days, but I'm pretty happy with the way it came out, and Arlo Guthrie liked it, too.

"A lot of people don't know that the version that was popularized on the Warner Bros. release was a different recording than the one in the movie," Mountain adds. "When they went to make the movie, United Artists made Arlo re-record 'Alice's Restaurant' as a two-part thing, because they wanted it on Side A and Side B. They didn't want one side of the album to be lop-sided. With Arlo's permission, we actually remixed the song and put the two parts together, because he wanted them to be one part."




Ryko has also included enhanced audio/visual components with each release. Often, the enhanced element consists of an original film trailer or an action scene (with 8-bit compressed audio) from the movie. Ryko director of new media Lars Murray oversaw the implementation of the enhanced elements, which are playable in Mac and Windows formats. "Essentially, when we looked at the whole series, we realized that there was going to be a lot of trailers that we could use, and a lot of these trailers would be interesting to collectors," Murray says. "There really isn't that much of an outlet for these trailers, and you are not likely to run into them anywhere, so we thought these would be a nice addition, like liner notes or extra photos, to the package."

"There is a hardcore niche of soundtrack collectors who are into classical soundtrack score music," Gilchrist adds. "These fans are a very vocal, knowledgeable bunch, and they don't take very kindly to second-rate product or bad re-records. They are really passionate about music. With this catalog of titles, there's jazz, soul, pop, country—it is really varied, encompassing all kinds of musical idioms. That is one big thing that was appealing about it. But everything that is here on these releases, should reflect, in my mind, the fact that it is a movie that we are dealing with here."

*—Rick Clark*

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Pupil.

The music is really the soul of the film, and the best scores will tell a story on their own. With some exceptions, if you [listen to] a really good score away from a film, you will actually hear a story being developed and themes being hinted at and, later, coming into fruition. That is a really well-thought-out score.

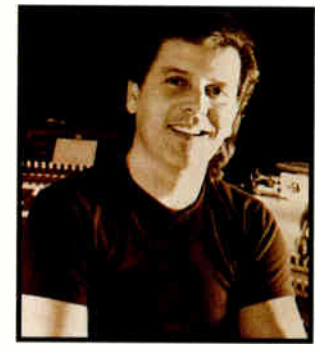
One of the most important things in storytelling is making sure you have peaks and valleys. There are areas where there should not be music. The fear of many producers today is that, the moment there is any silence, the audience is going to leap up and run out of the theater. So, composers are often asked to score every moment. You have music now that is simply seen as an adrenaline-pumping mechanism, as opposed to a storytelling device.

I'm one of these people who is barely on the threshold of understanding his equipment. All I do is use it, and I have some tech come and set it up for me. I've got an 8100 Power Mac that was basically outdated the second I bought it. I use Performer, and I have four 760 Roland samplers. I have a Korg TR rack sound module, a Korg O1RW sound module, a Korg X3R, an old Proteus FX and a Roland JD-1080. I've got a Roland R-8M. My keyboard is a Roland D-70. I have an old Ensoniq ASR-10 sampler. I have a Tascam DA-88 and a Mackie 32•8 mixing console, plus a couple of Lexicon reverb units.

I have this psychotic mission to do things differently. For instance, with *H2O*, we had this huge score that we did with an orchestra. We mixed it in the back of someone's garage. You would never know that. It doesn't matter where you are and what you are doing. It just matters how you are doing it.

With *The Usual Suspects*, we recorded that score seven times with each section of the orchestra recorded separately. I'll stack the strings up, and then it sounds like there is this massive-sounding string section. The great thing about that approach is that it gives you complete control in the final mixing because you have the groups of strings on separate tracks.

We also recorded the score with no picture. Since I was the editor, I already knew the picture very well. We just recorded the score and plugged it in with the SMPTE, and it fit in like a glove. [Laughs] You know, you can break the rules. Everyone feels like they have to hold allegiance to the rules of the game, and it seems like they sometimes forget what it is like to be creative, when they started out.



*Trevor Rabin*

**TREVOR RABIN**

*At the outset of the '80s, English prog-rock group Yes was enjoying a major comeback, thanks to hits like "Owner of a Lonely Heart," "Rhythm of Love" and "Leave It." Trevor Rabin, a newcomer in this legendary band, was a key ingredient in writing these hits. Then, after*

# ROBBIE KONDOR

## FILLED WITH 'HAPPINESS'

There's nothing like a nice cappuccino in New York City. Have a sip, talk about maybe scoring a film. Take another sip, find out you got the gig. Just as you're pulling the demitasse cup to your mouth one last time, you find out you've only got three weeks to write and record the score. Gulp. Welcome to Robbie Kondor's role in *Happiness*, the film he scored late last year that won the International Critic's Poll at the 1998 Cannes Film Festival for director Todd Solandz.

As if that weren't enough, Kondor had already committed himself to a solid week of work, composing music for clients like Xerox and HBO for national television spots. On *Happiness* he was given three weeks with a limited budget and a director who was in the studio every other day to see how things were going. Ready, set, go.

To optimize his time, Kondor used his own Midtown New York City studio (profiled in Oct. '97 *Mix*). Because he's a keyboard player from way back (he jokes that he started playing synthesizers when guys in white lab coats were using them to make novelty noises), Kondor used a Kurzweil 2500-X and E-mu E-64 with modules including Roland's JV-2080, JD-990, U-220 and R-8M (for drum and percussion sounds), and Voce's V3 Organ module. Kondor used to travel with rack upon rack of gear, but he has stripped his equipment list down considerably.

"Really, I must say, I get it done with the Kurzweil, the E-mu and the 2080. I think that's interesting because I was *the* synth guy," he explains. "I'm not sentimental about 'this one does this sound and that one does that sound.' It's like a 2080 can do kind of

—CONTINUED ON PAGE 76


*years of recording and touring with Yes, Rabin jumped into the world of film music and has enjoyed substantial success with films like* Armageddon, Con Air, Homegrown, Enemy of the State *and, most recently,* Jack Frost.

On all the stuff I've done with Jerry (Bruckheimer)—and I've done the last three movies and a TV show for him—I read the script and see some footage and go for a drive and think about it and hum stuff to myself. I'll play the piano, go for a walk and come back and think more about it. And then I'll sit down and start writing themes, like a little suite, just to give an idea of how I see the movie. This is without tying it to footage at this point. Once you've got that and the feeling is, "Yeah, that's the right feel," you've already won the battle of the "temp" because your theme is now being accepted.

A temp score should be used to give an idea of the best efforts of the music

*—FROM PAGE 75, ROBBIE KONDOR*

any sound and a 2500 can do kind of any sound. A couple of 'em have 64 voices, and one has 128 voices and I'm not running out of sounds, I'm not running out of voices. I like keeping it simple."

While he tacks down his ideas on the Kurzweil, using both Digidesign's Pro Tools|24 system and MOTU Digital Performer 2.42, on a Macintosh 9600, he prefers to bring in live players whenever possible. In fact, he says, occasionally a project can get done faster and closer to budget with musicians. "For example, if I had to do a nice swing and jazz band, I could program that and have it sound convincing," he explains. "I might spend a long time, or I might write out a chart in not too long a time. But once you get in a room with the right five musicians—probably booking the studio and making the arrangements and getting a copyist takes longer than recording the music—you're out of there in a half hour. I could spend a half hour looking for the right acoustic bass patch or trying to EQ it till I like it. If the music is written and you know what it's supposed to sound like and you have it committed to paper in the right way—that's to say not too detailed nor too lacking in detail—it comes together quickly and beautifully."

For the *Happiness* scoring sessions, Kondor had a handful of live players come in to add overdubs to the tracks he had written with Solandz's assistance. Joining Kondor's sampled piano were a pair of guitarists, a percussionist, and players contributing English horn, oboe, violin, cello, trombone, flute, saxophone and accordion. He delivered the project on both Tascam DA-88s and DAT. Usually, he split the percussion tracks out on the DA-88s just in case the instruments were conflicting with sound effects or dialog, though it turned out the re-recording team generally used the stereo DAT mixes Kondor supplied.

*— David John Farinella*

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editor, to show you where the director is hoping to go emotionally and rhythmically. When it gets to a point where you are a slave to the temp, it is a very dangerous place to be. That is why I like to solidify the themes, so they can eclipse the temp score pretty easily. Then my music editor will put down a comprehensive spotting list together of the cues, and I'll start locking to picture. That only happens when I have established the themes.

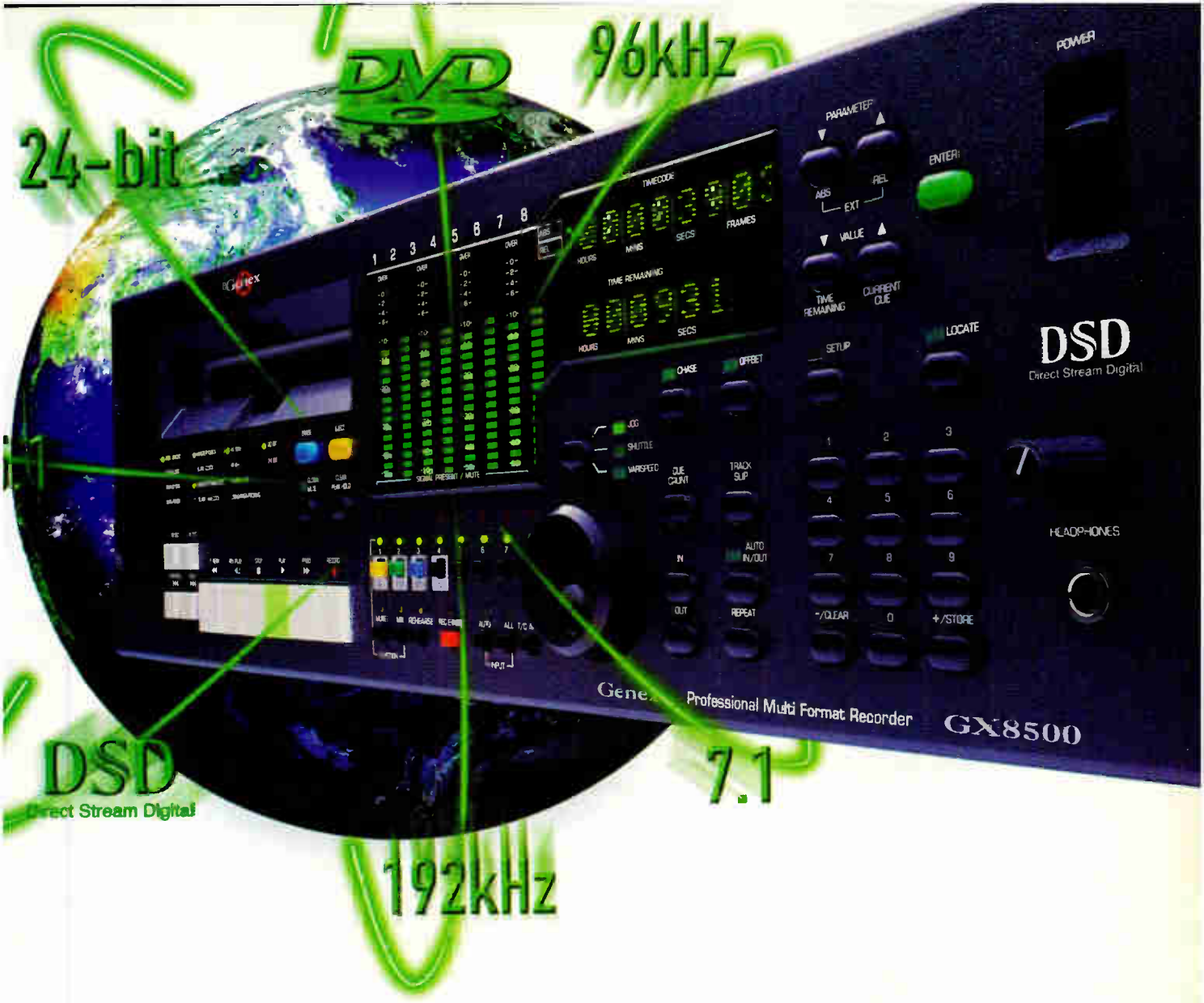
I have a couple of dozen E-mu E-IVs and about a dozen Roland 76s. As far as synthesizers go, I love the Korg stuff. It is pretty much all I use. When I'm writing, I basically record at home. I never record the MIDI information to tape. I just leave it and do everything in the computer, which is an Apple G3. I use Digital Performer, which has a really great time-stretching or tuning device.

When writing music, you sometimes need to take the keys of the source music songs into consideration. Quite often, you will need to merge into that song and merge out. Sometimes it is a clean break.

With one of the *Jack Frost* tracks, source was an old Cole Porter song called "Every Time I Smile." Since Michael Keaton was a blues player and singer in the movie and the song was a jazz standard, there were guitar fills that I thought would work great if I introduced more of a blues feel, which was actually quite a challenge because the chords don't lend themselves really to down and out 12-bar blues. I had to redo the song because it was really imperative for the movie, and there was no existing version of the song that was appropriate.

Other times, I like to come up with things that play against the picture. If you hit every sting, it becomes very predictable and you are telegraphing everything that is about to happen. Sometimes, it might be that I let the music tell people that things are going elsewhere, so that when things go to where they are supposed to go, it is a surprise. ■

*Rick Clark is a freelance writer, producer and song wrangler based in Nashville.*

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# Engineering Without PAIN

BY PHILIP DE LANCIE

## RSI Awareness For Audio Professionals

For many in the audio industry, working with sound and music is a conscious alternative to working in more "mainstream" occupations. But while the hours may be different and the work more creative, the reliance on computers that permeates the business world has been at work in the recording industry as well. The typical audio engineer and (particularly) sound editor is, like the typical office worker, far more likely to use a computer regularly now than ten years ago. And just as the benefits of computers apply in both realms, so do the risks. Repetitive Strain Injury (RSI), potentially leading to chronic pain and permanent impairment, is by now a well-documented phenomenon among workers in a variety of computer-intensive fields. It is not known how widespread the problem is among audio professionals, but it is clear that some risks may be even greater in audio workstation applications than in the general office.

*An ideal position at the computer workstation, with feet flat on the floor, arms horizontal from the elbow, and eyes lined up with the top one-third of the monitor.*

ILLUSTRATION: JOHN FRANCIS

Also known as Cumulative Trauma Disorder, RSI is basically a matter of bodily wear and tear. RSI is not a specific condition or "disease," but rather an umbrella term for a collection of conditions arising from the accumulated trauma of motions constantly repeated over long periods. "There is actually not a lot of good research out there to help us understand the underlying causes of RSIs," says Dr. Paul Handleman, who practices in the Occupational Medicine Clinic of the Kentfield Rehabilitation Hospital in Kentfield, Calif. "But I think our bodies are simply not designed for very limited-amplitude, repetitive muscular activities."

The consequences of RSIs can range from mild discomfort to serious disability. "This can be a serious and very painful condition that can occur even in young, physically fit individuals," says Paul Marxhausen, whose excellent Web page on dealing with RSIs is hosted by (though not an official publication of) the University of Nebraska at Lincoln: engr-www.unl.edu/ee/eeshop/rsi.html. "It is not uncommon for people to have to leave computer-dependent careers as a result, or even to be permanently disabled and unable to perform tasks such as driving or dressing themselves." Marxhausen describes the most common warning signs of RSI as: "tightness, discomfort, stiffness, soreness or burning in the hands, wrists, fingers, forearms or elbows; tingling, coldness or numbness in the hands; clumsiness or loss of strength and coordination in the hands; pain that wakes you up at night; and feeling a need to massage your hands, wrists and arms."

According to the online RSI/Ergo Information FAQ (www.tifaq.com/information.html), activities that may cause or aggravate RSIs usually involve one or more of five main risk factors:

- Repetition: performing repeated motions in the same way with the same body part.
- Posture: placing a joint toward its extreme end of movement in any direction away from its neutral, centered position.
- Force: performing an activity with excessive muscular exertion/force.
- Static Exertion: holding an object or a body position in a still, fixed manner.
- Contact Stress: direct pressure on nerves or tendons due to resting the body part against a hard and possibly angled surface.

RSIs crop up in all sorts of occupations, from assembly-line workers to musicians (providing a good excuse for those of us who have been negligent about practicing our scales). But in the age of computing—perhaps in part because of growing overall awareness of occupational health and safety issues—the problem seems to have reached epidemic proportions. "There are risks associated with any task in which you use the same set of muscles and tendons to make the same movement over and over again," says Paul Hendrix, rehabilitation technologist at the Center for Accessible Technology in Berkeley, Calif. "But the problem has become more significant with computer use, because it's possible to work at a computer uninterrupted for hours and hours at time."

For clerical and office workers, these hours and hours of uninterrupted work are often focused on the computer keyboard—lots of word processing and data entry. The typical user interface for an audio program, on the other hand, doesn't involve much typing; it tends to be very graphically oriented and thus mouse-intensive. But there is little consolation in the distinction. Constant use of a mouse or other "pointing device"—particularly dragging with the mouse button held down to select regions for editing or processing—can be even more hazardous than simple typing.

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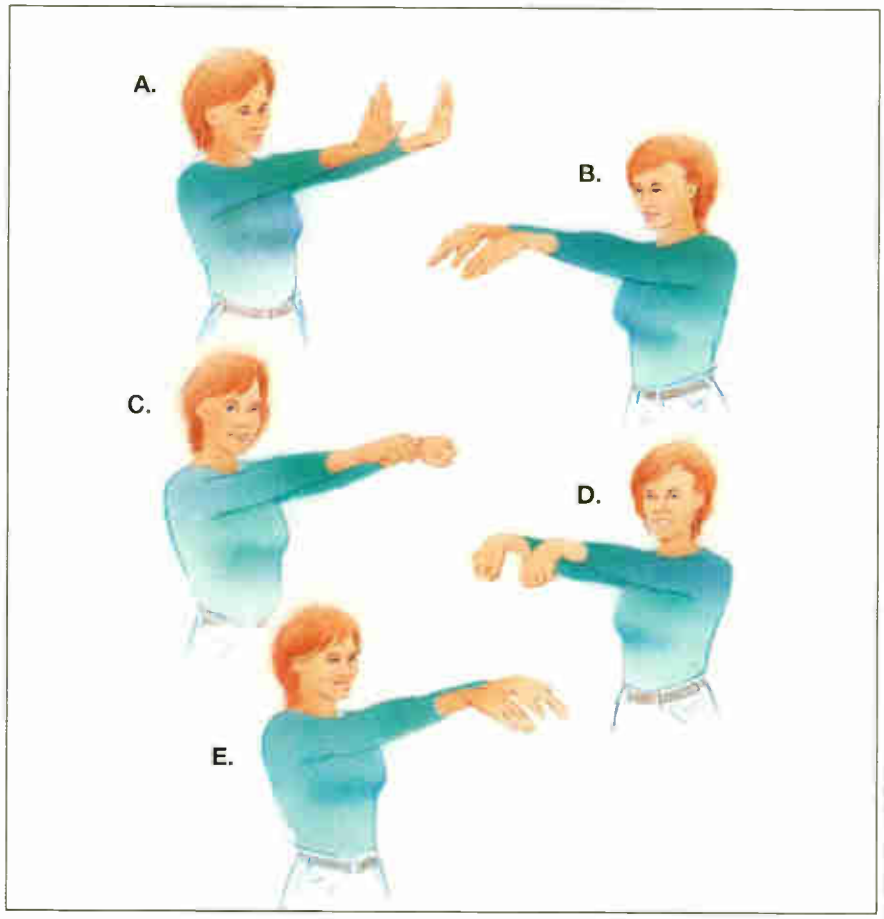
"Mouse use is especially problematic," says Hendrix. "A lot of people that I see with RSIs are people who are doing a lot of mouse-based work. One reason is that there is really only one way to hold a mouse, so you are using your hand and finger in the same exact position, which guarantees that your movements will be repetitive. It also requires gross movement of the arm and shoulder to move the mouse on the surface of the desk. And because there is not always a convenient flat spot in front of you, the mouse sometimes winds up being put up and far to the side, which results in positioning problems. Also, unlike typing, you are only using one hand to do it, which concentrates the load on just one part of your body."

Another factor that can increase the risk for audio professionals is that console-dominated mixing rooms are not often set up to provide an ergonomic setting for workstation use; the room's existing equipment and fixtures may preclude ideal placement of the keyboard, pointing device and/or monitor. And then there is the issue of reasonable work habits: Marathon editing sessions with few (if any) breaks can turn even the best-positioned setup into a source of trauma. "A lot of the people that we see in creative fields work really hard," Handleman says, "harder than most other jobs. When they are in production, they are going 10, 12, 14 hours a day, and they are totally into their work. So it's really challenging, because you can tell them not to overuse the computer, and they are going to do it anyway."

## AN OUNCE OF PREVENTION

"RSIs are far easier to prevent than to cure once contracted," says Marxhausen. Luckily, there is much that can be done in terms of both setup and

*A simple stretch routine, from the American Academy of Orthopedic Surgeons: A) Extend and stretch both wrists and fingers acutely as if they are in a hand-stand position; hold for a count of five. B) Straighten both wrists and relax fingers. C) Make a tight fist with both hands. D) Bend both wrists down while keeping the fist; hold for a count of five. E) Straighten both wrists and relax fingers, for a count of five. Repeat exercise ten times; let arms hang loosely and shake them for a couple of seconds.*

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work habits to reduce the possibility of developing problems.

Many of the work habits are simply common sense, based on the notion that you can avert repetitive strain by minimizing both repetition and strain. Use a light touch at the keyboard. Vary your routine, organizing your workday so that computing time is interspersed with other tasks, or at least intersperse different types of computing tasks rather than concentrating all activities of a given type into long, uninterrupted blocks.

Taking regular breaks is crucial. "The most significant thing you can do to avoid problems is to give your body breaks," Hendrix says. "Taking a break and shaking things out can help a lot. There is research that suggests that as little as a minute or two every 20 to 25 minutes can significantly reduce your risk."

Ideally, breaks are coupled with exercises that stretch the built-up tension out of hard-worked muscles and tendons. Marxhausen describes some exercises on his Web page (illustrated with animated GIFs), and also provides links to additional stretching information. The American Academy of Orthopedic Surgeons' site (www.aaos.org/wordhtml/aaosnews/exerci.htm) has diagrams of a simple stretch routine (see illustration) that was found in a study led by Dr. Houshang Seradge of the University of Oklahoma to "decrease the median nerve pressure responsible for carpal tunnel syndrome" when used regularly (start of each shift and after each break). Carpal tunnel may not be the most widespread form of RSI, but the study adds credence to the general notion that stretching can be an effective preventative measure.

Equally important to work habits is the setup of the working environment. Basic ergonomic setup is outlined in any number of sources, including the documentation that comes with many computers. To recap the fundamentals: Your chair should provide adequate back support and be adjusted so that your feet are flat on the floor with your thighs horizontal. The height of your keyboard and pointing device should be such that your forearms are level and wrists straight when poised over the keyboard in typing position. This means a standard 29- to 30-inch table or desktop is too high for the keyboard and mouse. The pointing device should be within easy reach without stretching. The monitor should be 18 to 28 inches away with the top of the viewing area at or just below eye level, and positioned to minimize glare from windows or artificial light sources. Ideally, everything you need to use frequently should be within easy reach.

Once you meet these basic ergonomic criteria, you can, if needed, add accessories to improve your positioning and comfort. A wrist pad to support the arms between (but preferably not during) keystrokes is a standard part of most setups. It's also important to keep your wrists and hands warm while working in air-conditioned rooms; various partially fingered gloves and wrist wraps are available for that purpose. Footrests, monitor arms and document stands are also common. More esoteric—and expensive—are pivoting forearm supports that mount to the front edge of the table. "Some people really benefit from pivoted forearm

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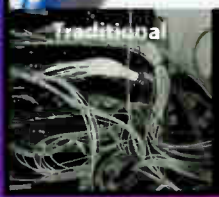


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rests," Handleman says. "You can move the whole arm to take some stress off the wrist and hands, but you don't have to hold up your arm with the muscles in the shoulder and upper back." A detailed discussion of the ergonomic pros and cons of various accessories may be found at the F-One Ergonomics Web site (www.ur-net.com/office-ergo/pros&.htm).

### ESCAPING THE MOUSE TRAP

Even with a textbook-perfect ergonomic setup, heavy mouse use can still create problems. "I seem to see more problems from use of a mouse than from typing," Handleman says, "though it depends on how intensively the mouse is used and how much clicking and dragging is going on. When you type properly, you are using most or all of your fingers, but with a mouse you end up using basically your index finger, with the hand in a fixed position. So it can be a more difficult situation to deal with."

Adding to the problem, Handleman says, is the fact that most people are never shown how to use a mouse properly. "You're really not supposed to use the end of your finger to tap the mouse button," he says. "It's actually supposed to be the middle third of the finger that touches, because if you are curling your finger and tapping, you are contracting your muscle while pressing."

One of the simplest ways to avoid mouse-related strain is to learn to use keyboard equivalents. "Whatever software you are using, there are more than likely a lot of tasks that have keyboard equivalents," says Hendrix. "When you look at the interface of Logic Audio, for instance, you see a lot of sliders, but you can control almost all of the settings with keyboard commands that cause the sliders to move. So if you learn to use the keyboard commands, you may be able to avoid some problems."

Dave Froker, general manager of Digidesign in Palo Alto, Calif., agrees that "people who use a program all the time can learn the keyboard shortcuts and use them whenever possible." Froker adds that while he has never heard of anybody having problems as a result of working with the company's software, "we do recognize that not everyone likes to use the mouse for

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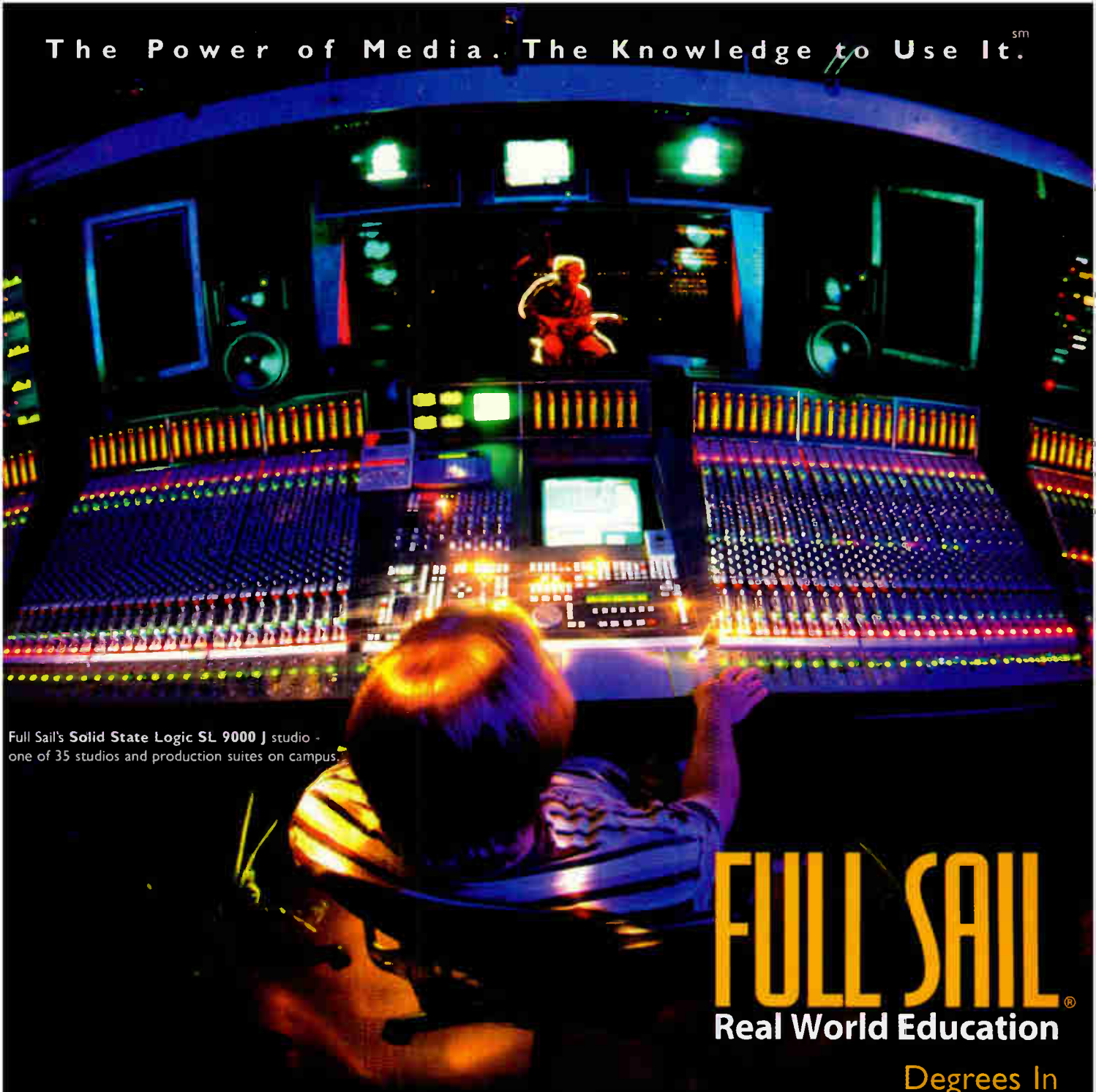

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everything. That's why we developed our ProControl mixing surface, so that you have the choice of using hardware faders and buttons."

Short of a control surface, there are other less-specialized input devices available as alternatives to the mouse, including track balls, track pads and graphics tablets. None of these devices will eliminate the risks associated with repetitive overuse, but depending on the type of work and the shape of the individual's hands and body, they may reduce the potential for damage. "You can't give everyone the same thing," Handleman says, "because what works for one person doesn't work for another."

Because the choice is so individual, Hendrix recommends that people "go to a computer store and pull out a few devices, and see which one best fits their hands and the kind of work they are going to be doing. Take a look at your limbs while you are working, and ask yourself whether they seem to be in a relaxed, neutral posture, or contorted in some way. Ideally, you want a straight line from your elbow down through your little finger, and you want your wrist to be straight, or maybe bent downward a little bit."

Track balls are probably the most widely used of the mouse alternatives. "Track balls are generally better than mice," Hendrix says. "For one thing, because they don't need space to roll around, you can position them more conveniently so you don't have to reach as awkwardly. And you can find more different ways to move the ball, mixing your movements to avoid repetition. With some track balls, however, if you use them while resting your arm on the desk, your wrist is extended backward at almost 45 degrees, and eventually that will screw you up. Also, avoid the ones that restrict you to using them in only one way. The ones that are designed for moving the ball with your thumb are especially bad."

For those who are doing a lot of dragging—selecting regions in a sound file, for instance—Hendrix suggests getting a device that allows you to lock in a "mouse down" position. "For many people, the most painful thing to do is to drag stuff, because it requires them to move their wrist while holding one finger pressed down. Rotating your wrist while pressing down with your finger creates a likely point of injury." The Kensington line of track balls, for example, allows you to define a button combination that holds a mouse-down state until you next click.

"If clicking is more of a problem than just moving the ball around," Hendrix continues, "there are a number of mice and track balls available commercially that allow you to plug in an external switch, such as a foot-pedal. And if you are handy with a soldering iron, you can rig that up yourself by putting a jack in parallel with the button switch."

The favored solution among graphics professionals and others who need very precise control is the graphics tablet, which is used in combination with a handheld stylus. Tablets can also work well in non-graphics applications. "Many people who have developed RSIs from mouse and keyboard use," Hendrix says, "do not find it uncomfortable to write with a pen, in which case a digitizing tablet might be a good solution."

Another mouse alternative, one that lets you use your fingers to point directly, is to use track pads. But Hendrix cautions that tracked performance can vary depending on skin moisture. "Most track

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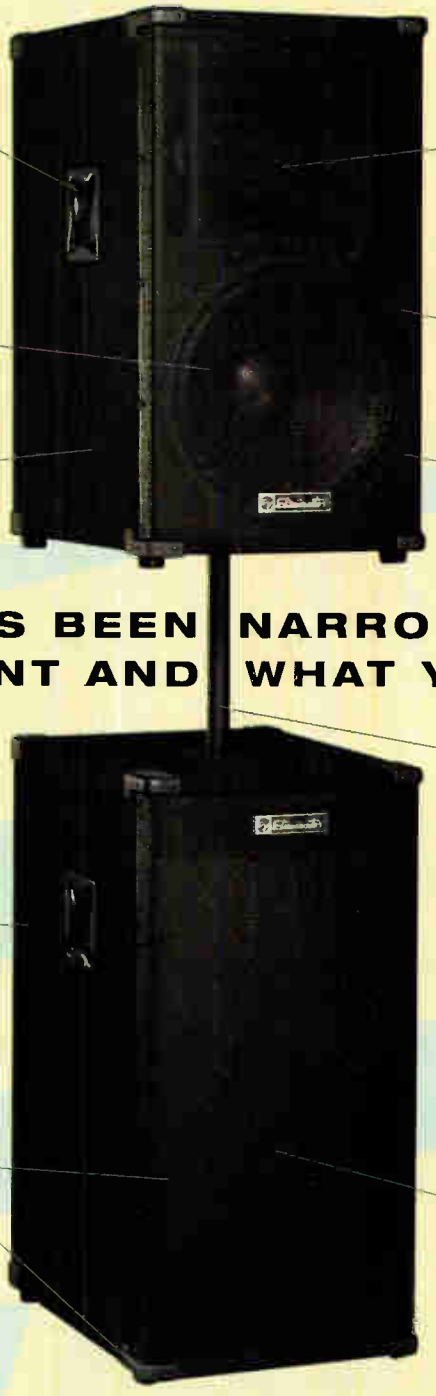

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pads detect the disturbance of an electrical field, caused by the capacitance of your finger. That varies depending on the individual; if your skin is dry, the behavior of the tracker can be erratic. But many people don't have that problem."

If you have the resources and you are comfortable with several different ways of interfacing with your computer, you can further reduce repetitive motion by alternating between several input devices. "Change off pointing devices," Hendrix suggests. "Have a couple plugged into a serial switch box, and regularly switch from one to another so you are not using the same exact motions all the time." Some devices for the Macintosh's ADB bus feature plugs designed to allow several input devices to be daisy-chained together.

Voice recognition software is another option to consider to minimize strain on hands and arms, though there is a risk of straining your voice, as well. You probably won't be able to speak commands while mixing because the ambient noise level will be too high for the program to clearly recognize your words. But in editing, one often performs an operation in silence and then listens back when processing is complete. "If there is a keyboard equivalent," Hendrix says, "you can program that task to be associated with a voice command. But as a general rule, voice input programs do not do a good job with mouse movement, because they are sending discrete commands, and it tends to be very cumbersome to get the cursor to move exactly where you want. Dragon Systems has a nice approach called MouseGrid, which allows you to specify numbered points within successively smaller sectors of the screen, but even so, it requires a number of steps to get where you want to go." Reviews of leading voice recognition packages may be found on the CAT Web site, www.el.net/CAT/voicein/VI.html.

## PROFESSIONAL CARE

As noted above, prevention is far easier than cure. But what if you are already experiencing one or more RSI-related symptoms? The most important thing to recognize is that RSIs don't just go away as long as the causative conditions and activities are still present. The sooner

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you begin to deal with them, the better. Particularly if you've already made the suggested changes in ergonomics and work habits and are still having symptoms, the consensus seems to be that you should consult a professional health care provider as soon as possible, hopefully one who is experienced with RSIs.

"We all have occasional aches and pains that go away in a day or two, especially when we overdo anything," says Marxhausen. "But if you have symptoms regularly when you are using the computer, run, do not walk, to your doctor or health care provider right away. Dealing with this early is critical to limiting the damage. By the time you have symptoms, there has already been some damage done, and if you try to ignore the pain, you may sustain a serious injury."

"There is a natural evolution in a lot of these things," Handleman agrees. "It can go from a hand problem to a problem of the entire upper extremities and eventually a neck and back problem, as well."

So what can you expect from your health care provider? "I first do a thorough evaluation to determine what's going on," Handleman says. "What level of damage do they have? What areas of the body are involved? Do they have nerve involvement? Then I recommend treatment, which might include hand therapy, physical therapy, which covers the rest of the body, acupuncture, deep tissue massage or osteopathic manipulation.

"If it's a hand problem," Handleman continues, "I will often send them to a hand therapist, who does both treatment and prevention. The treatment can involve things such as heat, ultrasound and steroids on the skin. If the problem is minor, the treatment is usually of fairly short duration. They will also be shown stretching exercises to do periodically on the job. And we also use ergonomic specialists who go on-site and make a complete recommendation on the ergonomics of the workstation, because there has to be a reason why the problem is occurring."

When ergonomics and treatment alone aren't enough, minimizing the activities that are causing the strain may be the only way to give the injury an opportunity to heal. "If someone has a significant problem," Handleman says, "I will probably intervene in their workplace, putting them on some kind of modified work for a while to get things quieted down. In a typical job, with mild overuse, you might put someone on a computer restriction, say only two to three hours in the morning and two to three hours in the afternoon, or prescribe a five-minute break every hour to stretch out and relax. And if their situation is really bad, I'll take them off the computer completely for a period of time."

Of course, the audio field probably isn't what Handleman has in mind when he refers to the "typical job," where lawsuit-fearing management can enforce a doctor's orders. Working in a frequently unsupervised environment, the audio professional alone will likely have to balance the urgency of today's workload against the potential for disability down the road. Those who make a reasonable effort to set up ergonomically and work smart will probably have few problems. Unfortunately, there may be those among the rest who end up discovering the hard way that the risks of RSI are real. ■

*Philip De Lancie is Mix's media & mastering editor.*

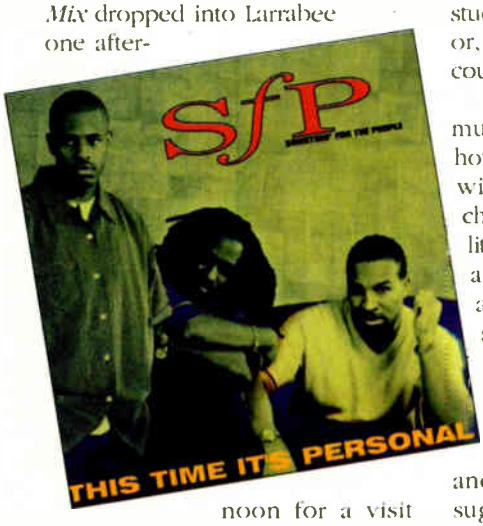
# KEVIN DAVIS

## QUICK HITS AT AN EARLY AGE

*Davis in Studio One at Larrabee North*

Wunderkind is probably the most appropriate label for Kevin "KD" Davis. Still in his early 20s, Davis is a one-man mix factory. He works six to seven days a week at his favorite Los Angeles room, Larrabee North's Studio One, where he focuses on cranking out pop and R&B chart-toppers for the likes of Coolio, Montell Jordan, Brandy, K-Ci & JoJo, Adina Howard, Somethin' for the People, Keith Sweat, SWV, Chanté Moore, Oleta Adams, New Edition...the list goes on and on.

Maybe Davis relates so well to what kids are buying because he's not that far away from being one himself. Or maybe music just runs in his genes: Both of his parents are professionals in the music business. Trying to get some hints about the secrets to his success, *Mix* dropped into Larrabee one afternoon for a visit and found Davis to be low key, friendly and modest to the point of shyness when discussing the subject of his early-in-life achievements.




***You were a recording studio rugrat.***

Yeah, I was born into the music business. My father, Mark Davis, is a producer who worked with people like Sly Stone and Natalie Cole, and my mother, Ivory Stone, is a songwriter. She also sang backup for Smokey Robinson; she's been doing that since I was three or four years old. So I was always around studios, playing in the game room or, many nights, sleeping on the couch.

And I always had some kind of musical equipment around the house that I was trying to have fun with—keyboards or drum machines. Being around studios as a little kid I always wanted to touch all the buttons, and get in there and do something. At age 14 or so I went out on tour with my mom as a roadie, learning the live end of the business, setting up the stage, doing bags, whatever. I did that for a few years and then one of the sound guys suggested that I go to recording school, to take what I knew and apply it at a professional level, so in '91 I went to the L.A. Recording Workshop. I knew before that that I wanted to work in the studio and make records, but I didn't know how to get there.

***What was your first job after recording school?***

I started at Cornerstone Studios in Chatsworth as a runner/assistant. That was a good thing, because at the bigger studios you have to start out as a runner and work your way up to get to be an assistant. But at that type of studio, it's so small you just do everything. I was hired as an assistant, but if somebody needed food I went to get it. I was there about a year, and I got a great deal of knowledge. Then I moved to Soundcastle and was a full-time assistant for about a year-and-a-half, and then I went independent.

***That's pretty quick to go out on your own.***

I had a couple of clients I was working with a lot, tracking for, at Soundcastle. A lot of times people would come in, they didn't have an engineer, and they would need someone to help them track. I built up a good relationship with some of those people who kept coming in, and I just started urging them to give me a shot at doing their mixes. In my early stage it kind of sounded strange...

***You mean it sounded strange to ask them?***

[Laughs] No, I mean the mixes sounded strange! Because I was just trying to get the gig. But the clients heard that I had something, so they kept going with me, and I still work with a lot of the same people today. Some of my main

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CIRCLE #069 ON PRODUCT INFO CARD

clients are the same people I started off with. Somethin' for the People, Laney Stewart, Tricky Stewart—we all got our start together.

***So you were developing some clients, doing a few mixes—how did you go from that to being so in demand?***

I don't know, word of mouth? I hope it's people hearing what I've done and liking it. But it's a blessing, really; it just started snowballing.

***You have a lot of loyal clients. Why do you think they stay with you?***

A lot of my main clients, we just relate well together, and they know me from when they started, when they weren't as good as producers, and I wasn't as good as an engineer. We've come up together, so at this point it's like, they're a little bit more successful now, I'm a little bit more successful now, why change it? It's not broken so why try to change it up?

***Do you think you're easy to get along with?***

I think so. If a producer comes in here and doesn't like what I've done, I'll change it. My main thing is I want the song to come off cool. I mix a lot of songs, and not every song is gonna be a hit; it's not gonna happen—you just can't make every song be a hit. So, I'll try to make the producer happy enough so he'll say, "Kev is cool to work with. I like what he did with the song, and I know he'll get the job done."

When I was an assistant, I saw a lot of producers and engineers that were hard to get along with, and I always wondered why. I try to keep everything organized, but still be laid back. Because really, this job is so chill—I don't have a mean boss, I live right around the corner, I just don't have that much trouble. You know what I mean? There's just no reason to stress out too much. I do really try to keep things organized.

***There can be stressful moments, though; for example, what do you do when you're working with a producer and you know that he or she is going down some wrong path that's going to keep you up all night?***

[Laughs] There's different techniques to head that off. Engineers have their tricks, but we're not going to give them away here.

***Do you work mostly on singles, or on whole albums?***

Both, right now. Earlier on, I did mainly singles—one song here or there because my clients were just getting to do one or two songs on an album. But now it seems like five or six songs at least on an album. Lately I've built up more of a relationship with labels and the A&R departments. I've met a lot of producers through A&R, and it seems like when you get more label connections you're more likely to get the majority of an album.

**I think the formula right now for a hit is something that makes the public remember from the old days. That's why these samples and remakes are selling so much and are on top of the charts.**

***What makes an R&B hit? There seems to be such a formula today among songs—what do you think gives a tune that edge that makes people hear "Buy me!"***

That's a good question, because, right now, to me, R&B is in a bit of a lull as far as the creative element goes and having something new that sounds great. It's like you turn on the radio and hear a sample of something old, over and over again. I think the formula right now for a hit is something that makes the public remember from the old days. That's why these samples and remakes are selling so much and are on top of the charts. There's something familiar in every song that brings people back and makes them think of when they first heard the original song. Then, when they have their favorite artist, a rapper like Jay-Z or a singer like Mary J. Blige or Faith Evans on the record, it's just all that much more—their favorite rapper with the old song that they used to love, together all at once. Right now that's a hit formula.

***Do you think you have a feel for when a song will be a hit? Say when you mixed "Gangsta's Paradise" for Coolio.***

Now that's a funny one. We were mixing at Encore, and Coolio decided that he didn't really like the drums on tape, so at about two in the morning he changed all the drum sounds up. We were still mixing at six in the morning, and finally, when we were finished we were so tired that we didn't even listen to the finished mixes—I just had the assistant print them after we left. The next time I heard it was on the radio, and

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**Montell Jordan**
*Let's Ride,* "Somethin' for the Honeys," "Payback," forthcoming

**SW**
"Come & Get Some," "Gettin' Funky," forthcoming

**Coolio**
"Gangsta's Paradise"

**K-Ci & JoJo**
"Last Night's Letter," "Money Can't Buy You Love"

**New Edition**
"Hit Me Off," "Don't Jump," "It's Alright"

**Keith Sweat**
"Come & Get With Me," "Rumors," "Love Jones"

**Brandy**
"Give Me You"

**2Pac**
"I'd Rather Be," "Getaway," "Heavy in the Game"

**Public Announcement**
"What a Woman Feels"

**Adina Howard**
"If We Make Love," forthcoming

**Somethin' for the People**
"Damned if I Do," "Make It Happen," *This Time It's Personal*

**Eric Benét**
"Let's Stay Together," *True to Myself*

**Chanté Moore**
"Old School Lovin'," "Without Your Love"

**The Braxtons**
"L.A.D.I.," "Where's the Good in Goodbye"

then it seemed like it was everywhere, and I was like, "That's the song we did? Sounds pretty good." So no, I didn't know it was going to be a hit. But you do get a feel about a track sometimes when you put it up.

***Do you have to do a lot of "mixing as arranging"—muting things, compiling vocals, making decisions about what stays and what goes?***

It really depends. Sometimes I deal with producers who are organized, and sometimes I deal with producers who are unorganized. I guess it's about half and half. Sometimes I get a producer who's got great sounds, everything's arranged, the backgrounds are comped, everything's done, and all I've got to do is just push up the faders, add a little of my thing to it and get the right balances. But sometimes I have to fly vocals around, change drum sounds and really get into it. Which I don't mind if it's a good song; I can get excited about it because I'm adding to what could potentially be a hit. But, when it's just an "okay" song and it's really got some work that needs to be done, those are the days I wish I could be at home instead.

My main clients for the most part are pretty well-organized, things are set and done, and we may just add a few things here and there.

***When you get tracks, what kind of shape are they in? A lot of engineers these days complain about track sheets, tracks that haven't been cleaned...***

We do get some real crazy stuff, sometimes. But I've got a real good assistant here, Steve Macauley, and we just rip up their track sheets and redo and relabel everything.

***Do you work mostly from analog or digital masters?***

Usually analog 48-track, although lately a lot more has been coming in that was cut on 48-track digital. But I also might transfer tracks to a hard disk, like the Akai DR16. I might transfer the vocals, because it takes SMPTE so quick—it locks up instantly, and when you don't have to wait for the two machines to lock up it makes the work a whole lot simpler and quicker.

***What format do you mix to?***

I mix to Quantegy ½-inch tape—30 ips at plus nine.

***Do you work alone a lot, without the artist or producer being there?***

It varies. I like to work alone to a certain point where they can come in and say, "Do this," or "That's fine," and a lot of producers will give me that liberty to do what I do. They come in after 6 or 7 o'clock and make a few changes. With my main clients we tend to have a relationship; I already know how they want it to sound, and they know what I'm going to do, so when they come in there will be just a few things that we have to do.

***Do you usually leave your mixes up overnight, spending a day-and-a-half on them?***

It depends—with my main clients I usually knock it out in a day if it's just a straight mix. If we have to change things or put on more vocals I like to get that leisure of taking a day-and-a-half, but sometimes certain clients' budgets aren't to that point.

***You're mixing mainly for radio—how do you keep up with the competition?***

I listen to a lot of stuff in the car, both CDs and the radio—I don't listen too much at home because when I go home I'm not really thinking about music. But being in Los Angeles you spend at least an hour a day in the car, so you can be taking care of business when you're rolling around.

At the studio here they have a Sony digital satellite system that broadcasts a lot of the music channels—R&B, rap, blues, jazz, '70s, soft and hard rock; I'll listen to those channels sometimes just to get familiar with what's playing. I have a MiniDisc player in my car, so to listen to my mixes I record a MiniDisc at the studio.

***Why MiniDisc instead of CD?***

It's just easier. Also, the CD thing gets expensive unless you've got rewritable. With a MiniDisc, you can record over and over and you don't scratch them up as easily because they're in a case. CDs you always scratch up. And you can label the MiniDiscs, so you know which one's playing. The MiniDisc doesn't sound as good as a CD, but it sounds a lot better than a cassette does. Like most engineers, I truly hate cassettes.

I'll burn a MiniDisc through an Apogee filter off of the console stereo bus, and in the car I can get an idea of how it sounds. I know mastering is going to do a little something different to it, but it's still gonna be in the ballpark.

***What do you monitor on in the studio? Do you use the big speakers?***

I do a lot of my work on NS-10s—the old style, not the studio version. And I like my little Bose Freestyles that Barney Perkins turned me on to. I think Bose stopped making them for stores, but there's a private stock if you call the

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company. I love the way they sound. I often use a mono Auratone for vocal rides, and I do listen some on the big speakers. One of the things I like about this room at Larrabee is that you can throw the mix up on the big speakers and cruise for a while. It doesn't really hurt your ears.

***You don't do much recording these days—do you miss it?***

Not at all. If you're working with a live band, it's a whole different story. That's fun when you're in there trying to get the right sounds. But if the music is coming out of a keyboard or a drum machine and you're just getting levels, waiting for it to lock up and then dumping it—no fun.

***When you first put up the tape, how do you know what you're going to feature? Like between the bass and the bass drum on a particular track?***

It's just feel, and it depends on what the bass is doing patternwise and how it sounds, what sound each producer has chosen. The bass and drums have to be hitting to the point where you really feel the track, and you have to understand what the singers are saying. You can't have the track with just the bass and drums driving where you don't understand what the vocals are saying. In my early mixes, that was the big problem for me—trying to get a happy medium between the two. Now I always kind of put my vocals on top, and second you'll hear the kick or bass. Really, the main focal point is just vocals. That's what sells the song. Because if you're listening on a bad-sounding radio, what's important is for somebody to be able to sing the song, rather than to know what the bass drum is doing. It's work, though, because at the same time you've got to have the track hitting.

***You always mix on SSL consoles.***

I'm hooked on the 9000. It's hard for me to go back to a G. I like mixing on Neves also, but for me it's hard to find a Neve room that sounds good. I've been at Larrabee for a few years now, and when I go to other rooms it takes me a day-and-a-half to adjust. When I work here, I always know what it's going to sound like—it's true—when you play it loud on the big speakers and when you play it in your car.

***A lot of tracks you've been working on lately have that really low, woofy, rubbery bass sound. What might you do to give it enough definition in the mix to work well with the drums?***

I like to use the Distressor on drums, and I'll also use it on the bass; I'll just change the attack and release of each. The Distressor is great because you can manipulate it so much. And, on the kick I might use an API 550A EQ—I love the sound of those—and on the bass something like a Pultec.

***So a tighter EQ on the kick, and more of a wash on the bass. And you might tie them together using the same type of compressor.***

Yes.

***When your tape comes in, what's the first thing you do?***

I put it on and throw up the faders to see what's goin' on, see what kind of song it is: Is it a good song or not, does the singer sound right? Then I'll listen to it instrumentally, see what's not good, so I can take it out or throw it far back in the mix or fix it! I'll listen for what's good that I can feature and see what I can do to make it better. Sometimes you can't really do much. No matter how much fixing you do, it's just going to be what it is. Then I'll lay the board out how I want it, see if I have to cross-patch.

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***Do you listen to rough mixes of the song?***
If they have one they like. You can hear the song how it was when they first wrote it. Sometimes it doesn't sound great, but they like the way it felt.
***What's your favorite gear to use on vocals?***
I love the Avalon 2055 on vocals—it's smooth. I also like to use LA-2As and Summit compressors, and maybe a Focusrite Red 3 compressor/limiter. I like GML or API EQ on the backgrounds.
***Do you use much board EQ?***
I'll do lot of taking out of stuff that I don't like with outboard EQ, then I'll use the EQ on the board to bring out stuff that I do like. I love being able to use the E selection EQ on the J Series board.
***Do you use the SSL stereo compressor?***
No, I think it makes things sound a little small. I do use the Focusrite Red 3 across the stereo bus a lot. Focusrite is the smoothest, it seems to warm stuff up a lot. It doesn't seem to squash things, but overall it makes it sound like a record. I also use an NTI as a stereo EQ.
***What gear do you own?***
The Akai hard disk recorder, the Bose Freestyles, NTI EQs, and I just ordered the Avalon 2055, and a Focusrite Red 3.
***What effects do you like?***
I like the Sony D7 as a stereo delay, and of course like everybody else I have to have my PCM-42s. The Sony V-77 is pretty awesome, and I've been using an old Mutron a bit on bass tracks lately.
***What do you listen to for fun?***
I like Faith Evans, some of Eightball, and Jay-Z is one of my favorite artists. I like R. Kelly, DJ Quik, TQ, Outkast, and I love A Tribe Called Quest.
***Do you want to produce?***
Most definitely. Actually, I'm getting ready to start a project for an artist named Soleil that I'll be co-producing. That's got to be the next step. But it's hard, because I do love what I do. And I love that when the mix is done, I'm done working. I can go home, and I don't have to think about anything else.
***Do you have any engineering heroes?***
Well, I have a lot of people whose mixes I like. Tony Maserati and Steve Hodge both do a great job. I love Jon Gass' work with Babyface. Manny Marroquin, Dexter Simmons...when I was coming up I listened to a lot of Dave Way, Barney Perkins, Jon Gass—they were the guys I wanted to be like. I wanted to be as busy as they were, so I was listening to what they were doing, trying to see what it was about them that made them get the kind of work that they did. I wanted to have my own style, but at the same time I wanted to be commercially acceptable.
***What were some of those things that they did?***
Some of the effects and tricks that they were using then were really cool. There was a lot of trickery that engineers were doing in the late '80s and early '90s with drum sounds, delays, gated reverbs and stuff like that. Music has changed now, and mixing is a much more straight-ahead situation these days. It seems like lately it just has to hit, and it's got to hit hard.
***So what's a trick you might use?***
[Laughs] Sometimes I try not to listen from a mixer's perspective, but rather to listen to the song from a regular person's perspective, as if I just like the song. I try to figure out what it is I like about the song, not, "Is the kick hitting at 150 Hz?" I just listen to the song and what it feels like, because the average person wants to know what it feels like, and if they can sing it, and that's what's gonna make it come together. ■

*Maureen Droney is* Mix *'s Los Angeles editor.*

# BEYOND THE Big Three

## MASTERING OUTSIDE THE MAJOR MARKETS

BY PHILIP DE LANCIE

For as long as most of us can remember, America's music business has been concentrated in just three cities: Los Angeles, New York and Nashville. Other regions have had their moments in the sun—Detroit was Motown, San Francisco had its Sound, and Seattle had grunge—but the Big Three remain the power centers, the places you have to go to "make it" not only as a performer but as an engineer.

Mastering engineers in particular have been bound by this rule, in part because success often depends on close relationships with the major labels, but also because mastering projects are measured in hours or days rather than weeks or months. That means a mastering house needs a much broader client base to survive than does a recording studio. And because they can't thrive in a vacuum, mastering studios are to the recording business as canaries are to coal mines, indicating whether local conditions are sufficient to sustain life. Viewed from that perspective, the presence of mastering activity beyond the boundaries of the Big Three tells us something not only about mastering, but also about the recording industry as a whole.

*Atlanta Digital, where more than half of the mastering work is R&B*

It turns out that it is possible to survive and thrive not just in second-tier cities such as San Francisco or Boston, but in places like Portland or Phoenix, Boulder or Orlando. And you don't necessarily have to be a Bob Ludwig—with decades of New York experience under your belt—before hanging up your shingle outside of the Big Three. To find out how it's done, and how the business in such communities differs from the major recording centers, we spoke with owner/engineers from six mastering houses. Their experience is in mastering, but most of their observations apply to anyone outside the major markets who is building a career in recording.

## THE PANELISTS, IN THEIR OWN WORDS

**George Blood, principal, Delaware Valley Digital Media (Philadelphia):** I've been doing this for 15 years. I grew up in Philadelphia, went to the University of Chicago, was hired by WFMT to work on the Philadelphia Orchestra's nationally syndicated radio series and began freelancing on the side. The biggest skill I had was the ability to razor blade-edit music. This grew into what is now DVDMedia.

**Jay Frigoletto, owner and principal engineer, Atlanta Digital (Atlanta):** I've been working in the Atlanta market for about five years. I graduated from Berklee School of Music in Boston and apprenticed at a mastering studio with an engineer who worked on projects like David Bowie and Aerosmith. I then took a job as a staff engineer at a post facility in Atlanta, bought a Sonic Solutions system and started doing freelance editing and other work for local and major-label clients, including Arrested Development and D.A.R.P. Noticing Atlanta's lack of experienced mastering engineers and professional facilities, I got bank financing and started Atlanta Digital just over two-and-a-half years ago.

**David Glasser, chief engineer and owner, Airshow Mastering (Boulder, Colo.):** We have two locations: the original studio in Springfield, Virginia—now run by co-owner Charlie Pilzer—and a new multiroom facility in Boulder, which is where I am. When we built the Virginia studio, affordable premastering was a novelty, and we quickly found a niche with local artists and some good independent labels. When we built the Boulder facility, we had eight years of mastering experience under our belt, as well as a Grammy for Best Historical Album, the *Anthology of American Folk Music*. We also had mastered 40 Grammy-nominated CDs and had a national clientele of mostly independent labels and artists.

**Bob Katz, president, Digital Domain (Orlando, Fla.):** We moved Digital Domain to Orlando from New York City in June of 1996. I had founded Digital Domain in 1990. For several years before that, I had

PHOTO: ERIC SWITHENBY

*Airshow Mastering's Boulder, Colo., facility. The Springfield, Va., branch won a Grammy for Best Historical Album.*

recorded and mastered audiophile jazz and pop CDs for Chesky Records, and transferred and restored their historic classical reissues at either New York Digital or BMG mastering studios. Prior to that, since 1972, I

BEYOND THE

# Big Three

freelanced as a recording engineer and frequently participated in mastering sessions, observing other "masters" at work.

**Rick McMillen, owner, SuperDigital Ltd. (Portland, Ore.):** We started about six years ago with the first "real" mastering facility in our region. I was a live tour mixer for eight years, including six years with Kenny G. Then I worked as a studio engineer for years. Wanting to EQ, edit and archive my own live tapes and studio masters was the impetus to start buying fancy gear, and I liked mastering because a session is over in a day or less and it can be a lot of fun, almost like live mixing!

*Bob Katz at Digital Domain*

**David Shirk, president, Sonorous Mastering (Tempe, Ariz.):** We've been open at our current location since July of 1997. My mastering experience started in 1989 at American Helix in Lancaster, Pa., which grew from a "small fry" CD plant to the third largest supplier of CDs on the planet. We had a huge range of clients, from Sony- and EMI-level stuff down to street-level local bands. I stayed with that company through its acquisition by KAO Infosystems in 1993, and then in 1995 I relocated to Phoenix, where I worked for a small mastering facility before starting my own place.

***What was it about your area that motivated you to open your mastering business there, and how has your actual experience in the area compared with your expectations?***

**Blood:** Many secondary markets, while small compared to the Big Three, aren't served particularly well. Within months of arriving to work with the Philadelphia Orchestra, I was getting calls to do other things. Three years later I moved the studio out of my house. I've been very surprised by the size of the market. We've seen double-digit growth every year for 15 years.

**Frigoletto:** Atlanta had a dozen SSL rooms and a rapidly growing hip hop and R&B scene, with companies like D.A.R.P., LaFace and So So Def. There was also a strong alternative rock scene with Capricorn Records and the influence of Georgia bands like R.E.M. and Collective Soul. With all that, the only place to get something mastered was with an assistant in a walk-in closet at a studio or in somebody's bedroom. Most of the work went to Nashville or New York. That's still the greatest challenge—getting the larger clients to stop going out of town and understand that there is a viable alternative locally.

**Glasser:** We needed to enlarge our facility to better accommodate our growing clientele, and we chose Boulder for a break from the crowded East Coast. Boulder's pace suited us. We hoped that our clients would view it as a great "destination" city, where they could come to master a record, hike in the mountains, fish, ski or take in some hot springs. Increasingly, that is happening, with producers flying in from California, Texas, New Orleans and elsewhere. The town has a great local music scene, and many national acts pass through here.

**Katz:** Initially, I was pretty neutral about the Orlando area as far as the music biz goes. We moved here for the weather and the easier-paced living, and it's midway between Nashville and Miami. We lost about 30 percent of our business initially, including a few New York clients who didn't want to travel this far, but we kept most of them. Some travel down, but most send tapes.

Since moving here, we've gained a wonderful Seattle-based "country-rock-acoustic-folk" record company and have mastered about 15 CDs for the United States Marine Band! Then, word

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of mouth brought us considerable Orlando-based business: three serious Florida-based record companies, plus work for an independent Platinum engineer and even some work for Disney and a couple of Miami-based engineers. So, after two-and-a-half years in Orlando, we have almost tripled our business over New York. I see a big future for this town; it's snowballing very rapidly on top of a monstrous Disney seed.

**McMillen:** We serve one of the smaller markets—the Pacific Northwest—but we felt we could grow the market and take some chances. When we started, there was nothing remotely resembling mastering in our area—you'd have to fly to L.A. and spend way too much money with one of those old vinyl-cutting/U-Matic guys. Also, to some degree our mastering grew out of our everyday needs in our duplication services division, where we make Digalog cassettes and CDs. We started mastering with one Mac IIci with a 660 drive. Now we have about $100,000 sunk into gizmos alone, and we just moved into our new location, where we are building two new rooms.

**Shirk:** Over the years I had built a client base that wasn't necessarily dependent on geography. Many of my clients are from out of state and just FedEx me their projects. I knew that opening a business meant committing to a location, and I really like living in the Southwest—great golf! This is a thriving area on many levels, and there's a nice local music scene that I feel is growing and maturing along with the rest of the valley. Being located ten minutes from the Arizona State University campus, with 50,000 students, is also a bonus for our growth.

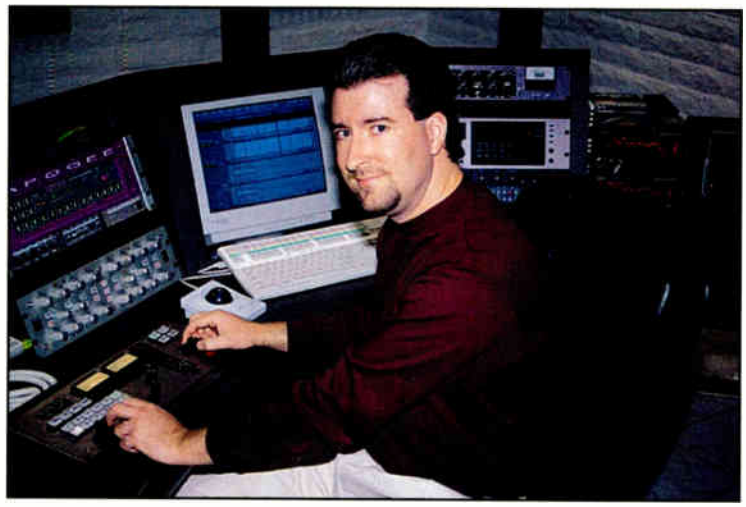
***Characterize the most common types of clients in your regional market in terms of musical genres and their label situation (major, indie, self-distributed, etc.) and their budgets.***

**Blood:** We see a very wide range of clients, from people just trying to break into the business to the Philadelphia Orchestra and the Opera Company of Philadelphia. Like the clientele, the label situation varies very widely. With the recent difficulties in the classical music market, many mid-market projects that would have gone to mid-level labels just two years ago are opting to go it on their own. Our card rate is half what's charged in New York City, and we have a few steady clients—including Pogus and New World Records—who find that FedEx is no more expensive than a crosstown courier, so we can compete. In pop, most of our clients are small indie labels, demos or self-release.

**Frigoletto:** Atlanta is best known for its hip hop and R&B scene, and it's no surprise that more than half of the work that comes in is in that style. There are also a lot of great rock bands in town, and a cool funk/jazz scene, too. In addition to the major label sessions, which often tend to be the smaller or newer artists, there is some indie work and a lot of self-distributed projects. A substantial amount of work also comes from demos, EPs and compilations for the many production companies in town. Most of the work is from Georgia, but a respectable amount comes from locations like Japan, Canada, New York and most of the Southern states. Budgets run from a couple hundred dollars for a short, quick demo to a couple thousand for the better label jobs but tend to be between $600 and $1,200 most of the time.

**Glasser:** Airshow gained a following with many acoustic artists—folk, bluegrass, "new acoustic," alternative country—and there is a good deal of that in Colorado and the mountain West, as well as new age and Native American artists and labels. Then there is the indie rock scene and a fair number of jazz artists. Many are self-distributed regional acts, some are on independent labels, and a handful are on major labels. We also do a lot of restoration work for labels like Revenant, Folkways and Rounder. At the Virginia studio, we are close to the Federal government and institutions like the Smithsonian, so we work with the various military bands, Folkways Records and the Library of Congress.

**Katz:** We have a few major-label clients and would love to have more. I refuse to be typecast—I do well with many kinds of music. My "metal" clients might be shocked to learn that I also edit and master classical music from score. Ninety percent of our clients are from outside of Florida. Over 60 percent of our clients are indies with as few as three to perhaps 200 records in their catalogs. Thirty percent are "self-distributed," but a number of popular musicians now fall into that category, and some of them are into their second or third album with us.



*David Shirk's Sonorus Mastering in Tempe, Ariz., serves clients from the Phoenix Symphony to young bands from the Arizona State University campus.*

**McMillen:** Usually any of the major-label acts that live in our area will have their projects done at one of the "name" houses because that's where their record company sends them. About 90 percent of our clients are indie or unsigned bands, so we really run the gamut of musical styles, from classical chorales to garage bands to bebop. Self-distributed is pretty much the operative word for most of our clients, and they seem pretty proud of that.

**Shirk:** I work on local projects that are anything from the Phoenix Symphony to death metal. Most clients in this market are indie or self-distributed, but there are the well-known Tempe bands [Gin Blossoms, Refreshments] that have had a glimpse of major-label success. Budgetwise, the local clients usually fall into two categories: those who are funded by a label and understand the importance of mastering, and those who are learning the process of recording and generally have limited budgets. My ratio of local to national work I'd say is about 60 percent local and 40

percent coming from labels and studios outside this region.

***How is your facility designed and equipped, and how (if at all) has that been affected by your location?***

**Blood:** The rooms were designed by Doug Jones of EAS in Chicago, following the LEDE design principles. Our monitors are B&W 801s and 805s, and KEF 103.2s, all driven by Bryston amps. We have four networked Sonic Solutions DAWs—two SSPs and two USPs. Three have full NoNoise, and one has DVD Creator. We have the Pacific Microsonics Model One ADC/DAC, Lexicon reverb, Studer A80, all the usual toys.

**Frigoletto:** The room is spacious and was specifically designed and built as a mastering room. It was also tuned by Bob Hodas. It's professionally done, but not a "million-dollar, built from the ground up" kind of facility. Equipment is top of the line: fully expanded 96kHz Sonic System, Manley, Apogee, Quested, Focusrite Blue, Dolby Digital 5.1—everything you need to make great records. The market isn't ready to pay for a million-dollar construction for a mastering room just yet—nor is my bank!—but I hope it will get there.

**Glasser:** Our Boulder facility is brand-new and was purpose-designed from the ground up. We wanted to distinguish our facility as a superbly equipped studio in a great locale, even though we've had to educate certain clients and convince them it's worth spending a bit more for mastering services than they're used to paying at a "project mastering studio." The two mastering rooms are large and ready for surround-monitoring, and we've got a solid infrastructure with a custom balanced power system, central machine room, production room, full kitchen and sunny lounge. Equipment is the usual high-end mastering stuff: Sonic Solutions with MediaNet and NoNoise, Weiss 102, Sony 1630, Studer, Sontec, Manley and Apogee gear, as well as Pacific Microsonics HDCD.

**Katz:** Our location has had no effect on the design of the facility or, fortunately, our ability to pay for top equipment. Our room has a cathedral ceiling, and the position of the loudspeakers—mounted on 150-pound, sand-filled stands anchored to the concrete—produces minimal diffraction, so extremely fine details can be heard in the sound. We have a Studer C37 analog tape transport modified to 30 ips ½-inch, with custom-wound heads feeding Ampex MR-70 tube electronics. Our A/D converter was built by me using Ultra Analog modules, while the D/A converter is a Counterpoint DA-10 designed by Peter Madnick and modified by me. Our Sonic Solutions system is equipped with all options, including high-sample-rate audio. Two Digital Domain VSP Model P sample rate converter, jitter reduction and routing units are part of the digital chain, as is a Meridian Model 518 redithering processor, Audio Alchemy redithering and dejittering processor, products from Waves and many other processors.

**McMillen:** We are building two rooms in a new facility inside a building built by

**FedEx is no more expensive than a crosstown courier, so we can compete.**
**—George Blood**

BEYOND THE

# Big Three

Paramount Pictures in 1930. One room will be tuned for 5.1 surround. We love digital, but we also wouldn't go without GML analog gear, or Apogee or Manley. We have a pretty well-equipped room that should go for bigger bucks, but our area lacks the big album budgets, so we have to be more competitive in the way we function. What would cost about $250 an hour in L.A. can be had in Portland for less than $100.

**Shirk:** The room started out as a pretty good near-field listening environment, which is why we took this particular building. We've got analog electronics by Manley and Avalon, Apogee Platinum Series converters and UV1000, an MCI JH110 ½-inch machine, TC 5000, full-blown Sonic Solutions and a pile of other toys. The location hasn't really affected my decisions on gear. I just wanted to invest in equipment that I knew was top-shelf, that would enable me to attain a finished product that could compete with the big guys.

***What do you see as the keys to doing well outside of the Big Three markets?***

**Blood:** I gave up trying to compete against the Big Three years ago. If you do good work, treat your clients well and price your services fairly—to you and your clients—I'm convinced the work will be there.

**Frigoletto:** We need to keep more big Atlanta artists in Atlanta. Beyond that, it's important to understand that in a secondary market, not every gig is going to be a major-label gig. There's plenty of other work to go around, and you need to make sound business decisions and not just try to finance your dream studio. Unless you are independently wealthy, you need to make the numbers work. Networking is the other important part. Meet all the people you can, and eventually those contacts will lead to better jobs.

**Glasser:** We maintain close working relationships with both local and out-of town clients, including engineers, producers and studios, making our facility a creative resource they can use not only for mastering, but as a place to evaluate mixes, get CD dubs, attend product evaluations and shoot-outs, etc.

**Katz:** Quality of service, attention to detail, knowledge, equipment and results. Come to think of it, that's no different than being in the Big Three, is it?

**McMillen:** First, adapt or die! Technical innovation will make mastering an increasingly diversified service. Second, you need to convince the public that "mastering" doesn't just mean "some guy with a computer in a closet!" Third, it's about reputation. In a smaller market you see a lot of the same faces again and again. Anyone can buy the gear, but it's the engineers that make the difference. We like our clients, we care about their work and treat them like kings.

**Shirk:** Always trying to stay current technically, and provide the best service possible to our customers. I try to put myself in the place of every client I work with and understand the emotions they're experiencing in the process of recording a disc project. Everyone has a set of certain needs, but in most cases the simple stuff is what matters. Most of my accounts are friends as much as they are clients, and that's the kind of connection I want to create, the ones that last.

***Any other observations on your situation and the pros and cons of working outside the major music markets?***

**Blood:** Spend more time working on keeping the clients you get than getting new ones. If you don't return that

***George Blood, principal of DVDMedia in Philadelphia, has been mastering for 15 years. Here he stands beside his B&W monitars in his Doug Jones-designed studio.***

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BEYOND THE

# Big Three

phone call from the cranky client who owes you money, then you can expect him to go elsewhere. Maybe he was referring a friend in L.A.

**Frigoletto:** Working outside the major markets means you can live a little cheaper and maybe work for yourself, which can be a blessing and curse at the same time. It also means that big credits are harder to come by, whether or not you do the work as well or even better than many of the guys in the Big Three markets. You also have to educate your consumers a bit more in a market that may be less knowledgeable about your craft. It can still be a rewarding, if lower-profile, career.

**Glasser:** I think it's a myth that most music is made in the major markets. There are independent labels literally all over the place. That is where a lot of the exciting, compelling music is being made.

**Katz:** The biggest con is that in New York, our clients could arrive by convenient taxi or subway, and we lose a certain genre of client that works in a major Manhattan label and doesn't want to travel out. Conversely, mastering has grown into a more decentralized situation, and I thank Bob Ludwig for making it legitimate to leave New York. I figure if producers are willing to fly to Portland, Maine, in December, they'll fly here, too!

**McMillen:** Educating a young market to what real mastering is all about can be challenging. But we do get to watch the trends in major markets and see the guys with big bucks making the mistakes, so we can learn from them. Also, thanks to new communications technologies I'm really only a couple of milliseconds away, and my clients have the potential to compete with the world.

**Shirk:** There is not as much direct competition here, though also not as much backyard business being generated. There is the ability to be part of the expansion process as growth occurs in your own region, and lower operating costs compared with the Big Three. And there is less personal strain due to issues associated with overpopulation. But it's tough to find a good cannoli! ■

*Philip De Lancie is Mix's media and mastering editor.*

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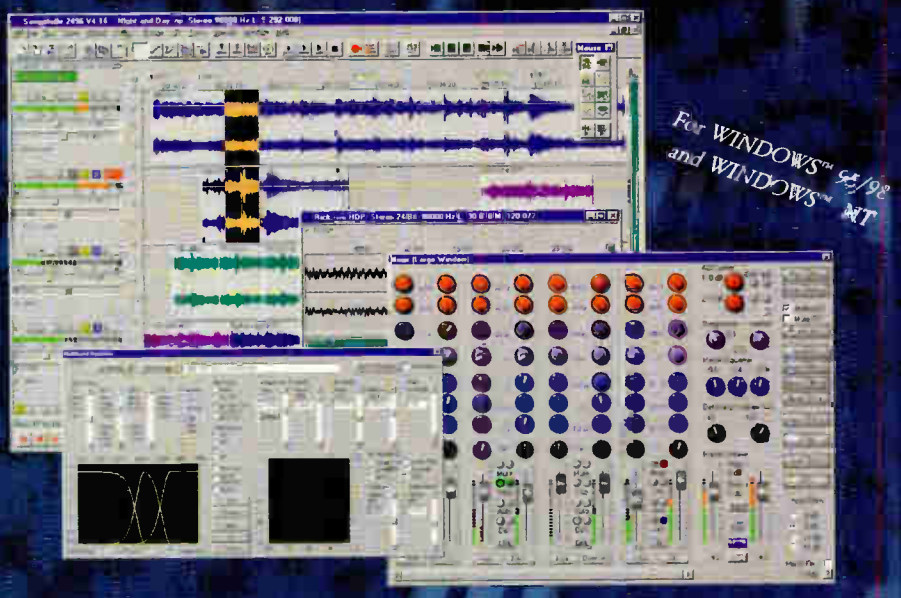

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# THE GENTLEMEN'S CLUB

## DESMOND CHILD'S VIRTUAL AESTHETIC

**ON THE COVER**

**by Dan Daley**

Desmond Child certainly has to be considered one of the most influential pop music composers of recent years. He co-wrote much of *Slippery When Wet* with Jon Bon Jovi, including the anthem "Livin' on a Prayer" (which essentially defined the hair-band culture of the 1980s), on through cuts for Aerosmith ("Angel," "Dude Looks Like a Lady"), Joan Jett, Cher, Hanson, Trisha Yearwood and Alice Cooper. Along the course of what would turn out to be a very unorthodox career, Child's auteur inclinations came to the fore, and he turned to producing much of what he wrote, including tracks for Cooper, Cher, Jett, Billie Myers and Megadeth, among many others.

PHOTO: SONIA & MEL VICTOR

In 1995, after stints living in Los Angeles and Nashville, Child settled into Miami Beach. There he and longtime manager/partner Winston Simone solidified a growing relationship with Universal Records that culminated in Child creating his own label, Deston Entertainment, distributed by Universal Music Group. That, says Charles Dye, the engineer who now oversees Child's growing studio, is the reason the composer jumped from working on a 4-track cassette deck and a Boss drum machine in his L.A. home to a three-studio complex completely outfitted with virtual recording technology. "The studio is the hub for the record company," says Dye, who, before joining Child, worked in Miami as personal engineer and studio manager for Jon Secada.

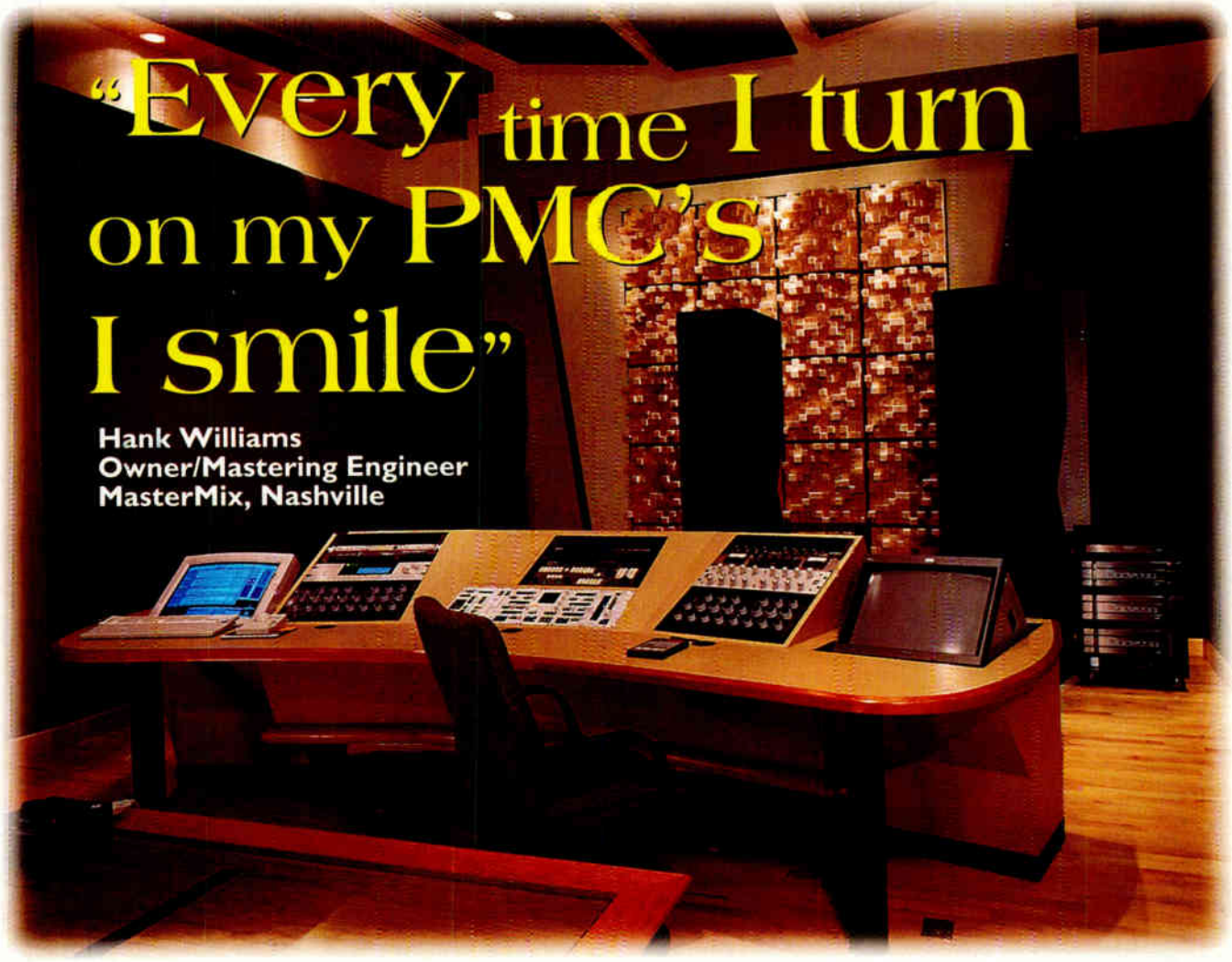
When Dye arrived on the scene, Child had the first room completed. It was built in a two-car garage on his residential property in Miami Beach, and designed and installed by David Frangioni of Audio One. But Dye is quick to stress that the aesthetics and ergonomics of what is now known as The Gentlemen's Club are purely Child's: From club chairs and overstuffed sofas, clients gaze onto saltwater fish tanks, overflowing bookshelves and oil paintings; racks of outboard gear are cleverly disguised in cabinetry. Even the basic technology platforms are discreet: Child decided early on that he wanted to work in a virtual domain, and all three studios are now equipped with Digidesign Pro Tools 24-bit, 64-track systems. A Mackie console and Otari MX-80 24-track are barely touched anymore, and a 20-bit Alesis ADAT II is generally reserved for transfers.

"When you listen to a Desmond Child song, whether he just wrote it or wrote and produced it, you realize pretty quickly that the vocal and the lyric are paramount," Dye explains. "He puts a lot of energy into a production, but most of it goes into the vocals. I remember seeing his comp sheets when he was working in analog, and it's amazing what he was able to accomplish with that technology—there are parts of vocals all over the tracks that had to be put together. He was using a technique that Tom Dowd used to use, which was to put six tracks of vocals up and bus them to a seventh track and use really fast crossfades instead of mutes to get a comp without pops and clicks. It works, but it's a lot of work. He certainly wasn't compromising just because he was working on analog. But you can certainly see why digital makes so much more sense for Desmond, both for recording and mixing.

"Pro Tools works in bars and beats, so you can use cut-and-paste techniques to fly things around," Dye continues, "and the Auto-Tune plug-in is great to avoid burning out a singer trying to get the pitch perfect, which Desmond is a stickler for. A lot of people think that pitch correction steals feeling from a performance, but if you use it correctly, it actually frees singers up emotionally because they're not worrying about the pitch instead of the performance." Dye uses Focusrite Red Range and vintage Neve mic pre's and compressors to take vocals directly into the Pro Tools systems. He and Child will also sometimes use nearby Criteria Studios (where Dye started as an assistant engineer 15 years ago), for cutting basic tracks.

Besides serving as the hub for the record label, the studio continues to be the interactive lab where Child uses his preternatural ability to create very, very successful pop music. For their debut album, Hanson sent over a minimalist piano-vocal version of a Desmond Child co-written ballad, "Weird." Dye and Child took the analog multitrack to Criteria, added live drums, then returned to The Gentlemen's Club, dumped the analog tracks into Pro Tools, and laid down guitars and background vocal parts. "Weird" became the smash debut album's third hit single. Both Aerosmith and Bon Jovi have used the studio in similar fashion. The first full record production to be done there was Billie Myers's *Growing Pains* (featuring the hit "Kiss The Rain"). Ricky Martin cut the hugely successful 1998 World Cup theme song "The Cup of Life (La Copa de la Vida)" at The Gentlemen's Club, and the studio is now hosting sessions for the first release on Child's label, Jason Raize (who plays the lead role in the Broadway production of *The Lion King*). Dye is also mixing for Sammy Hagar's forthcoming release.

"I've done the freelance thing, and there's not a lot of security in it," Dye says. "Desmond likes things orderly, and so do I, so we're a perfect match. That's important for this kind of relationship, and that's not something you always get when you're a freelance engineer." ■

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# THE MUSIC LAB

## MICHAEL TERRY'S SCORING EMPORIUM

Although the benefits of spending one's days surrounded by simple beauty and the charms of our Colonial past can't be discounted, it's still not easy making a living as a creative musician in the rolling hills of Connecticut. Michael Terry is a native son who's making a go of it. He staked claims from Nashville to Canada before settling back down in Trumbull, Conn., to open his own project studio.

Terry operates The Music Lab (with his wife, Tricia, who handles the business end of things) and finds that he can maximize his time and the facility's resources best by splitting his work three ways: He writes and composes commercial music for radio, television and corporate clients, produces outside songwriters and scores films.

The Music Lab has 24 tracks of original blackface Alesis ADATs running in conjunction with MOTU's Digital Performer. On a 200MHz Mac Terry easily gets another 12 to 16 tracks of digital audio recording, and his experience integrating DP into the studio as a hard disk recorder has proven better for The Music Lab than working with Pro Tools. "Pro Tools is a great system," Terry says, "but I've found far less synching problems—remember we do a lot of video work in here—using DP instead. The editing functions are very easy to work with, the effects are quite useful and everyone knows that Performer is a great sequencer."

A singer and musician (he played drums back in high school in a band that featured John Scofield on guitar, and now plays guitar and keyboards himself), Terry has also had some success as a composer. Mickey Gilley recorded his tune "Texas Heartache," and Terry penned Canadian Top 40 hits during his stay north of the border. One of the hats that Terry wears these day is music director for American Comedy Network. This work involves the production of parody tunes for radio broadcast. "Our job is to keep the place busy," Terry says, "and I'm grateful for the amount of business that we get from the ACN. It's not the most creative aspect of what we do, but parodying songs that have great production values keeps me learning."

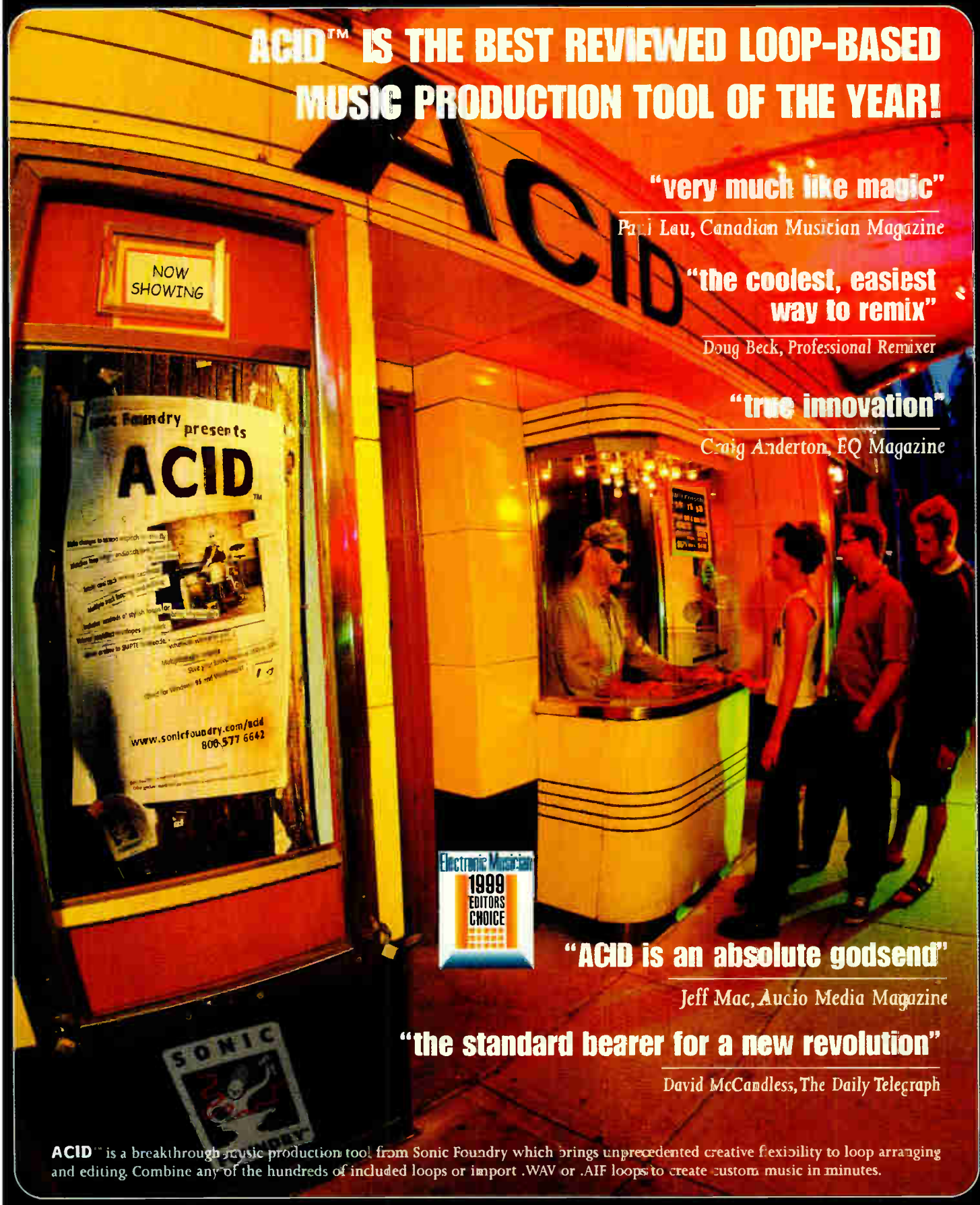
Most project studio owners who need outside clients to augment the work they get for themselves are faced at some point with setting limits on the kind of people they deal with. Semi-professionals often bring hassles that outweigh the benefits to smaller rooms. "Working with outside songwriters is another leg of our business, to be sure," Terry says. "Fortunately, we're able to be very selective with respect to the people who we work with. I produce a dozen or so songs each year for outside writers. I'll also do drum programming for people who want to cut some tracks in their homes but don't have a good MIDI setup or just don't feel comfortable programming drums. Generally, someone will bring in an ADAT rough mix of their tune, and I'll lay a drum program back to an ADAT tape. How wide the split will be depends on how extensive their ADAT system is."

As much as he enjoys being a working studio owner, the radio and song demo work essentially serves to keep Terry's business running when The Music Lab is not booked doing the work that excites him most—scoring for film. His break in this field came several years ago, when local filmmaker Joe Consentino tapped him to score *Muhammad Ali, The Whole Story*, Consentino's tribute to the great fistmeister that aired on TNT. Interestingly, his work on the Ali project helped Terry close a circle with a success story who lives a few miles down the road, Brian Keane.

"Brian is a very gifted musician," Terry says, "a terrific guitar player and composer. I knew that his film scoring career had escalated to the point where he was using outside orchestrators to flesh out some of his projects." Keane liked Terry's score to the Ali film and invited Terry to the party. In the last several years, Terry's worked on about a dozen projects with his neighbor, including HBO's *Reflections On Ice* and *The Babe Ruth Story*, and the PBS documentary *A Science Odyssey*.

With an expanding film reel, Terry is finding more scoring work on his own. Earlier this year he scored a Lifetime "Intimate Portrait" study of Gloria Steinem, which was directed by Oscar winner Lee Grant for Joseph Fuery Entertainment. This work, scored at The Music Lab, is now serving as a prelude to a second gig for the "Intimate Portrait" series. "We'll be working with Lee Grant and JFE for a second time," Terry says. "This program will look at the life and career of Mia Farrow, and will air later this year." ■

BY GARY ESKOW

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# WIREWORLD

## MICHAEL WAGENER'S SOUTHERN RETREAT

Located on a farm about 25 miles from downtown Nashville, in full view of grazing horses and cows, is WireWorld, the studio base of Michael Wagener, one of hard rock's legendary producer/engineer/mixers. More than 42 million albums have been sold with Wagener's stamp of sonic integrity on them, including projects for Ozzy Osbourne, Extreme, Metallica, Skid Row, X, Megadeth, Poison, Plasmatics, Black Sabbath, Saigon Kick, Alice Cooper, Queen, Motley Crue, White Lion and even Janet Jackson.

So how did he end up here, far away from his old Los Angeles stomping grounds? "There are no earthquakes. You know, you can run away from tornadoes, but you can't run away from earthquakes," Wagener laughs. "Actually, it was when I did the Accept Predator record over at 16th Avenue Sound for two months in 1995 that I absolutely fell in love with Nashville. I love the people, the environment and the seasons. Everybody here lives music, and there are a lot of rental companies, repair companies and manufacturers."

WireWorld is near the home of Wolf Hoffman, the lead guitarist for Accept. "They have a nice piece of property out in the country," Wagener explains, "and there was an extra building that we decided to make into a studio. We started building it on August 1 of 1996, and we had the first band in [a band from Japan called Outrage] in the last week of September. So we built the studio in about seven weeks! It was all very make-do at the time, but it went wonderfully."

Wagener is a huge fan of the Yamaha 02R V.2.1 console; he has two at WireWorld, set up for 5.1 surround. "The 02R is absolutely affordable, and what it gives me is absolutely amazing," Wagener says. "I hold it up to any other console in the world, from the sound, the features and everything else. It's very small. I don't have to move around a lot, and I can always sit in the sweet spot in front of the speakers; it's just a great-sounding console."

WireWorld offers six Tascam DA-88s as the primary multitrack format, as well as an Akai DD1000 optical disc recorder/editor, two Akai 650 optical disc drives, and a substantial battery of Apple computers, including a 256MB RAM 333MHz G3 with a 9-gigabyte internal hard drive and two 16-gig external drives. "The G3 has Sample Cell software and the AudioMedia card," Wagener says, "plus every kind of sequencer in the world. With this setup, I have the ability for video editing, too."

For monitoring, Wagener has Genelec 1031As, Tannoy Classic 15-inch monitors, Tannoy SRM 10Bs, Tannoy PBM 6.5s, Infinity 2001s and Infinity R-1s, powered by Bedini 813 Class A amplification. The facility features a load of outboard gear and various assorted studio toys, more than many world-class facilities. "I've always collected a lot of equipment," Wagener explains, "and it's still in the flight cases that I used to carry it all around in when I would do my productions. Lately, I've been upgrading my older stuff with newer stuff. Anything that doesn't make money gets sold! I just sold a couple of 1176s and have replaced them with Distressors, which do a great job of emulating the 1176s. Another new piece of gear is the Antares ATR-1, which is an amazing pitch-correcting unit."

Among Wagener's array of mics are pieces by Schoeps, AKG, Audio-Technica, Oktava, Beyer, Groove Tube, Sennheiser and others; his favorite is his Neumann Binaural Head. "I actually use it quite a bit," he says. "To me, it's the most natural-sounding microphone, if you use it for percussion or acoustic guitars, or even vocals. The other main microphone that I'm using, which is a very good-sounding all-around mic, is the AKG Solid Tube."

WireWorld's primary tracking space is 11x22 feet, with slightly angled walls. Wagener is a big fan of his ASC tubes, which he uses to make the room seem smaller, in terms of reflections.

Besides having a huge collection of guitar amps and 47 guitars, WireWorld also is loaded with all kinds of keyboards, samplers, MIDI controllers and drum boxes. But Wagener is quick to point out that what makes WireWorld such a great working environment is its locale. "At first, I was really concerned that most rock bands would want the city life around them," he says. "Now when everyone comes out here, they're totally happy and relaxed. It's worked out really well. Most everyone has come back again, which is a good sign that they had a good experience here." ■

BY RICK CLARK

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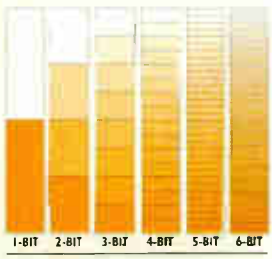


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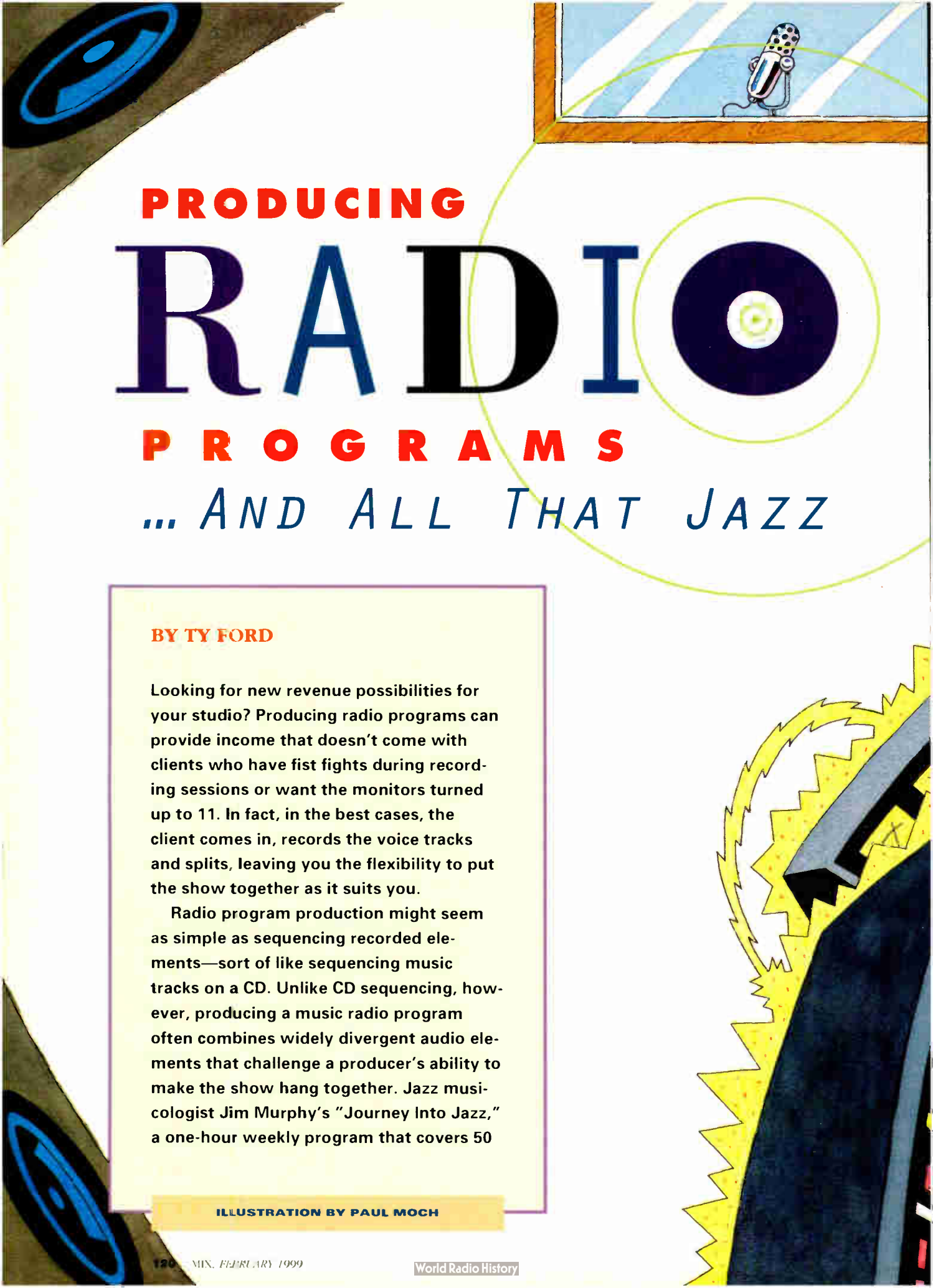
ALESIS

# PRODUCING RADIO PROGRAMS ... AND ALL THAT JAZZ

BY TY FORD

Looking for new revenue possibilities for your studio? Producing radio programs can provide income that doesn't come with clients who have fist fights during recording sessions or want the monitors turned up to 11. In fact, in the best cases, the client comes in, records the voice tracks and splits, leaving you the flexibility to put the show together as it suits you.

Radio program production might seem as simple as sequencing recorded elements—sort of like sequencing music tracks on a CD. Unlike CD sequencing, however, producing a music radio program often combines widely divergent audio elements that challenge a producer's ability to make the show hang together. Jazz musicologist Jim Murphy's "Journey Into Jazz," a one-hour weekly program that covers 50



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years of music, provided just that sort of challenge.

When you have recordings from Sinatra, Tito Puente, the Four Freshmen, The Rippingtons, The Hi-Los, Max Roach, MJQ, Oscar Peterson, Spyro Gyra and Sonny Rollins, you've got a very listenable but very wide hour of music.

The show, with 13 weeks of programming already in the can, was produced on an Orban Audicy workstation, with the music loaded in a cut at a time. Under direction not to "mess with the music" (which I interpreted as no EQ or compression), I found the loudest passage of each cut and set record levels accordingly. Against my gut instincts, all of the voice and music elements of the first two shows were mixed without processing.

After listening to the mixed programs, Murphy was not happy. The first problem was that the intros to some of the pieces started at rather low levels, which became more apparent when sequenced with the voice tracks. I explained that raising the level would be changing the dynamic properties of the music, and that's what he said he did not want. He cleared things up by saying he wanted the audio to sound like it did on the radio.

That changed everything and made my gut feel better. Almost everything on the radio is EQ'd, compressed and limited. Part of running a "tight board" (radio lingo for no dead air and consistent levels) is raising the level of soft intros and backing them off as the song builds. After that, you let the station's compressor, limiter and clipper do the work. If the song fades at the end, it's not unusual to increase its level until the subjectively "best" musical moment for either a segue to the next tune or the back announce. That part of the recipe was working.

The other part is the appropriate use of compression and limiting on both the voice and music. I know some people think music should not be messed with—it is a complete art form and the degree of compression and limiting is part of the art form. I also know that in the 17 years I spent working at radio stations, every single one compressed, limited and clipped at the transmitter. (So, no flame mail!) In the '60s and early '70s, stations were using the CBS Audimax and Volumax. They were crude by today's standards, but they increased the average modulation level. In AM (amplitude-modulated) signals, a good portion of the signal strength and coverage area is produced by the modulation in the side bands. The harder you bang it, the bigger it gets. Bigger coverage area means more listeners.

In the late '70s, Bob Orban's multiband Optimod 8000 revolutionized the sound of FM radio by reducing the amount of artifacts produced by massive amounts of gain reduction. Multibanding was part of the solution; using a small amount of delay to prepare the gain reduction circuits for what was about to hit them was another. Other manufacturers contributed boxes with their own "secret sauce," resulting in some truly hideous audio when too many radio stations tried to turn it up to 11. (And that's the last time I'm going to use that phrase in this article.)

The point is, you never know if the programming you're producing is going to end up being aired on a station where management has decided that louder is better. If you give them the full, unadulterated stuff, with no...er...preprocessing, it will sound a lot worse on the air than if you do

**You never know if the programming you're producing is going to end up being aired on a station where management has decided that louder is better.**

some of the gain reduction work with relatively transparent gear beforehand. That way, their equipment doesn't have to work as hard, which generally means fewer artifacts and better sound.

Preprocessing also falls right into line when loading said audio into a workstation. The more bits you use, the better the sound, but digital "overs" suck. Striking the right balance of compressor and limiter settings took some time because the production styles and mix techniques within 50 years of jazz vary wildly. In the end, I found that an Aphex Compellor followed by a Studio Dominator set at light but fast settings contributed a consistency. The Compellor is a very transparent device, and the tri-band stereo limiting of the Studio Dominator kept the lid on without pumping. Compression ran at a fairly constant 2 to 4 dB. The Studio Dominator was set to catch the occasional peaks, most of which required 1 to 3 dB of gain reduction. A few of the selections, some with bongo accents and drum and vibe solos, had extremely high peaks, requiring the Dominator release times to be set faster to avoid pumping. From there, the input level to the Compellor/Dominator stage was varied as needed to account for level differences on the LPs and CDs. In most cases, the newer tunes were produced with more overall compression than some of the earlier ones. The more gain reduction I heard in the original recording, the less I used.

After testing several mics on Murphy's voice, I settled on a Gefell UM 70 through a GML mic preamp with no EQ. The voice tracks were recorded through the Compellor/Studio Dominator chain using the same settings as for the music tracks. The Audicy was used to cut the center out of Murphy's breaths, leaving enough to imply natural breathing.

A good turntable, stylus, cartridge and preamp all make a difference. You can't "get by" with bad stuff. I used a Stanton 981 HZ-Mk II-S cartridge with a II D98S stylus in a Technics SL-D1 direct drive turntable and a Stanton Model 210 phone preamp. Murphy's LP collection is in very good condition, requiring only that a standard, moistened Discwasher be used to remove the usual dust buildup. Some of the older, more frequently played discs had developed some crackles and pops. The Audicy got rid of the pops with no problem, but the budget wasn't there for more extensive noise removal.

The show was mixed to a Panasonic SV-3900 DAT in quarter-hour segments. It's very easy to let the level of a sequenced show creep away from you. The tendency is to make each segment just a little louder than the last. I used the -6dB peak hold indicator on the DAT meters as a guide, with rare excursions to -4 dB and -2 dB.

After making high-speed DAT backup copies of each program with a Tascam DA-302 dual-well DAT, the DATs were sent off for CD replication. The house with the best price is not always the best deal. Of the first ten shows sent out, 1 to 7 came back in mono, and 8 and 9 came back in stereo with the channels reversed, but that's another story. ■

*If you're interested in airing "Journey Into Jazz," Ty Ford can be reached at www.jagunet.com/~tford.*


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# GLEN BALLARD

## THE HEART OF THE SONG

PHOTO © CHRIS BARR 1998

Songwriter/producer Glen Ballard has had a fairy tale career: Over the course of more than two decades in the L.A. music industry, the Mississippi native has worked with some of the biggest names in the business, topped the music charts many times, won Grammy Awards, started his own record company and co-founded an independent film company. Though he is perhaps best known for his recent triumphs producing Alanis Morissette's multi-Platinum *Jagged Little Pill* (more than 28 million sold) and new disc, *Supposed Former Infatuation Junkie*, Ballard has written songs for and/or produced a wide range of artists through the years, including George Benson, the Pointer Sisters, James Ingram, George Strait, Michael Jackson, Paula Abdul, Barbra Streisand, Van Halen, Celine Dion, Aerosmith and Earth, Wind & Fire.

Never one to rest on his laurels, the indefatigable Ballard is always looking for new singers and songwriters to work with, whether they're established talents like Billy Idol, or little-known groups like the genre-bending Boston band Splashdown. In 1996 he formed Java Records, a co-venture with Capitol Records, where he acts as producer, writer and A&R man. Artists on the Java roster include Splashdown, Lisa Marie Presley, Terence Trent D'Arby, Brendan Lynch, Block and singer/songwriters Judith Owen and Celeste Prince. Meanwhile, Ballard's film company, Intrepid Entertainment (started with record producer David Foster and cellular giant John McCaw), is releasing its first feature, *Clubland*, directed by Mary Lambert, in April. The soundtrack to the film, which consists entirely of new artists, will be released on Java in March.

We caught up with Ballard shortly before the new Alanis Morissette album was released.

***You wear so many hats creatively—producer, songwriter, musician, A&R man. Is there one area you feel closest to?***

I started off as a songwriter really, and I've always approached everything from the standpoint of songwriting and arranging, and it has led naturally to my being a producer, and on some level doing some engineering, recording and programming. All of the things that I do technically are really an outgrowth of me starting off writing. So I really think of myself as a writer first, although I by no means only produce what I write. I produce a lot of other things and enjoy that process, too. I find that the hardest part is the writing. So it's always kind of a relief if you've got a good song because it's almost impossible to ruin it. Or at least you've got a good chance of not ruining it just because good songs are hard to find. They tend to rise to the top and make a producer's job easier.

***As a producer and musician, how do you approach the creation of an album? When does the producer take over and when does the musician or songwriter take control?***

The lines are so blurred with me that I think I'm functioning on some level in every capacity as I approach any project. In a lot of cases, I'm writing material with an artist. So what I find is that I can

BY BRYAN REESMAN

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build a lot of the production into the actual writing of it. That's been a very exciting thing for me because a lot of times there's a certain magic that happens when you're creating something, whether it's a sound, a groove, a vibe. What I've always tried to do—since technology in the last decade has allowed me to do this—is basically try to think of everything as a possible record, even in the writing stage. So I'm constantly thinking of stuff from a song standpoint and also an arranging and production standpoint. It all really does bleed together for me.

***Do you like to develop things in the studio?***

Yes, very much so. Being in the studio, I have a workshop that has all my tools there for me. It's really easy to reach into the paintbox, as it were, and try blue or try green. When you have guitars, synthesizers, drum machines and samples—and an ability to manipulate all of that, whether it's in Pro Tools or in a sequencer—then it just enhances your ability to get more than just a sketch of what you're doing. I definitely love to work in my studio.

***Was a lot of* Jagged Little Pill *developed in the studio?***

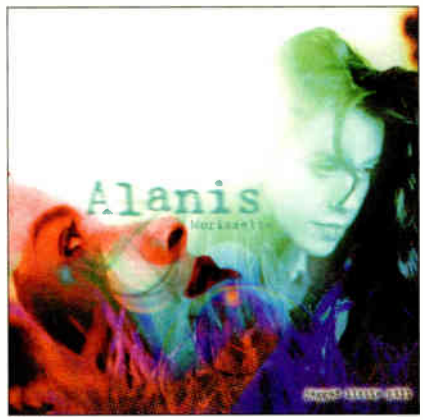
All of it was.

***Alanis had done some pop stuff before, but this was a different approach for her.***

And it was a different approach for me, too, in that we didn't redo anything on that record. We would record something and that was basically it. We later added some overdubs to what we'd already done, but all of her lead vocals are from the day they were written. So we largely preserved what we were doing as "demos." It turned my head around in that the sort of conventional way to approach that record would have been, "We've got these wonderful demos, now let's really cut the record." But we felt from the beginning that it was important to not try to gild the lily, and really let the rawness and the freshness of what we had captured in its initial form speak for itself. And it certainly found resonance out there in the listening public. Some of the comments I've always gotten is that there's an energy to it that seems somewhat spontaneous. The fact is that it was completely spontaneous. [Laughs] It forced me to be a better player, because I would play my part one time, and that was usually the take. I didn't fix much of anything. She certainly didn't sing a song more than one or two times. We were challenging each other to do it in the spirit of a performance and to own that. It was wonderful.

***Was it a challenge for Alanis to reproduce her first album live on tour?***

No. She's so smart about everything. She never tried to. She said, "You know, this is how we do it now, with two guitars, bass and drums." There wasn't a moment of anxiety like, "This doesn't sound like the record." It was like, "This is how it sounds here," and she did it with passion. It was an amazing act of courage on some level, and it was also amazingly smart to not try to get in that trap of using loops onstage and special effects. The songs had their own personality live.




***How did you approach doing her new record? I assume there was some pressure, given the mega-success of the past album.***

If we had considered that some expectation on the part of the industry and the public was important enough to bring into the studio with us, I think it would have been pressure. Once she was ready to write, and had gotten off the road for a year-plus, it was like we intuitively knew that we just had to do what we do. So the pressure was really more internal than external—how can we be as true to what we do as we have before? She always takes the lead in terms of being courageous about that sort of thing. She set the tone. We certainly didn't design a record for the marketplace. We just did what we did last time, which was make a record, and not be self-conscious about it. When we first got started, she was basically working out her own internal compass. When she did that, we wrote 25 songs in 25 days, and she had written a bunch of songs on her own, and then we had an album. It was pretty straightforward.

***You've been working with a hip band from Boston called Splashdown.***

Oh, God, they're wonderful! They basi-

cally made their record on their own, with me as a creative consultant. They're working with an engineer/producer named Brian Carrigan. They just made this record that is amazing. It's just exquisite. They're so musical, and Melissa [Kaplan] has such a distinctive voice. I just fell in love with the whole vibe of the band. It's just an exotic flavor that's unique to them.

***It's like rock, dance and jazz all wrapped up.***

It's completely their own thing, and yet I think they've made a very compelling record. I think that we will find a large audience for this music, and I think it will be a refreshing change. It's kind of hard to categorize it. It creates an initial problem in terms of the traditional marketing niches that you try to find at radio and retail. But at the end of the day, people are just going to think it's good. We're going to fight hard for them to find their audience, and I think they will.

***There's a dark undercurrent to a lot of their music, which gives it an edge.***

It's slightly unsettled. It's got this almost Hitchcock quality to it in terms of there's something not right in some of these stories and some of these moods. It's really thrilling to me. It's like Portishead meets The Cardigans. It's got some pop, it's got some trip-hop, it's got some jazz, it's got some progressive rock. It's got a lot of stuff, but it all works for me.

***You're currently working with Lisa Marie Presley. I didn't even know she was a singer. It seems like she's avoided being in the shadow of her father's legacy.***

I think she's always had a lot of music in her, and I think that she didn't have an opportunity to develop it. It's such a legacy to live up to that the natural process of somebody learning their craft and playing out or sending around demos—I think she was a little bit intimidated by the scrutiny that might have been brought on her before she was really ready for it. But she has been working on writing for quite a long time, and I think at a certain point in the last year she just said, "You know what, I do have music in me and I want to express it." So I met with her through our mutual attorney, and I was convinced, number one, that she had a really interesting and good voice, and number two, that she was serious about becoming Lisa and not just being Elvis' daughter. She doesn't repudiate her legacy, but at the same time, this is her life. I think this record has really been an act of discovery and of affirmation for her.

***What is the music like?***

We're just getting into it now. It's hard to describe. It has a certain intensity to it that maybe people aren't expecting, and a really passionate voice and delivery. It's pop music, but it's got a bit of an edge to it.

***You're also working with Billy Idol. Will it have that same pop-punk quality to it?***

I think it's a more mature side of Billy. He's at a point in his life where people are interested in him, the real Billy. Not that the punk Billy isn't the real Billy, but he's 40 years old, and he's survived a lot of things in his life, and I think he wants to talk about that. He's got a distinctive voice, and he's got some real songs. I've always thought he was a good songwriter. It's just the next chapter in his life, but it's not a punk record, nor should it be. He's a very musical guy, and he's been writing some songs over the last couple of years that really are from the heart and really do express something that's beyond just the one-dimensional image that people may have of him.

***Do you think we'll see a Glen Ballard solo record?***

I don't think that's gonna happen.

***You don't want to do it or you just don't have the time to do it?***

I suppose I could find time to do that, but I've never considered myself to have a distinctive enough voice. I mean, I can hit the notes, but to me it's all about having a voice that's compelling, that's unique and wonderful. And I think my voice is pretty mediocre. [Chuckles] I like to tell great singers that God lets about 100 million people go by and then on the next one, he gives them a great singing voice. And it's about that—a handful of truly great, distinctive voices on the planet at any one time. I didn't get one; Alanis Morissette got one.

***Who are some of your favorite singers?***

Frank Sinatra. Alanis Morissette's my favorite singer. I may be biased, but I think she's the most expressive. There are no barriers between what she sings and feels and her ability to sing it. That really comes across to me. I love Chaka Khan, whom I've worked with. Aretha, of course. Billie Holiday. Those rank at the top for me. I've worked with so many great singers, it's really overwhelming. I've been blessed as a songwriter to work with people like Barbra Streisand and Al Jarreau. It's amazing to see when they get their hands on a song, how they make it their own. That's what it's all about for me. I think I know how to make good records, but still the vocal is at the heart and soul of it.

## PRODUCER'S DESK

***You've co-written a lot of the tunes with many of the artists you've produced. I've heard a theory that the reason pop vocalists aren't as good today as they were 30 or 40 years ago is that too many people are actually writing their own material, whereas somebody like Frank Sinatra would sing someone else's material but make it his own. Do you think that some of the newer artists suffer because they don't look at the possibility of collaborations and someone else bringing something to the table?***

You know, I've never heard it expressed that way. I think it's a very interesting point to make. I think that most singers do write for their strengths. I think that Alanis writing her own material is an asset, but if someone has a certain comfort zone that they won't get out of and they're writing it all for that comfort zone, they may never stretch themselves in terms of intervals or range as they would if given a more challenging melody, one that may be more sophisticated than they may get on their own.

There are still pure singers out there like Whitney Houston, who doesn't write very much at all and yet is an interpreter of songs. She certainly has an exquisite voice. Then you have somebody like Mariah Carey, who writes virtually everything she does, and yet I think she uses her voice profoundly well. Whether you love her material or not, there's no question that she's an incredible singer. Sometimes people are better singers than they are songwriters, and to get both of those things to be world-class, top-of-the-line is hard.

Even Michael Jackson is an underrated singer. I think he's an incredible singer. He'll spend two years making a record then go out and sing all the lead vocals in a week. He's got such confidence and ability. I've worked with him sitting at a piano playing and having him sing, and it's just a religious experience. The guy is amazing. For whatever reason, people don't think of that first when they think of Michael, but he's an exquisite singer. He's expressive, has great pitch, does incredible backgrounds. His backgrounds are probably as good as anybody's I've ever heard; they're textures unto themselves.

As a songwriter, I was always interested in the best people singing my songs, then they would make the songs sound better. ■

*Bryan Reesman is a freelance writer based in the New York area.*

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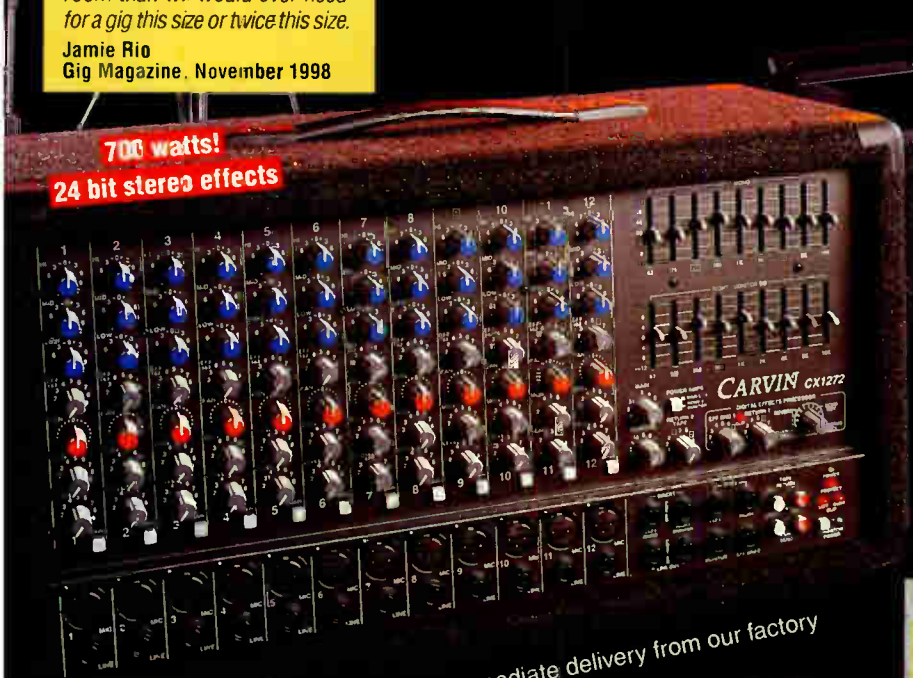





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# IN-EAR MONITORS FOR EVERYONE

## HOW TO GET UP AND RUNNING ONSTAGE

ILLUSTRATION: KELLY ALDER

In-ear monitors are not just for rock stars and Platinum cowboys anymore. The miniature speakers that fit in musicians' ears are gaining popularity, and today more and more tours are leaving floor monitors and sidefills back in the shop. Advances in IEM products have combined with their economic benefits to encourage more bands to move over to better-sounding, safer stage monitoring. We spoke with a half-dozen leading engineers who have worked with IEMs for many years about how to make the switch.

### BEFORE YOU START

Everyone we spoke with agrees that the first step is a discussion among bandmembers about the benefits of in-ear monitors and the experience of changing over. The monitor operator needs to first do a little research and find out about available equipment and how to apply it to the artist's particular situation. Larry Droppa, the IEM pioneer who works with Stevie Wonder, advises that the monitor engineer take a leadership role early on, discussing the pros and cons with the artist and acting as ambassador for the technology. Dave Pallett, who started Sarah McLachlan on IEMs four years ago, says it's important to check that no one is really opposed to it. Drummers and vocalists tend to benefit most from IEMs and are usually willing to make the switch, but guitar players, who are used to creating a pocket of sound they can step in and out of, often offer resistance. Jerry Harvey, designer of the

BY MARK FRINK

—CONTINUED ON PAGE 140

SPECIAL EVENT

# ONE NIGHT OF TIMELESS MUSIC

## *Tony Bennett, the Count Basie Orchestra and the Squirrel Nut Zippers at Radio City Music Hall*


New York's gilded midtown entertainment palace, Radio City Music Hall, narrowly escaped the wrecker's ball in the late 1970s during the last days of disco. However, unlike several other New York architectural landmarks, Radio City survived and prospered; during the following two decades the 5,874-seat room has again become a "must play" venue for top music entertainers, and it hosts a wide range of musical and nonmusical events.

Early this year, Radio City Music Hall closed temporarily for a long-needed restoration. When it reopens, in six months or so, Radio City will join the splendidly restored Grand Central Station and the enormous Main Reading Room of the New York Public Library (restorations of both were completed last fall) in a trifecta of cavernous, breathtaking spaces from bygone eras.

One of the last events staged at Radio City before it closed for renovation featured the enticing combination of Tony Bennett singing with the Count Basie Orchestra, plus young neo-swing act Squirrel Nut Zippers. The event's producers took every advantage of the production and, in keeping with the big room's swing-era heritage, the audience was greeted by several young couples who Lindy-hopped down the aisles and up onto the stage. And the show never stopped once it started. From the time the Squirrel Nut Zippers and all their gear rose from beneath the stage on the massive, elevated front area at 8 o'clock sharp until Bennett's final encore, there wasn't a single break.

As soon as the Squirrel Nut Zippers finished their unusual hybrid of ragtime and swing, they dropped below stage level via the elevator. "Radio City is one of the largest indoor venues, short of an arena, in the world," observes Tony Bennett's FOH engineer, Tom Young. "The stage is 100 feet wide by 60 feet deep, with 40 feet of offstage area. Imagine having the opportunity to put an entire act on an elevator and then wheel a legendary big band out to center stage, all ready to go! That doesn't happen at many other places."

A curtain rose and the Count Basie Orchestra rolled out on Radio City's self-propelled band car, essentially a mobile elevated bandstand that can travel the entire depth of the stage. (In a nod to contemporary production demands, the band car has been fitted with a 50-pair audio snake by house audio engineer Eddie Santini.) The 17-piece orchestra immediately launched into their first number, barely waiting for the last notes of the Zippers to fade. After a too-short, three-song set, the Basie band's solo turn was over. The band car then rolled farther downstage and the Basie rhythm section gave way to the Ralph Sharon quartet; Sharon is Bennett's longtime music director and discovered Bennett's signature hit *I Left My Heart in San Francisco*. The entire crack Basie horn section stayed put. Seconds later the star of the show walked onstage, straight from singing the national anthem at the opening game of the World Series at Yankee Stadium. The genial, ageless Tony Bennett thrilled the crowd with a long, beautifully paced set that com-

BY ERIC RUDOLPH

—CONTINUED ON PAGE 136

TEXT AND PHOTOS BY STEVE JENNINGS

On the road to support *Version 2.0*, Garbage is playing in large theaters and arenas, many of them venues the band has never played before. *Mix* caught up with them at the County Bowl in Santa Barbara, Calif., under a full moon and in what singer Shirley Manson described as "heavenly" weather.

"Shirley's rig is pretty straight forward," says Chad Zaemisch, one of three instrument techs on the tour, along with Todd "T" Confessore and Billy Bush. "We're using the new digital wireless X-wire system. Shirley's guitar goes straight into a Matchless Hurricane head that goes to a 1x12 cabinet that's offstage in an isolation box. Then we have a SansAmp to control her distortion. Steve [Marker] has a 2x15 powered by his Matchless head. For Steve's guitar rig, we have two of the GCX ground control units in the rack with about 12 or 14 different total loops all set and done; it basically controls the TC preamp units and the DigiTech amp unit, and the Matchless hot-box—those are his main distortion sounds. He has a MicroSynth, as well."

"Shirley's vocal mic being the only ambient mic onstage," monitor engineer Brian Keeffe says, "I wanted control on what comes into that mic, so I have the new Drawmer de-esser that SSE provided me with—it's very fast, both on attack and release. I run it out of the de-esser into the BSS Varicurve, which is one of the only programmable parametrics you can get that actually notches. I notch around the 2kHz area—because there generally is some room resonance. I try to contour in the low mids to keep the body of her vocal from hitting the compressor too much. It doesn't have high and low patch filters, so I use a notch at the bottom as a highpass, then I use the console EQ as a lowpass, then it goes into the Focusrite 3, which is a great-sounding compressor. I'm using the SPX-900 on Shirley's vocal to give it a bit of pitch-shifting for some of the ballad-like songs. She likes her vocal real dry and right up the center. I have a SansAmp for her vocals and guitar, for a bit of distorted sounds, and the rest is just input compression on bass guitar, some of the D-Drum sound and the keyboards. Sennheiser, out of Chicago, is the in-ear company we're using. For the band we have the Pro-4, which is a modular unit; for Shirley we have this new dual element driver called the 2X—bass and treble driver with a built-in crossover network inside. It has a lot of fidelity and top end."

ALL ACCESS

# garbage

*"For this tour we're using a lot more technology," says drummer/producer Butch Vig. "We are literally trying to take the studio setup and translate that to live. There's so many samples on the record (Version 2.0), we decided why not just load them onto the D-Drum sampler, and then use the same sort of monitoring thing? In the studio you isolate everything, so that's why the drums are all taped down: There's no acoustic mic sound; the acoustic drums are all firing off samples. There's just two overhead mics, which are compressed. I've got the bass thumpers for my drum stool since we're all on in-ears, so I get some feel for the rumble, like the kick and bass. Once you work that way with in-ears I don't know how you ever go back to wedges."*

*"The only open mic I have in the monitor rig is Shirley's vocal mic," says Brian Kneffe. "I only use the overhead on two songs; the rest are direct inputs. I'm using the Midas XL-3 console; I think it has one of the best sounding preamp EQ sections made."*

*"For drummer Butch Vig's kit we're using Audio-Technica 4050s for overheads," says drum tech Confessore. "The four acoustic drums are filled with packing peanuts to deaden the sound. We have a custom-made rack with the triggers and everything coming from the monitor board run through it. The D-Drum is going to it as well, and we run two D-Drums simultaneously—if one goes down we have a backup with the flick of a switch. Butch can change the sound on each pad, per song if he wants."*

*"My rack includes an H3000 for pitch-shifting vocals and a Roland ST330 for changing tempos," says FOH engineer Tom Abraham, pictured in front of the Soundcraft Series Five console. "We have three Behringer Virtualizers that I use for special vocal effects. Shirley's vocal goes through the BSS 901, and the output of that goes into a Behringer Composer Pro just to do a little more leveling. The rest is a Klark Teknik BN-500 compressor and a Manley Variable Mu inserted on left and right. The sound company for our tour is SSE Hire from Birmingham, England; all the electronics come from England—it's a 240 rig with a transformer." The tour is using Nexo Alfas. "The subs are unbelievable on the rig," Abraham says. "the best subs I've ever heard."*

—FROM PAGE 133, TONY BENNETT

bined hits with superb lesser-known material.

### ACOUSTIC TREATMENTS

The magnificent hall of Radio City, with its gilded sunrise proscenium and triple balconies, presents several challenges to the conscientious audio engineer. Above the last balcony is a large back wall that was originally an absorbent surface but is now quite reflective, and the front surfaces of the three balconies are also reflective. "Those surfaces present problems, but the cost of putting up acoustic treatment for one show would be prohibitive," explains Young, who took over mixing Bennett's show four years ago (from *Mix* Sound Reinforcement editor Mark Frink) shortly after the retirement of his previous client, Frank Sinatra. "If we were going in for a month you would want to bring in some material to absorb the energy."

The large back wall and balcony fronts were, in fact, originally built as absorbent surfaces, according to acoustical consultant Sam Berkow. Berkow's Manhattan-based company, SIA Acoustics, conducted an acoustical evaluation of Radio City Music Hall in 1994. "Radio City is a beautiful room with wonderful staging opportunities," he says. "However, if you are onstage or sitting in the first orchestra section, you're likely to hear a slap-back from that large wall and from the fronts of the three balconies." Those surfaces were originally fabric-covered wooden frames over cinder block walls with acoustic damping material placed between. "The hall was built in the early 1930s, and since then the absorbent material decayed," says Berkow. "The fabric covering was later coated with fireproofing, which rendered the surface more reflective." Overall, however, Berkow (who built a 3-D acoustical computer model of the room) says that Radio City is "not all that reverberant. The scalloped edges of the proscenium arch and the light slots built into the ceiling make it quite dry for so large a room."

Young carefully selected a speaker system to help keep the reflections down. "The key to Radio City is really in the hang of the P.A.," he explains, "to direct energy into the audience and not at the walls. That is one reason I used the Turbosound Floodlight speakers which, despite the name, are a higher-Q box without wide dispersion. My basic approach was to use a large center speaker cluster to keep the energy off the walls. If I'd gone for a larger left and right setup, the problems would have been greater." Young flew a four-by-four center cluster of THL 760 Floodlights as well as left and right clusters of two cabinets wide and four deep. Eight Turbosound TSW 721 bass cabinets were ground-stacked to each side, with three more Floodlights perched on top.

Fortunately, Young's crew was able to rig the cabinets the day before, an expensive luxury considering the show was a one-nighter. "If I'd had to hang the boxes the day of the show, we wouldn't have done as well as we did," Young says. The trick isn't all in speaker placement, however. "I also balanced the energy so the room doesn't get overly excited, and that is easier to do with acoustic acts," Young says.

### TIGHT FEEDBACK REJECTION

Other than the P.A., Young's basic gear was the same as what he uses for Bennett's other shows, most of which take

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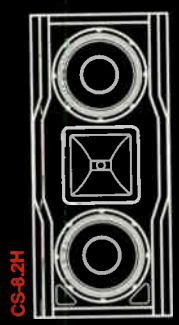

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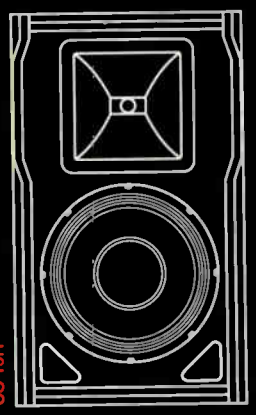

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place in 2,000 to 3,000-seat theaters, Tony Bennett has used a Sennheiser SKM 5000 wireless condenser mic for the past three years, since upgrading from the ubiquitous SM-58. "The SKM 5000's super-cardioid pattern capsule has really tight feedback rejection—he's often a foot or more away from the capsule," says Young. "As you get close, the tonality doesn't change all that much. And when he's two feet from the mic, it sounds much like it does when he's closer. You pull most vocal mics two feet away and they're just gone."

Miking the 17-piece Basie band was a challenge. The Basie horn section uses a classic big band setup of three rows, with the reeds in front and the trumpets behind the 'bones; Young says that they've been working that way forever and aren't comfortable moving things around, but the setup was so tight there was no room for mic stands. Eighteen-inch goosenecks clamped to each music stand got the mics in the proper placement and kept them low-profile.

The reeds got AKG 414s, the trumpets and trombones Sennheiser 421s. "I try to choose mics that will give a good natural definition of the instrument without much EQ," Young notes. "The 414 is especially good for reeds, be it a flute or sax, because the pattern is switchable to a tight cardioid."

Young's outboard effects are minimal. "I use a Summit Tube Compressor to add some warmth to Tony's sound," he explains. "I also use a BSS 901 dynamic equalizer on Tony's vocal. Every singer has something in their range which is excited a little bit more than something else. Rather than take that out of the house EQ, you can use this unit to frequency compress it when they hit it past a certain threshold." Young eschews gates. "Both Tony's quartet and the Basie band are jazz bands, and with the wide range of dynamics they use, sometimes going down to just brushes, you can't really be closing off mics. I use compression on the bass, kick, snare and guitar just to cover peaks, with a dbx 903."

Whereas the Squirrel Nut Zippers used a Yamaha PM 3000 along with a Ramsa WRS 840 monitor console offstage left, Young ran Bennett's monitors from his front-of-house PM 4000. Bennett's onstage monitors were arranged in a slightly unusual configuration, which Young developed during his 13 years working for Sinatra. "Tony is used to hearing the front-of-house P.A. and the room," he points out. "To make singers like Tony Bennett comfortable you really have to simulate a concert hall atmosphere onstage so it marries very well with the house." To achieve this, Young flies four Turbosound side-fills upstage and downstage, so the sound is all around the singer—the only signal in the side-fills is vocal. Young also adds minimal monitoring for the musicians. "It's the idea of sound reinforcement in its truest sense—I start acoustically and then work from there," explains Young. "If there is something the musicians can't hear because of the acoustic environment, then you bring it in. That allows me to run the monitors from the front of the house."

As if proof were needed that Bennett appreciates good room acoustics, he closes the show by singing "Fly Me to the Moon" without the aid of the sound system. "That's something Tony's been doing for many years," says Young. "Because of the curvature of the ceiling at Radio City, you hear just as well at the top as you do at the bottom." ■

*Eric Rudolph is a frequent* Mix *contributor based in New York City.*

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—FROM PAGE 132, IN-EAR MONITORS

UE-5 earpiece, who just finished touring with Van Halen, agrees, adding, "If the band is willing to try, I'd first tell them how it's going to be different—not just the isolation, but also the benefits of monitoring yourself more clearly." He suggests everyone try it for a couple of soundchecks before making a decision. "Until you try it, you won't know how much tighter your playing can be."

"You have to start with the earpiece, the same way people used to get together and listen to wedges when they started a tour," says Droppa. Pallett recommends seeking advice on earpieces before making purchases for the entire band. "The problem is that you can't really try custom molds unless you just go ahead and buy them," Pallett explains. "Research different models and talk to people who have tried them." He points out that Walkman-type earbuds don't provide enough isolation unless the stage is quiet, in which case you don't need them anyway. "What you'll find, given a half-dozen models, are six different sounds," Droppa adds. "Most people don't have that luxury and must rely on the recommendation of someone that already has a pair." He suggests first listening to a CD player or home stereo for a few weeks to get used to what they sound and feel like.

Rob Nevalienen, who has mixed IEMs for Stephen Curtis Chapman, Luis Miguel and Styx, suggests getting your feet wet by bringing your molds to wedge gigs before your band makes the switch. "Engineers can plug into a console's headphone output and get a feel for what individual inputs sound like with the earpiece's isolation." Before you put it in a musician's ears, you should try it yourself and learn the limitations and what you can do to sweeten it up in a mix.

Steve McCale, who mixes "ears" for the Steve Miller Band, suggests practicing by making stereo headphone mixes before introducing the technology to the band. "Then one day you can run a cable onto the stage at soundcheck to let the guys try monitoring with a pair of good closed headphones before they've even spent a dime," explains McCale.

### MAKING THE TRANSITION

Using IEMs in rehearsal gives a band the chance to try them without the pressure of a gig. "Find a rehearsal space that you can rent out cheap and play for a while," suggests Ian Kuhn who's mixed IEMs for the Dave Matthews Band for several years. "Time and again I've seen bands jump into it before a show, and they're the ones that have more problems." Pallett agrees that it can be awkward to work them in on-the-fly while touring. For bands already out doing shows, Harvey suggests making the transition with one member each day to give them the proper attention. "In the real world, this stuff shows up in boxes at the gig and you've got to try to work with one person at a time."

"I recommend an all-or-nothing approach because hybrid monitor systems are more difficult," says McCale. He insists on getting rid of the wedges and minimizing ambient stage sound from the backline so the new approach has a chance to show what it can do, though using a woofer or bass rig to add sublows to the drums or bass can be helpful. "Make sure each mix is together before you hand it to each musician, because they won't have the patience to listen while you learn," McCale points out. "Get the mixes started during linecheck and then begin with the drummer, adding one musician at a time until everyone's rocking with a killer instrumental mix." He advises bringing in vocalists last, but not until their mix is ready, with a big, fat, wet sound so they can have a positive first impression.

### PROCESSING REQUIREMENTS

Mixing IEMs differs from wedges. You have to be more accurate with the mix, but you're no longer managing feedback with EQ at the expense of sound quality. Outboard equipment for in-ear monitors is a typical FOH complement of gates, compressors and effects. In reality it's more like mixing for broadcast. "It's like doing a remote mix because you're kind of removed from the listen-

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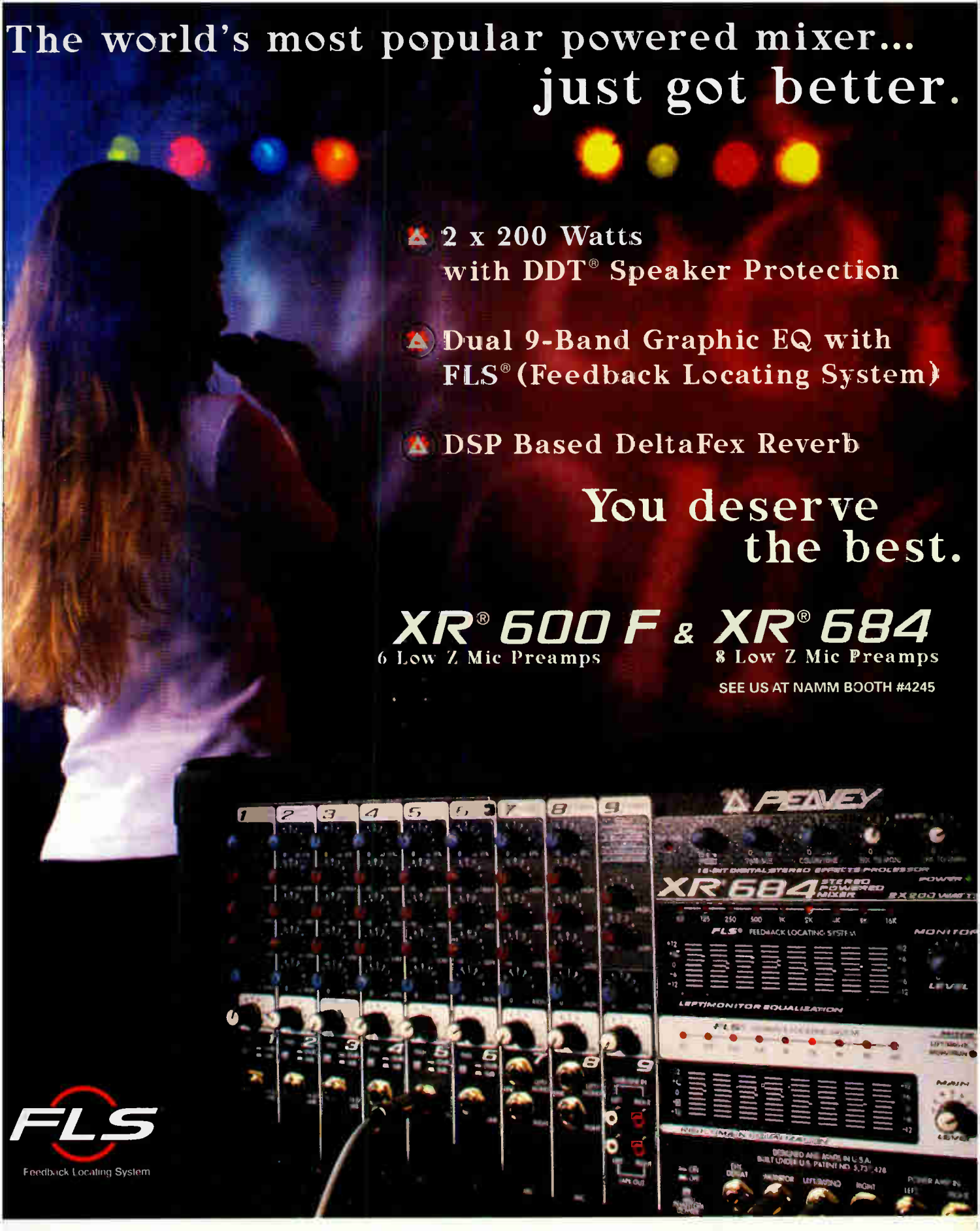


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ing environment," Nevalienen explains. "You have to add 'size' back to the mix with reverb and audience mics, but you also have to squash the dynamic range to keep things from jumping out, especially on vocals and guitars, which you wouldn't normally do with wedges."

"Any featured vocal mics must have a compressor inserted, using high thresholds with high ratios," McCale advises. The vocal is often the loudest element of the mix and the most dynamic, so if you don't limit it individually, every time it peaks, the whole mix is going to pump and breathe as it hits the master limiter. Compression on bass, kick, snare or drum machines allows more overall level, because it's easy to clip a mix. "You also need mix compression because the built-in limiters are a little too stiff," Harvey cautions. "You need them for protection, but you don't want to run into them more than a few dB." Droppa emphasizes that mixing IEMs is not the same as wedges. "As the mix keeps building, you reach a point where you can only put more of something in by taking other things down," he cautions.

Each singer's vocal is usually panned to the center in his or her own mix. "A little reverb or chorus-reverb adds dimension to the vocal, making it clearer and easier to hear," McCale explains. "I like a Harmonizer with a few cents of shift to spread it out. It's not like you have to sauce up the guitars, but a little ambience on the drums makes a world of difference."

Rather than a static wedge mix, you're going to be doing a full mix, pushing cues and making fader moves that mirror what's going on at FOH. "You definitely need to actively mix the show," Harvey says. "You'll be riding solos and pushing up singers when they're quiet." He also points out that there are details to how the mixes are structured, and some individuals will prefer a static mix to the fader moves. "There's going to be bandmembers that are pre-fader on many inputs, like drummers, while others are post-fader," Harvey continues. "The down-center star will want to hear all the cues, but the guy playing rhythm guitar won't want to hear the lead guitar come up whenever there's a solo."

Essentially, you end up mixing a record every night. "FOH engineers have the most applicable skills," McCale comments, "and have the easiest time making the transition to being an IEM

engineer." For a frustrated monitor engineer who would rather be mixing house, IEMs can be a welcome relief. With ear monitors you're concerned with image, tone and definition instead of feedback, which is a lot more fun—you get to mix music instead of just getting the voice loud. McCale points out that the pan pot becomes important. "The difference between having something located at 1 o'clock or at 3 o'clock in your head can make more difference than 6 dB of level change," he adds.

Minimal equalization of mixes is helpful but not necessary, and the parametric output EQ on several consoles is considered more than enough. "A standard graphic works if parametrics aren't available," Harvey says. "There's often three points of EQ that can help. Wide, rather than narrow filters work better." He suggests boosting 100 Hz, cutting around 3 kHz and then maybe a wider cut around 5 kHz to make the highs above that stand out. "RF systems don't like high-frequency boost—it freaks out the transmitter," Harvey adds, pointing out that most wireless systems include a built-in high-frequency boost to counter the transducer's roll-off. "It's better to use the belt-pack's built-in boost for sibilance along with cuts to keep it from getting harsh."

### AMBIENCE MICS

In addition to needing as many inputs as the FOH desk, a monitor desk must also have enough inputs for ambience mics, which pick up the audience and the room. "Audience mics help ease the transition for artists by giving them the crowd's reaction," Nevalienen comments, while Kuhn points out that "the right combination of ambient mics can be better than reverb effects. I rely on the natural reverb of the room, although for quiet songs it's nice to add some reverb to the snare." Kuhn also finds that he gets a lot of useful room ambience from the drum overheads. Harvey finds that monitor mixes inevitably contain ambience from the drum overheads and open vocal mics. "But it's not the same as properly placed, dedicated room mics," he notes.

Locating a pair of ambience mics in neutral spots downstage out of the P.A.'s pattern on each side of the artist replicates the sound they would hear naturally and helps to identify individuals in the audience. "I always make sure the ambience mics are on before the artist puts on their ears so they never feel isolated," reports McCale. A pair of pencil condensers like SM-81s or C-460s are commonly used, but nearly everyone cited something like a Sennheiser 416 short shotgun as their preference. Droppa agrees that ambience mics are essential but notes that some artists like to be in a closed-off environment, more like a studio headphone mix.

### CHOOSING EAR MOLDS AND 'PHONES

The two kinds of transducers used inside the various earpieces are the diaphragm-type found in Walkman ear-buds and the armature-type found in hearing aids. The diaphragm-type is ported to tune the low end and therefore allows more ambient sound into the ear, but the improvement in bass response is at the expense of highs. The armature-based transducers have more highs, but often peak around 3 kHz, where hearing impairment generally first occurs. Two-way earpieces, like high-fidelity speakers, use two transducers, each optimized for the frequency range they're intended to cover, allowing higher headroom, better frequency response and lower distortion. (For a detailed look at available ear pieces, refer to "Choosing In-Ear Monitors," in the July 1997 issue of *Mix*.)

"I own 15 or more different models of earphones, and the high-end dual-transducer molds make a huge difference," Nevalienen points out. "It's like comparing the factory in-dash speakers in your car to the two-way speakers you'd replace them with." He suggests using the same model as the bandmembers for accurate monitoring. "If a band is financially able, I suggest they dive right in with top-of-the-line custom molds," Kuhn agrees. "A proper fit often makes a big difference in sound quality and comfort, giving the best impression of this technology's ability." The ability to monitor at safe levels is only possible with earpieces that offer isolation from stage noise. "If you've got your ear mix going full-blast to get over the stage level, then you're more than likely damaging your hearing," Nevalienen adds. "Whatever products you choose, get as much isolation as possible."

### SHORTCUTS. CAN MONO WORK? MUST IT BE WIRELESS?

When set up for stereo, IEMs will require almost twice as many outputs from the monitor desk as wedges, plus additional sends and returns for reverb. A band that was happy with four wedge mixes may wind up with a dozen IEM outputs, plus an additional drummer's send for subwoofers or

"shakers" that can produce the low-frequency impact that the IEM transducers can't deliver.

If the number of buses on the monitor console is limited, only mono mixes may be possible at first. Though a mono mix has more clarity than a wedge, without stereo you can't get the benefit of centering the artist while panning other inputs around to create space. "We live in a stereo world, and that dimension keeps you in touch with what's going on," Droppa says. "By the time you get an entire band's worth of inputs piled up, you have difficulty maintaining distinction between instruments."

Most engineers insist on stereo mixes. "You get so much from the stereo field you listen to naturally that when you're in mono it sounds alien," McCale points out. "If you listen to similar inputs in mono, it's hard to tell one from the next, but when they're panned, it's easier and you can even turn down the volume." If you can't afford limiters, reverbs or wireless, at least make sure everyone has stereo mixes. "I'd prefer stereo even if it meant giving up effects sends," Nevalienen agrees, though he advises keeping at least one



# QUICKTIP

## WIRELESS IEMS FOR CUEING AND COMMUNICATION

While mixing monitors for k.d. lang last year, I started using in-ear monitors instead of a traditional cue wedge and have discovered several advantages. For example, at the beginning of the show, k.d. could easily turn her back to the audience for a moment and whisper comments into her microphone that only I heard, eliminating the frustration of hand signals. Another benefit of IEMs is that incipient feedback can be heard before it actually goes into oscillation.

A wireless IEM system switched to mono mode allows two inputs to be mixed together. This enables one to combine the monitor console's "cue" output with the intercom system, a setup that can speed communications, especially during soundcheck. The FOH engineer can speak to me immediately, wherever I am onstage, without having to wait for me to notice the intercom call light. Often, only a hand signal is needed in response, so I may not even have to pick up the intercom.

Another advantage of a wireless IEM system fed with cue/intercom is that you can check monitor mixes and inputs without having to stand right in front of a cue wedge. This means that you can hear what another monitor engineer is doing without getting between him or her and the cue wedge. I find this particularly helpful when I'm working as a sound company tech, as I can still monitor the stage action from catering. When an act brings in their own IEMs, I can easily monitor their engineer's mixes, and I can also hear any intercom conversations, allowing me to more quickly assist in troubleshooting. And, with a mono feed, I can carry on a face-to-face conversation by taking out one ear mold, without missing any cues. Despite the expense of a wireless system, the freedom of mobility and the time saved solving problems can more than justify the cost.

*—Mark Frink*

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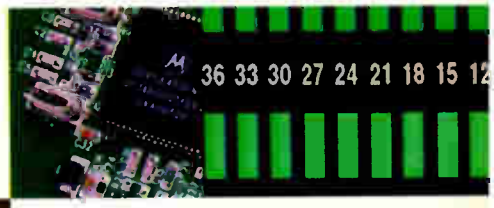


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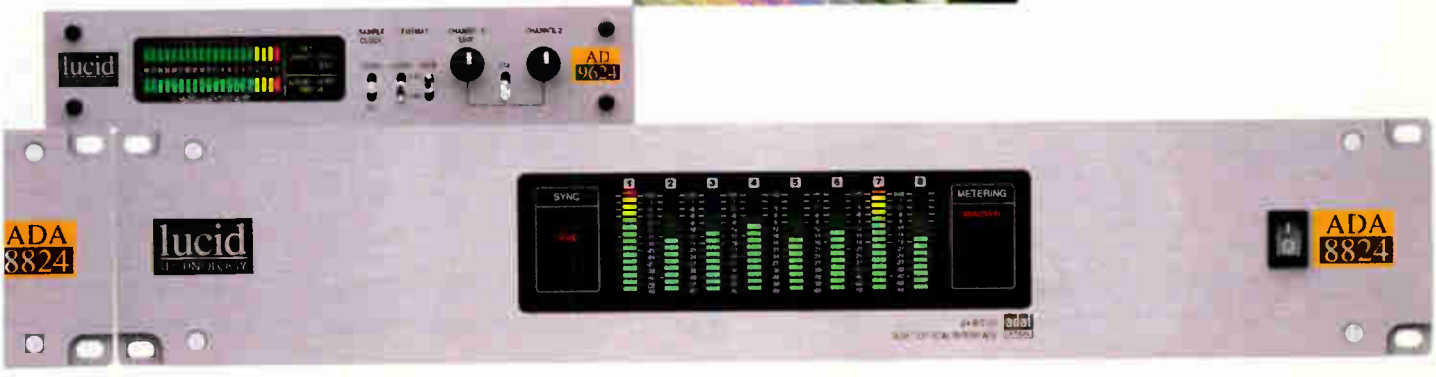


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aux bus free for vocal effects. "You can send to a reverb from a direct out, but on many consoles they're pre-fade, so they don't work well for vocals."

Shortcuts for dedicated effects include using direct outs or inserting on input channels, and aux bus inputs can be used as effects returns. "You could insert on a snare or an acoustic guitar—any single instrument that needs reverb," Harvey proposes. Similarly you can take a direct out for the kick and bass DI to send to subwoofers between those two players. McCale doesn't recommend running the entire mix through a reverb, though: "You wouldn't want the same effect on everything, because some inputs need to be dry and tight."

Just as with wedges, it's hard for vocalists to share a mix. Two musicians can sometimes share a stereo mix, which is better than each having a mono mix because by panning inputs, they'll both get a better sound field. "More than two is difficult, but I could see a bass player and drummer sharing, or two rhythm players," McCale offers.

Everyone agreed that hard-wired systems generally have better sound, lower cost and less potential RF problems than wireless. Harvey points out that with wireless you only get partial stereo separation. "You only get 9 o'clock and 3 o'clock, instead of hard left and right," he notes. Though standard headphone amps can be used, hard-wire beltpacks are less likely to blow up the earpieces and allow musicians to adjust their own volume. Drummers can go hard-wire, but anyone who moves around needs wireless. Money saved on the drummer's hard-wire tends to get spent on a subwoofer or drum-throne shaker for added impact. Even with a protection limiter and custom molds, IEMs costs less than the wedges and amps they replace, but the full advantages require a dedicated console that travels with the band.

## IEM ADVANTAGES

IEMs can lower sound exposure and help conserve hearing because individuals no longer have to compete to hear themselves over others. Besides the obvious advantage of effectively eliminating feedback, IEMs can reduce vocal fatigue, particularly on tours with multiple consecutive gigs. And IEMs allow more accurate monitoring. "Every musician who has made the switch says it's a more musical experience," Nevalienen comments. "They can hear themselves and the entire performance more clearly, and become more excited about playing." McCale says that when the band can hear better, they play tighter and sing better, and this all translates into better paychecks and longer careers.

Though it's often difficult for the monitor engineer to tell what an artist's stage wedge really sounds like, IEMs will reproduce the mix with consistency and accuracy. Further, a wireless system mix will follow a musician all over the stage without any significant change—musicians who know their way around a mixing board can walk right over and fix their own mixes during soundcheck without disturbing the monitor guy, who may be busy catering to the star. "Musicians will more easily be able to hear what they want and they'll have more fun," says McCale. There are also unique communication possibilities with artists able to talk to their engineers or each other without being overheard by the audience. Changing the set list mid-show can be as easy as whispering into a talkback mic.

Night-to-night consistency is another significant benefit. "After you have the

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band happy in rehearsal, when they step out onstage, no matter what size the venue, they still have the same sound," explains Harvey. Besides the possibility of eliminating soundcheck, often a requirement in festival situations, opening acts may find it easy to carry a small rig that's dialed up and ready to go. Some bands have found they can carry a complete monitor rig in the cargo bay of the bus and, short of the console, can more easily ship it overseas.

There are uses for IEMs offstage as well. An in-ear system can effectively replace a rehearsal monitor system, reducing the impact of band practice on the neighbors, and vice versa. Several interviewees also mentioned the recent trend among IEM-aware musicians who bring their IEMs into the studio. "It may seem like it costs more up front to get into in-ear monitors, but in the long run it can save time and money, in addition to hearing," McCale points out. Add to all this the potential for a cleaner, clearer concert experience for the audience as the stage volume is reduced and the FOH engineer is given more control of the show, and you have a winner.

### AVOIDING THE PITFALLS

Before we leave you thinking that

## NEW AT NAMM

*The following in-ear monitor products were unveiled at the L.A. NAMM show the last week of January.*

**Beyer SMS 600.** A synthesized, microprocessor-controlled wireless stereo in-ear monitor system that operates 16 channels in four banks on carriers between 798-822 MHz. The half-rack transmitter features a menu-driven LCD control panel that displays both channels of audio level, operating frequency, input level and user name. Front-panel LEDs indicate operation of fast-attack limiters and stereo/mono setting. Unique features include 5-band fixed EQ with five presets, configurable from a Windows computer, allowing the user to tailor the response of the earpieces. List price $4,999.

**Future Sonics EM-2.** The original IEM is joined by a second model of the Ear Monitors brand custom earphones, a two-way design offering maximum reduction of ambient sound. The original Ear Monitors custom earphones allow some ambient sound and have ports to contour low-frequency response.

**Garwood IFB-1624.** Uses the same 16-channel synthesized circuitry as the Garwood TS transmitter, but has independent input level controls for each channel; the rear panel enables you to switch between line level, RTS and Clear-Com inputs. Designed for on-air talent and presenters, it is possible for the user to adjust the relative level between the two inputs at the supplied LV-2 receiver ($2,999). The miniature LV-2 dual-frequency beltpack ($999) has an integral antenna and runs on a single AA battery. The IFB can also be matched with a 16-channel TS receiver for the same price.

**Jensen Music PM.** This low-cost 2-channel system operates at 803 or 807 MHz. The PM RX-100 miniature receiver is much smaller than other body-packs, comes with generic Walkman-type earbuds and together they list for under $250. Transmitters and receivers are sold separately.

**Sennheiser EK-3053.** The new IEM receiver for the 3050 system has more output and a large exterior knob on its volume pot.

**Shure PSM-700.** This second-generation, frequency-agile 16-channel synthesized wireless stereo in-ear monitor system offers a 6dB improvement in S/N and operates between 722-745 MHz on one of two groups, allowing up to 16 systems to be used simultaneously out of 32 frequencies. The transmitter's half-rack chassis has 8-segment LED signal and limit metering, local headphone monitoring, group switch and channel select. The beltpack receiver also has group and frequency select and improved reception for greater range. List price is under $2,000. Also available is the PA-770 antenna combiner.

**Shure E-5.** The first dual-driver "universal-fit" earphone has armature technology and offers greater fidelity. It uses an improved rugged clear Mogami cable, a metal-shaping strain-relief behind the ear and an improved foam tip. An optional custom soft silicone sleeve is available. List is around $600.

*—Mark Frink*

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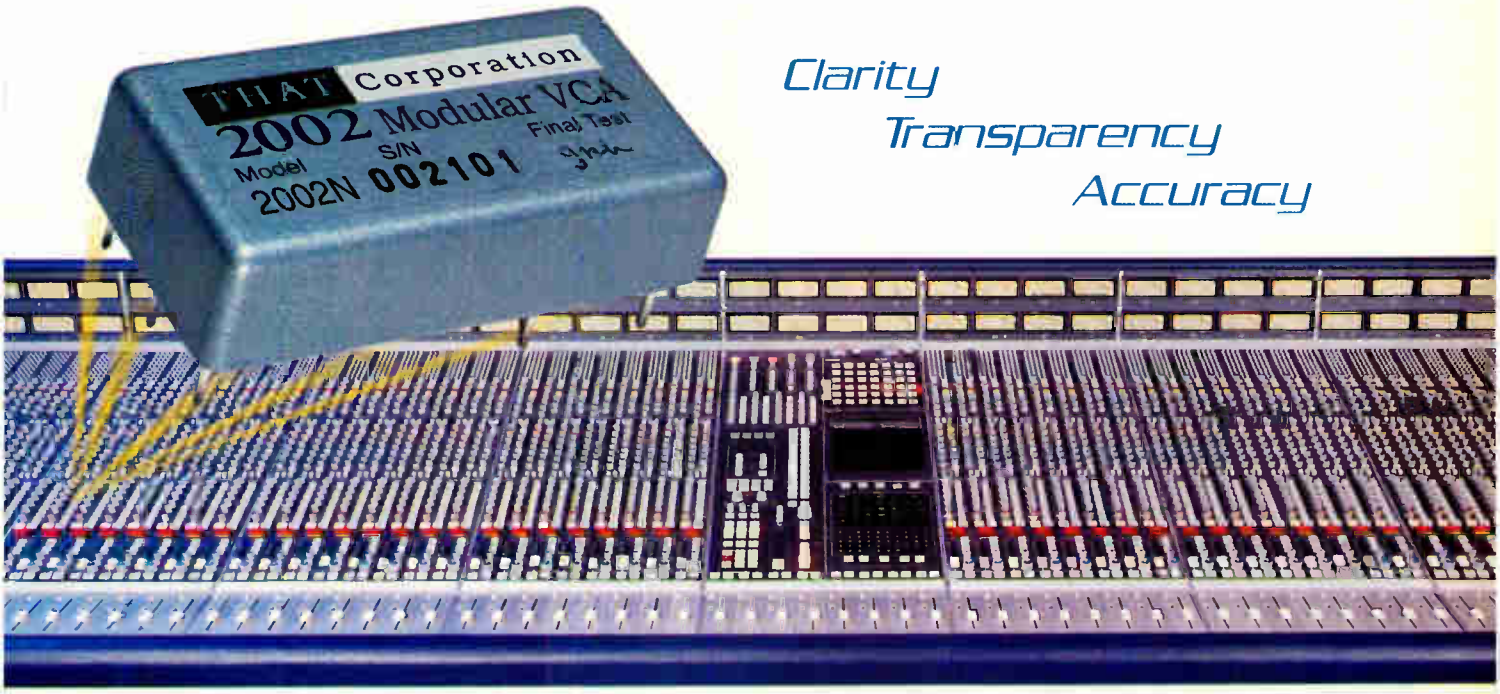


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# New Sound Reinforcement Products

### HARRISON LIVE CONSOLE

The Live Performance Console (LPC) from Harrison (Brentwood, TN) is a digitally controlled analog mixer with a 74x36-inch control surface and up to three 80-input racks, normally positioned at the stage or close to the input sources, and controlled via copper or fiber optic links. Input channels are individually switchable between two inputs, so a 40-channel control surface can control 80 inputs, and each input channel accepts three mic and one line-level input, allowing for a maximum configuration of 720 mic and 240 line inputs. Its automation package can instantly recall up to 10,000 preset cues, including input select, EQ, dynamics, routing and levels. Any of the 32 MixMaster buses (assignable as group, aux or matrix send masters) can be controlled from any fader. Additional features include motorized faders and pots, four stereo output master buses, 4-band EQ with HP filtering and comprehensive dynamics control.

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### NEW A&H MIXWIZARDS

Allen & Heath (Sandy, UT) intros a new MixWizard small-format live sound console, the WZ12:2DX ($995), featuring eight mic/line inputs, two dual stereo inputs, 4-band EQ, six aux sends, 100mm faders, and built-in DigiTech stereo effects with 16 presets and MIDI control capabilities. The unit can be reconfigured for desk, rack or flight case mounting. Allen & Heath has also upgraded its 14- and 16-input MixWizards, now named the WZ14:2:2+ ($1,495) and WZ16:2DX ($1,195), respectively, and has added an oscillator/noise generator and switchable phantom power to the former and DigiTech FX capability to the latter.

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### ARX 2-CHANNEL AMP

ARX Systems (Victoria, Australia) debuts the dual-channel ZR850 power amplifier, the first in the new ZR Series. Featuring new generation lateral MOSFET output devices and a toroidal-transformer-based, non-switching power supply, the ZR850 is rated at 300 W/ch into 8 ohms or 400 W/ch into 4 ohms. Headroom Enhance circuitry provides maximum power levels under all conditions and eliminates clipping. Inputs are XLR and ¼-inch; outputs are Neutrik Speakon.

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### WOODWORX WAVESERIES SPEAKER

Woodworx (Greensboro, NC) intros the WaveSeries WX 15A, a two-way system featuring a single 15-inch woofer and a 1-inch compression driver on a 70° constant-directivity HF waveguide. The trapezoidal cabinet is constructed from ¾-inch poplar and birch plywood. An internal crossover allows for full-range and bi-amplified powering, and the unit is capable of 120 dB SPL. Options include integral 12-point rigging hardware and a white finish. The standard WX 15A (two handles, stand mount, gray finish) is $747.

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### NEW GALAXY HOT SPOT

The CORE PA5X140 powered monitor speaker from Galaxy Audio (Wichita, KS) includes a ferrofluid-cooled, 5-inch driver and an integrated 100-watt amplifier. Designed for flexible close-range P.A. and monitoring applications (similar to Galaxy's HOT SPOT), the 13-pound system is capable of 114 dB SPL and features a frequency response of 150-15k Hz. XLR and ¼-inch inputs have individual volume controls, and an automatic gain control circuit adjusts for instrument, mic and line inputs. The unit also includes a 3-band EQ, a built-in compressor to prevent clipping and a post-EQ RCA output. Price: $399.95.

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### SHURE DIGITAL PROCESSOR

The DP11EQ digital dynamics processor from Shure Brothers (Evanston, IL) is a computer-controlled unit with comprehensive dynamics control, 9-band parametric equalization (plus high and low-cut filters) and up to 1.3 seconds of delay. Designed for fixed installs, the line-level DP11EQ is configured via provided Windows-based software with point-and-click manipulation of threshold and ratio settings. A transfer function display allows monitoring the effects of the various dynamic control processes, including gate/expander, compressor, limiter and no-overshoot peak limiter functions. Settings are stored in nonvolatile memory, and the system can be made tamper-proof when the PC is disconnected. Up to 16 DP11EQ units may be controlled from a single PC. Price: $800.

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*John Meyer holds numerous patents including a low distortion driver/horn combination which is utilized in the UM-1P, and one for the perfectly aligned phase response through crossover (zero-pole crossover) utilized in both the UPA-P and UM-P.


# ...AND NOTHING BUT THE GAIN

## THE NEWEST IN UNACCESSORIZED MIC PREAMPS

**by Loren Alldrin**

Nowadays, more and more microphone preamps are coming loaded to the gills with additional processing. You've got compression, EQ, enhancement, limiting, de-essing—everything but onboard pitch correction. For folks in the market for one box that does it all, these feature-packed preamps are a great solution.

But what if you just want good, clean gain with no frills? There are still plenty of mic preamps out there that deliver the gain and nothing but the gain. In fact, numerous such preamps were introduced in the past year. Here, in alphabetical order, are the latest mic preamp offerings.

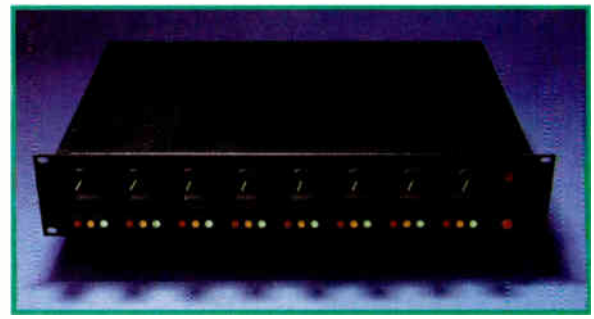
### SIMPLE GAIN

The **Amek** 9098 ($1,710) offers stepped gain and variable trim controls, DI inputs, phase reverse, highpass filter, mute switches and eight-segment metering. Designed by Rupert Neve, the whole Amek 9098 Series system (preamp, EQ and compressor/ limiter) offers the sonic heritage of the 9098 console.

**Aphex Systems** has introduced a new 8-channel preamplifier with remote control capabilities. The Model 1788 ($5,000) offers continuously variable gain (even by remote), unique microphone output limiter, 26dB pad, variable maximum output level, separate analog outputs per channel, and advanced metering with remote option. The Model 1788's remote protocol is standard MIDI, RS-232 or RS-422.

**The Crane Song** Flamingo ($2,025) is a 2-channel discrete Class A mic preamp that offers four unique sounds through its Fat/Norm and Iron/No Iron switches. These change the amplification color and presence of iron in the signal path, respectively. The Flamingo also offers stepped gain control and variable attenuation, transformerless balanced inputs and outputs, 22-segment level meters, phase reverse and phantom power.

**The Curtis Technology** Opre8 Microphone Preamplifier ($2,495) is an 8-channel mic pre in a 2U rackmount chassis. Each channel features a 10-segment multicolored LED VU meter as well as backlit buttons for a 20dB pad, phantom power and polarity



*Curtis Technology Opre8*

reverse. Each channel includes a separate digital control circuit, and the Opre8 power supply is based on a toroidal design. The unit also includes a basic 2-channel mixing bus. All I/Os are balanced XLRs.

**Demeter** debuts the HM-1 tube stereo mic preamp. The HM-1 ($1,295) combines 12AX7 tubes and solid-

*Demeter HM-1*

state output driver circuitry. Each channel of the HM-1 offers instrument input, highpass filter, pad, phantom power, phase reverse, gain control, output level control and 10-segment LED meter.

**Grace Designs** introduces the Lunatec V2 ($1,495) and Model 801R ($5,495, $995 for remote) mic preamps. Designed for field recording, the 2-channel Lunatec V2 runs off DC power and offers stepped gain

*Grace Designs Lunatec V2*

control, output trim and switchable highpass filter and M/S decoding. The Model 801R is a remote-control version of the Model 801 8-channel preamp. Through serial control, users can adjust parameters such as gain, phase reverse, phantom power and mute.

Two new preamps roll out of **Great River Electronics**, the MP-2X and MP-4X. Both are modeled after Great River's transformer-coupled MP-2 and offer unique low-impedance balanced topology, hum-bucking input capacitor array, high-impedance FET instrument inputs, 24-position stepped gain knob, phase reverse and pad. The 2-channel MP-2X has a list price of $1,250; the 4-channel MP-4X lists for $1,975.

New from **HHB** are the Radius 10 stereo tube mic preamp ($749) and the Classic 80 stereo tube mic preamp. The Radius 10 offers input and output level controls, phase reverse, highpass filter and drive/peak LEDs. The Classic 80 uses a transformer-coupled Class A discrete input followed by a EF86 pentode tube; each channel then passes through two additional triode tube stages. Other features of the Classic 80 include switchable input gain with variable trim, low- and highpass filtering, unbalanced instrument inputs, phase reverse switch on second channel and output level controls.

The **Lafont** LP-21 is a 2-channel mic preamp that offers up to 75 dB of gain via separate coarse and fine gain controls, seven-segment LED level bargraph, adjustable low- and highpass filtering and silent mute switches. Designed for critical film recording and Foley work, the LP-21 delivers extremely low-noise, low-distortion performance. With a list price of $1,495, the Lafont LP-21 is distributed by Sascom.

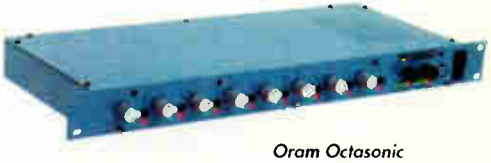
Known primarily for its hand-built condenser mics, **Lawson** introduces the Shaman tube preamp. Built with no solid-state components in the signal path, the Shaman offers Jensen transformers, XLR balanced inputs and outputs, high- and low-gain direct inputs, gold contact switches, 20dB pad, phase reverse switch and true VU meter. Available directly from the manufacturer; list price is to be announced.

The **Neotek** MicMAX ($1,595) is a 2-channel mic preamp with several unique features. The MicMAX offers digital read-

*Neotek MicMAX*

out of mic gain, three switch-selectable input impedances plus mute, phantom power, output ground lift switch, phase reverse and highpass filter.

The **Oram** Octasonic ($2,118) is an eight-channel mic pre in a 1U rack-



*Oram Octasonic*

mount package with an internal power supply. Featuring the same mic pre circuit as used in the BEQ Series 24 mix console, the Octasonic offers switchable +48V phantom power, 70 dB of gain (channels 1-6), +28 dB of headroom, peak indicator, phase reverse, balanced in/outputs and vintage aluminum knobs. Two "hot channels," inputs 7 and 8, can be used as line inputs with 34 dB of headroom. Outputs are electronically balanced.

**Peavey Electronics** has introduced the

## MANUFACTURER CONTACTS

**Amek**
818/973-1618
www.amek.com
Circle 215 on Product Info Card

**Aphex Systems**
818/767-2929
www.aphexsys.com
Circle 216 on Product Info Card

**Crane Song**
715/398-3627
www.cranesong.com
Circle 217 on Product Info Card

**Curtis Technology**
815/399-8453
Circle 218 on Product Info Card

**Demeter**
818/994-7658
www.demeteramps.com
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**Grace Designs**
303/443-7454
Circle 220 on Product Info Card

**Great River Electronics**
651/455-1846
www.greatriverelectronics.com
Circle 221 on Product Info Card

**HHB Communications**
310/319-1111
www.hhb.co.uk

**Lafont (distributed by SASCOM)**
905/469-8080
www.sascom.com
Circle 222 on Product Info Card

**Lawson**
615/269-5542
www.lawsonmicrophones.com
Circle 223 on Product Info Card

**Neotek (a division of Martinsound)**
800/582-3555
www.martinsound.com
Circle 224 on Product Info Card

**Oram**
888/ORAM PRO
www.oram.co.uk
Circle 225 on Product Info Card

**Peavey Electronics**
601/486-1408
www.peavey.com
Circle 226 on Product Info Card

**PreSonus Audio Electronics**
800/750-0323
www.presonus.com
Circle 227 on Product Info Card

**Requisite Audio Engineering**
818/247-2047
www.requisiteaudio.com
Circle 228 on Product Info Card

**SPL (distributed by Beyerdynamic)**
516/293-3200
Circle 229 on Product Info Card

**Studer Professional Audio**
408/542-8880
www.studer.ch
Circle 230 on Product Info Card

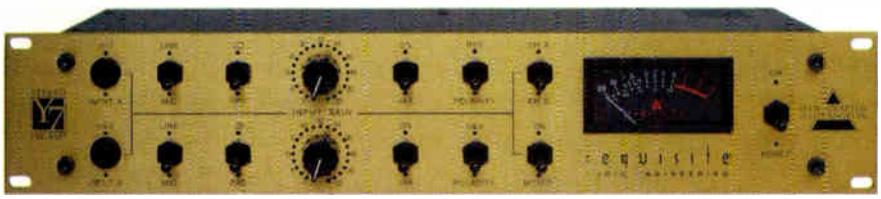
**Symetrix**
425/787-3222
www.symetrixaudio.com
Circle 231 on Product Info Card

**True Audio Systems (distributed by Neumann USA)**
860/434-9190
www.neumannusa.com
Circle 232 on Product Info Card

CAB 8i microphone preamp/CobraNet bridge. The 8-channel preamplifier has studio-grade discrete mic preamplifiers whose gain can be controlled across an Ethernet network using CobraNet technology and MediaMatrix. A/D converters are 24-bit.

PreSonus debuts the M-80 8-channel microphone preamp ($2,399). Each channel of the M-80 offers infinitely variable gain, eight-segment meter, highpass filter, pad, phase reverse, phantom power, balanced send and return jacks and pan control for the M-80's stereo bus. An IDSS knob on each channel allows adjustment of harmonic distortion to emulate tape or tube characteristics.

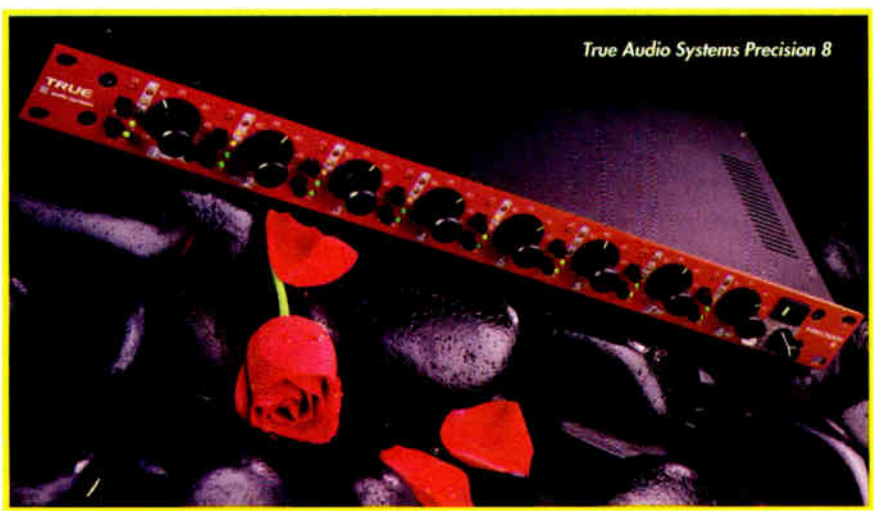

*PreSonus M-80*





*Requisite Audio Engineering Y7 Stereo (above) and Electra*


*Symetrix 302*




*True Audio Systems Precision 8*

**Requisite Audio Engineering** introduces one new mic preamp and makes improvements to two others. New is the Electra ($2,950) all-tube mono mic preamp. With circuitry optimized for the 5751 "black plate" dual triode tube, the Electra offers hand-wound transformers, 24-step attenuation control, high-impedance input and illuminated VU meter with switchable ranges. The Y7 Stereo and Y7 Mono preamps ($2,895 and $2,195 respectively) now boast more gain for the balanced line input, removal of the output attenuator and a redesigned output driver tube circuit. The transformer-balanced Y7 Series also offers pad, input gain control, phase reverse, meter select/on/off and an illuminated meter.

**SPL** introduces the GoldMike Model 9844 tube microphone preamplifier. The GoldMike offers matched ECC83 tubes running at 250 volts, dual-mono configuration for optimum separation and backlit VU meters. The GoldMike preamp has a list price of $999.

The D19m MP4RC Quad Remote Controlled Mic/Line Input from **Studer** is one of a series of cards designed for the D19 modular rack system and is one of the building blocks in the analog to digital system. The MP4RC includes four channels, each offering a transformer-balanced mic/line input, 48V phantom power and a highpass filter. Each input features clip protection, a split output, an external mute, and an electronically balanced line-level output. All channels may be remotely controlled by the D19m Remote Controller card.

Improving on the popular SX202 mic preamp, **Symetrix** introduces the model 302 dual microphone preamp ($299). The 302 offers up to 60 dB of variable gain, 15dB pad, phase reverse switches, ¼-inch balanced and Euroblock terminal outputs.

**True Audio Systems** debuts the Precision 8 8-channel microphone preamplifier. The single-rackspace Precision 8 ($2,695) offers eight channels of high-quality preamplification, two high-impedance instrument inputs, DB-25 multi-pin balanced output, M/S decoding, phase reverse, 5-segment level meter with peak hold for each input and variable reference level knob. ■

*Loren Alldrin is a Nashville-based engineer, producer and studio owner. He is the author of* The Home Studio Guide to Microphones, *distributed by Hal Leonard Books.*

# Relive the Magic.

There's a reason why the classic microphones have endured for over 50 years. It's what happens when you put one on the mic stand and plug it in. And that's all you have to do. The classic microphones have a built-in character that makes things easy, so easy that it feels like magic.

There are two ways you can relive that magic. If you have a small fortune and can find a classic mic that works--that's one way.

The other way is with the Lawson L47MP--a new large diaphragm condenser microphone that we hand-craft in the USA with all the look, feel, and sound of a true classic. Magic included.

Experience the magic for yourself with our ten-day, no risk trial.


Lawson L47MP Gold Mic features:
- U47/M49 1" capsule reproduction
- 3-micron gold sputtered diaphragms
- Vacuum tube
- Internally shock mounted capsule
- Continuously variable multi-pattern
- 30' Mogami cable
- Jensen transformer
- Shock-proof carrying case
- Magic

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Visit us at www.LawsonMicrophones.com to see how others are reliving the magic!

*"For sheer tube magic, a realistic vintage vibe, and superb craftsmanship, the L47MP takes top honors."*
***Electronic Musician***
*Brian Knave, Feb. 98*

*". . . this is the microphone of choice for the project studio owner who wants to buy only one microphone. And at the given asking price, it is the biggest bargain in microphones today."*
***Pro Audio Review***
*Dr. Fred Bashour, Feb. 97*

*"When you tuck vocals recorded with an L47MP into a mix, something magical happens. . . I cannot praise this microphone enough. Don't wait--buy it."*
***Mix***
*Michael Cooper, May 98*

*"The Lawson L47MP is a heavyweight contender in the ring of multi-pattern tube mics. Most definitely recommended."*
***EQ***
*Steve La Cerra, Oct. 97*

# PREVIEW

### WEISS ADCI MK2 A/D CONVERTER

The Swiss-made ADCI analog-to-digital converter from Weiss Engineering (distributed by G Prime, New York City) is now available in a 96kHz/24-bit version. The new ADCI Mk2 model—which also operates at 44.1/48/88.2kHz sampling rates—features optional mic preamps, dual 40-segment, high-res bar graph metering, switchable internal/external sync, and AES/EBU, S/PDIF and SDIF outputs.

Circle 327 on Product Info Card

### ETA SEQUENTIAL POWER DISTRO

Designed to guard against high in-rush currents, the PD11SS Series sequential power distribution system from ETA (Twinsburg, OH) provides two-stage EMI/RFI filtration and four stages of power up/down via eight rear panel AC outlets. Capacity is 15 amps (1,800 watts). Four preset intervals ensure that equipment is powered up or down at intervals of 1, 5, 10 and 30 seconds. Manual settings offer intervals of up to 240 seconds. The front panel features a "go/no go" LED display and a single "always on" AC outlet. There are two additional "always on" AC outlets on the rear panel. Price is $390.

Circle 328 on Product Info Card

### RAXXESS STUDIO FURNITURE

The Daytona from RAXXESS (Paterson, NJ) features an all-steel substructure and a 42x32-inch (width x depth) desktop made of 1¾-inch laminate trimmed in solid oak. The Daytona also includes a 60x13-inch curved monitor shelf, adjustable from five to 13 inches in 1-inch increments, a built-in ten-space rack and a CPU compartment below the desktop. A matching keyboard shelf with attachable mouse pad is optional. Retail: $999.95.

Circle 329 on Product Info Card

### GENEX MULTIFORMAT MO RECORDER

IHIB (Santa Monica, CA) offers the Genex GX8500 multiformat digital multitrack, a magneto-optical (MO) hard disk unit that records in AES/EBU, S/PDIF, SDIF-2 and DSD (Direct Stream Digital) formats. Optional A/D, D/A converters allow for 24-bit/96kHz recording, and sample rates up to 192 kHz may be selected. In addition to the onboard 5.2GB MO drive, the 8-track GX8500 will record data to any remote hard disk or removable media via SCSI. The unit is backward-compatible with the GX8000 and supports BWF/.WAV file formats and the platform-independent Universal Disc Format (UDF), plus FAT and MOFS Macintosh disk formats. Additional features include a built-in 8-channel digital mixer, low-jitter clock, seamless punch-in/out and adjustable crossfades. Price: $8,035.

Circle 330 on Product Info Card

### DK-AUDIO MSD600M MASTER STEREO DISPLAY

Distributed by TC Electronic U.S. (Westlake Village, CA), the MSD600M Master Stereo Display from DK-Audio combines a phase meter, audio vector oscilloscope, level meters and spectrum analyzer, and is now available in a 5.1 multichannel version. Paired with a flat-panel VGA monitor, the unit provides a display that's visible at any angle.

Circle 331 on Product Info Card

### PHOENIX STEREO MIC PRE

The GTQ2 stereo mic preamplifier from Phoenix Audio International (Hollywood, CA) was designed by former Neve designers David Rees and Geoff Tanner. The rackmount unit uses the familiar Neve-style knobs for stepped input gain (5dB steps) and incorporates all Class A transistor circuitry. Features include 3-band equalizer, transformer-balanced I/Os, phantom power, polarity reverse and 45Hz highpass filter. A front panel DI offers rear panel link-through jacks. Price: $1,995.

Circle 332 on Product Info Card

# PREVIEW


### SIGNAL-1 ELECTRONICS CABLE TESTERS

The GS-1 Cable Tester from Signal-1 Electronics (Encino, CA) is a battery-powered instrument designed for testing cables with any combination of XLR, mono and stereo ¼-inch, RCA and MIDI connectors. Housed in a compact and rugged case, the GS-1 provides five LEDs to indicate tested and faulty conductors and includes an AutoScans™ test circuit that automatically tests any cable

for shorts and wiring continuity in under ten seconds. Price is $170. Signal-1 also offers the TT Patchcord Cable Tester, a simpler test unit that checks TT patch cables. Price is $64.95.

Circle 333 on Product Info Card

### CRANE SONG TRAKKER COMPRESSOR/LIMITER

The Trakker from Crane Song (Superior, WI) is a single-channel discrete Class-A compressor/limiter offering a selection of amplifier/gain control characteristics that can introduce harmonic content to emulate tube and VCA compressors. Featuring adjustable threshold, attack, release, knee shape and make-up gain controls, Trakker also includes a 12-position function switch for various combinations of "transparent" and "vintage" sounds with and without "VCA artifacts." A 22-element LED meter shows gain reduction or output (switchable). A front panel switch links up to eight Trakkers for surround mixing. I/Os are balanced and transformerless. Price: $1,695.

Circle 334 on Product Info Card

### KLARK-TEKNIK DUAL-CHANNEL EQ, MIC PRE

Klark-Teknik (Buchanan, MI) intros the DN422M, a dual-channel equalizer with integrated mic preamps. Each channel features a 4-band EQ with variable high-pass filter and input and output level controls. Equalizer sections offer 15 dB of cut/boost and bandwidth control from 0.1 to 2 octaves. Additional features include 25dB pad (accepts line inputs), 48V phantom power, independent mute switches and 10-segment LED meters. A switchable balanced insert and return path allows for post-mic pre, pre-EQ signal processing. Signal I/Os are on XLR (insert is TRS), and transformer-balanced options are available.

Circle 335 on Product Info Card

### DEMETER TUBE EQ, DI

Demeter Amplification (Van Nuys, CA) offers the H Series Tube Parametric Equalizer ($1,300) and the H Series Tube Direct/Line Driver ($900), a pair of 2-channel, single-rackspace units featuring the company's tube technology. Each channel of the Parametric EQ offers three bands of variable frequency/variable Q equalization, and channels may be linked for 6-band mono EQ. Up to 15 dB of boost/cut is available. Features include individual channel EQ bypass switches and overload LEDs. The Tube Direct may be used as an instrument DI or as a line driver for adding tube "warmth." Each channel has separate ¼-inch inputs, ground lift, polarity reverse and a tube drive boost mode, with up to 20 dB of gain. Both H Series units feature rear panel XLR and ¼-inch connections, and fully regulated power supplies.

Circle 336 on Product Info Card

### MAP DIGITAL MIXER DESK

Middle Atlantic Products (Riverdale, NJ) introduces the DMD-50 Digital Mixer Desk, a modular system suitable for most current small-format digital mixers. The easily assembled 30x50-inch desktop is supported by a system of heavy-duty folding legs made of 2-inch steel tubing. Optional risers (in two heights) support an overbridge that includes eight rackspaces in two bays. Both desktop and overbridge surfaces are provided with conveniently located cable pass-throughs. Price for the base unit alone is $500; risers are $200 or $218; and the overbridge is $204.

Circle 337 on Product Info Card

### OKTAVA VM100 TUBE MIC

Oktava from Russia offers its VM100, a single-pattern cardioid tube condenser microphone based around a large (1.3-inch diameter) diaphragm capsule gold-coated with 5-micron thick

# PREVIEW

Mylar. Frequency response is rated at 40 to 16k Hz. Pricing is $650, including a wood storage case, mic clip and dual 115/230-volt power supply. A shock mount is optional.

Circle 338 on Product Info Card


## HOT OFF THE SHELF

**A second edition of *The New Stereo Soundbook* by** Ron Streicher and F. Alton Everest is now available from Audio Engineering Associates. Prospective buyers may preview the Table of Contents and order online at www.stereosoundbook.com. Or call 800/798-9127…**Eventide's UltraShifter software for the** Ultra-Harmonizer 4000 Series effects processors can modify or maintain pitch and spectral content over a four-octave range. Price is $495. Call 201/641-1200 or visit www.eventide.com…Swedish-made **Pearl microphones are now distributed by Independent Audio** in the United States. Visit www.independentaudio.com…The **Hebden Sound (formerly Calrec)** range of small-diaphragm studio condensers are now available through San Francisco's Fortress Group (e-mail: fortress@ricochet.net)…**A two-page briefing paper on DVD-Audio** is available from Panasonic, one of the briefing paper sponsors. The color brochure outlines technical constraints, authoring tools and market potential for the new format. Call Panasonic at 323/436-3500…**Burr-Brown announces the PCM1704** digital-to-analog converter, a high-performance BiCMOS, sign-magnitude design aimed at high-end consumer and professional applications. At 24-bit resolution and 8x oversampling at 96 kHz, the PCM1704 offers 112dB dynamic range, 120dB S/N ratio, and THD+N = 0.0008%. Call 800/548-6132 or visit www.burr-brown.com…**Fat Max heavy-duty 8-gauge loudspeaker cable** is the first Pro Co product manufactured with state-of-the-art ultrasonic welding. Pro Co also plans to incorporate ultrasonic welding in its Neutrik Speakon and dual-banana connectors. Call 616/687-8816…**Sweetsong Productions has released five new buyout production library CDs.** Titles include *The Romantic Library, The Holiday Library, Soothing Moments Music, The Video/Film Transfer Library* and *Video Logos*. Each CD is available for $45 (or $150 for all five). Call 304/428-7773 or visit www.sweetsong.com…**Hannay Reels offers a full line of cable reels** specifically for audio and video production applications. AVX Series reels feature rugged steel aluminum construction, stage box trays and a friction brake to prevent cable overruns. For a color catalog, call 518/797-3791 or visit www.hannay.com…**Audio Classics Ltd.** buys and sells all brands of high-end and vintage audio equipment and stocks hundreds of tested used components from manufacturers such as Levinson, McIntosh, Dynaco, B&K, Marantz, Rogers, Tannoy, etc. For a list of current offerings, call 607/766-3501…**Tele Music has released five new production music CDs.** Titles include *Large Screen Themes, Multimedia Themes Vol. 4, Acid Jazz Trax, Big Beat Box* and *31 Jingles*. For a free CD-ROM demo and catalogs call 888/578-6874…**New software for the Fostex PD-4 portable professional timecode-capable DAT recorder:** Version 2.30 has off-tape confidence monitoring facilities and additional customization options. The software is free but requires a chip upgrade. Call 562/921-1112 or visit www.fostex.com…**AKM Semiconductor has a 96kHz/24-bit stereo codec** in a space-saving 28-lead VSOP package. Additional features of the AK4524 include 110dB dynamic range, 128x oversampling, switched-capacitor filtering and 5V operation with a separate pin for 3.3V logic interface. Call 408/436-8580 or visit www.akm.com…**KRK Systems now offers the Exposé range of powered monitors in a less expensive finish.** Models E7, E8 and E12 are now available in a textured black finish; the E7 is $2,695. Call 714/841-1600 or visit www.krksys.com…**The Hollywood Edge has released a series of four audio test discs** developed in collaboration with TMH Corporation and Tom Holman, the mastermind behind THX technology. The test signals contained on the discs may be used to set up stereo or surround sound systems, and to check noise floor and headroom. Call 800/292-3755…**The *Complete Guide to Audio* by John J. Adams provides detailed answers to common audio questions** and includes sections on audio equipment basics, home theater and computer sound, DVD and surround sound decoders. Price is $24.95. Call 800/428-7267…**Shure has prepared a document that answers frequently asked questions** (FAQs) about the FCC's reallocation of UHF channels for DTV and public safety use. Concerned wireless users may call 847/866-2525 and may obtain the FAQ and other technical documents from www.shure.com…**Control Concepts has released a new product catalog** for its full line of power conditioning equipment. Call 800/288-6169…**The *AKG Microphone Basics and Fundamentals of Usage* manual** is available free; call 615/360-0143. ■

# Testing...

. . . 1, 2, 3, 4,. . . it takes more than one kind of tester to get the job done on the road or in the studio, and we have a lot of them ready to ship your way. On the right is our new SC-48EP speaker cable checker. It tests EP cables with 4-pin and 8-pin connectors for shorts, opens, and cross-wiring. For systems with 6-conductor systems, we have the SC-46EP. Both models also check standard 3-pin XLR's. Down at the lower left of the page is our SC48NL, the companion 4-pin and 8-pin NL connector cable checker.



To your left is the Qbox audio line tester, featuring a complete set of tools for the person who has to find out what went wrong and fix it. For sending signal up a line it has a built in tone generator and a built-in microphone. For monitoring signals it has a built-in speaker and amp (along with a headphone jack for private listening).


The Tester checks cables with virtually every possible combination of XLR, 1/4", or RCA Phono connectors for shorts, opens, and cross-wiring.

The Qbox includes Voltage Present LED's for checking pins 2 and 3 for phantom or intercom voltage. It operates at mic or line level, and once you've had one for a while, you'll wonder how you ever did without it.


This practical, affordable phase checker gives a clear visual indication of driver polarity. Just play the source CD through your system and point the tester at the drivers you want to check.

The Phase Checker comes with a carrying case and source CD. It's powered by a standard 9V alkaline battery with an auto-off feature to preserve battery life.

Put your cables to the test — not your patience — with these handy testers.


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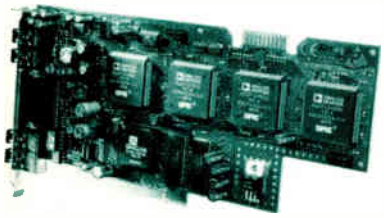
CIRCLE #115 ON PRODUCT INFO CARD

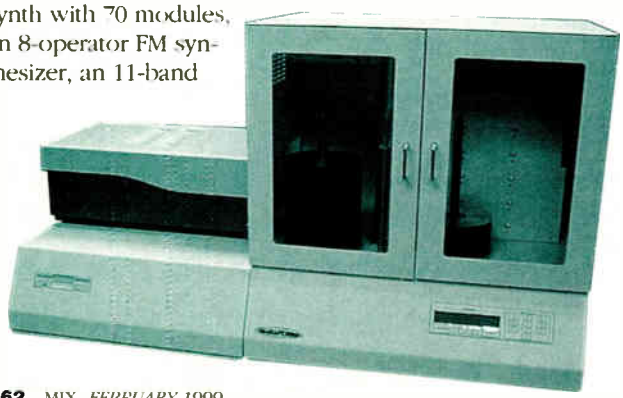
# New Hardware/Software for Audio Production



### CREAMWARE PULSAR SHIPPING

Creamware (www.creamware.com) is now shipping the Pulsar DSP-based system for computer-based mixing, effects, sampling and synthesis. The Pulsar card is based around four Analog Devices 32-bit floating-point SHARC processors and offers 20 I/Os, including two ADAT interfaces (without requiring an expansion slot), two S/PDIF and two analog I/Os. 96 kHz is supported, and Pulsar is MME-compliant and includes ASIO drivers. The accompanying software includes a 32-channel, fully automatable mixer featuring eight auxes, 16 recording buses and six mute groups. Each channel offers 4-band parametric EQ, four insert points for Pulsar effects (including chorus, flange, phaser, 4-pole filter and mono and stereo delay), phase reverse, pan and solo functions. MIDI support is also included. Also included are a host of sound generators, such as a modular synth with 70 modules, an 8-operator FM synthesizer, an 11-band Vocoder, an Akai-compatible sample player and a CD-ROM offering more than 400 MB of samples. List price is $1,298.

**Circle 339 on Product Info Card**



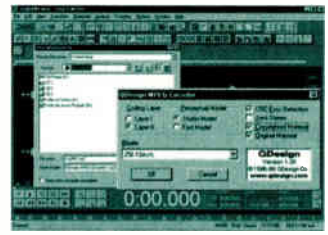
### MEDIAFORM 3706P CD DUPLICATOR/PRINTER

New from MediaFORM (www.mediaform.com), the 3706P is a stand-alone, spindle-based 6-drive CD-R duplicator/printer with the capability to automatically detect disc format, simultaneously duplicate six CDs, then automatically print the CD-Rs with a thermal transfer printer. One-button operation allows duplication of up to 175 CDs before the system needs to be refilled. The internal software creates exact copies of audio CDs, including PQ codes and ISRC information, with full bit-for-bit verification; in addition, the unit will detect defective blank media and place them in a separate reject area. Optional Easi DAT and Easi Audio functions allow importation of audio from virtually any digital or analog source. Labels may be created in Windows editing applications and saved to 3.5-inch floppy disk; when inserted in the 3706, the machine will automatically print, instead of defaulting to duplication-only mode. Up to 24 drives/four printing stations can be networked together.

**Circle 340 on Product Info Card**

### QDESIGN MPEG FILTER FOR COOL EDIT

QDesign (www.qdesign.com) and Syntrillium Software (www.syntrillium.com)



jointly announce the release of the QDesign MPEG Audio Encode and Decode Filter for Cool Edit. Users of the filter can save their Cool Edit, Cool Edit 96 or Cool Edit Pro sessions directly into an MPEG audio file for storage and transmission; files are encoded at less than 20% of their original size. The QDesign MPEG filters encode 44.1kHz stereo in real time, and are compliant with MPEG-1 and MPEG-2 Layer 2 audio bitrate reduction standards. The Cool Edit filter retails for $149; in addition, an Audio Suite plug-in for Pro Tools ($495) and a stand-alone Windows 95 version ($299) are available.

**Circle 341 on Product Info Card**

### FOSTEX HARD DISK RECORDER

Debuting this month from Fostex is the D-108, an 8-track stand-alone hard disk recorder. The D-108 offers .WAV compatibility, allowing users to save and load sound data in .WAV format, and to transfer data to and from external DOS-formatted media via removable SCSI media. Also included is a SCSI interface for back-up to external SCSI devices, plus a digital interface with optical I/O for S/PDIF and ADAT digital exchange. The D-108 features 8-track simultaneous recording/editing via ADAT or analog, and up to 16 virtual tracks can be used. Also built-in is Fostex's proprietary FDMS3 disk management format, allowing up to 1,548 track minutes at 44.1 kHz on 8.2 GB. Editing features include a graphical preview function for fine editing control and adjustments, and a graphical level envelope display. Multiple units may be cascaded together, and a variety of models are available; options include a T/C Sync card and internal hard drive. Retail for D-108 with internal hard drive is $1,495.


**Circle 342 on Product Info Card**

### SOUNDS LOGICAL WAVEWARP

WaveWarp is a new effects processing software package

for Windows from Sounds Logical (www.soundslogical.com). An object-oriented application, WaveWarp allows users to build effects such as delays, reverbs, flangers, chorus, phasers, filters, EQ, noise cancellers, limiters, etc. Effects run in real time, and multiple effects can be placed in series, parallel or feedforward or feedback connections. Full-featured waveform editors and spectrum analyzers are also included. WaveWarp is designed as a stand-alone application, but can be used in conjunction with other applications by sharing .WAV files. In addition, WaveWarp has mono, stereo and multichannel capability.
Circle 343 on Product Info Card

### AUDIO ARCHITECT 4.0

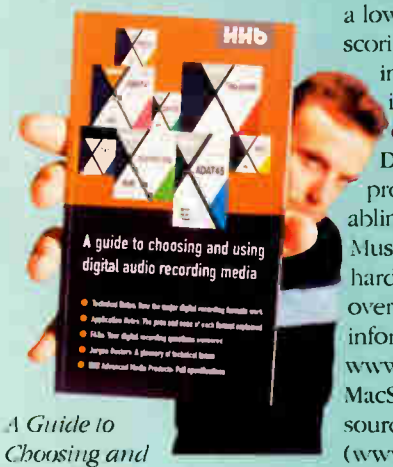
Audio Software Ltd. (www.audioarchitect.com) recently released Version 4.0 of its Audio Architect software synthesizer. This latest version is said to be ten times faster, since all code has been ported to 32-bit and algorithms and calculations optimized for floating-point. Real-time control has also been added, allowing real-time adding, deleting and changing of modules. Other new features include a wider selection of modules, including a pan module, a wave shaper for creating wavetables, and a control shaper (which allows the drawing of envelopes). In addition, Version 4.0 is now up to ten-note polyphonic.
Circle 344 on Product Info Card

### TASCAM CD RECORDER

New from Tascam (www.tascam.com), the CD-RW5000 is a 2U rackmount-able CD recorder with the ability to read/write to CD, CD-R, CD-RW, CD-R-DA and CD-RW-DA media. Inputs and outputs are balanced XLR and unbalanced RCA I/O, plus AES/EBU in and S/PDIF coaxial and optical digital I/O. Other features include a Sync Start function, providing automatic record mode entry; auto or manual track increment capability, for flexible control over recording Start ID messages; sample rate detection and conversion; an erase function; and parallel control I/O capability. Suggested retail is $1,299.
Circle 345 on Product Info Card


## UPGRADES AND UPDATES

**Emagic** (www.emagic.de), **E-mu** (www.emu.com) and **Steinberg** (www.steinberg.de) are the most recent developers to announce **support for the BeOS** multimedia-optimized operating system. Emagic's Logic Audio Platinum, Gold and Silver and Audiowerk 8 will offer support early this year, and E-mu's Audio Production Studio and Steinberg's NUENDO will also be BeOS-compatible this year. Visit Be Inc.'s Web site at www.be.com for the latest developments...**Alesis** offers a **free M20 Version 2 software upgrade**, featuring RS-422 9-pin synchronization, to all registered users. Visit www.alesis.com, or call 800/5-ALESIS...This month, **HHB** (www.hhb.co.uk) **expands its range of media related products**: The MO5.25GB is a **magneto-optical disk**, individually tested and certified for a range of equipment. **Bulk-packaged CD-R discs**, packed 600 to a box, feature a silver reflective recording surface to give the impression of long-run mastering and pressing. And HHB publishes a **free new publication**, *A Guide to Choosing and Using Digital Audio Recording Media*, available from the manufacturer and its dealers...**DUY** (www.duy.es) announces **Pro Tools|24 MIX-compatible** versions of all its TDM plug-ins; upgrades are free to registered users...**WaveFrame** (www.waveframe.com) recently signed a development agreement with E-mu-Ensoniq to support the **E-mu Audio Production Studio**...**CD CyClone Duplication Systems** introduces the **T-8, a self-contained 8-drive CD duplication system** featuring an interactive LCD touchscreen and 4x drives. Visit www.cdcyclone.com...**Cakewalk** (www.cakewalk.com), **Yamaha** (www.yamaha.com), **Event Electronics** (www.event1.com) and **Digital Audio Labs** (www.digitalaudio.com) recently announced they will deliver products for **AudioX**, Cakewalk's proposed open driver specification for audio software products to control the functionality of advanced PC audio cards. A developers' meeting was held last month in Los Angeles; watch this spot for updates. In other Cakewalk news, **ScoreWriter**, a low-cost, entry-level scoring application was introduced...**Yamaha** introduces a **hardware accelerator for Microsoft's DirectMusic** application programming interface, enabling the offload of DirectMusic synthesis to dedicated hardware, reducing CPU overhead and latency. More information is available at www.yamahayst.com...**MacSourcery** (www.macsourcery.com) and **AudioEase** (www.audioease.com) jointly introduced **Version 2.5 of BarbaBatch**, a batch audio processor. New features include QDesign support and segment conversion...A cool tool for Mac users: **Walnut Systems'** (www.walnutsys.com) Cruise Control, an automation utility for the Macintosh, can turn your computer on and off, check and print e-mail, and power up and run virus scans and backup at night. Retail is $85. ■



# SNAPSHOT PRODUCT REVIEWS


## NEUTRIK MR1 MINIRATOR

**Pocket Audio Generator**

I'm always impressed when I find simple, low-cost tools that make my life easier. The Neutrik MR1 Minirator is definitely one of them. Housed in a VCR remote-sized package, the MR1 is a multifunction audio generator that outputs 20 to 20k Hz sine waves (steady or variable-time sweeps), 20 to 5k Hz square waves, white noise and pink noise, and includes a polarity check function. The $139 price grabs attention, but what knocked me out was the MR1's little touches such as unbalanced RCA and balanced XLR connectors (the latter using a clever flip-out male plug), and variable outputs that are user-definable as -76 to +6 dBu, -78 to +4 dBV or 0.13 mV to 1.6 volts. Other features include a fast, intuitive three-button-plus-LCD-screen interface, and an always-on or auto-off function that both extends the (dual AA-cell) battery life and enables automatic shut-off of pink noise after 10, 30 or 60 minutes. A must-have accessory for any audio pro working in contracting, live sound, broadcast or studio recording, the MR1 Minirator is an instant classic!

Neutrik USA
908/901-9608
www.neutrikusa.com

## FURMAN HDS-6/HR-6

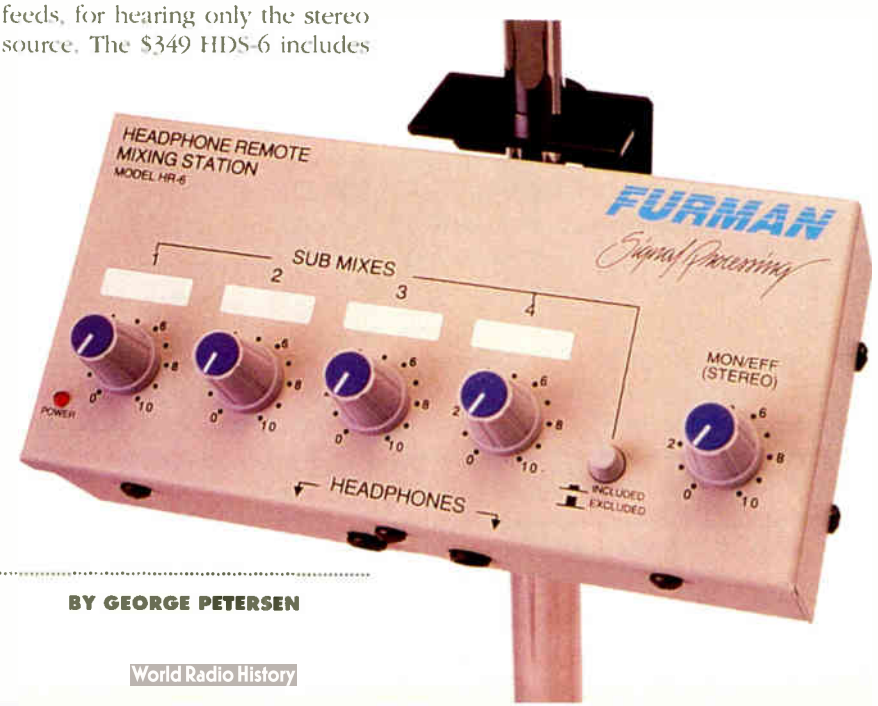
**Headphone Mixing System**

My least favorite studio chore is setting up monitor mixes for musicians, so when something like the Furman HDS-6/HR-6 comes along to make that job easier, I'm interested!

The system consists of the rackmount HDS-6 box with six (four mono and one stereo pair) ¼-inch TRS balanced inputs—all have recessed trimpots with a 20dB range to accommodate line level feeds from a console send or direct output. The HDS-6 outputs use standard RJ-45 Ethernet-type cables that "daisy chain" connect up to eight HR-6 remotes. The latter are simple mic stand-mounted mixers that allow musicians to create their own cue mixes using one stereo and four mono pots. Each HR-6 has a built-in stereo headphone amp (with two output jacks) and a button that mutes the four mono feeds, for hearing only the stereo source. The $349 HDS-6 includes one HR-6 mixer and 25-foot RJ-45 cables; additional HR-6 mixers (with RJ-45 cables) are $129 each.

Over a period of months, I used the HDS-6/HR-6 on all kinds of sessions and liked the results. About the only downside of the unit was having to set up the rack box in the studio, and using adapters to feed it through the mic snakes from the control room. (I don't have any Ethernet snakes coming from my control room—yet.) Yet, aside from this minor point, the system worked wonderfully and I was pleased with the audio performance: Reproduction is clean and loud, with a respectable 500mW (@ 100 ohms) headphone output. The standmount HR-6 mixers are convenient and rugged, and hold up well to the usual abuse. Musicians liked having control over their own mixes, and I didn't have to spend three-quarters of my setup time doing cue mixes for that picky percussionist or that overbearing oboe player. What more could anyone ask for?

Furman Sound
707/763-1010
www.furmansound.com




**BY GEORGE PETERSEN**

## B.L.U.E. THE BLUEBERRY

Studio Condenser Mic

Baltic Latvian Universal Electronics (B.L.U.E.) has always been an innovative company that does things differently. For example, its B7 Lollipop is a large-diaphragm capsule that attaches to the mic body of AKG's C60/61/28/29/30/451/452 mics, offering an instant big sound for a small $735 price. And B.L.U.E.'s Bottle Mic provides state-of-the-art tube mic performance in a $4,500 package based on the shape of Neumann's classic CV3.

Now B.L.U.E. has taken on the challenge of creating an affordable, solid-state mic based around its handbuilt capsules. Priced at $1,295—including velvet-lined wood box—The Blueberry is a cardioid design combining a large-diaphragm, single-membrane capsule with discrete, Class-A electronics and a transformer output. But under The Blueberry's distinctly cool body shape, it's evident that this is no "budget" mic; the construction and workmanship are impeccable, and the parts used throughout are of the highest quality.

I tried The Blueberry on various instrumental and vocal sessions and must admit that I like this mic. My first session was four-string dulcimer, which I miked from about two feet away. The Blueberry neatly captured this instrument, with all the zing and complex overtones intact. Results on banjo and acoustic guitar were similar, with a nice balance between highs, lows and mids. Next, I recorded snare drum cadences to be used as background effects on a CD-ROM. The result was punchy and crisp and the mic handled high SPLs without problem. The same session revealed just how clean The Blueberry's output is when I used it to record Foley-style effects—a quill pen scribbling notes on parchment. The mic's price may be low, but its performance is definitely high-end.

Of course, the main application for a large-diaphragm mic is vocals. The optional shockmount/pop filter is a clever yet simple design that grips the mic securely in any position and provides excellent shock isolation. The mic's mesh grille offers ample protection from all but the breathiest vocalists, and I rarely needed the pop filter. Also, the mic's proximity effect is fairly minimal, except in VERY close quarters, so there's no worry about all your vocalists sounding like Barry White. If you're looking for a vocal mic with a huge bass bump and a presence boost, this is not the mic for you, but on both male and female vocalists, The Blueberry provided an unhyped sound that was quite natural, with an uncolored off-axis response.

Overall, The Blueberry is an excellent all-around studio mic whose natural reproduction, clean output and versatility make it a good choice either as a first large-diaphragm mic for the novice or as an addition to a well-stocked mic locker. Besides, who says all mics have to look alike?

Baltic Latvian Universal Electronics
818/986-2583
www.bluemic.com


## ART DUAL TUBE EQ

Professional 2-Channel Tube Parametric Equalizer

Three years ago, ART broke the price barrier of tube gear with its can't-beat-it-for-the-money Tube MP, a mic preamp/direct box offering impressive specs at a rock bottom $159. Now ART is poised to do the same for EQs with its Dual Tube EQ, priced at $499.

Although the product's front panel uses the phrase "parametric equalizer" the Dual Tube EQ is not parametric at all—each channel provides two sweepable mid bands, along with high and low shelving bands. Yet, even without the variable bandwidth controls required of a true parametric, switchable range controls on each band and ability to cascade both channels (transforming it from stereo 4-band to mono 8-band operation) give the unit plenty of versatility.

Under its rugged, extruded aluminum chassis, the Dual Tube EQ is a hybrid design like other modern tubes: solid-state filters, followed by a tube gain make-up stage, using readily available, industry-standard 12AX7a tubes.

The front panel is laid out logically, so this unit is plug and go. Each channel's hard-wired bypass switches are placed next to each other for comparing flat and processed settings without resorting to the "thumb-pinkie stretch" required on other units for one-hand bypass. Input controls permit optimizing gain without overload—even in extreme boost settings—while the output controls allow the user to trim down the processed level for making intelligent A/B choices, without a huge gain boost being part of the decision process. The rear panel has both balanced XLR and unbalanced ¼-inch I/O, along with an attached AC cord for the built-in power supply.

In operation, the Dual Tube EQ proved to be a real workhorse on all kinds of material. It is best used as a shaping tool, especially due to the smooth action of its wide bands, which are free of edginess, even in extreme settings. The frequency centers of the LF/HF bands are musical, with the 120Hz band adding warmth and fullness, while the 40Hz setting was ideal for cutting rumble and fluff. At the other end, the 18kHz setting could either add air or cut hiss, depending on your needs, and the 6kHz added punch and sizzle. The 10x Multiplier switches on the mids sweep the LMF band from 20 to 200 Hz (or 200 to 2k Hz); the HMF sweeps from 200 to 2k Hz, or 2k to 20k Hz in 10x mode, making the unit equally versatile to punch up a vocal track or to reshape mixed program material.

Other than the EQ's lack of bypass switches for each band (hey, it's only $499—they had to cut corners somewhere!), I would have liked some color variation on the concentric frequency/gain controls on the mids. Right now, the black outer ring gain controls are hard to see against the black front panel. But other than these minor quirks, the ART Dual Tube EQ is a solid performer that should find a welcome space in effects racks everywhere.

Applied Research & Technology
716/436-2720
www.artroch.com ■

# MIDAS HERITAGE 3000

## *DUAL PURPOSE FOH/MONITOR MIXING CONSOLE*

One exciting debut scheduled for the 1999 Winter NAMM show in Los Angeles is the Heritage 3000, a new 48-input, 24-bus live sound mixer from Midas.

According to Bob Doyle, VP of Sales and Marketing for the Klark Teknik Group, the Heritage name was selected to reflect Midas' 30-year history, and the Heritage 3000 is the first of a series; Heritage 2000 and 1000 models will appear later this year. Originally available in a 48-input format, the Heritage 3000 will also be made available with four additional stereo inputs. A broadcast version, supplied with a communications sections designed specifically for broadcast applications, is also scheduled.

Based on proven technologies, the Heritage 3000 combines favorite features from Midas' top-of-the-line XL-4 (including mic pre and 4-band EQ sections) with a revised automation package and improved noise figures. Common mode rejection figures for the Heritage 3000 are projected as 30 dB better than on the XL-4, already recognized as one of the quieter consoles available.

Designed for both FOH and monitor mix applications, the Heritage 3000 provides a 3-fader Left/Center/Right master output section and 24 discrete group/aux outputs. The LCR master output section includes Midas' patented Spatial Imaging System (SIS) technology, designed to compensate for the fact that the center cluster in a LCR sound system is typically under-powered relative to the Left and Right clusters. A pot on each input channel sweeps between L/R and LCR stereo, enabling the operator to add or subtract a centered signal from the center cluster without changing the stereo imaging. In addition to the 24 subgroup/aux send masters, the Heritage 3000 offers a separate eight-way matrix that can be fed from both the subgroup masters and from the Left, Center, Right master outputs; by using all the available outputs, a user can generate as many as 32 discrete mixes, plus LCR outputs.

As with most monitor consoles, the Heritage 3000 may be thought of as a matrix mixer—individual input channels are routed to any or all of the 24 aux outputs via 24 individual pots per input strip, allowing for 24 mono or 12 stereo mixes, or a combination. In addition, an innovative switching system allows the operator to mix and match mono mixes, stereo mixes suitable for in-ear monitoring *and* "straight-through" subgroup assignments. Each adjacent pair of the 24 output group masters has an illuminated three-way switch configuring each consecutive pair of aux send pots as discrete mono mix sends (normal monitor mode) or as pan and level controls for a stereo mix. The third switch position routes each aux send direct to the relevant output bus, enabling the operator to easily combine subgrouping for an FOH (or sidefill, or broadcast) mix with traditional monitor console setups for mono wedge and stereo in-ear mixes.

Another innovative touch is an LED ladder that runs parallel to each input module's 100mm P&G fader. A snapshot function in the automation package illuminates the LEDs; simply repositioning the fader to match the LEDs effectively recalls the stored fader setting. The same LEDs can also indicate a recalled "virtual fader" setting—when a channel is assigned to one of the ten VCAs, the LEDs indicate the recalled channel's send level, regardless of the channel fader level. The physical channel fader then becomes a trim control. The automation system may also control every function switch on the console, simplifying multiple set changes in festival and theatrical applications. The automation will recall up to 400 separate scenes and may be edited offline with supplied Windows software.

The Heritage 3000's input mic preamps and channel EQs are identical to those offered on the XL-4. The EQ is 4-band parametric, with a choice of bell or shelving curves on HF and LF filters. Additional features include a sweep oscillator, pink noise generator and a built-in interface for Telex and ClearCom communications systems. Metering includes 20-segment LEDs on the outputs and 10-segment LEDs on the inputs. Two power supplies are standard, linked for redundant operation.

The Heritage 3000 is priced at $105,000, within a few percentage points of the popular XL-3 (800 sold worldwide).

Midas, 600 Cecil Street, Buchanan, MI 49107; phone 616/695-4750, fax 616/695-4750. Web site: www.midasconsoles.com. ■

**BY CHRIS MICHIE**


# Your Passport to 25,000* Latin American Recording and Sound Professionals

No other Spanish-language magazine delivers equipment information and in-depth applications-oriented coverage of this caliber on the following topics:

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# *Mix-Edición en Español*

## For Advertising Information call

**Dan Hernandez, Advertising Director: (510) 653-3307**

*Publisher's Own Data (includes newsstand single copy sales)

# SHURE KSM32

## CARDIOID CONDENSER MICROPHONE


The folks at Shure really know how to package a microphone to make one drool with anticipation. This mic looks good! Fortunately, the sleek look mirrors its fine performance, which is not entirely surprising, given Shure's success with other condenser mic designs, such as the industry-standard SM85, SM87 and SM98.

The KSM32 comes in two flavors. The $1,029 full studio version—Model KSM32/SL—has a champagne-colored finish and is supplied with an elastic-suspension shock mount, a locking aluminum carrying case, swivel mount, velveteen pouch and a fabulous little mic stand adapter for tight placement when the unit is used in cramped quarters, such as for hi-hat or tom miking. The $959 Model KSM32/CG is the same mic but in a non-reflective, charcoal gray finish for stage applications; it ships with only the swivel mount and a padded, zippered carry bag.


The elastic-suspension shock mount is fantastic. The mic slides easily into its holster, and five turns later you are ready to go. Plus, you can't strip the shock-mount threads by turning it too much, so you can let your caffeine-crazed apprentice play with this toy. Once it's seated, the base rotates freely with the mic, which makes positioning an absolute breeze.

The first thing I like to do to a (non-ribbon) mic I'm testing is to blow into it. The KSM32 handles gale-force garlic breath just like you'd expect a pro mic to. During this extreme torture, the distortion is there, but the capsule doesn't bottom out. As an added bonus, the mic body takes well to handling. A firm tap yields only the slightest rumbling in the capsule. This is a very well-built mic with excellent capsule isolation, and it only weighs a bit over a pound.

The KSM32 is a single-pattern, cardioid condenser mic with transformerless preamp circuitry. The capsule features a gold-layered Mylar diaphragm and is reportedly capable of handling SPLs up to 133 dB. Frequency response is 20 to 20k Hz. A three-position switch selects between flat response and two low-frequency cutoffs: One is a -18dB/octave slope at 80 Hz; the other is a less aggressive -6dB/octave at 115 Hz. The cardioid pickup pattern attenuates sharply from the sides, aiding in isolation from other instruments.

The accompanying booklet mentions several different applications for this mic, mainly voice, acoustic instruments and ambient techniques like overheads for a drum kit. It also mentions low-frequency instruments like bass or kick drum.

I admit I was a little worried about putting a mic of this caliber in a kick drum. The mic has a switchable -15dB pad, which amazingly wasn't really necessary. A bit of distortion reared its ugly head, but the mic held up well with and without the pad. The KSM32 was solid in the low-end department: The sound was round, fat and moved considerable air on the sub-woofer. Only time will tell if the diaphragm will hold up to repeated punishment.

Testing the KSM32 mic on female and male vocals, I found the male voice to be rich, present and well-rounded in all frequencies, basically a "snapshot" of the live voice. The female voice was also well-rounded, with a high-end sparkle that is a signature of female vocals in the mid to high register. The KSM32 proved an excellent choice for vocals when clarity is of the essence.

Another shining aspect of this mic is its ability to focus an overhead track on a drum kit. I may even go so far as to say this is the only mic you need to record drums. You know how natural those mid-'60s jazz recordings sounded? Remember how the drums sounded like a single instrument, rather than seven? This provides the modern equivalent!

I also tried the KSM32 on electric bass. In this application I was most impressed; the KSM32 gave the bass a well-defined low end yet retained the snappy high end necessary to assist the instrument in the fight for air space in the final mix. The KSM32 captured the bass in all its glory, reminding me of the day I first heard the album *Soma Holiday* by Proletariat. That album was recorded by Jimmy Dufour

**BY SCOTT COLBURN**

# ACCURATE MONITORING IS NOW A RIGHT, NOT A PRIVILEGE.


Accurate monitoring used to be expensive. Not any more. Available in both active and passive versions, the new HHB Circle 5 incorporates a number of unique breakthroughs in loudspeaker technology to create a compact, high performance studio monitor that's ideal for use in a wide range of professional applications. An investment of $250,000 in research and development has produced a loudspeaker of exceptional clarity, with a sound that doesn't fatigue the listener, even after a long session.

So if you're looking for a great sounding studio monitor, listen to the Circle 5 at your nearest HHB dealer and prepare to be impressed. Then ask the price and prepare to be amazed.

HHB CIRCLE 5

- Varied cone thickness minimises low frequency distortion
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and Lou Giordano, and has always been a personal reference point for great bass sound. Indeed, this would be my mic of choice for bass, electric or acoustic.

Used close-up on a loud electric guitar amp, however, the sound was not as great. The mic didn't break up under the pressure and could handle the SPL with the help of the -15dB pad, but in close-miking, I preferred a Shure SM57 on this particular cabinet. I also tried the KSM32 as an ambient mic on electric guitar. It sounded great and was true to the sound I heard while the guitar was being played.

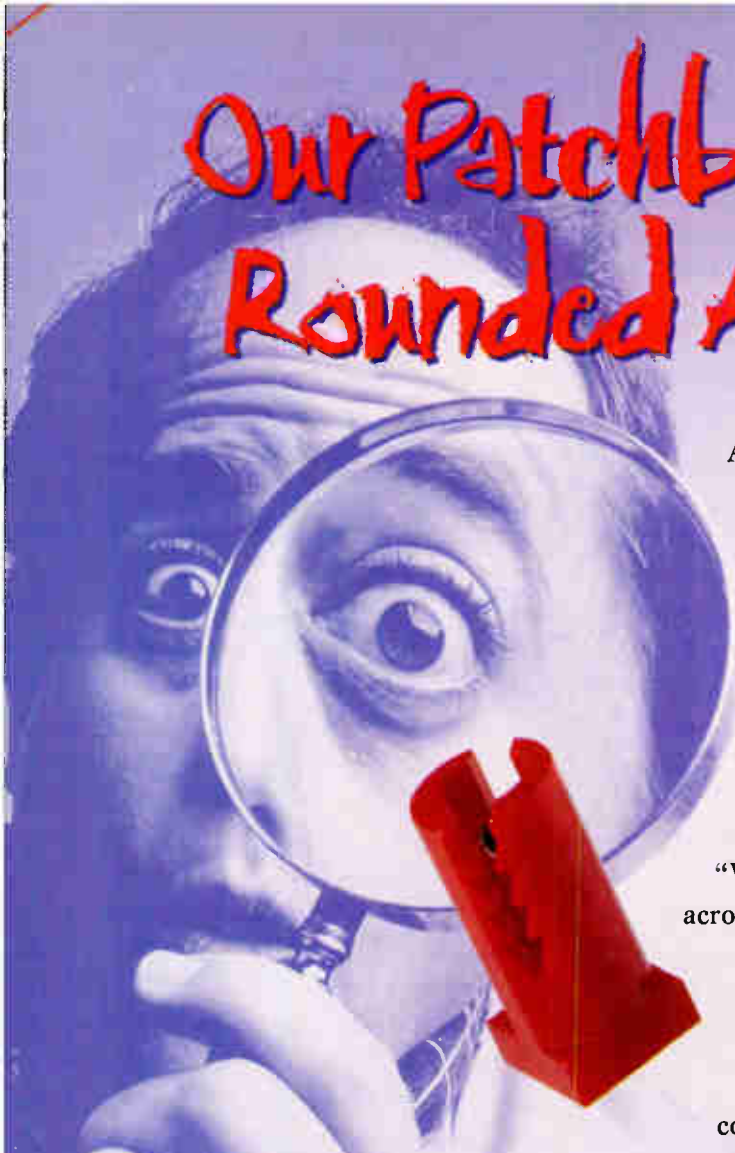
Testing the KSM32 on several other instruments (violin, contrabass, trumpet, flute, piano and hand percussion), I found that it captures the true sound of most instruments in an open, ambient miking style evoking the warmth, smoothness and natural energy of most acoustic instruments. You may prefer a different mic to provide an "edgy" sound on your guitar or percussion tracks, but if you want a fairly accurate picture of your source with the rough edges taken off, this is your mic.

One last experiment I tried was to test the focus of the mic in an extreme ambient setting. The mic was placed at the end of a 100-foot, cement-and-drywall hallway that connects my studio to the outside world. I played a tape with all manner of feedback madness at the opposite end of the hallway while the Climax Golden Twins went plink-a-plink on a roachaphone and ukulele (no waffle irons this time). Lo and behold, with all the racket that tape deck was making, the plink-a-plinks could still be discerned beautifully. And if that weren't enough, each member of the Twins walked closer to the mic during the course of the recording, plink-a-plinks a-plinking away. The stringed instruments became much more prominent, of course, yet each individual sound remained focused. Quite amazing. It certainly passed the mono mic test.

All in all, the KSM32 is a reasonably priced condenser mic that holds its own on a variety of instruments. I was most impressed with its bass response and ambient clarity. Would you expect less from Shure? I think not.

Shure Brothers Inc., 222 Hartrey Ave., Evanston, IL 60202. Phone 847/866-2200; fax 847/866-2279; Web site: www.shure.com. ■

# Our Patchbays Have Just Rounded A New Corner



Actually, the corner we rounded belongs to our patchbay's revolutionary new Professional Punchdown Terminal (PPT), making it perfectly compatible with the industry standard. We realized that achieving a new industry standard meant we couldn't cut any corners to get there.

Our new PPT is a split-barrel design that incorporates a more rugged, thicker housing to minimize the impact of repeated punchdowns. This design eliminates the problems associated with the old "V-shaped" terminals by distributing pressure evenly across both sides of the terminated wire, causing improved wire retention and more reliable connections. The serrated teeth in the plastic housing also improve wire retention by firmly gripping the wires. With the PPT, multiple wires can be terminated to a single contact, and a wide range of wire gauges can be used.

**Switchcraft**

www.switchcraft.com

**Audio Patchbays**

**MTP48K3FN**
48 MT or ¼" jacks in a 3.5" height, fully shielded enclosed unit. Available in normals strapped, normals brought out, and sleeve normals out.

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Look for Switchcraft's new PPT in our APP and Front Access Series of audio patchbays, and in our new Backpanel Series. All Switchcraft audio patchbays incorporate heavy gauge materials and come standard with our high quality nickel-plated, steel framed jacks, and gold-plated crossbar contacts!

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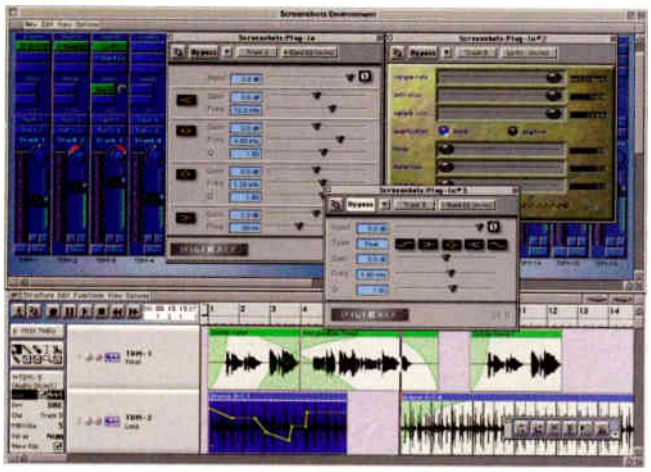
# EMAGIC LOGIC AUDIO PLATINUM

## INTEGRATED MIDI/DIGITAL AUDIO PRODUCTION SYSTEM

With the increasing power of personal computers and development of digital audio workstations, several feature-packed programs have been developed to integrate MIDI and digital audio seamlessly into a multipurpose production application.

Logic Audio Platinum is the highest-tiered configuration of Emagic's four Logic MIDI/audio software applications (the others are Logic Audio Gold, Logic Audio Silver and Micro Logic AV), and it is a very powerful option among the wide variety of sequencers on the market. The program combines MIDI sequencing, editing and scoring with digital audio workstation features at an extremely high level of resolution and control. From its humble beginnings on the Atari to its current state in the Mac and Windows universe, Logic has been an innovative player in the battle between MIDI/digital audio sequencers. The current software (Version 3.6 as of this writing) is full of features that can be harnessed for use in a variety of production environments.



*Logic Audio Platinum integrates audio recording and editing with MIDI functions.*

### OVERVIEW

In the MIDI realm, Logic offers 960ppq resolution and impeccable timing. The resolution is there, and the timing is even tighter when Logic is used in conjunction with Emagic's Unitor 8 MIDI interface. Emagic has developed a proprietary system called Active MIDI Timing (AMT) for moving MIDI data between Logic and the Unitor 8. I did an A/B comparison between the Unitor 8 and my existing interface, and the difference was substantial; a downside to the Unitor 8 is the lack of word clock (although VITC is supported). This wasn't an issue in my setup, but it's definitely a consideration for some production environments.

Logic supports the myriad of sync options available today and has a Tap Tempo feature for programming real-time tempo parameters on-the-fly. Tempo data are non-MIDI, meta-level events that can be edited in a variety of ways.

The software supports a wide range of cards, including Emagic's own multiplatform PCI card—the Audiowerk 8—designed to dovetail with Logic Audio. For this review, I used a Digidesign Pro Tools|24 Mix Plus setup, and I had no problem configuring Logic for use with the Digidesign hardware.

One of the strongest points of Logic is the Screenset feature. This allows you to define up to 90 custom screenset configurations that can be recalled via the number keypad. So, for example, if you have a set of tools that you use for one task set up in one screenset and you want to jump to another screenset for a different task, you can quickly switch between the two with the touch of a key. The variety of configuration options in Logic makes the Screenset function a welcome necessity for users who want to become facile in using the program. In addition to the Screenset function, the majority of Logic's numerous mouse-based functions can be executed via custom key commands; integrating the screenset function, these key commands allow you to substantially speed up your work flow.

Another important concept to consider when choosing an application is the ability for windows to update graphic information in real time as it is selected or edited within a separate window or editor. This is done via the Link, Show Contents and Contents Catch buttons that are found on windows. You can define these display options for every window that bears relation to the window where you are going to make selections or edits.

### BASIC PROGRAM LAYOUT

The main window of Logic is the Arrange window, where MIDI and audio information is recorded, displayed and played back on horizontal tracks. Tracks can be individually muted, soloed or scrubbed. Each track is played through a MIDI or audio "Instrument," and each Instrument's settings can be controlled via the Instrument Parameter Box in the bottom left corner. Instrument parameter settings such as MIDI patch, volume and pan information can be sent to devices when loading a

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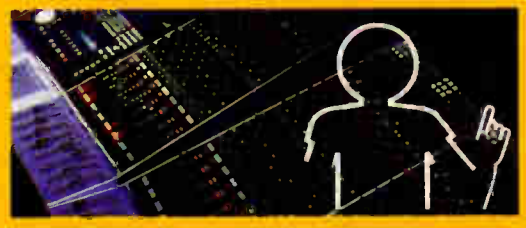

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song. Other parameters include transposition, velocity limiting/expansion, note range adjustment and delay.

Individual MIDI sequences and audio information are represented graphically and can be controlled via the Sequence Parameter Box in the upper left corner. MIDI parameters, including quantization, transposition, velocity treatment and delay, can be changed on-the-fly and are non-destructive—an extremely useful feature. I've had more than a few clients wax rhapsodic about the joys of adjusting quantization factors during playback in real time. A Loop On/Off switch in the parameter window that allows you to loop a MIDI sequence or audio region without having to make multiple copies is very cool. Once you have tweaked your tracks to where you want them, any parameter changes set in the Sequence Parameter box can be transformed into permanent MIDI data via the Normalize function; sequences can also be graphically edited.

The Transport Window controls and displays the recording, playback and location functions. Multiple variations (such as SMPTE clock display, Bar/Beat display) can be configured, and multiple windows can be displayed at the same time. The transport window can be expanded to a very large size, allowing for easy viewing from across the room—a feature that is especially appreciated by one of my visually challenged clients.

Switches on the main transport window also allow you access to Logic's Cycle mode, which is the program's loop playback function, and Autodrop, the program's record punch-in locator. Cycle and Autodrop location points can be entered numerically via the keyboard, or graphically via the mouse. Other buttons include record, pause, play, rewind/forward, solo/solo lock, metronome and replace (for punching in audio and MIDI).

Logic also lets you create and store Markers that can be viewed and accessed in the arrange window and its own window list. Marker points can be displayed as bars/beats or as SMPTE addresses (with the ability to be time locked). The Markers are helpful when used in conjunction with Cycle mode to set up various in and out points for quick location within a song; it would be nice, however, if Logic allowed you to store Autodrop points within Marker points so that preset punch in points can be called up without having to input them manually.

For quick mixing of audio and MIDI information, the Adaptive Mixer is a condensed mixer based on all tracks that are visible in the Arrange window. The Adaptive Mixer is ultimately designed to make using the Environment (see below) easier and is available via menu selection or key command.

### QUANTIZATION/GROOVE

The MIDI quantization options within Logic are quite extensive. Sixteenth-, eighth-, half- and whole-note quantization parameters with a range of swing variations are available, as well as a number of -tuplet options. An Extended Sequence Parameter box that allows you to apply additional quantization parameters is available for those hardcore quantization tweak heads. The Q Strength parameter is especially helpful for finding a balance between quantized and non-quantized events. I found this to work really well with adjusting swing quantization factors. Custom quantization groove templates can

be created from MIDI data or audio based drum loops, and you can import third-party groove templates (such as DNA Grooves). All in all, Logic covers every MIDI quantization need or desire one could possibly think of, all in real time.

### EDITING OPTIONS

Throughout various windows in Logic, MIDI and audio can be edited using HyperDraw editors. HyperDraw is a graphic editor based on MIDI controller data, so volume control is going to be controller number 7, whether you're dealing with audio or MIDI information. The graphic representation consists of plot points connected by lines.

The Event List can be used to make precise adjustments to recorded data when the graphic display of other editors is not suited to the task; it is the only editor that provides access to all recorded event data (including program-specific non-MIDI META events). You can also restrict what you see and edit to specific event types—useful, for example, if you want to zero in on a specific MIDI controller number without wading through a sea of pitch-bend data. MIDI events can also be added and subsequently edited, and SysEx editing capabilities are available.

The Hyper Editor (not to be confused with HyperDraw mentioned above) is a graphic editor well-suited for editing drum sequences and controller data. Data types within MIDI sequences have their own graphic representation and can be adjusted with various tools via the mouse. Custom setups called Hypersets can be configured, saved and called up for use in carrying out specific tasks. Any quantization can be applied graphically within the Hyper Editor.

The Matrix Editor edits note events in a piano roll-type graphical interface environment. Existing notes can be edited or notes can be added to the sequence. Controller data can be edited via a HyperDraw display.

The Score Window allows users to work with traditional music notation in dealing with MIDI information. Input, editing, copying or deleting of MIDI events and changing their musical position can be done directly in the Score Window. In addition, the Score Editor is used to produce printed music. Sequencing and preparing music for printout are closely related in Logic. Recorded MIDI notes are immediately displayed in the score, and notes that are inserted with the mouse on the screen or changes of already existing notes can be played back in real time.

### THE ENVIRONMENT

The part of Logic that can send shivers down the spines of new users and seasoned veterans alike is the Environment. At first glance, understanding the Environment may appear to be the technical equivalent of decoding the Dead Sea Scrolls. However, configuring the environment to work in a basic MIDI setup is actually quite easy, and diving in and learning the concept of the Environment's form and functionality allows the depth of possibilities to become clear. The Environment is a powerful but elegant tool that allows you to customize your setup while providing scalability for a high degree of flexibility.

The idea behind the Environment is based on object-oriented programming—you use "objects" to create a virtual representation of every device in your MIDI and Audio setup. Some objects, such as MIDI instruments and faders, address your real devices (hardware-based synthesizers and DAW I/Os, for example). Other objects can have specialized functions, such as effect

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modules, routing switchers or MIDI data tranformers. All objects within the Environment are connectable via virtual cables, allowing you to control the signal path of your particular setup, and most objects have a set of parameters that allow for tweaking of the highest order. Environments can be set up in different display levels (layers), and objects from different layers can be interconnected.

The different types of objects in Logic, multiplied by the sheer number of addressable parameters, allow for infinite possibilities. A substantial number of users have developed some pretty sophisticated Environments over the years—everything from custom sysex-based synth editors to drum machine emulators. A few of these are included on the installer CD, and many more are downloadable from Emagic's Web site. The complex nature of the Environment can increase the steepness of the learning curve, even for the avid manual reader. There is even a third-party tutorial book available for learning the intricacies of the Environment. The bottom line on the Environment is scalability: From the very simple to the highly intricate, both ends of the spectrum can be explored for your working setup.

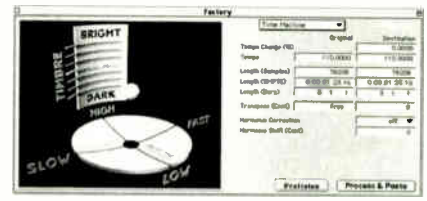
## AUDIO FUNCTIONALITY

Logic works with a plethora of audio cards on both Mac and Windows (non-NT) platforms. The program supports Steinberg's ASIO, Lexicon and MOTU 2408 I/O formats, most Digidesign hardware, as well as Audiosuite, Premiere and VST-based plug-ins on the Macintosh, and DirectX on PC. Logic works very efficiently—even with a high track count putting a load on the CPU—when utilizing the Apple Sound Manager. A colleague of mine brought his G3 laptop to the studio to play a song that had 32 audio tracks with a fair amount of VST plug-in activity going on. Logic just hummed along without even a hiccup. Not bad for a program using the Apple Sound Manager as a bus.

Logic dovetails nicely with Digidesign's Pro Tools|24 hardware, and I've yet to run into any hardware incompatibilities at all—very important when working with clients who aren't happy with too many bumps in the road! TDM-based plug-ins are supported, as is the 64-track feature that is available to Pro Tools|24 Mix users. One plus as far as plug-ins go—Logic can have multiple plug-ins open at once, which is helpful when you have tracks with a number of effects needing to be tweaked.

The recording, busing and playback signal path is controlled within an audio Environment layer via faders, with aux sends and plug-in inserts easily accessible. Another feature is the Audio Configuration window, a matrix window that allows you to edit signal path routing for all of your audio objects without having to jump to the respective faders. This is helpful in large systems (i.e. 64 tracks with numerous aux groups).

Mixer automation is one area that could be enhanced. Recording and keeping track of fader information is confusing and inconsistent. It took me a while to factor the quirky automation into my working style, and unpredictable fader behavior would occasionally occur. Also, since Logic's automation is based on MIDI controller data, the smoothness that is necessary for some mixing situations just isn't there. TDM plug-in settings




*The Digital Factory's Time and Pitch Machine has an easy-to-use interface.*

were often lost when reloading previously saved songs. Enhanced automation would be a welcome addition to a future release.

Working with audio files is very straightforward and, in fact, one of the more intuitive aspects of the program. The graphic overviews of the audio files are displayed in the Audio Window where any number of region start and end points can be defined. Regions can be defined as any segment of an audio file, ranging from one sample to the entire file. Once a region is defined, it can be dragged from the audio window to anywhere in the Arrange Window.

Information about the regions, such as length (in sample, bars/beat, SMPTE or minute/second increments), size and even file location can be displayed. Logic also allows you to time-stamp audio files—extremely useful for exporting projects to a Pro Tools session.

Double-clicking on a region brings up the main editing window with extensive editing features. Region start and end points can be tweaked. As is the case when dealing with MIDI data, audio regions can be tweaked in real time during sequencer playback—even when carrying out destructive edits.

This makes adjusting loops within the context of a song a breeze. The edit resolution is zoomable down to the sample and the region can be viewed in bars/beats, SMPTE, samples or minutes/seconds increments. Editing options within the window include fade in/out, gain change, phase inversion, silence and DC offset removal.

Logic's Digital Factory function, accessible from within the region edit window, offers some cool effects: The Time and Pitch Machine, which gets an A+ in the Cool GUI Category, allows you to tweak pitch and tempo via an intuitive and easy-to-use interface. Other tools include the Groove Machine, which is a requantization tool for audio files, and the Energizer, which is an exciter type of destructive effect. Tools for extracting groove templates from loops are option-packed and very effective.

Logic's Fade Tool is by far the most intuitive and easiest way to crossfade digital audio that I've ever used. Fades and crossfades are "painted" between audio regions in the arrange window, using the mouse; fade curves can then be selected and tweaked numerically in a parameter box during sequencer playback. It's that simple.

**THE BOTTOM LINE**

To touch on all of the available features in a written review of Logic could easily fill a lot more space than I have here. The bottom line: Emagic has managed to combine MIDI and digital audio into a very powerful package that can be customized to suit many different working styles and production environments. The timing and resolution within the program form the basis for a smooth and very musical working environment.

There is a potential for people to be frightened by the learning curve, but this should be expected from any program with the depth of features that Logic has to offer. At the basic level, configuring the program is relatively simple. If your goal is to become a power user, judicious time allotted to learning the deeper intricacies of the program will reap exponential rewards in productivity and creativity.

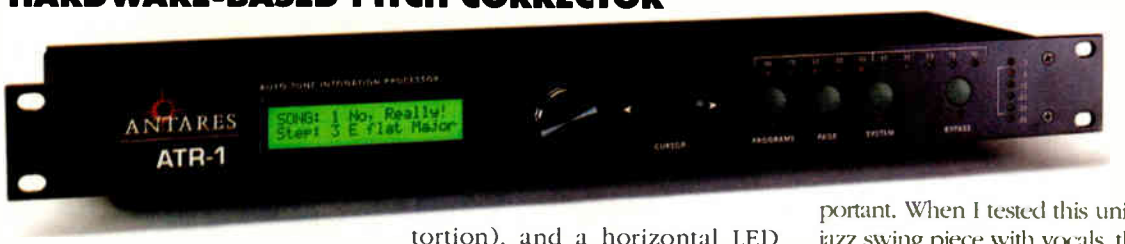
Special thanks to Mark Pappakostas at Digidesign for his assistance.

Emagic, U.S. offices: 13348 Grass Valley, Building C Suite 100, Grass Valley, CA 95945. Phone 530/477-1051; fax 530/477-1052. Web site: www.emagic.de. ■

*Walt Szalva was born and raised in America.*

# ANTARES AUTO-TUNE ATR-1

## HARDWARE-BASED PITCH CORRECTOR




Antares introduced the Auto-Tune pitch correcting plug-in for Pro Tools about two years ago, and the masses went mental. Because it (as well as the subsequent PC version) corrected the pitch of vocals and solo instruments without altering the expressiveness of the performance, Antares was asked to put the same processing in an outboard unit. Voila!

As the title indicates, the ATR-1 (list price $1,199) is a 1U digital processor that allows for precise control over the parameters surrounding pitch correction. It's quite easy to use and program: Thirteen basic preprogrammed scales (chromatic and A-G major and minor scales) and 37 user-programmable banks make it possible for users to create their own scales or songs. What's more, this unit is extremely portable and roadworthy, which most engineers and producers will appreciate wholeheartedly.

The ATR-1 detects and measures the time length of the repetitions of the input waveform (it works best with periodic sound sources that include vocals and other solo instruments), calculates the frequency of that repetition and matches it to a known frequency of preprogrammed notes, ranging from A0 to C6, then shifts the incoming pitch to its nearest matching frequency, in less than 4 milliseconds.

The ATR-1 is very simple in its layout, offering four balanced and unbalanced inputs as well as MIDI in and a footswitch jack. The front panel features an LCD screen, a data entry knob, a few buttons plus a vertical LED meter indicating the input signal (input must be high enough for effective pitch correcting, but not so high as to cause distortion), and a horizontal LED meter indicating pitch change in cents (10, 30, 50, 70, 90), in both the sharp and flat directions. One could even use this unit as a tuner.

The ATR-1 has two modes: Program mode is useful for pieces that use only one or two scales; Song mode is useful for precise control of individual parameters, allowing one to preprogram precisely which notes in a scale will be pitch corrected, how much (if any) vibrato will be added, how sensitive the unit will be to variances in pitch before correction occurs, and how a series of these settings will be saved for live or MIDI playback. Song mode is especially helpful in live performance situations—each page of a song structure can be programmed and changed with a footswitch.

### MIDI-CONTROLLABLE PARAMETERS

The Scale parameter allows you to modify notes in a particular scale (either user-defined or preset) and define what the ATR-1 will do with each note: Tune selects which notes will be pitch corrected; Bypass will skip pitch correction of particular notes, allowing the input signal to pass through unchanged; Blank allows you to take a note out of the scale in order to tune it to a specific scale or set of notes. One good example is provided in the well-written owner's manual: Say a vocalist likes to drop the pitch of the last note of a phrase by three semitones (think Sinatra!). The ATR-1 would normally want to correct the last two notes, but if the unit is programmed to ignore them, everything comes out fine and you don't end up in the river.

The ATR-1's Speed setting is important. When I tested this unit on a jazz swing piece with vocals, the default setting for a chromatic scale worked pretty well for the lyrics, save a few slides, but bringing the speed up a few notches allowed those slides to come through unscathed. It would probably be best to leave the ATR-1 off during scat points, but I just had to push those limits, so I left it on. The unit had to work quite hard. If the speed was set slow (15 to 25), vibrato or slides were left intact, yet the main pitch was corrected. If the speed was set fast (0 to 10), the unit corrected pitch virtually instantaneously. This worked on short pitch durations but could sometimes remove natural vibrato.

Speaking of which, you can actually create vibrato with the ATR-1! Vibrato settings include Sine for smooth variance of pitch, Square for sharp variances, and Saw for slow incline and sharp decline. You can also control the depth of pitch variation (0 to 100 cents), rates from 0.1 to 9.7 Hz and delay (from 0 to 3,500 milliseconds after the attack note has sounded).

The ATR-1 is a fine addition to any professional studio—no wonder the hordes stampeded to buy the original software version. This box is fascinating technology, but I wonder if its use will so distort the audience's impression of what music is supposed to sound like that live music, with its beautiful flaws and personality intact, will be a let-down. Use with discretion.

Antares Systems, 464 Monterey Ave., 2nd Floor, Los Gatos, CA 95030; 888/332-2636, fax 408/399-0036. Web site: www.antares-systems.com. ■

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Along with signal averaging, Mac the Scope uses overlapping to fully capture incoming signals. Select the Overlap button, and each incoming frame is combined with 50% of the previous frame, processed, averaged and then processed and averaged again using the most recent trace record. This increases averaging throughput and decreases the effect of signal attenuation with a power spectrum weighting function.

Weighting is accessed via the program's windowing function. Windowing allows you to preprocess each incoming frame so that during power spectrum analysis, amplitude spikes at the edges of frames can be eliminated. Windowing functions include Welch, Bartlett, Hann, Hamming, Cosine4 and Square Top (no windowing). The windowing shapes can be graphically displayed by using Balloon Help and selecting the windowing function you want to see.

Overall, Mac the Scope seemed to work well. I ran into a few technical problems (the stimuli) and implementation problems (a cluttered main window), but these didn't overly interfere with the program's basic operation. All told, it's hard to go wrong with software that turns your computer into a solid audio test machine for only $399. What else lets you generate test stimuli, check the phase on stereo signals, analyze a mix's frequency content, tweak a device's frequency response and signal throughput, or view sound wave reflections while you tune a room for under four C-notes? Version updates are readily available via Channel D's Web site, as are application tips and updates to the manual.

Channel D Corporation, Nine Highland Ave., Red Bank, NJ 07701; 732/933-9388; fax 732/933-9389. Web site: www.channld.com/software.html. ■

*Erik Hawkins is a producer and musician in California and the owner of MuziCali Intertainment, www.muzicali.com.*

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The HT 60 handheld comes with AKG's new D880 Emotion Series supercardioid dynamic capsule ($580 list). It is also available with one of three Tri-Power elements—the D3700 and D3800 dynamic or the C5900 condenser—as well as my favorite singer's mic, the C535. These interchangeable screw-mount capsules can also be ordered separately, though they raise the system's cost; for example, the 535 adds $270 to its list price. The PT 60 bodypack ($518 list when supplied with a guitar cable only) has a mini-XLR connector that will connect with a choice of AKG's MicroMic collection, including the C417 lavalier, C419 clip-on, C420 headset and CK 77 lavalier.

The transmitters offer gain adjustment, frequency selection, a power switch and a mute switch, all hidden inside the microphone body or beltpack. A ring in the handheld transmitter can be changed for another that allows the unit to be muted without opening it, and an optional set of colored rings can be used to identify multiple transmitters.

Both handheld and bodypack transmitters are equipped with battery-status LEDs that momentarily glow brightly when first turned on to indicate they're okay, and then they dim. They glow brightly again when battery life is under 90 minutes. Both transmitters use AA batteries, and, with over eight hours of use from a fresh set of alkaline batteries and ample warning, there's little need to turn them off to conserve power over the course of a day.

The WMS 60 receiver employs the half-rackspace form-factor of most wireless products. Featuring a plastic chassis and an external power supply, the WMS 60 is a bit larger than a paperback and about the same weight. The AC adapter/transformer is positioned in the middle of the eight-foot cable (provided), a design that makes better use of power strip input slots than a wall-wart; a clip on the receiver's back holds the DC plug in place. Front panel controls include a power switch and recessed, screwdriver-adjustable pots for frequency selection, volume and squelch. A clip on the back of the unit keeps a screwdriver handy.

The receiver uses AKG's new 4LD microprocessor-controlled diversity for rapid switching to find the strongest signal. Two pairs of front panel LEDs show diversity switching and RF signal strength. Other LEDs indicate audio signal present, and Peak and Mute modes. Two telescoping antennae are fixed to the front panel, and there are instructions for determining how many antenna segments to extend for optimum performance. Both balanced and unbalanced outputs are provided, and the XLR output can be switched from line to mic level. The receiver also comes with a rackmount kit. Unfilled knockouts on the back for BNC connectors suggest that this platform will also be used for other systems.

Both transmitter and receiver are labeled with a frequency chart for their 15-position selector. For the United States, there are two sets of "Traveler" frequencies between 169 and 172 MHz that each offer four frequencies, and two frequencies in each set can be used at once. For non-traveling U.S. applications, there are five more sets operating in TV bands 7, 8, 11 or 12, each with 15 frequencies, of which three can be used simultaneously in a single TV channel. Even with the advent of digital TV, one of these TV channels will be free in your city (except maybe San Francisco). Altogether, up to nine systems can be used in proximity without interference.

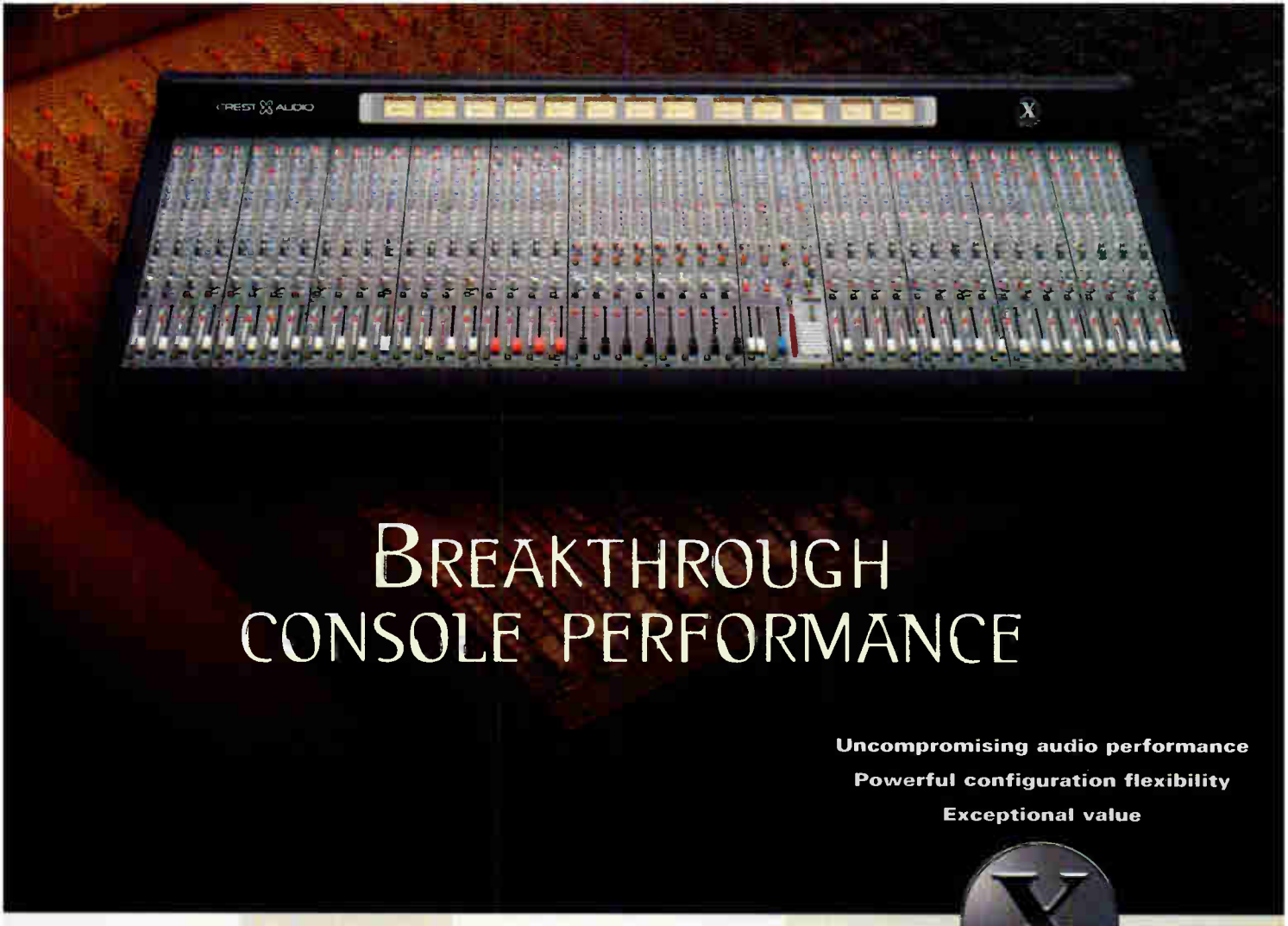
I used the Emotion capsule for a church's musical service and discovered that the system was capable of high gain before feedback and created low handling noise. With a signal-to-noise ratio of 100 dB and a frequency response of 50 to 20k Hz, there is little to distinguish the wireless system from its hardwire-equivalent AKG capsule. Since I'm most familiar with the C535, I swapped capsules to make a comparison. The only noticeable difference was a subtle artifact of the compander on loud transients. I used the C417 lavalier on a violin for a Christmas pageant and was surprised by the smooth high-end response. Guitar players interested in sonic quality should check out this system's performance.

Although I initially discounted this system as a music store product, the price and packaging undersell its performance. After careful listening, I would be hard-pressed to find better value in an inexpensive wireless system. As the RF world turns, VHF is not such a bad place to be, and the WMS 60 has some advantages to offer, including the benefits of frequency agility.

AKG Acoustics, 1449 Donelson Pike, Suite 12, Nashville, TN 37217; 615/360-0499. Web site: www.akg-acoustics.com ■

BY MARK FRINK

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



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# PMC IB1S

## MIDFIELD STUDIO MONITORS

The Professional Monitor Company's PMC IB1S midfield studio monitors provide one of the most sensational listening experiences I have enjoyed. I found it practically heartbreaking to have to return them to the manufacturer after the evaluation.

Retailing for $4,500 a pair, the IB1S measures 29.1x13x18.3-inches (HxWxD) and occupies a little more than four cubic feet of studio

BY HUNTER PIPES

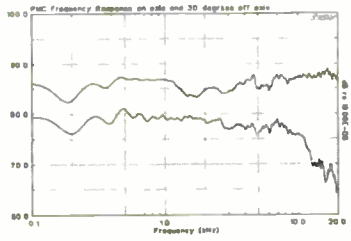

## Lab Analysis: PMC IB1S Monitor

**by John Schaffer and Rob Baum**

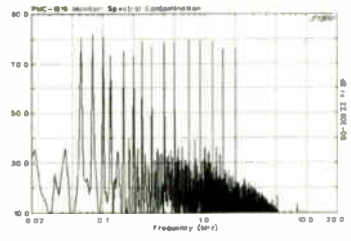
The PMC IB1S is a three-way system. The 1-inch Vifa soft-dome HF tweeter is driven by a 1-inch-diameter voice coil and is mounted to a 4-inch-diameter, horn-loaded faceplate. The pole piece is vented into a sealed plastic enclosure. The unshielded driver is supplied with two 0.11-inch male connectors. The midrange driver, a Vifa 3-inch dome unit with a 3-inch diameter voice coil, has a 6-inch diameter, shallow, horn-loaded plastic faceplate. The design uses a central slug of either neodymium or Alnico magnet, so it is inherently shielded. The motor case is vented into a sealed plastic tube rear enclosure, and there are two 0.11-inch male connectors.

The 10-inch woofer has a ¼-inch-thick flat diaphragm and is constructed from textile skins on either side of a honeycomb diaphragm, which is attached to a half-roll butyl rubber surround. Flat di-

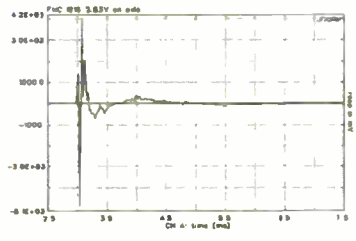
—CONTINUED ON PAGE 192



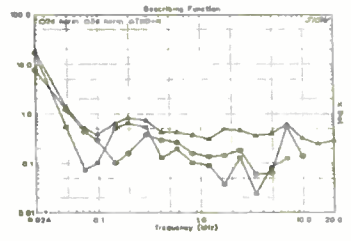
*The on-axis frequency response (top trace) is generally smooth to 1 kHz, dipping from 1,200 to 3k Hz, with a generally rising response from 1.8 to 20 kHz. The 30-degree off-axis response (bottom trace) smoothly tapers down by 5 dB from 500 Hz to 11 kHz then drops off rapidly.*



*Spectral contomination distortion is around 40 to 45 dB below the input test tones in the mid band, and improves at lower frequencies.*



*Impulse response is well-behaved, particularly considering the use of three drivers.*



*Harmonic distortion is very low (about 0.2%) between 100 and 5k Hz, but rises at the frequency extremes.*

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space. Weighing in at a hefty 79 pounds apiece, these monitors provide a usable frequency response of 25 to 25k Hz and pack a mighty wallop. Peak SPL is listed at >116 dB @ 1 meter; sensitivity is 89 dB (1W/1m). Recommended power handling is up to 500 watts, and for this review, I used Bryston's 4B-ST stereo power amplifier, providing 455 watts into a 4-ohm load.

### THE BOTTOM LINE IS TRANSMISSION LINE

How do you design a loudspeaker to achieve at least one more octave of low-frequency information while providing higher SPLs, lower distortion and a more sonically transparent delivery than an equivalently powered ported loudspeaker? PMC's answer is Transmission Line loading, which makes these speakers extremely accurate at both high and low SPLs, and provides uncolored sonic clarity across the frequency spectrum.

Behind the front grille is a flat, extremely rigid, piston-type low-frequency driver. Constructed of a carbon fiber and Nomex sandwich, this 8-inch planar woofer is driven by a 24.6-pound (!) magnet, with a ferrofluid-cooled, edgewound 3-inch Kapton voice coil. Working in tandem with this driver is the transmission line. A polyurethane-lined port—which occupies the same surface area as the woofer itself and folds to an effective length of 14 feet—allows the speaker to perform more efficiently. The integration of this port provides accurate and punchy bass-end balance at nearly all listening levels.

The mid driver (crossed at 380 Hz) is a 3.5-inch doped fabric dome. After the 3.8kHz point, highs are handled by a 1-inch silk dome tweeter, said to offer response to 25 kHz. The 25 elements in the 4th-order Linkwitz-Riley crossover include matched, high-quality components such as high-current air core inductors and low-loss caps. Multi-stranded oxygen-free copper wiring is used throughout.

Speaker inputs consist of three pairs of 4mm gold-plated terminals that are strapped together with gold-plated banding that's removeable for active bi-amping and tri-amping. Other options include matching speaker stands, mag shielding and film curve filtering; the IB1S is also available in a self-powered configuration.

### HEARD BUT NOT SEEN

For the critical listening tests, I selected five CDs in various styles and genres, from rock to jazz to classical to techno, and a few masters that I had mixed myself. First out of the bag was the techno: rich and heartily textured with great analog synth sounds and sweeps, pounding low frequencies and shrill highs. The sound of this modern mixture of old and new was like a breath of fresh air. It was as if my control room had been transformed into some sort of supercharged listening environment. I quickly ran down the hall and summoned everyone in the facility, saying "You gotta come hear these things!"

As the day wore on, I realized I was hearing things that until then had been imperceptible to me. For example, when listening to a jazz trio that had been recorded in what sounded like a fairly large tracking room, I was amazed to discover that I could hear the rustling of a musician's clothes before he performed. Further listening revealed the slightest buzz of an antique organ speaker and the switching of

channels in the bass part as the take was going down.

Next came classical scores: Beethoven, Vivaldi, Wagner, Brahms. The width of the image was completely uncompromised. I could close my eyes and point to each musician, as if they were all seated in the studio in front of me. French horn in the middle of the third row, oboe in the last seat of the last row on the left hand side, a bass drum booming right down the middle with the intensity of a freight train.

When I concentrated on mixing, I noticed the amount of depth that was opened up within my own mixes. I was working on an animated series, and it seemed as if each element of the show—dialog, music, Foley and SFX tracks—occupied its own pocket within the mix. There was more "airiness" within the mixes, and the depth of field was something that I had not previously experienced using my standard monitor system. The director kept saying "Wow, this is great. It sounds so much better than last season." I just smiled and bit my lip; I did not want to tell him that it was more likely the speakers that he was appreciating instead of some radical advancement of my sound design techniques.

The IB1S system reminded me of a finely tuned racing car. The speakers were great fun to zip around at low level and everything sounded wonderful, but when you started to apply a little gas it really got exciting. I noticed that as I applied a little more power, the cabinets seemed to open up; at SPLs around 85 to 90 dB, the speakers really started to punch. I pulled out the techno again and started to apply the gas. I slowly started to increase the monitor levels past 85 dB, on to 90 then to 95 and up to the point of clipping the Bryston. The amazing thing was there was no audible distortion within the cabinets. Actually, I was barely able to see any excursion on the low frequency driver: The speaker handled everything I could throw at it.

Due to the physical constraints of my control room, I was forced to place the speakers on a shelf behind the console and I was certain that I would have problems with the studio furniture creating low-frequency resonance, but the IB1S proved me wrong. Even with the most earth-shaking low-frequency information fed to them, there was barely a hint of any external vibration when I put my hand on the surrounding surface. This was also true when I felt the outside of the speaker enclosure.

In closing, I was completely impressed with the IB1S. I've been mixing in one environment for an extended amount of time, and I'm very comfortable with the sound of the room, so I didn't think that another pair of speakers could make much of a difference. Boy, was I wrong. The PMCs let me hear information that I didn't know was present in program material that I had been familiar with for months. They provided an extremely wide and deep stereo image with little to no distortion or resonance, and a silkiness and sheen among the mid and high frequencies the likes of which I had not imagined. If I only had a few more square feet in front of my console, I would be adding a pair to my ensemble.

PMC Monitors/Bryston Ltd., 677 Neal Drive, Peterborough, Ontario K9J7Y4; 705/742-5325; fax 705/742-0882; Web: www.bryston.ca. ■

*Hunter Pipes is a sound designer at Dubey Tunes, a post-production facility in San Francisco. He has been working on the Nickelodeon series* Life With Loopy.

*—FROM PAGE 188, LAB ANALYSIS: PMC IB1S MONITOR*

aphragms permit shallow baskets or frames, and consume less volume inside the enclosure than cones; hence, the popularity of flat woofers in car audio, where space is at a premium. The cast-aluminum basket is powder-coated black, and the surround is attached by screws into the main body of the basket. The woofer's top plate is 18.5 mm thick, and the 3-inch diameter voice coil is underhung, i.e., the voice coil is shorter than the top plate. The unshielded woofer uses a 7-inch diameter cupped (as opposed to flat) spider. The one-piece backplate and pole piece are forged. The conventional ceramic (ferrite) magnet is 8½-inches in diameter and 1 inch thick. The wire terminals are spring loaded barrel terminals.

The PMC IB1S cabinet uses a slot-loaded scoop design, is built of 1-inch-thick MDF, and is finished in black textured paint. T-nuts are used for all threaded fasteners, and the enclosure is heavily stuffed with polyester foam. All the drivers are recessed, as is the crossover panel. The crossover uses three pairs of gold-plated five-way binding posts on an MDF rear panel, allowing for tri-amped or full range use.

**TEST RESULTS**

The on-axis frequency response is fairly flat above 500 Hz, except for a shallow dip between 1,200 and 3k Hz. The frequency response rises by about 5 dB from 1.8 to 20 kHz. The off-axis response smoothly tapers down by 5 dB from 500 to 11k Hz, and then decreases rapidly above 11 kHz. The PMC exhibits a fine transient response, particularly for a three-way system. The drivers are generally in good acoustic alignment with each other.

Harmonic distortion measured well, and was approximately 0.2% for the two decades from 100 Hz to 10 kHz, rising only at the frequency extremes. The spectral contamination distortion test is a measure of the speaker's nonlinear distortion (i.e., the generation of frequencies not harmonically related to the original input frequencies, and therefore very objectionable). The PMC generated spectral contamination (or self-noise) at a level of about 45 dB below the input test tones. ■

*John Schaffer and Rob Baum are test engineers with Menlo Scientific, an independent acoustic lab based in Berkeley, Calif. For more on testing methodology, refer to the Feb. '98 issue of* Mix, *or visit www.mixonline.com.*


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**CIRCLE #138 ON PRODUCT INFO CARD**

# E-MU AUDIO PRODUCTION STUDIO

## DESKTOP MUSIC PRODUCTION SYSTEM

E-mu has delivered a powerful new tool for desktop computer music production called the Audio Production Studio. This PCI-based audio card provides 64 voices of sampling, multitrack hard disk recording and quality, real-time DSP effects. Included is a drive bay input/output component that provides convenient left/right channel ¼-inch inputs, a headphone jack and S/PDIF connections, all accessible from the front of the PC.


*The Audio Production Studio combines sampling and workstation functions.*

In addition, E-mu bundles a nice array of software and hundreds of sounds with the package. The E-mu software includes a mixer/control panel called E-Control, plus the SoundFont Bank Manager and SoundFont Librarian, for loading, unloading and previewing SoundFonts, and for creating and manipulating banks of SoundFont presets. Third-party software includes Vienna, Creative Labs' SoundFont editor/creation program; Cakewalk Express Gold 6.0, a special version of Cakewalk's sequencer supporting four digital audio tracks and automatic SoundFont loading; and Sound Forge XP 4.0, a full version of the popular Sonic Foundry audio editing program.

E-mu recommends at least a 200MHz CPU with 64 MB of RAM, running at a video resolution of 1,024x768. I installed and tested this card on an AMD-K6 200MHz machine using 128 MB of RAM running Win 98, and it performed exceptionally well. Plug-and-play installation made it easy to add the card to the last remaining slot in my computer.

The APS is basically a sampler combined with a stereo digital audio card for hard disk recording, and a multichannel effects processor and digital mixer. The APS can be combined with other audio cards to provide a 64-voice sampler and digital effects processing. Because the card does all of the processing, all 16 true stereo effects worked well together in real time. Each effect is controlled onscreen via an Effects Insert strip, and an effect can run on multiple strips by using one of four virtual aux buses. And again, because the card is doing the processing, all available inputs can be mixed down simultaneously without affecting CPU bandwidth.

**BY MIKE LAWSON**

I used the APS system with Cakewalk Pro Audio. However, my version 6.0 did not support the new SoundFont V.2.1, making it impossible to take full advantage of APS; I had to install the limited version of Cakewalk Express Gold in order to enjoy automatic loading of these new versions. (Cakewalk Pro Audio V.8.0 does support V.2.1). If you are using Cakewalk Pro Audio V.6.0 software and don't want to upgrade to V.8.0 or switch to the Cakewalk Express Gold package, you won't be able to use the wonderful SoundFonts that come with the APS. Because the APS is a stereo sampling card, you can only record up to two tracks discretely, and since Cakewalk Express Gold only supports four digital audio tracks, you'd be better off upgrading to Cakewalk V.8.0 (or comparable, compatible software) if you want more than four digital audio tracks.

The APS CD-ROM contains more than 1,500 sounds, including 2MB and 8MB General MIDI banks, plus sounds converted from E-mu's E-IV sampler library and selections of the Module Mania library. This includes samples from the original Proteus 1-2-3, Vintage Keys and Planet Phatt modules. The great thing about this card is it sounds like you're playing a real instrument and not some cheap General MIDI sound card for gamers. When you're playing 8MB samples from any of these modules, you'll realize how cool it is to be able to load the same sounds straight off your PC that sell on $1,000 rackmount units!

The I/Os can all be used simultaneously. There are four mono analog (balanced) inputs, two analog (balanced) outputs, two stereo digital (S/PDIF) inputs,


**Forrest Lawson:** Frostbite Productions, Haskell NJ.
"... marvellous - I don't know how ever got along without it ..."

**Andy Hewitt:** 2nd Sense, Watford UK.
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and two stereo digital (S/PDIF) outputs. That's a nice feature. I do have some concern about the S/PDIF settings, though. They are set for 20-bit resolution at a 48kHz sample rate. The digital inputs have asynchronous sample rate converters (SRCs), which allows them to accept a digital audio stream anywhere between 28 and 53 kHz and convert it to the professional 48kHz sample rate that the APS runs at. That's great for inputs, but the output is locked at 48 kHz. This makes for lengthy software-based SRC via a program like Sound Forge in order to output to a different sample rate, such as 44.1 kHz. This means you will not be able to burn a CD directly from the S/PDIF outputs on the APS without potentially destructive sample rate conversion down to 44.1 kHz via your mixdown program. I suggest you use the APS only in 48kHz mode and perform the SRC during the final mix. E-mu's Web site (www.emu.com) includes an explanation of why they chose a 48kHz rate, and other information on sample rate conversion. While you're there, check out additional available sounds, including third-party sounds in SoundFont format.

E-mu has produced an excellent audio/sampler card with a lot of wonderful features. Allocating system RAM to play 8MB SoundFonts is a nice feature and lets me enjoy pre-made (as well as my own) high-quality sounds without spending a fortune on rack-mountable modules. I would probably never invest in the Planet Phatt library as a standalone unit for my needs, yet there are some great sounds from that product on the CD packaged with the APS that I will definitely use.

I would have no problem recommending the APS to anyone who wants to dive into digital home recording, sequencing, sampling or other music production on a PC. For the suggested list price of $699.99, it's a really good deal, even if you're only using it for its powerful sampling and MIDI capabilities.

E-mu-Ensoniq, 1600 Green Hills Road, Scotts Valley, CA 95067. Phone 408/438-1921; fax 408/438-8612; Web site: www.emu.com. ■

*Songwriter/guitarist Mike Lawson is the publisher of MixBooks and recently released a CD,* Ticket to Fly, *with Merl Saunders, Bob Welch, Jorma Kaukonen and others.*

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# QSC AUDIO PLX SERIES

## POWER AMPLIFIERS

QSC Audio's second generation of lightweight amplifiers, the PLX Series, was introduced at the 1998 NSCA show in Las Vegas. With a two-rackspace form factor that's only 13 inches deep—five inches less than QSC's original PowerLight (PL) Series of amps—the PLX Series will fit comfortably in any amp rack. And since each amp weighs just 21 pounds, one person can easily lift a rack of four. You can expect to see a lot of these.

The four PLX models are the 1202, 1602, 2402 and 3002, model numbers that refer to each 2-channel amp's total power output into 2 ohms (600, 800, 1,200 and 1,500 watts per channel, respectively). The two lower-powered models are Class AB amps, while the 2402 and the 3002 are efficient two-step Class H designs. At 4 ohms, the PLX 2402 delivers 125 watts more than the PowerLight 1.8's 700 watts, and the 3002 has an extra 350 watts. However the PowerLight 1.8 has 34 dB of gain, while all the PLX amps have 32 dB of gain, so getting the extra power out of the PLX means you'll be hitting them with a bit more signal. Four-step LED metering indicates -35, -20 and -10dB input signals in green, plus true clip and protection in red. Two yellow LEDs show bridge-mono operation and parallel input mode status. Another nice touch is the comfortably designed gain knobs, which are detented in 2dB increments.

We racked up two 1602s and two 3002s, along with a TDM CX-4 crossover to bi-amplify a four-mix monitor system, and used them to power wedge monitors, each loaded with a JBL 2226H and a 2426J compression driver. The 3002's 8-ohm rating of 625 watts proved ample for the 15s, and the 1602's 350-watt 8-ohm rating meant the amp could deliver over 150 watts to the 16-ohm 1-inch high-frequency drivers without clipping. We found no problems when doubling up two floor monitors on a single amp. In fact, since the amps are 2-ohm capable, three or four of these wedges could be run on a single mix.

The PLX has the same studio-quality performance as the original PL, including a virtually inaudible noise floor (108 dB) and ultra-low distortion (0.03%) on 8- and 4-ohm loads. If you compare specs, however, you'll notice the PLX has a slightly higher damping factor, which may account for the PLX amps sounding a skosh better to my ear.

On the rear panel, separate XLR and ¼-inch balanced inputs allow for loop-through connection of multiple amps. A recessed row of DIP switches next to the inputs selects bridge mode, or parallels the inputs. There are also facilities to select a 30 or 50Hz highpass filter and a channel clip limiter, to increase usable power and protect speakers. A variable-speed fan cools each amp from back to front.

The PLX has some nice touches that won't mean much unless you spend time in the back of a rack. The touch-proof binding posts found on all QSC amps accept banana plugs—not just the usual way, but through their sides as well, allowing the posts to tighten and secure them. PLX Series binding posts are in a vertical row, making for convenient connections when several amps are stacked in a rack. Also, the two Neutrik Speakon connectors are wired with their first pair of conductors each to one channel's output. A hidden feature is that the SECOND pair in the first Speakon is also wired to the second channel. When using a single PLX for bi-amp applications (channel 1 for lows), you can simply connect a single Speakon cable from amp to speaker.

The data port on the original PL Series is omitted, but there are users who don't need or want the advantages it offers. The only thing I didn't like about the PLX was its goofy handles. Other than that, it sounds like a better amp at a great price, with clean, clear tonality that reminds me of a studio reference amplifier.

QSC's PLX Series amps come with a three-year warranty. List prices are: 1202, $798; 1602, $1,198; 2402, $1,498; and 3002, $1,798. QSC plans to announce a big brother, the PLX 3402, by the time you read this.

QSC Audio Products Inc., 1675 MacArthur Blvd., Costa Mesa, CA 92626. Phone 714/754-6175; Web site: www.qsc-audio.com. ■

**BY MARK FRINK**

*Mark Frink is* Mix*'s Sound Reinforcement editor.*


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BY TOM KENNY

POST SCRIPT

SOUND FOR FILM

# OLD SCHOOL, NEW SCHOOL

**by Larry Blake**

There seems to be two ways that you become part of the film sound family in Hollywood: Either your father was in the industry or you went to USC. This is of course a gross simplification, but if such statistics were kept, these two methods would surely be at the top of the list.

My own path to editing and mixing movies would certainly be near the bottom: writing about film sound after flunking out of LSU. Twice. In the late '70s I conducted an autodidact film school in New Orleans, making double-system Super 8 short films with friends and reading everything that I could on filmmaking. There was plenty of good material on cinematography and directing out there, to be sure, but nothing about use of sound. It was either needlessly technical or uselessly vague. I figured that the only way I could find out how the soundtrack was created was to teach it to myself in the process of researching and writing about it. And perhaps learn a thing or two about Hollywood in general.

With that in mind I got in my 1973 Chevy Bel Air and drove to Hollywood in April 1979 to write the definitive book on the history of film sound. I had the brilliant idea that I would research the book, do interviews and be back in New Orleans to write it by the end of the summer. (Now *that's* world-class wishful thinking.)

In my early years in L.A., I did indeed get many of the film sound greats on tape, although I'm sorry to report that the Big Book itself remains on the back burner at this point. My interest in the history of my profession has not waned, and I'm always happy to see and talk to those who remember what it was like "back then." Sometimes that same person is still doing it today, providing an even greater sense of continuity to the old school.

In the past month I've had the chance to spend some time with two such gentlemen, Richard Portman and Jim Webb, who are at the top of the field of re-recording and production mixing, respectively. Together they developed the 8-track system (seven tracks of radio mics, one track for sync) used by Robert Altman on all of his films starting with *California Split* in 1974. Their work on the second such film, *Nashville*, remains one of the Robert Frost moments in my appreciation of film sound. (In other words, had I not seen it I might have taken a different road down the path of filmmaking. Costumer? Grip?) Although I didn't like the film on first viewing, I went back again because my friend Kevin McDermott wanted to see it. I got hooked and eventually wound up seeing it almost weekly, partly because it was such a richly textured film and partly because it was playing in Baton Rouge in 35mm 4-track mag. It sounded glorious.

COMPOSITE IMAGE ALEX BUTKUS

While *Nashville* and other Altman-directed and -produced films entailed Richard and Jim's primary work together, they have separately made their marks on dozens of other films. Richard had a great run in the '70s with *Harold and Maude*, *Carnal Knowledge*, *The Godfather*, *Paper Moon* and *The Deer Hunter*, for which he won the Best Sound Oscar. Jim got a statuette for his stunning work on *All the Presi-*

—CONTINUED ON PAGE 205

# TRIPLE PLATFORM DVD

## TRAVIS TRITT IN MULTIMEDIA SPLENDOR

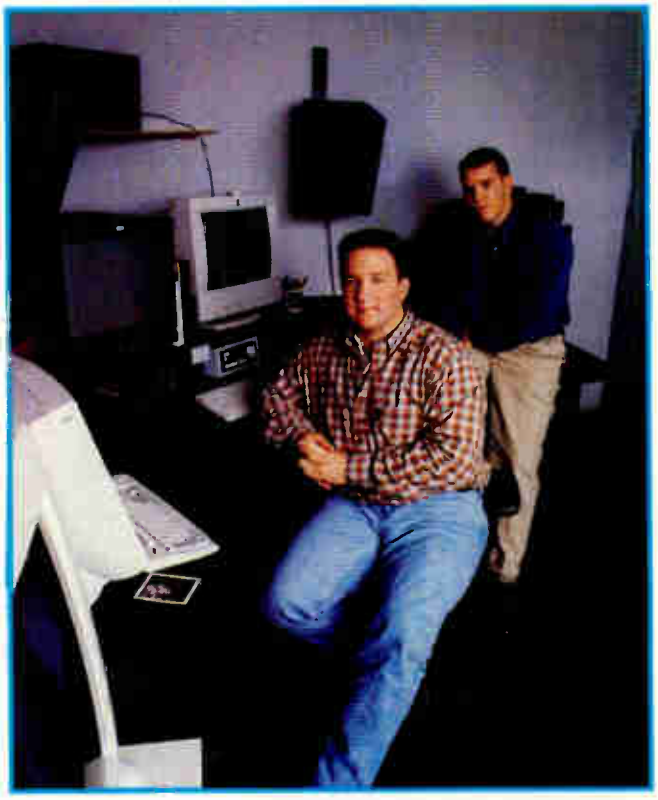
**by Ty Ford**

Convergence. We knew it would happen. In fact, a lot of talented people have been hard at work to make it happen as soon as possible. But, be careful what you ask for, you may get it. Most thought the two final obstructions, throughput and real estate, were all that stood between expectation and bliss, with DVD (digital versatile disc) being the next solution. We are now no longer on the verge of convergence. We are converged. And we're up to our hips in media and content management.

The jump from a CD's measly 650MB quarter-acre lot to DVD's 17 GB of prairie farm surely should provide more digital acreage than we could think of using, at least for a while. But just like the truism, "you can't have enough inputs or tracks," the work in progress on the Travis Tritt triple-platform DVD may have filled the space to the point where disc management is a concern. Triple platform, in this case, refers to DVD-Video, DVD-Audio and DVD-ROM partitions, all on the same two-sided disc. The DVD-Audio and Video portions will be playable on your new DVD player; the DVD ROM portion will be playable on your computer's DVD drive. Currently, the ROM part of the disc is being programmed for PC machines, with every attempt to be compatible with Macs.

David Newcomb is director of DVD services for Hen-

—CONTINUED ON PAGE 207



*Ari Zagnit, front, and David Newcomb at the Sonic Station, Henninger Interactive Media, in Arlington, Va.*

FACILITY SPOTLIGHT

# THE SOUND LOUNGE

**by Gary Eskow**

A shift has slowly been taking place in the Manhattan advertising community over the past several years, and increasingly, it involves a trip down to the Flatiron district, where agencies and their suppliers are migrating in search of cheaper rents and large, airy loft spaces. Several months ago, a trio of established sound designers and mixers opened up an audio post facility to service the ad biz, leaving things loose enough so that record projects could find a comfortable home there, as well. These three—mixers Tom Jucarone and Peter Holcomb and sound designer Marshall Grupp—joined Peter Corbett, the founder of Click 3X, a consortium of visual effects houses, as partners in Sound Lounge.

Located on Fifth Avenue and 22nd Street, close to the New York branch of Click 3X, Sound Lounge has been designed for comfort and workflow. The facility includes a large space for recording live bands and an edit room for Sound Lounge jack-of-all-trades Philip Loeb, in addition to production/post rooms for the three principals. Holcomb, lead mixer at New York's Photomag before going into business for himself, says, "Tom and I each have six 4x6-foot windows in our rooms, and the way gazing out of them tends to put everyone at ease is really special. As everyone knows, the advertising industry runs on brutal deadlines and pressure. Being able to witness the passage of time, to see the day go by in front of you, is great. Clients love it, and so do we."

*A 160-in, 40-out Soundtracs DPC II, with a dropped-in Fairlight MFX3plus workstation, forms the centerpiece of Peter Holcomb's production/post production studio.*

The centerpiece of Holcomb's room is a Soundtracs DPCII digital console, and he says that despite the plethora of digital boards out there now, the choice was easy. "To tell you the truth, I didn't really consider any other board," he says. "I'd been using an AMS Logic 2 for two or three years, so I was very familiar with digital consoles. I really

—CONTINUED ON PAGE 210

# JEFF RONA

## SCORING FOR THE BIG AND SMALL SCREEN

**by Mel Lambert**

Jeff Rona has become something of a musical jack-of-all-trades. He started his career as a synthesist, drawing on a wide range of influences—from classical to ambient to electronica to rock—and lending his writing talents to compositions for theater, dance, records, orchestral works and, eventually, television series and feature films. Along the way, he has put together a creative working environment that is packed with power, a project studio that translates his musical vision to the big and small screen.

PHOTO: MEL LAMBERT

Rona's film scores include Ridley Scott's *White Squall* (recorded with the London Symphony Orchestra), *Trading Favors*, *Lipstick Camera* and *Black Cat Run*, written and produced by Frank Darabont. He has contributed music to such films as *Assassins*, *The Net*, *Toys*, *Kafka* and *The Fan*. His television work includes scores for Barry Levinson's critically acclaimed *Homicide—Life On The Street*; David Kelley's *Chicago Hope*; Steven Spielberg's *High Incident*; *The Critic*; *Profiler*; and the main title music to *L.A. Doctors*, *Sleepwalkers* and *Teen Angel*. His more recent work includes a two-hour score for the ABC mini-series *Tom Clancy's NetForce*, directed by Rob Leiberman.

Rona has also scored several documentary films, including the award-winning *The Art of Survival*, and his music has been heard in several prominent commercials. He has recorded, collaborated, performed and arranged music with such artists as Mark Isham, Philip Glass, Hans Zimmer, Jon Hassell, Brian Eno, Earth, Wind & Fire, Basil Poledouris, Cliff Martinez and many others.

***What role does a project studio play in your day-to-day productions?***

Most everything I do starts and ends in this room. Once I started getting professional work as a composer, I knew immediately that the process would be a key element of my musical product, which meant that I needed to have all my creative options open—and they needed to be available simultaneously. Intrinsically, I'm kind of a lazy person. I didn't want to be loading sounds into samplers and having to imagine [how they would sound against other, yet-to-be-recorded elements]. I wanted to close my eyes and have every sound in front of me. I slowly built a studio that was capable of realizing my musical vision in real time, as a creative process. I started off with a little Tapco mixer that was barely good enough for live sound! Then I got my first Soundcraft 200B 24-track console, and then another. Unlike conventional studios, in a project studio I don't want a split-format console; I want one with inputs that are all the same and active [simultaneously].

Working with my three Soundcraft boards was great, but it also brought up a real problem. When working on albums, I typically worked on one project at a time. But in a film or TV score, I may need to write 20 to 30 pieces of music that, collectively, are a project, but each can be a musical world unto itself. Automation was the key. For me, the advent of affordable boards with total recall was a great leap forward. I replaced my Soundcrafts, one at a time, with these three Yamaha 02Rs.

I work in my [Opcode Studio Vision MIDI] sequencer, with one file [holding] all my cues. I like to be able to compare and listen back to things I've already written and use one cue as the inspiration or starting point for the next. I think about what makes that cue work, and then how to approach that with the next cue. I [send] a MIDI patch change at the beginning of each piece of each cue to the 02Rs that recalls my snapshot.

***Give us an example of how the project studio environment enhances your creativity. You have just finished composing the music for an ABC mini-series,*** Tom Clancy's NetForce.

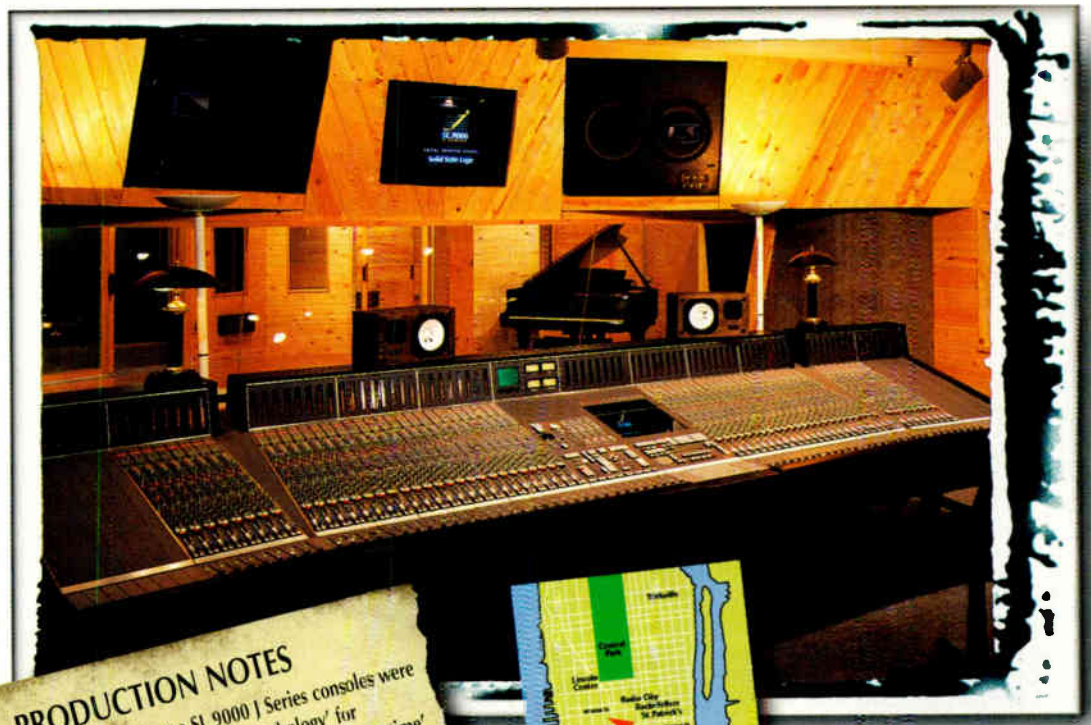
The most important thing when starting a project is developing a sound palette and a theme. I go through all my samples and choose the things that evoke what I think I want to do. The theme doesn't always come first, not for me, because I'm going to use the sounds to inspire the theme. I knew that I wanted to try some experiments with some extended, weird guitar [elements] and noise loops. I wanted to use some kinds of percussion that I hadn't done before.

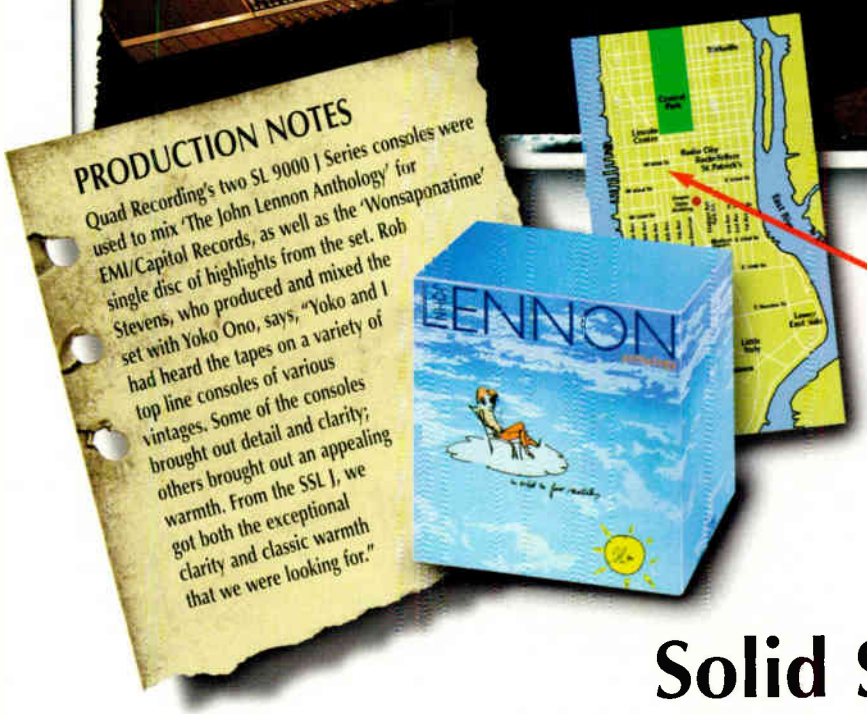
I watched [the work print] a couple of times and tried to understand the pacing, and what they were trying to do with the temp score—to get into the head of a director you've never worked for before. You learn what they're trying to do. You sit with the director and talk about books, what movies they have seen lately, and what music they like. I asked him to describe what it is about each piece in the temp score that made him choose it to communicate the emotion of a scene.

Then I came to my studio, and I spent a good two or three days just thinking about how the score should sound. Do I want an orchestra? Do I want percussion? What kind of percussion? What live instruments am I going

# Great Studios Of The World

Great Studios Of The World



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to use in addition to samples and synthesizers? Do I need to have samples of those live elements? What sort of motifs—sounds that will be a recurring element within the score? It could be something as simple as a solo trumpet, or it could be scratching a gong, or something purely sonic that becomes a signature. Eventually that builds into an entire palette. I spent a few days sampling sounds and doing extensive processing. I often go back through my library and regenerate the samples with something fresh.

***How much sound design is involved at this stage?***

It varies. Sometimes there's one sound that I know will be great, so I'll use that. I build my palette and then start writing. Sometimes I'll build a rhythmic bed, and then I'll start writing music on top of that. Sometimes I'll sit with a piano sound and come up with a melodic idea. I'll take time to get that initial, melodic idea that's going to take me through the film. It really is important to come up with a really good tune—the main melodic theme. Again, a theme to me can mean a melody and a chord progression, or just a chord progression, or a simple tonal motif. It runs the spectrum from sound design to very traditional composition. But once you've created something that's solid and expresses what you think the movie is all about, you're halfway there. This project had a main theme, a "heroic" theme and a "love" theme. They are completely unique themes, yet there are ties that bind them together.

I wrote a 15-minute cue for the last reel [of *NetForce*] which went from suspense to action to romance to heroism to final resolution. Everything that happened in the story coalesced and culminated in this magnum opus. So I pulled out all the stops.

***How do you make a decision between using electronic/sampled and live sources?***

I prefer not to use electronic textures as soloists, unless I'm going for a very specific synthesized sound. You cannot replace that musicality, that legato sensibility, with samples. As beautiful as you can make a line with a sample or synth, you do remove a level of musicality that just diminishes your score by that much. If you're doing a very low-budget score, it's unbelievable how much emotion you can pick up by bringing in one or two musicians to lay on top of your lovely expansive orchestra of samples and synthesizers. It makes all the difference in the world, even if you just bring in a guitar player. Ain't nothin' like the real thing!

Hard-disk recording on the sequencer has become an integral part of my process for both composed and improvised lines. My musical training was on woodwinds and flutes—whenever there are flute parts, I do all my own parts right here. I hit record, play my part right into the sequencer to hard disk. I'll then go in and mercilessly hack it up, fix the pitch if needed, and shift it around. I will often have musicians sit right behind me and read notes on my computer monitor while they play or improvise. I love that sense of collaboration to add textures, lines and colors. It's a physical thing; we're interacting. The digital picture is up, digital audio is running, I'm flailing my hands around to conduct them as they perform. We'll do three or four takes, then I stop being a composer and become a producer. I chop, hack and come up with things that don't exist any other way. You really can't do these things in a recording studio; you don't have the time, and you don't have the interactivity. If I need to record a large ensemble, I'll go somewhere else. The same is true for instruments that I can't record in my room: drums, percussion, really loud brass.

***How important is random-access video?***

It has become essential. I did some research, and I found a PCI card called the MiroMotion DC30 made by Pinnacle Systems. It has video and stereo audio in and out. I have my VCR going to the card and the card [output] going to my video monitor—I use Adobe Premiere for the QuickTime video capture, and Studio Vision has built-in video playback capabilities. I needed to get a SCSI-II accelerator card and some fast [Seagate] 9-gigabyte Cheetah drives, which easily hold a four-hour miniseries.

I don't use MIDI Time Code for synchronization, since the video is now inside the sequencer. MIDI Clock is very important to me because I use it for all my arpeggiators in the synthesizers, as well as to synchronize all my audio effects and DDLs. I spent an awful long

## TODD-AO EAST BREAKS IN NEVE DFC ON 8MM

*The first-call Todd-AO mix team of, l to r, effects mixer Ron Bartlett, dialog mixer and Todd-AO Studios President Chris Jenkins and music mixer Mark Smith flew in to New York from the West Coast to shake down the newly installed 80-fader Neve Digital Film Console on Joel Schumacher's controversial February release, 8MM, distributed by Sony Pictures. Playback and stem mixing was from/to Akai DD8s, of which Todd-AO East has purchased 16 to date, along with a DL1500 editor/controller.*

time searching for the best delay line that wouldn't glitch when you changed tempos in the sequence. The Lexicon PCM-80 has a "glide" function, which creates smooth ramping of tempos so they don't click. I have five or so delay patches I use, such as dotted-quarter, half-note, dotted-eighth, etc. To change it, I just send a MIDI patch change to the DDL from the sequencer, and never worry about BPMs or millisecond delay times.

It saves so much time. I'm doing an action score right now, which means I'm going to be hitting a lot of specific moments. The ability to play through a section over and over again while fine-tuning the music without stopping to rewind video is very liberating. It took me about a week to stop reaching for the jog wheel on the VCR! Every time I hit play in the sequencer the video and dialog are just there in perfect sync. Plus, when I'm writing under important dialog, it gives me the ability to keep the notes away from the words more easily.

***What item of hardware would dramatically improve your efficiency?***
A good question. I have a Pro Tools system that gives me 8 ins and 16 outs. You know what I want? I want a Pro Tools this big! [Extends his arms to embrace his entire synth rack, which is currently housed in five, floor-to-ceiling racks.] I want to be able to take every instrument I own, every piece of outboard sampling and synthesis, and have everything go into audio inputs that have total processing—basically, have it all happening in one domain. I want real-time signal processing on all channels. I want within the 02Rs the same kind of power I have in the Pro Tools and Studio Vision plug-ins—pitch-shift, normalizing and all the rest. ■

*Mel Lambert is the international marketing director for Otari Corporation.*

—FROM PAGE 200, OLD SCHOOL, NEW SCHOOL

*dent's Men*, which is, alas, the last "dialog show" to win. Other notable jobs for Jim have been *One From the Heart*, *The Rose*, *The Long Riders*, *Flashdance* and *Pretty Woman*.

I spent a weekend recently with Richard in New Orleans, where I had a chance to pepper him with questions ranging from the alignment techniques used in the early days of mag to confirmation of some of his more legendary moments during his three decades behind a re-recording console. I was tickled to find out that Richard had indeed shut down a young producer, who was trying to make him do something that he knew wouldn't work, by simply uttering, "I've ruined more movies than you've made." Too funny.

The first two decades of his career were at The Samuel Goldwyn Studios, where he worked at the same time as his father, Clem, whose own career as a re-recording mixer had begun at RKO Pictures in the '30s. Richard's supervisor at Goldwyn was the legendary engineer Russ Hansen, who drilled into him an appreciation for the craft and science of film sound. Everything had to be perfect...or else. Every channel was tested each day for noise and distortion, every roll of mag film was tested end to end prior to use. While one could say that the level of detail that they devoted to maintenance was a function of the needs of those days, I am not so convinced.

In the grand tradition of Hollywood, Richard virtually took over from his dad in the late '60s, and in the next three

years he would mix 20 features. This was at a time when punch-in recording was not what we know of today, and after three rehearsals you would still mix 10-minute reels without stopping. His mixing chops were honed to a point that I regret my generation will never discover, being dependent as we are on automation and punching in.

However, as those technologies were developed, he took immediate advantage of them, in part because he liked to mix as a one-man band, virtually the only guy in Hollywood to do so. (For his recent films mixed out of New York, Richard has arrived at a sensible procedure wherein the supervising sound editor mixes the sound effects.)

I know a number of talented sound editors who credit their knowledge of what they do to Richard's patient explanations of what did and didn't work. One of the hallmarks of a good dialog editor is the "mixability" of the track layout—when to split material out vs. keeping it simple.

I'm happy to report that even in his semi-retirement Richard is passing his knowledge along full-time. Since 1996 he has been teaching film sound at Florida State University in Tallahassee. I sense that the Goldwyn sound department of the '50s has been reincarnated at FSU. They have two re-recording stages working all the time, with award-winning students in the film sound curriculum.

Nowadays he makes his way to New York occasionally to mix films for longtime clients. Not only is this okay with his school, it's a requirement at FSU that their teachers venture out in the real world. Apparently in Tallahassee, those who teach can and *must* do. If only this were the rule, rather than the exception, in academia...

• • •

Jim fits the other half of my Hollywood sound stereotype since he indeed went to USC. After two years in the military, he joined the union in 1964 in the newsreel division. He then worked on a series of concert films, including *Elvis on Tour, Soul to Soul* and *Mad Dogs and Englishmen*. This experience in the logistics of handling multitrack material (Jim also worked in re-recording during this time) was an important factor in his developing Altman's "Lion's Gate Eight-Track Sound," which was the screen credit that caught my eye when I saw *California Split*.

Jim is a rare and notable production mixer in that he actively seeks out the post sound crew, including the dialog editors. It's almost a party trick of mine: A sound editor will tell me, "You won't believe it, but a production mixer called me to see how things were going," and I'll reply, "Oh, Jim Webb, right?" He calls not just to find out what worked, but more importantly what *didn't* work, because, having been there, he knows that the reality of the re-recording stage is quite different from the initial reality of the set. His opinion is that no one should be allowed to go out on production to mix a film until they have been "chained" to a re-recording console for a year, watching what works and what doesn't.

Another issue that Jim is very vocal on is the use and misuse of multitrack recorders in production. He is clearly speaking from experience here. The difference between Jim then and a lot of hotshot production mixers today is that Altman's picture editing, sound editing and re-recording procedures *assumed* multitrack source material. What bothers Jim is when his brothers and sisters in production will spread material out from hell to breakfast across four or eight tracks without any discussion or collaboration with the post-production crew.

But this concern works both ways, and Jim welcomes the involvement of post people *during* production. It actually goes beyond just a simple invitation, because often it takes a unified front from the production and post-production sound teams to stand up for the track in the field. I'm sad to say that Jim can remember only one supervisor out there with him—Richard Beggs, who handled the post sound on *One From the Heart*.

When I made my way across west Texas to California, Jim was one of the first people that I looked up. We hit it off immediately, and he has been very supportive ("when are you going to finish the book?!") of my search for history. This is understandable because he has ventured even further than I in documenting our profession. Many of you might have seen his collection of over 400 antique microphones on display at Location Sound Corporation in North Hollywood. In recent years, one of Jim's pet projects has been extensive research on the history of RCA microphones. He hopes to turn his findings—and he really has uncovered some wonderful stories—into a coffee-table book.

Jim won't have to call and introduce himself to the supervising sound editor on his latest film, *The Limey*, because I am he. It was great to finally work with Jim after all these years, and I look forward to going over the tracks with him during dialog editing and premixing. I

regret to report that this will almost certainly be his *last* feature, since his retirement paperwork is on its way.

Talking to both guys recently, it was wonderful noting their similarities: their sense of community among all departments, an appreciation and knowledge of the good old days, and last but not least the enormous respect they have for each other's work. If the old saying is true—the more things change, the more things stay the same—then there's hope that the new school will adopt the comprehensive approach to film sound that was taken for granted in the minds of old pros like Richard and Jim.

This babe in the woods can be found at P.O. Box 24609, New Orleans, LA 70184; fax 504-488-5139; or via the Internet: swelltone@aol.com. ■

*Larry Blake is a sound editor/re-recording mixer who lives in New Orleans for reasons too numerous to mention, although one of them would be that there is no esteemed history of film sound in that city that he can besmirch.*

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—FROM PAGE 201, TRIPLE PLATFORM DVD

ninger in Arlington, Va. His background at NB Digital Solutions, a development and engineering company making DVD-ROM and DVD-Video titles for corporate, government and military clients, has served him well now that he sits in the DVD hot seat. "Before I came to Henninger, we did the corporate demo for Toshiba and Panasonic for their DVD-ROM products. Henninger's got the ability to do just about anything under the sun for audio, film and video. We also have a multimedia group at Henninger in Nashville that works on Enhanced CDs and CD-ROM. They had already done a multiplatform CD release for Reba McEntire with screen savers, virtual 3D photographs and a custom Web browser."

Newcomb says that because the DVD spec supports a wide range of capabilities and offers up to 17 GB of storage, the opportunity for evolving multiple audio presentations became obvious. "Henninger has both a DVD-Video facility and a multimedia group," he says. "That gave us the ability to produce DVD titles that include content and programming for computers, as well as for DVD-Video players. In the summer of '98 Sonic Solutions informed us of the developments they had made in DVD-Audio, a product called HD Studio. We used it on this

Travis Tritt project, although Sonic Solutions didn't announce the product until AES [in September 1998]. As far as I know, at the moment, Sonic Solutions is still the only software/hardware provider with a high-resolution solution for DVD-Audio."

Newcomb says connections other than technical still had to be made before the project started. "Our job was to provide the information to the label and artists about what could be done. Henninger Elite Post had a long-standing relationship with Warner Bros. in Nashville. They were both involved in a proof-of-concept trial. We contacted Warner Bros. and said that we had a unique project in mind. They seemed to be very excited about it. The more we talked, the more ideas and the better direction we got before we started. The tools and format and content were there; the 24/96 audio for DVD-Audio, live performance for DVD-Video and music video content for DVD-ROM. Sonic Solutions also helped us with connections at Hank Williams' MasterMix in Nashville, where the Travis Tritt audio was remastered at 24/96." Newcomb says that even though Henninger has a wide range of services, including audio, he felt MasterMix's expertise in high-resolution mastering was invaluable.

Remastering of the original 1/2-inch 30 ips Travis Tritt 2-track masters was done on an ATR 102 with extended LF heads. The analog portion of the chain consists of an Avalon AD2077 Class A mastering EQ and Manley Variable Mu compressor. The digital chain consists of a Prism Dream AD-2 A/D converter at 24/96, a Daniel Weiss digital EQ, level and compressor (formerly known as the Harmonia Mundi BW102), and a Sonic Solutions High Density DAW. Williams' expects the final mix to be delivered on DLT (digital linear tape) or an Exabyte.

With the DVD-Audio angle covered, Newcomb turned to the DVD-Video portion of the disc, and questions arose about how to mix surround for the live performances. "That's new to the consumer and to the professional and has been the biggest variable in the project," Newcomb says. "We did what we thought was a very conservative surround mix for the AES show. It was very subtle. The comments ranged from 'beautiful' to 'butchered.' It is sort of similar to what we have seen with compressed video streams. Some videophile purists can't stand it, others think it looks fantastic."

The DVD-Video portion is based on concert footage with multicamera angle options for the viewers, and will be mixed in Dolby Digital by Henninger's Tom McCarthy on one of the Arlington facility's AMS/Neve Logic II systems. The audio and video will be input to a Sonic Solutions system with DVD Creator video and audio encoders and DVD Producer. Unlike with CD-ROM, the higher throughput and disc capacity allow for full-screen and full-motion MPEG2 video. While opinions continue to be gathered, the decision on whether to do every song in one or more surround versions has yet to be made. At this point, there will be a number of cuts that will be mixed in Dolby Digital 5.1 at the Henninger facility in Arlington, in addition to a 24/96 stereo mix of every song. Newcomb says the bit budgeting process may force the rear surround channels to be recorded at 24/48, while the front channels remain in 24/96.

According to Roy Giorgo, director of interactive services at Henninger Nashville, the Tritt DVD is a step up from the CD-ROM Henninger did for Reba McEntire. "At this point, one whole side is DVD-Audio," he explains. "The DVD-ROM and DVD-Video are partitioned on the other side of the disc. I think there will be six hours of video on that side. There's more interaction due to the green-screen video we shot with Travis. He'll explain the disc and dodge buttons and screens. He'll direct you to the enhanced stuff, where to go to see his videos, how to connect to his Web site, and how to get T-shirts and other merchandising. The DVD-ROM partition

*Part of the crew at Henninger Interactive Media, Nashville: (l to r) Jason Wood, Ray Giorgio and John Frech*

also includes some 48kHz audio from D2, from three older music videos. The audio will be converted to 44.1 kHz when it's put on the disc."

Giorgo says that as of November, they were still working on the DVD-ROM video material. "We are teetering on how to present DVD-Video," he admits. "When we started this, everybody had to go MCI (Media Control Interface) because there were no compatible DirectShow drivers for the DVD drives. But now over half of the drives in the market are DirectShow-compatible. The DVD-ROM portion will be in the µUDF Universal Data Format, compatible with virtually all mainstream operating systems. David Newcomb and his team will create the master on their Sonic System. I'm not sure how they will create the partitions."

More pieces of the puzzles—both the evolving DVD market and the Travis Tritt project—will have come together by the time this article reaches you. Within a year's time, all of what's still being figured out will seem old hat. What's interesting is that everyone in the project is very aware that the goal is content and providing an enhanced listening and viewing experience for the consumer. It is, after all, they who will have to feel compelled to throw down the dollars for a DVD playback system for home, and maybe one for the car.

While there are reportedly well over a million DVD players in the market already, the universal DVD players won't be due out until sometime in 1999, most likely for Christmas. That will be key in the triple-format's acceptance, because they present a single product for consumers. The current plan is for universal players to be able to play all forms of DVD, including DVD-Audio, which means the user can listen in the car and listen and watch at home. That DVD player, of course, will also play all of those outdated CDs. Well, they'll be outdated as soon as the auto sound industry is ready with 5.1 Dolby Digital and DTS DVD solutions for the road. Hopefully, they won't forget the heavy-duty alternators to keep your ignition system from shutting down when the "1812 Overture" cannons explode.

What's very clear is that audio-only facilities are already beginning to find themselves having to become more familiar with video and images as a result of DVD's introduction. If you're running an audio facility and are experiencing increasing pain in the pineal region, the cause is not fluctuations in barometric pressure, it's nature's way of telling you to stick your face into the maelstrom of DVD before it converges and leaves you in its dust. ■

*Ty Ford is a writer and audio co-dependent. When not in session, he can be reached at www.jagunet.com/~tford.*



—FROM PAGE 201, THE SOUND LOUNGE

don't think there's another console on the market that can touch the DPCII at its price point. The board has 160 inputs and 40 outputs, which is perfect for our needs.

"The DPCII seems to fill the void between small digital consoles like the 02R, and the SSL Avants and Logic 2s," Holcomb continues. "There's really nothing else in that midrange. Of course, it has total recall and dynamic automation, and it really sounds great. The EQ sounds 'fat' and 'warm,' which I know are overused terms, but they apply here. The board sounds big."

Any board that has six buses can call itself a surround sound console, but a mixer needs to monitor across all of the buses rather than simply have them

*Tom Jucarone, left, and Peter Halcomb, advertise their Fairlight capability in the Flatiron District.*

available to hang speakers on. Holcomb says the DPCII monitoring is excellent. "It's a true surround sound board," he explains. "You can pan anywhere—even into the subwoofer if you want to. It has a 40x8 monitoring matrix built into the newest software releases, and it's very flexible, intuitive and easy to learn."

Studios designed for stereo mixing have to confront retrofits to handle 5.1 mixing, but new facilities like Sound Lounge have the advantage of constructing space with multichannel playback in mind. "My idea was to build a mixing environment that was like someone's home theater room, with a console sitting in the back," Holcomb says. "My clients are all in front of me, as is the speaker array [currently five JBL LSR 28s plus a subwoofer] and the large-projection screen. We hang out and roll picture like we were in our living room."

Sound Lounge relies exclusively on Sony PCM-800s when working with tape, figuring that material will come in on the Tascam DA-88 format. Final layback is to D1. Traditionally, audio post houses send that D1 on down the line to a video house, where final masters have been assembled, but Holcomb says that the Sound Lounge is now generally the last stop in the process. "We make 3/4-inch dubs for client screenings, but the relays we lay off to D1 generally go directly to dubbing houses, and then on to homes all across America! We almost always get the final picture on D1."

Tom Jucarone is equally jazzed about the analog console in his room, as it fits his style of working. "I love the sound of analog," he says, "and I like to stay analog as far into the mixing process as possible. The Harrison Series-Twelve console I've got in my room is perfect for me. It has a digitally controlled surface, and unless you knew it was an analog board, you wouldn't notice the difference between it and any of the digital consoles that are currently in favor. I've had the board since we opened in late September, so I'm still learning it, but it's very intuitive; with two hours of training I was able to start mixing on it."

The two main mixing rooms at Sound Lounge, plus Marshall Grupp's sound design room, are all equipped with Fairlight MFX3 workstations. "Fairlight seems to be making all the right moves now," Holcomb says. "They've got the networking aspect nailed, and that's very important for us."

How about working in the 24-bit realm? "As soon as the Fairlight goes 24-bit, I'm throwing one of those 24-bit DAT recorders in my room; my Soundtracs is standing by—it's ready to go 24-

bit. I'm not that interested in the 96k issue. To me, upping the bit rate is more important."

Finally, recognizing that much of the audio world lives with Pro Tools, Sound Lounge has a Pro Tools 24 system in Phillip Loeb's room. Holcomb explains that "the Fairlight can read Digidesign files, so Phillip will often take Pro Tools tracks and prep them for transfer to one of our MFX3s. He also handles our ISDN work, as well as the transfers of material that come to us on DAT or DA-88 tapes. Phillip also does a great job helping Marshall. We have a Foley room, and we also record ADR, so on any given day he'll be assisting on a variety of projects."

Yes, Sound Lounge has a lot of toys, and a nice blend of analog and digital technology, but the equipment is secondary to the personal aspect of the partnership, according to Jucarone. "Peter and I have known each other for many years, and we have a great connection. It just seemed natural that we should be working together, and we're looking forward to keeping the relationships we have with our existing clients, and establishing new relationships as well." ■

## POST NOTES

In Todd-AO news, J.R. DeLang announced the promotions of Richard Hassanein to executive vice president of Todd-AO Studios (West, East and Scoring Stage); Steve Mullinix to VP/general sales manager of Todd-AO Studios (East and West); Tyson Colt to VP of operations at Todd-AO Studios West; Duke Lim to director of operations for Todd-AO Studios; Matthew Sawelson to director of sales for Todd-AO Studios and Todd-AO West; and Ron Ward to manager of editorial and transfer departments for Todd-AO Studios...In AMS Neve news, that brings Todd-AO's total to five DFCs; the company has also sold a 180-channel DFC to Berliner Synchron, one of Germany's leading film mixing facilities, and one to Skywalker Sound, bringing the worldwide total to 25. Meanwhile, Reel Time Recorders of Halifax, Nova Scotia, has added an AMS Neve AudioFile 98 24-bit system to its editing/mixing facility...Consoles are going in all over: SSL recently sold a 64-channel Avant digital console to Jack-son, a leading French film re-recording facility...Soundtracs,

which has now sold eight DPCII digital boards to the New York Media Group, has also delivered two DPCIIs to BSkyB's Isleworth facility in England...Tell-A-Vision Post of Hollywood has put a Panasonic DA7 into its redesigned audio bay...New Century Productions of Allentown, PA, purchased a 60-channel Calrec Q2 analog board for its TV truck...And Euphonix keeps selling its CS3000B broadcast boards, with sales to KCBS in Hollywood, KCNC of Denver, KNSD of San Diego, KNVX of Phoenix and WTXF of Philadelphia...The new Four Seasons Media Productions of St. Louis has networked its Pro Tools 24 MIX systems throughout the facility...Pacific Sound Services, the audio post division of LaserPacific Media, has upgraded its WaveFrame systems to the 24-track 408-Plus...Late last year, Image Group Post of NYC put in a combo Fairlight FAME, MFX3 Plus and MediaLink server system. Across the pond, M2 Television of London put the OMF capabilities of its FAME system to use on *The First Snow of Winter*, an animated 30-minute film for the BBC...Hollywood Recording Services created the voice for this past year's holiday toy sensation, FURBY...Digital Sound & Picture of Los Angeles has finished the edit and mix of Robert Altman's latest, *Cookie's Fortune*, as well as Shirley MacLaine's directorial debut in *Bruno*...In San Francisco, independent filmmaker Werner Herzog returned to The Outpost for picture editing and full audio services for his latest documentary, *The Wings of Hope*...At DubeyTunes in SF, Hunter Pipes designed and mixed "Rapunzel," a PSA for the Arizona Department of Public Health, and Vance Walden mixed recent Gap and Birkenstock spots...Down in the SF ad district, One Union engineer Eric Eckstein designed and mixed a series of spots for EA Sports...Up in Seattle, Bad Animals hooked up with talent in Singapore studio Opuz for live ISDN sessions, then reversed the direction of the patch and sent voice to HBO Malaysia. EDNet facilitated the hookups. Meanwhile, Steve Lawson, Bad Animals president and a voice-over talent since 1974, has introduced FriendlyVoice.com, a demo package on the Internet, 45 rpm disc and CD...Finally, 615 Music of Nashville has put up an all-new version of its Web site (www.615music.com) and entered into a partnership with Liquid Audio for delivery of high-quality samples from its 60-CD library. ■

BY BLAIR JACKSON

RECORDING NOTES

# IMAGINE THERE'S A BOX SET . . .

## ROB STEVENS ON ASSEMBLING "THE JOHN LENNON ANTHOLOGY"

PHOTO: BOB GRUEN

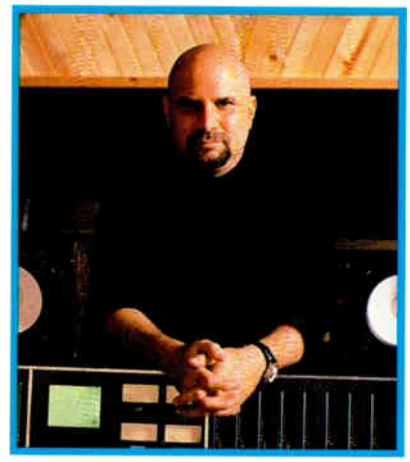
**by Blair Jackson**

Released in November '98, *The John Lennon Anthology* is a magnificent piece of work—a four-disc set that captures the depth and breadth of Lennon's post-Beatles work, offers unreleased rarities by the truck-

load and even works as an audio biography of the last decade of Lennon's life. Among the 95 tracks are primitive, bare-bones home recordings of some of Lennon's best songs; alternate takes that have been remixed for the box; a few live tracks; snippets from television performances; studio banter between Lennon and Phil Spector; and various song fragments that show different sides of Lennon's personality—his humor, his sensitivity, the rawness of his emotions.

The set was four years in the making and was co-produced by Yoko Ono and Rob Stevens, a New Yorker who has worked on a number of recording projects with Yoko over the past 13 years, including her most recent CD, *Rising*; the reissue of 11 of her solo albums; and the Plastic Ono Band's *Live Peace in Toronto*. Stevens' credits also include mixing and/or production duties with such diverse artists as Herbie Hancock, Africa Bambaataa, Bill Laswell and the Red Hot Chili Peppers. A confirmed Beatles/Lennon fan years before he had any professional association with the music, Stevens describes working on the Lennon box as a "dream project. It was a great place to be for four years," he says with a chuckle. In mid-November I talked to Stevens about putting together this historic anthology.

***Rob Stevens at Quad Recording***



***One of the first things I noticed about the set is that John's vocals are so much more out front than they were on a lot of his solo albums. I could never figure out why he insisted on burying that glorious voice of his.***

I agree. That was a conscious decision not to use as much on his voice when we were doing mixes. Both Yoko and George Martin have said that John hated the sound of his voice and he would look for any gimmick—whether it was a flange, a slap or a reverb—to help his voice. If you go through his solo albums, you can see that the ones where he used outside producers—like his first two were co-produced with Yoko and Phil Spector—his voice is more front and center. Then you go to *Walls and Bridges* and *Rock 'N Roll*, where he was the sole producer, and

—CONTINUED ON PAGE 220

# FIRESIGN THEATRE RETURNS

## COMEDY FOR THE NEW MILLENNIUM

**by Michael Goldman**

After a 17-year break, the four original members of the legendary Firesign Theatre comedy troupe returned to the recording studio last year. Their mission: to record a new, original comedy album—*Give Me Immortality or Give Me Death*—released last fall by Rhino Records. Since the group had not put out an original album since 1982, and since most of its classic recordings were created between 1967 and 1971, one might presume a touch of audio culture shock washed over Phil Austin, Peter Bergman, David Ossman and Phil Proctor—now in their late 50s and early 60s—when they first entered Sunburst Studios in Culver City to record *Immortality* under the guidance of veteran engineer Bob Wayne. However, "It's not like we spent the last 17 years in a time warp," says Austin. "We've been working individually in the audio business all this time, doing commercial, TV and film work. We're all well aware of the wonders of modern technology."

That point is immediately obvious in the album's creative direction, which adopts a media-based format (radio) and twists current themes into typical Firesign comedy. It's a style Bergman defines as "similar to a jazz-like radio play," along the lines of classic Firesign records made for Columbia, including *Don't Crush That Dwarf, Hand Me the Pliers* (1970) and *I Think We're All Bozos on This Bus* (1971). This time, the group offers a radio broadcast that examines the looming millennium by counting down the last few hours of the "old" century on New Year's Eve, 1999. The broadcast airs on a '90s-style, monolithic radio service, dubbed Radio

—CONTINUED ON PAGE 223

*Standing: Phil Austin, left, and Peter Bergman. Seated: Phil Proctor, left, and David Ossman.*

# THE COOLIDGE QUARTET

## CHAMBER MUSIC ON LOCATION

**by Scott B. Metcalfe**

In January of 1998 I was contacted by the Coolidge String Quartet about making a recording for the Danish record label Olufsen Records. The recording was of particular interest to me because it included three works that are rarely performed, let alone recorded. The first was Benjamin Britten's first string quartet; Britten was the most familiar of the three composers. The piece was written while the composer was in his 20s, but don't let his age fool you; this work displays a prodigious understanding of string writing and a mastery of theme and development. Danish composer Anders Koppel was next on the schedule, with his "String Quartet Number 1," and the third was a 1990 composition by Greg A. Steinke entitled *Native American Notes: The Bitter Roots of Peace*. Each piece had a neoromantic flavor, which meant miking all three similarly, though some subtle changes were necessary.

Anyone familiar with Britten's work will know that, stylistically, he has one foot in the past and the other in the mid- to late 20th century. Along with lush romantic harmonies and phrasings are Bartók-esque pizzicato and very forward-looking dissonances. To capture this on tape, our

—CONTINUED ON PAGE 225

PHOTO: DOUGLAS LEVERE

# DIRE STRAITS' "MONEY FOR NOTHING"

**by Blair Jackson**

Dire Straits were striking and original enough that they probably would have found an audience in any era, but the fact that they blossomed in the late '70s—when disco ruled and the popular alternative was punk/new wave—makes the British group's success seem quite remarkable in retrospect. With his low-key demeanor, his vaguely Dylanesque songs and vocal style, and his propensity to play long, graceful guitar solos, band leader Mark Knopfler was light years away from the rock/pop mainstream of the day. But his songs were neatly constructed, his guitar tone mellifluous, and he drew from a deep reservoir of influences—mostly old American folk, country and blues—that he fashioned into a sound that was familiar yet unmistakably new.

Dire Straits' first album, released in the fall of '78, took just 12 days to record and cost a mere $25,000. It went on to sell more than a million copies worldwide and yielded one of the surprise hits of the winter of '78-'79, a lively evocation of a working band sweating it out in the clubs called "Sultans of Swing." Though the group's next three albums failed to yield another hit single, the band's fortunes continued to rise with each effort, as Knopfler's songwriting became more ambitious and more assured, and Dire Straits became a highly successful touring act, thanks to Knopfler's fluid and imaginative guitar pyrotechnics. On both *Making Movies* (1980) and *Love Over Gold* (1982), Knopfler experimented successfully with longer story-song forms, somewhat akin to Bruce Springsteen's more cinematic '70s work. The latter album was another worldwide smash for the group, but it was their next effort, 1985's *Brothers In Arms*, that would cement the group's place in rock history, and produce the group's most popular single, "Money For Nothing."

Mark Knopfler

*Love Over Gold* marked the first association between Knopfler and a young New York-based engineer named Neil Dorfsman. "Mark was sort of getting into jazz, and he'd liked a record I'd done with a vibraphonist named Mike Manieri when I was a staff guy at Power Station in New York," Dorfsman recalls. "*Love Over Gold* was Mark's baby step into a new kind of music for him. It was very arranged. He was getting into orchestration and heavy use of keyboards, getting away from guitar as the central instrument. It was still the same band, still the original guys except for his brother, David. But I think it was a case of Mark kind of pulling the guys into new territory, whereas *Brothers In Arms* became more like Mark casting the musicians to play on the record because he had advanced his vision; he had moved to another place. By the time we made *Brothers In Arms*, Pick Withers [drummer] was no longer with the band and there was a new guitar player, and it was a different-feeling band in many ways. I think he had more confidence going into *Brothers In Arms* than *Love Over Gold*."

***Neil Dorfsman during the* Brothers in Arms *sessions at AIR Studios in Montserrat.***

In between making *Love Over Gold* and beginning *Brothers In Arms*, Dorfsman worked with Knopfler on a few projects, including the guitarist's widely acclaimed soundtracks for *Local Hero* and *Cal*, and Bob Dylan's exceptional *Infidels*, which Knopfler produced. Work on *Brothers In Arms* started in October 1984 at AIR Studios in Montserrat. "I had been freelance for a couple of years and was actually in the middle of recording a Def Leppard record in Holland when we were to begin *Brothers In Arms*," Dorfsman recalls. "I was recording what became *Hysteria* [Def Leppard's breakthrough LP]. I was committed to that for three months and, thinking foolishly that we'd be done in three months, I'd booked Dire Straits. Little did I know that in three months we'd barely have drums and bass on

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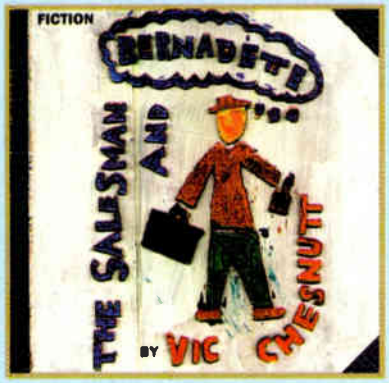
# Cool Spins

***The Mix Staff Pick Their Current Favorites***



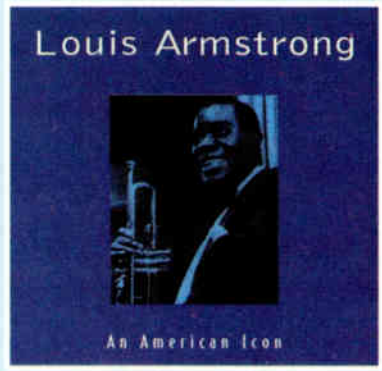

**Vic Chesnutt: *The Salesman and Bernadette* (Capricorn)**

Vic Chesnutt's sixth and most ambitious LP is pervaded by absence searching and a load of instrumentation. Backed by 13 members of the Nashville combo Lambchop (Lambchop leader Kurt Wagner co-produced), Chesnutt croons his haunted melodies over guitars, horns, vibes, accordions and miscellaneous sound effects. Despite all the musicians (and an abundance of vocal tracks—including a duet with Emmylou Harris), the whole is by no means cluttered—restrained playing and delicate arrangements actually give the CD a spare quality. Sessions took place over five weekends at a variety of Nashville studios and included a lot of live tracking. Lambchop are a sensitive and powerful crew, and their crisp surety creates an excellent setting for Chesnutt's gravelly-sweet voice and moody lyrics, which suggest (rather than tell) a poignant story. Chesnutt makes idiosyncratic folk-rock, tinged, at turns, by country, blues and soul, and he's never sounded better.

Producers: Vic Chesnutt and Kurt Wagner. Engineer & mixer: Mark Nevers. Additional engineering: Dennis Cronin. Studios: Treasure Isle, Quad, The Castle, Wedgetone (overdubs and mixing), all in Nashville. Mastering: Tommy Dorsey, Masterfonics (Nashville). —*Adam Beyda*

**Louis Armstrong: *An American Icon* (Hip-O/Universal)**

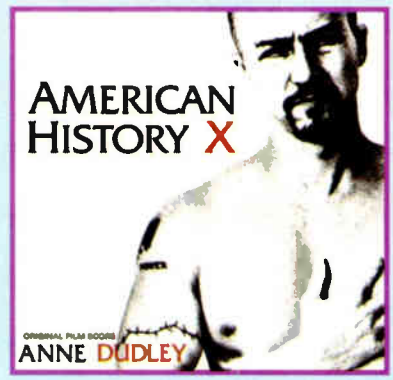
There have been a number of fine collections of Satchmo's seminal recordings from the '20s and '30s, but to my knowledge this is the most extensive package to chronicle his work from the end of WWII through the '60s. With four hours of music spread over three chronologically arranged discs, this set shows Armstrong's genius as a trumpet player and as one of the great interpretive jazz/blues/pop singers of all time. Listening to this collection is like taking a tour through 20th century American songwriting, with selections from W.C. Handy, James P. Johnson, Fats Waller, Rodgers & Hammerstein, Earl Hines, Brecht & Weill, Hoagy Carmichael, Mitchell Parish, the Gershwin brothers, Cole Porter, Duke Ellington, Kander & Ebb and others. There are both large and small band configurations, and a few exceptional duets with the likes of Ella Fitzgerald, Billie Holiday and Bing Crosby. A remarkable collection, with informative liner notes by




George Avakian, who produced a number of Armstrong's finest recordings.

Collection producers: George Avakian and Andy McKaie. Original producers, engineers and studios not listed. Digital remastering: Erick Labson/MCA Music Media Studios (No. Hollywood, CA).

—*Blair Jackson*




***American History X: Original Film Score by Anne Dudley* (Angel Records)**

Though he was denied final cut on the film, *American History X* director Tony Kaye is well-served by this score from composer Anne Dudley (an Oscar-winner

—*CONTINUED ON PAGE 228*

seven songs, which would subsequently be completely redone when Mutt Lange came in to produce. So I flew off directly from Holland to Montserrat to start the Dire Straits record."

In the early '80s, producer George Martin's AIR Montserrat studio was widely considered one of the plum recording locales in the world, offering a state-of-the-art facility in a gorgeous setting—a lazy, genteel Caribbean isle. "The best thing about the studio itself was the Neve [console]—it was one of the great 8078s ever built," Dorfsman says. "There were two made for AIR London, and this is one that went to Montserrat. It was just an incredible-sounding board; it's now at A&M in L.A. The great Police records were made on that board, as well as Dire Straits—a lot of great things. The actual recording space was very small—maybe 20 by 30, with a low ceiling—so even though there was excellent equipment and it was a nice place to work, it was difficult to cut in there as a band. It was hard to get any isolation on anybody, and the room didn't have a 'sound' really, so we always close-miked everything. But anything that went through that board sounded really good."

Dorfsman notes that recording in paradise had its pitfalls, too: "I remember one day going out of the control room to page the band and they were all lying around the pool like beached whales. When I got them in the studio they were playing with towels around their waists, white cream on their noses, sunglasses and towels on their heads, and everything was like 60 beats per minute—it was *so* slow! I'm saying, 'Guys, we're making a record here!'" he laughs. "It was so much fun to be there that it was difficult unless you were incredibly disciplined. It was hard to focus exclusively on recording. But once you were in a creative mode it was great because it was quiet and relaxing. I did a record there subsequently with Sting [*Nothing Like the Sun*], and he was very, very focused. That project involved longer days and more concentrated work, and it ended up being a perfect place for him. For Dire Straits it was fantastic, but occasionally the band's energy got a little scattered, and it was hard to rein it in and keep things intense."

Knopfler never demo'd his songs before cutting them, but he'd have his arrangement ideas solidly in his head and the band was always well-rehearsed and ready to record, Dorfsman says. "Things would sometimes happen in rehearsal that would change the

arrangements a bit, but there were never any radical shifts. Mark writes to his strengths as both a player and a singer. He has *loads* of feel in his playing. I was always trying to get him to do solos, because I think he's an incredible player, but he'd say, 'What do you mean? Like a *rock* solo?' He'd look at me with mock horror. He was always much more into ensemble playing and arrangements."

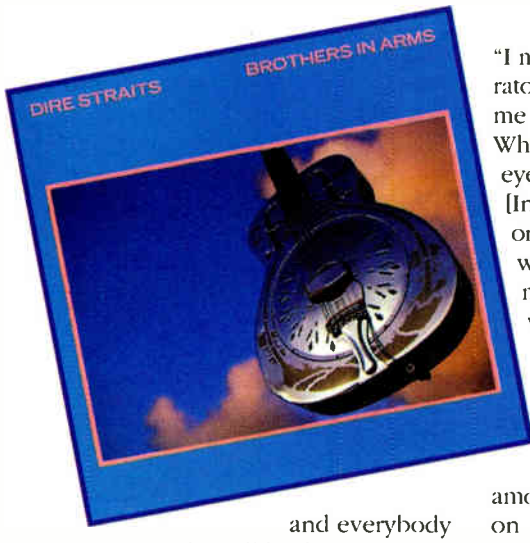
In keeping with that philosophy, *Brothers In Arms* found the entire group playing live on the basic tracks, with other parts added later as required. "It was kind of an odd situation at that time because the drummer was Terry Williams, a great rock drummer, and he was sort of new to the band. I think he felt a little uncomfortable with the direction the music was going, which was very 'heady' and arrange-y," Dorfsman says. "He's a wonderful feel player, and I think he found himself thinking about what he was playing rather than just doing it. So several weeks into the record we got Omar Hakim [of Weather Report fame] in, and he re-did about three-quarters of the drums on the record. He did it all in a day-and-a-half or two days—I'm sure he didn't do more than two takes on anything. Actually, on 'Money for Nothing' we kept Terry's toms and the tom fills throughout the song, but everything else is Omar."

Of all Dire Straits' albums, *Brothers In Arms* has perhaps the greatest textural depth, with layers of acoustic and electric guitars dancing effortlessly alongside bright keyboard parts and shuffling drums, all in an open and airy ambient space. The album is filled with wonderfully executed dynamic shifts, and each song seems to have its own mood—from the wistful, slide-guitar driven ballad "So Far Away" to the modern rockabilly feel of the spry "Walk of Life" to Knopfler's moody anti-war "Ride Across the River." And then there was "Money for Nothing," Knopfler's funny, cynical slap at stardom, told from the perspective of a working-class lug watching MTV and complaining about the easy lot of rock stars who get "money for nothing, chicks for free."

According to Knopfler, the inspiration for the song came to him while he was shopping one day. "I had to ask for pen and paper while I sat down in this mock kitchen display—which was in the front window of this kitchen electrical and appliance store in New York—and tried to write the tune," he said in *Mix*'s December '97 issue. "In the back of the store, all the TVs were tuned into MTV."

The song's ethereal opening section, with Sting slowly singing "I want my MTV" over a slightly ominous-sounding wash of synthesizers, was conceived after the basic tracks for the song were cut. As Dorfsman explains, "That was a happy accident. Sting was down in Montserrat while we were doing that song. He had come by to visit and had dinner with us one night, and I think after that Mark and I kind of looked at each other and thought, 'Let's get him on this record.' I'm not sure to this day if Mark had the 'I want my MTV' line written already or wrote it for Sting to be in the melody of [Sting's Police song] 'Don't Stand So Close to Me.'"

Dorfsman says that Knopfler's distinctive, crunchy guitar tone on the main body of the song was another accident: "I would go out in the studio while Mark would play, and I'd have a couple of mics up on his amplifier; the guys in the control room would be listening, and I'd move the mics around until it sounded pretty good to them in there. I'd usually use two mics, and I was positioning one and moving the other. It was sort of in a weird spot where you'd never put a microphone




and everybody on the talkback said, 'Stop! Come here and listen to this!' There was some weird phasing thing happening. I don't know what it was. But it sounded great and we did six or seven takes right away because I wasn't sure we'd ever get that exact tone again. I wrote it all down, but when we tried to better it in New York a month later, we never came close." Dorfsman says that on "Money for Nothing," Knopfler played a Les Paul Junior through a Kelly amp miked with two Shure SM57s, one close and the other "in that weird spot, like seven inches back and pointing to the side," he laughs.

He also notes, "We did a lot of keyboard overdubbing on that song in particular; we spent a lot of time on the sound and the part. I remember telling Guy Fletcher to treat that whole extended intro section as if was a science fiction scene and there was a monster coming alive. Eventually we got something that approximated the idea I had. Mark was always looking for sounds that weren't stock, and was into buying keyboards that other people weren't using."

As for Knopfler's craggy vocals, "A lot of cigarettes were involved," Dorfsman says with a chuckle. "I would try to get him to not smoke while doing a vocal but it never happened. I had vowed after *Love Over Gold*, 'I'm going to ask Mark to work harder on the vocals.' But it was always just a couple of takes, a couple of punch-ins—'See you later.' It is what it is, and you either like it or you don't."

Dorfsman and the band worked on the album in Montserrat from early November until Christmas of '84, then came back to the island for another month after the holidays before moving briefly to Power Station for some final overdubs, followed by mixing on an SSL G Series console at AIR in London. "I mixed that album in six days on Auratones," he says. "The thing that saved me was knowing the tracks so well. When I record I always work with an eye toward mixing; I'm always EQ'ing. [In this case he'd used the Neve EQs on the 8078.] I rarely cut things flat, so when it came time to mix, it was mainly a matter of balancing and it was relatively easy."

Dorfsman says the principal processors on the album are Sony DRE-2000, a number of EMT plates and the then-trendy (and expensive) AMS reverb. The project was among the first rock albums cut entirely on a 24-track Sony digital recorder, which Dorfsman says he "loved from the first minute I used it. Mark ended up buying one after working on that album."

Propelled by copious airplay and a clever, animated video, "Money for Nothing" became, in the summer of 1985, Dire Straits' only Number One single, and *Brothers In Arms* topped the album charts for nine weeks. "Walk of Life" was also a Top 10 single in both the United States and Britain. Dorfsman won a Grammy award for engineering *Brothers In Arms* (he had been nominated for *Love Over Gold*, too), and "Money for Nothing" was honored as the Best Rock Performance by a group. *Brothers In Arms* was widely hailed as one of the first great-sounding compact discs, and both musically and sonically it has withstood the test of time. ■

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—*FROM PAGE 214, JOHN LENNON*

you can hear the voice dug deeper into the mix. On *Rock 'N Roll*, you can barely even hear his voice. So on this set, particularly on the *Walls and Bridges* and *Rock 'N Roll* outtakes, I wanted the voice to be more prominent. Two of my favorite outtakes on the anthology are "Be Bop A Lula" and "Nobody Loves You When You're Down and Out," because for the first time the starkness of his singing is evident for everybody to hear.

***I also wondered if John liked all that slap on his voice because his musical heroes, such as Gene Vincent, did it on their records.***

I think that's probably got a great deal to do with it, at least in the case of the *Rock 'N Roll* record—"I want to sound like that." Because you've got to remember that when you cut through the myth that was John, there was a kid there who loved rock 'n' roll. Between takes he was always breaking into old rock 'n' roll songs.

***Was The Beatles'* Anthology *series a reference point for you in putting this box set together?***

Not really, no. It actually came out after I started working on the Lennon anthology. Formally, I was hired in 1994 to begin screening about 2,000 hours of John's material. Those came in all shapes and sizes—cassettes, 8-tracks, 4-tracks, 16-tracks.

***I don't suppose they were all in one place.***

Of course not! [Laughs] The cassettes were Yoko's archives. EMI had the Plastic Ono Band albums over at Abbey Road, and they made digital safeties and sent them to me. Then there were about 600 hours of tapes from *Walls and Bridges*, *Rock 'N Roll* and *Mind Games*. In 1988, I was sent down to the basement of the building where the Record Plant in New York used to be, and those tapes were sitting down there amid the mold and the mildew, and I catalogued them prior to this project. I'd say about 75 percent of all the tapes were uncatalogued before I got them, so I ended up creating a database and about 1,500 pages of paperwork with the listings and my initial reactions and second reactions; Yoko's reactions.

To have Yoko trust me to be the initial screener was a huge honor, and it was a little frightening, too.

***How much of it had she heard?***

Well, she had participated in most of it. She was very active in his sessions. When you listen to the home cassettes, you can sometimes hear her in the background or you can hear John asking her things before or after the take. You hear her laughing, even singing a harmony here and there. So she lived it. I think it would have been unkind to ask her to go through those 2,000 hours with a lost partner. I listened to everything, and once I whittled it down to about 50 hours I started to present material to her.

***Was there anything that wasn't retrievable?***

No, everything was either bakeable or the cassettes I cleaned up using the Cedar system. The Cedar was so good it was scary—you'd be amazed at some of the "before" and "after" tapes. I had some tapes that sounded like there was no way to make them listenable. But the algorithms in the Cedar can recognize the difference between noise and music so astutely, you can clean it right up.

There was one song—John's acoustic version of "New York City"—that I actu-

ally bootlegged off a bootleg because the master is gone: Over the years Yoko has had some stuff stolen from her. So I took that and I cleaned it up. By the way, I felt no guilt about bootlegging the bootleg. [Laughs]

Not everything sounds perfect. When you go from a TV performance to a multitrack, you're going to hear a difference. But that's part of the set's charm. The nature of the material and the nature of the project was not so much hi-fi as it was high emotion.

***You did most of your mixing at Quad Recording on the SSL 9000 J?***

Yes. Initially, we put the tapes up on a variety of consoles—old and newer Neves, some older E Series and G Series SSLs—and out of them we got a variety of qualities. We got warmth on some of them, we got clarity on others. The J gave me both, so we stuck with that. We used Studio A at Quad for maybe 90 percent of the mixes. That room felt like home to us. There ended up being about 50 mixes on the set.

***What monitors did you use?***

About 80 percent of the mixes were done on my KRKs—700 Series—and the rest I mixed on the new Mackies, which I got near the end of the project. Those were good for some of the low, low bottom definition. There wasn't a whole lot of outboard gear used. I used some tape slap, some digital delay. Often John and his engineers would print their own tape slap. There might be tape slap at 7½ and tape slap at 15, and I would bring up whatever seemed to work but usually not to the degree that they themselves might have brought it up.

I ended up doing very simple, musical mixes—fully EQ'd, maybe a little bit of reverb, very little adulterance on John's voice. Presented as if you were there in the room as it happened. If you listen to *Double Fantasy*, that's where John was heading. The voice is much clearer, and it's mixed up more.

***In a sense you were working as both a historian and a fan on this project. You wanted the set to have archival value, but it also had to appeal to the fans.***

That's right. That was something I was aware of. I think Yoko and I each fulfilled functions that the other could not fulfill. She was John's partner in life, in art and in work. I was a devout Lennon fan. Not a fanatic mind you—a fanatic would probably think you should put on the sound of John brushing his teeth in the morning. [Laughs] But I could provide Yoko with the viewpoint of someone who had loved John's work all my life and wanted to hear this, wanted to hear that, *didn't* want to hear too much of this or too much of that.

And I have to give her a lot of credit, because she encouraged the dialog of difference. There were times when she didn't want something out and I'd say, "Yoko, as a fan, and not as someone who simply wants to scrape the bottom of the barrel, would you consider looking at this track from this angle?" We didn't always agree, and in the end I would defer to her, but she was open and would try to look at it from the perspective I was presenting.

***I think it was a good decision not to overdo the between-songs chatter. What's there definitely augments the set, but it doesn't really intrude on the music.***

As a listener, I didn't want there to be too many places where after the first couple of times of being charmed or humored by something I'd want to then skip by it each time. Yoko was sensitive to that also.

***I really love the studio conversations***

***between John and Phil Spector, because they show what made their peculiar combination of personalities work. John's messing around, messing with Phil, and Phil humors him but is still driving the session so something actually gets done.***

Right. Who else is going to be able to keep John Lennon in line and say, "Yeah, John, you can do that, but only after you do *this* task"?

***I think the greatest revelation for me was how good Disc 2 is—the political material from New York City. At the time I never really got into*** Sometime in New York City. ***It seemed sort of trite and obvious. But the way it's presented here, as another epoch in Lennon's life, it has more strength and resonance.***

PHOTO KISHIN SHINOYAMA

***John, Yoko and Sean Lennon during the 1980* Double Fantasy *sessions.***

It's funny you should say that, because I also wasn't so much into the New York City period. With the exception of "Woman Is the Nigger of the World," that album sort of passed me by, and I kind of jumped from *Imagine* to *Mind Games*. So it was surprising to me to really get into that period. I think it holds up pretty well, actually. There's a lot of spirit in the songs, and like you say, it's a specific period of his work, so it's interesting in that way.

Interestingly, the first sequence we did on that particular disc—and Yoko is notorious for sequencing and resequencing until it feels exactly right—ended up being pretty close to what eventually went on the set. And that's the only one of the discs that didn't go through maybe 15 sequence permutations.

***Can you talk about that process a little more?***

I began by presenting her with some of my selections. And it was very difficult at first because the nature of this kind of beast is that you not only show the songs themselves, but you play a little bit of what happened before the take and what happened after the take. And invariably she's there. And that was difficult to go back there and hear so much of this because he sounds so alive; he's really there on these tapes. But as time went on, her resilience built up to the point where she was at it for 12 or 16 hours a day, seven days a week. The last three months on the project it was nearly around the clock, with the two of us tossing sequencing options back and forth, deciding on which versions to use. We took it up to the last possible minute.

There's a version of "Only You" [intended for a Ringo Starr album] with John singing the guide. And all I had until two days before I was going to master was a crummy bootleg version of that. And then Richard Perry, the producer, bless his soul, discovered that he had the multi in his storage room. So I got it on the Saturday morning before the Monday I had to master. We transferred it, I did a mix that day, Yoko commented on Sunday, I fixed it Monday morning at 10 a.m. and at 11 a.m. it was mastered.

***Generally speaking, how was the quality of the studio recordings?***

They were amazing. A lot of great engineers were involved—Shelly Yakus, Roy Cicala, Jimmy Iovine, who became a great producer and now runs Interscope Records, was Shelly's assistant. At one point you can hear Shelly telling Jimmy to adjust John's gobo. *Double Fantasy* was Jack Douglas. That to me was a record-maker's record. If that came out today it would still sound modern. The sound and the depth of the sound on *Walls and Bridges* were astounding.

***Is that because of the room where it was recorded?***

I don't think it's so much the Record Plant as it was Shelly's knowledge of the drums he was using and, of course, the players. A good player like Jim Keltner knows how to hit the drums so they sound great on tape. They are *so* rich and deep on tape. If I had a different sense of ethics than I do, I'd be sampling those snare drums left and right. [Laughs] If you listen to "Nobody Loves You When You're Down and Out," you can hear what I'm talking about.

In terms of the players, he had Tony Levin and Jim Keltner and Jesse Ed Davis, David Spinoza. These weren't just great players; they were guys who knew how to work with each other, and they clearly knew how to get great sounds in the studio.

***I always thought John was underrated as a guitarist.***

I agree. He was much better than is acknowledged, if you're listening for the feel of a song. It's not like his tuning was impeccable or the timing was impeccable, but when I removed his guitar from some of the mixes, even though they sounded slicker in terms of the playing, you lost a lot of the feel, because he brought an earthiness to it that was really part of how he intended the song. People talk about "songwriter's guitar" or "songwriter's piano." I'd put John's work in that category.

***When you went back to the masters for actual mixing, did you eliminate any parts—a third guitarist, a stray maraca?***

Yes, there were some choices made along those lines. In most cases, when I listened to the tapes I could tell what was an overdub and what wasn't by listening to the nature of the leakage—whether it came from headphones or from the room around the player. And there were times when I would remove some of the overdubs to get down to the initial tracking session. There were never any extractions where, say, I'd go down to just John and his guitar when there was actually a whole band playing around him. If there was a band, you hear a band. But if there were three guitar players, you might only hear two of them. That was to keep the focus on the raw John doing the song in a more pure, less produced form.

***By the end of the project you must have felt as though you got to know John well, listening to him in the studio and at home in so many creatively intimate moments.***

It would be presumptuous of me to say that I really got to know him, but I did get a sense of what he was like. By the end, I felt like I knew what it would be like to be in the studio with him. I had sense of what it would be like to work with someone whose brain was firing on all cylinders so much of the time.

On a project like this you can feel like it's a job well done, but there's a bittersweetness at the end. You finish a normal record with a living, breathing artist and you feel celebratory and relieved and you have that feeling of moving on, which is also a little sad because when you make a record with a group, you sort of become like family for a while. And in this case there was Yoko, but no John, to share it with, and there was bittersweetness on her part that mine was no match for, obviously. But it was a challenge and privilege to work on it; a once-in-a-lifetime opportunity I wouldn't trade for anything. ■

*—FROM PAGE 215, FIRESIGN THEATRE*

Now, which changes formats every few minutes. During the course of the broadcast, listeners are treated to bizarre traffic reports, news, sports and "celebrity stalking," all orchestrated by DJ Bebop Loco (played by Austin). Their coverage of events like the sinister schemes of mysterious men in eyeball hats, advertising icon Joe Camel's tragic fall from grace, the "death" of a doll named Princess Goddess and the unexpected consequences of the year 2000 computer crash, make up an album so unorthodox that it presented numerous recording challenges during its creation.

"In the broadest sense, it was the same process [we used in the '70s], in that we decided to record the album in order, end-to-end, after a couple of months writing a basic script," says Proctor. "That script, of course, changed dramatically during the sessions, and as usual, we went into the studio with absolutely no idea how the piece would end. That's probably the area where newer technology helped the most: We brought a laptop computer and a printer into the studio, and for the first time in our careers, we wrote, re-wrote and updated the script as we went along, in the studio. That little PC actually helped us organize the project much more efficiently than we used to."

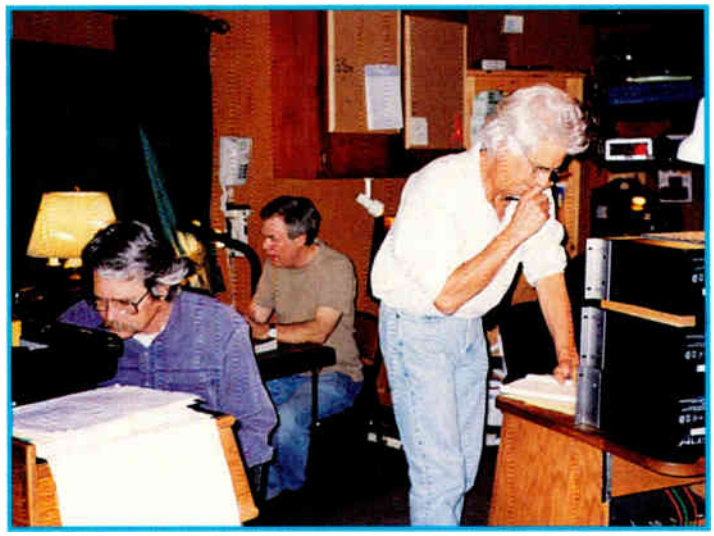
The album's 29 connected scenes were recorded in order through a Trident board and Neve preamps onto 32 tracks of Alesis ADAT-XT, and mixed to a Panasonic 3700 DAT. The plan to record the CD in linear fashion meant engineer Wayne had his hands full, especially since the project required extensive, live Foley work and other "madness," to use Ossman's term.

"All of us in Firesign Theatre are used to Phil Proctor ripping apart studios," says Austin. "But Bob Wayne had never worked with us before. I remember one point when Bob and I were in the control room together and we heard a loud rumbling above us. Bob thought it was an earthquake. But I told him, 'That's just Phil Proctor upstairs looking for cardboard boxes for Foley.' Bob told me that the ceiling was not secure and no one was allowed up there. He was real worried that Proctor would fall through it and between the two pieces of glass in the recording booth. We decided if Phil fell to his death between the pieces of glass, we would use a picture of his body wedged in there as the album's cover."

Proctor and Wayne survived the experience, and others, as Proctor went through trash dumpsters, empty rooms and cabinets in search of Foley material that he and his mates promptly dumped onto the floor in the middle of Wayne's

studio, thereby creating an instant Foley pit. It was worth the trouble, since the four members of the group performed most of the Foley work themselves, in real time during recording.

Austin says the four men purposely tested Wayne's patience early on because "at our age, we aren't about to change our way of writing and performing our material. We've been known to be a real pain in the ass for recording engineers. As it turned out, Bob was a genius and he greatly helped this record. We made him fight his way in and force us to stop and protect material, and he ended up influencing us greatly."



**L to R: David Ossman, Phil Proctor and Phil Austin rewriting script in studio.**

One of Wayne's many challenges was how to allow the Firesigners to seamlessly transition their "big studio" mentality into his Sunburst facility, which is much smaller than the huge studios the group used in its Columbia days.

"We're used to gigantic studios," says Ossman. "At Columbia [Studio B in L.A], we would just tear the studio apart, running mics and wires everywhere we wanted and taking advantage of all the Golden Age radio mics and sound effects tools they had lying around. Sunburst is much smaller, which ended up being important for the sound of the album, since almost all of it takes place inside a small, enclosed radio station. But we still wanted to work the same way that we always had."

Wayne also had to figure out how to mike everyone properly for the numerous voice effects and characters that appear on the album, while allowing them the physical freedom to perform and interact in real time. "I had to set them up so they could see and hear each other, along with the sound and musical effects, and let them do each piece and move onto the next one," says Wayne. "I had never really worked on an album in this manner, recording as one continuous piece. The guys really wanted to hear the realism of each piece, rather than adding things later in post."

Capturing that realism often meant choosing microphones that matched the creative content of the scenes. In Bergman's scenes as sportscaster Chump Threads, for instance, Chump reads sports from an old radio booth. So Wayne put Bergman in a vocal booth and set him up with an old RCA-44, a square ribbon announcer's microphone from the 1940s. Bebop Loco, on the other hand, is more of a hip, modern disc jockey, so Wayne placed Austin on the other side of the studio, behind a rolling baffle, and had him use a contemporary AKG 414 condenser mic. Ossman and Proctor, meanwhile, portrayed the station's two confused newscasters, Harold Hiphugger and Ray Hamberger (pronounced Hambur-ghe), two return characters from 1974's *Everything You Know Is Wrong*. Ossman (as Hiphugger) used a Neumann U87 vocal mic behind a baffle, while Proctor (as Hamberger) set up in the studio's drum booth so that he could also perform in conjunction with some complicated effects as traffic reporter, Captain Happy Pandit. He used an EV RE-20 radio mic for his news announcing scenes.

But each man played multiple parts and contributed to the album's Foley and effects work, and some of that work was "improvised in the grandest Firesign tradition, with a lot of help from Bob Wayne," says Proctor. His work as Happy Pandit in the helicopter circling fictional Fun-Fun Town, where the album takes place, is a prime example. The group needed Captain Happy to sound as though he was on a helicopter, speaking over a wireless headset, so they had to improvise a method to create that effect.

"Again, they wanted the reality thing, so we couldn't add helicopter sounds later; we had to have them running

while Phil was talking," Wayne explains. "We recorded him in the drum booth, and I gave him one of those tiny, round crystal microphones, the kind with a little clip on the back. It cost maybe two dollars and doesn't even have a brand name on it. I had Phil use that, and then I heavily compressed it to make it sound more like a wireless headset mic. It was a very tinny sound, but that is what we wanted. Then, we decided not to use canned helicopter sounds because Phil had to sound like he was actually inside the helicopter, not outside of it. I recorded a car chase on TV, put that on cassette, edited it to get ten to 20 seconds of the copter sound when the announcer was not speaking, and then I put it inside a sampler and put the sound into a cyclical pattern. As Phil read his lines, I played that sound, and then we laid the whole thing onto tape."

When Ossman did his bits as "celebrity stalker" Danny Vanilla—who gets a little too close to the object of his desire, Princess Goddess—Wayne stationed him outside the studio, in the parking lot, and ran wires to a handheld, Shure SM57 microphone.

"That allowed us to pick up car and crowd noises in the background, which is what the scene required, and gave the impression Danny was filing a location report," Wayne explains. "We also got a break when it started to rain. We let the microphone pick up ambient sounds of rain hitting his umbrella, and that gave the scene more realism."

Such techniques were routine throughout the recording sessions. But since the album takes the form of a radio broadcast, significant use of music was also required. "In the past, we mainly used live musicians in studio," says Austin. "But this time, we bought cuts from the APM music library. The truth is, the music quality is so high these days, played by the best people in L.A., London or New York, that we had plenty to choose from to create musical IDs and commercial music for this album. It gave us a wider range of choices than if we had done it the way we used to. I'm sure such musical libraries will be our tool of choice on future albums."

And there *will* be future Firesign albums, thanks to solid sales for *Immortality*. The group is already writing and expects to begin recording a new album, tentatively titled *You Just Don't Get It, Do You?*, in the next few months, probably for release at the end of the year. Despite some of the arduous work involved to get *Immortality* just right, Wayne hopes to engineer that one, as well.

"I learned a lot working with these guys," Wayne says. "Even when they weren't sure how the album would end, and were improvising like crazy, they rarely required more than three takes for anything. That's really rare, especially when almost everything was done in order, with all four guys live on mic, performing multiple characters and effects. It was essentially a continuous performance, and that is something you don't see too often. Plus, it was a lot of fun, with the four of them running around, wearing those strange eyeball hats." ■

—FROM PAGE 215, COOLIDGE QUARTET

plan was to combine a classic minimalist approach of two spaced microphones relatively close to the ensemble, and a pair of omnis in the room for ambient pickup. The two other pieces worked well in this configuration but needed a little more "edge" to fit with the more contemporary style of composition. For the Koppel work, simply bringing the ambient mics down in the mix by about 10 dB and moving the mains toward the ensemble a couple of inches worked great. The Steinke, however, required a more direct sound, which meant moving the mains down

almost a foot closer to the ensemble, and the ambient mics were lowered to the point of almost being out of the mix altogether. The Steinke also included excerpts of Native American poetry interwoven between short musical interludes; the voice-over was recorded weeks later in the studio directly to Sonic Solutions in order to expedite the editing process, which had already begun.

*Recording setup at the Congregational Church of Naugatuck.*

### CHOOSING A PLACE TO RECORD

Classical recording requires a performance space that will become an integral component of the sound canvas. This is not to say that other genres don't benefit from their acoustic surroundings, but the extreme dynamic range associated with classical performance makes it nearly impossible to work in a noncomplementary ambient space. Inherent characteristics of a remote recording space must include an extremely low noise floor, appropriate first reflection and reverberation, a separate small room with minimum reflections for a temporary control room and, of course, a use fee commensurate with your budget. For this recording, the Coolidge String Quartet and I spent several months visiting churches and concert halls all over Connecticut until we stumbled upon the Congregational Church of Naugatuck. The church's music director, Scott Lamlein, was extremely helpful in accommodating our needs, which included converting the minister's study into a control room, closing the sanctuary for a full week (not easy to do in a church) and cycling the heat to down times.

The distance from the altar to the narthax measured just over 50 feet with the width only slightly smaller. An ornate ceiling arched over the pews, with its apex running front to back. On the sides there were five Corinthian-style columns, each about five feet from the wall. Along with these physical amenities were the usual detriments often associated with location recording, including a nearby commuter train, adjacent roads and poor electrical ground. We settled on this location, though, because of the lush tonal color produced by the strings, and we just took a break when the ambient noises became prohibitive.

### THE MICROPHONE SETUP

I've always subscribed to a minimalist approach when choosing a microphone configuration. When more than two to

four microphones are used, the result is often a collapse in the sound field's depth. We scheduled time in the church a month before the recording sessions to experiment with different microphones and confirm that the space would be appropriate. Brüel & Kjaer 4011 cardioids spaced slightly smaller than the width of the ensemble were used for the main pair. Their distance from the ensemble sat just outside the reverberation radius for the Britten, and moved within the direct sound field for the other pieces. (The "reverberation radius" is the invisible line that separates the area of direct sound from the diffuse. It's important to note, however, the reverberation radius as it relates to the polar pattern of the microphone: An omnidirectional microphone will sense this balance close to where our ears will, as our ears exhibit essentially an omnidirectional pickup. Cardioids, on the other hand, are by definition more sensitive on axis and therefore must be brought back farther—1.7 times as far to be exact—to achieve that same balance. Logically, the more directional the microphone becomes, the farther back it must be placed to achieve that equilibrium. It's not always necessary to place microphones right at this point, but it's a great place to start, and you know exactly what the result is going to be if you move them forward or back.)

The B&Ks in this configuration provided a wonderful sense of space, a wide stereo image and a brilliant roundness to the sound. The Britten and Koppel pieces needed just slightly more reverb than recording with the two mics provided, so two AKG 414s in omni were placed about 30 feet back, with 20 feet of separation, and about 15 feet high. The 414s are inherently a bit weak in the high end, so they were exactly what the doctor ordered for reverb color.

### THE CONTROL ROOM

The minister's study was used for a control room and needed just a little temporary renovation. Absorption was placed on the sides of the listening area to defeat some of the distracting high-frequency reflections produced by the near-field speakers, and behind us to break down rear reflections as much as possible. A room mode around 400 Hz was difficult to defeat, but switching between loudspeakers and headphones gave us a good idea of what was really going to tape. The B&Ks were sent through a brand-new Earthworks LAB102 microphone preamp on loan from Parsons Audio (Wellesley, Mass.), and the 414s went directly into an Audio Developments AD145 Pico mixer. A Mytek 20-bit A/D converter followed the mixer, and the recording was made on an Otari DTR-8 DAT machine. Mytek's Hi-Bit 16 was used for dithering from 20 to 16 bits. Monitoring was mainly on Genelec 1031As with occasional reference on a pair of Beyerdynamic DT770s (mostly to listen more closely to unwanted ambient noise). The digital output of the DAT was sent through the Mytek's D/As for better resolution monitoring.

As is common in many older New England buildings, the integrity of power was of major concern. The usual culprits such as RF noise and fluctuating voltage were there but easily tamed with an isolation transformer. The biggest electrical concern was the lack of a quality earth ground. Although we weren't able to rectify the situation entirely, some relief came from grounding the transformer and the Otari DAT to an old steam radiator in the control room. The situation was further complicated by a few days of dry weather resulting in frequent static shocks from the mixer and anything else that was touched, usually at the most inopportune moment, of course. A couple of times these shocks were of enough intensity to throw the Mytek into a tailspin, only to be restored by cycling its power.

### EDL: DIGITAL EDITING

Planning the post-production process while making a recording is a key to overall efficiency. Creating a rough draft edit decision list (or EDL) during the recording sessions can help expedite the process later on. Producer Eric Dahlin worked from an 11x17 sketch pad that had two systems of music pasted on each page. This system is the best I've worked with for providing ample room to make editorial comments and other post-production notes. You should always keep in mind that it is impossible to make too many notes in the production process. Even the most experienced producers will not remember all of the subtleties within each take or insert.

Back in the studio at Metcalfe Productions, all takes were loaded onto a Sonic Solutions system. For projects of this magnitude I am more inclined to load in all of the takes rather than only those selected in the producer's decision process. Inevitably, when the clients come in to listen to the edits, they will find more problems that need

to be addressed, and if all of the music is right there in the computer, the searching time can be drastically reduced compared to digging through the session tapes. This also supports the argument for recording directly to the computer and using the tape simply as a backup source. With PCI expansion chassis now being developed for Mac-based laptops, this is becoming less of a chore than pulling a large system out of your studio. ■

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*—FROM PAGE 218, COOL SPINS*

for *The Full Monty*). Kaye had asked for "big and elegaic," and Dudley's 17 relatively brief orchestral themes ring all the emotional bells: hope, despair, triumph, fear, tension, anguish, faith, redemption, reconciliation, etc. Uncluttered by novel textures, the traditional arrangements make full use of the disciplined power of a sizable orchestra and choir, and the stirring, if not overly memorable, themes are rendered con brio. Beautifully recorded in a detailed, if somewhat artificial soundscape, the score is both listenable and undemanding, a sort of Classical Music Lite. A recommended addition to the Music You Can't Dance To section of any well-regulated collection.

Producer: Anne Dudley. Engineers: Paul Hulme and Roger Dudley. Mixer: Roger Dudley. Studio: Whitfield Street Studios (London); additional recording at AIR Lyndhurst (London). —*Chris Michie*

**Strunz & Farah: *Wild Muse* (Selva)**

L.A.-based acoustic guitar wizards Jorge Strunz and Ardeshir Farah have carved a suc-


cessful niche for themselves with their exciting and technically impressive fusion of flamenco, Brazilian and Middle Eastern styles. At this point, their writing and playing styles are developed to the point where there aren't many surprises from one disc to the next, but the fluidity of their guitar work never ceases to amaze me, and they continue to find sympathetic musicians to augment

their basic guitars-and-percussion attack—a few tracks here feature violin, bouzouki and horns. The final tune, "Manos Del Tiempo" even features Spanish vocals. All in all an invigorating world music stew.

Producers/engineers: Jorge Strunz and Ardeshir Farah, with Kathlyn Powell. Studio: Queen's Stables (Santa Monica, CA). Mastering: Tom Baker/Oasis Mastering.

—*Blair Jackson*

King Curtis: *King Curtis Plays The Great Memphis Hits/King Size Soul* (Koch Records)

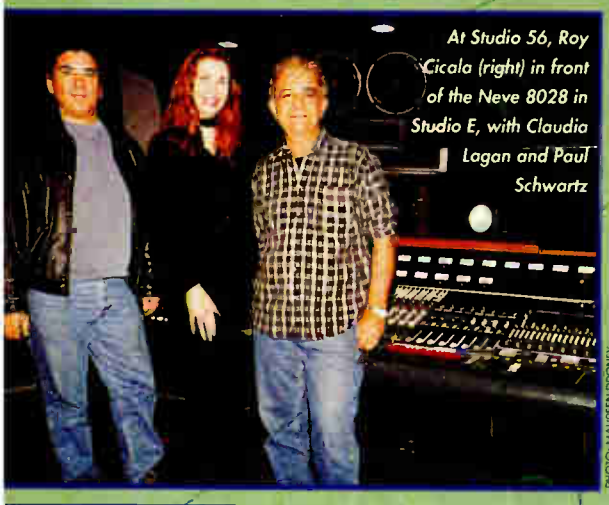
This reissue puts two of the tenor sax legend's best albums back in circulation, effectively doubling the meager catalog of quality


King Curtis CDs. (Remarkably, 1994's 23-song *Instant Soul* compilation on Razor & Tie is the only other thoughtful King Curtis CD retrospective.) The first of two albums recorded for Atco Records in 1967, *Plays The Great Memphis Hits* features the hit-making Muscle Shoals rhythm section, and was recorded by Tom Dowd and Arif Mardin, with Jerry Wexler producing. The material is well-chosen; standout tracks include "When Something Is Wrong With My Baby," "I've Been Loving You Too Long" and "You Don't Miss Your Water," all in versions that compare well with more familiar renditions. *King Size Soul*, recorded six months later in Memphis, offers brilliant instrumental covers of "Ode to Billy Joe," "A Whiter Shade of Pale," "I Was Made To Love Her" and the original studio recording of "Memphis Soul Stew," which made the R&B Top Ten. In fact, the ten-song album spawned three chart hits and was Curtis' best seller for Atco until 1971's *Live at Fillmore West*. Liner notes are comprehensive and include original cover art. Koch is to be congratulated for tackling the long-anticipated King Curtis CD reissue program with style—more, please.

Producers: Jerry Wexler, Tom Dowd and Tommy Cogbill. Engineers: Tom Dowd, Arif Mardin, Chips Moman and Darryl Carter. Studios: Atlantic (New York) and Stax-Volt (Memphis). Reissue producer: David Nives.

—*Chris Michie* ■

# COAST TO



At Studio 56, Roy Cicala (right) in front of the Neve 8028 in Studio E, with Claudia Logan and Paul Schwartz

PHOTO: MAUREEN DRONEY

## L.A. GRAPEVINE

**by Maureen Droney**

Hollywood's Studio 56 has reinvented itself several times since opening in 1986 on the Santa Monica Blvd. corner that was the site of the old Radio Recorders. Now, with the help of industry vet Roy Cicala (engineer, producer and former owner of the legendary New York Record Plant), the facility has renovated Studio E, the live recording space at the rear of the complex. ("E" is for Elvis, commemorating the fact that "Jailhouse Rock," "All Shook Up" and several other of the King's hits were recorded there.)

Featuring studio designer Vincent Van Haaff's "The Wall," a portable, drop-down control room complete with TAD monitors, the studio offers a refurbished Neve 8028, a 27x32-foot recording space with an attached 13x25-foot iso room, a comfortable lounge and lots of privacy.

The control room, a space-within-a space that looks a bit like a stage set and can be set up in about three days, has an overhanging ceiling decorated with stars and planets. It comes in approximately 12 pieces, including the soffitted speakers and an amp rack, which are attached to modular scaffolding that's bolted into the floor.

One of the first acts to record in Studio E was Edgar Winter's band, with the recently un-retired Cicala engineering. "Yes, I tried to get idle, but I'm back in it again," he says with a laugh. "When I closed Record Plant in 1990, I moved to Brazil, which I loved, but, really, how many times can you go to the beach? Then Paul Simon came through on tour and I went to visit him, and he talked me into going back into the business.

"I ended up recording again and built a studio called IIWII (It Is What It Is) in New Jersey with my partner John Hanti. The studio has gotten very busy, but now I've got an engineer working there for me, so when [former Record Plant New York studio manager and former director of Sony Studios New York] Paul Sloman said, 'Let's go to California!' I came along. Then Vincent [Van Haaff] called and said, 'You've got to come over and hear this,' and I found myself involved in this project."

There are, as usual, a lot of other things going on at Studio 56 and 56 Productions. After 12 years as a ten-

—CONTINUED ON PAGE 232

## NY METRO REPORT

**by Gary Eskow**

Leading New York facility Clinton Studios turns 15 this month, and though president and chief engineer Ed Rak is happy to discuss the past, his thinking tends to gravitate toward tomorrow. If you want to visit Clinton, head on over to 10th Ave. and look for Hell's Kitchen. This midtown area used to strike fear in the hearts of suburban types, but the area is changing. "Let's not give people the impression that this is Beverly Hills," Rak laughs. "We want to keep our edge!"

Clinton is particularly well-known for Studio A, a large soundstage-style room that can hold up to 85 musicians. Studio A has a unique sound diffusion system that immediately grabs the eye. "We were initially concerned with standing waves that can bounce between the floor and the ceiling," Rak says, "although we made them unparallel and treated the surface of the ceiling with six to eight inches of cotton and Fiberglas. We put in a highly polished hardwood floor for a lively sound, and we didn't want that sound to get absorbed by the ceiling, but of course you don't want waves bouncing back and forth between the two

—CONTINUED ON PAGE 234

Clinton Studio A, with owner Ed Rak at the 8078 in the control room

# COAST

## NASHVILLE SKYLINE

**by Dan Daley**

Nashville remains in the throes of a long-forecasted consolidation, which began with the announcement that **Emerald Recording was in negotiations to purchase the assets of Masterfonics** (which entered Chapter 11 bankruptcy protection in January 1998). That deal, which included debts listed on record totaling $2.9 million, including $1.5 million to a single bank, was expected to have been completed by the December 15 deadline imposed by the federal bankruptcy court. The acquisition would make the merged facility the largest such entity in Nashville, and one of the largest in the Southeast. Masterfonics has four studios, including the 5,500-square-foot The Tracking Room and former owner Glenn Meadows' mastering room, which will remain online. (Meadows, according to published reports, will have the opportunity to purchase up to 24% of the merged facility's stock over time; he remains as director of the studio's mastering operations.) Emerald has three studios, including a broadcast studio, at its Music Row location.

Meanwhile, **Seventeen Grand Recording completed its purchase of the main studio at Love Shack Studios** in mid-December. This was not a distress sale, inside sources emphasized. Rather, Love Shack owner Vern Dant wanted to cut back on his involvement in studio operations in order to focus on songwriting. The move gives Seventeen Grand, which now has two studios at its location on 17th Avenue with Neve VR and Euphonix CS3000 consoles, a less expensive overdub room that should keep more of projects' time and rev-

—CONTINUED ON PAGE 236

*Above: The Long Beach Dub All Stars recorded for their new Skunk Records release (out next month) at Total Access in Redondo Beach, Calif., with engineer Eddie Ashworth (standing, L) and producer/engineer Miguel (center, in white).*

## SESSIONS & STUDIO NEWS

### SOUTHEAST

Rappers **Goodie Mob** recorded for a new CD at **Doppler Studios** in Atlanta with producer **Easy Mo Bee** and engineer **John Frye**...At the **Sweat Shop** (Alpharetta, GA), **Ol Skool** tracked for Universal with producer **Steve "Stone" Huff**, and **Sol** tracked with producer **Keith Sweat** for Sony. **Karl Heilbron** engineered on both sessions... **Tracy Byrd** tracked for MCA at **Sound Emporium** (Nashville) with producer **Tony Brown**, engineer **Steve Marcantonio** and assistant **Chris Davies**; **Lynn Drennan** tracked for RCA with producer **Garth Fundis**, engineer **Dave Sinko** and assistant **Matt Andrews**...At **Criteria Studios**, **Lenny Kravitz** produced tracking sessions for his contribution to a forthcoming **Elton John** tribute CD. **Terry Manning** engineered, assisted by **Chris Carroll**...**Reflection Sound** (Charlotte, NC) reports work on numerous gospel projects of late, including overdubbing and mixing sessions for B-Rite Records artists **Trin-i-tee 5:7**, in with producer **Kevin Bond** and engineer **Mark Williams**...

### SOUTHERN CALIFORNIA

At **Westlake Audio** (L.A.), **Lisa Marie Presley** tracked in Studio D

—CONTINUED ON PAGE 238

*PJ Harvey and band performed for a broadcast on radio station Live 105 at Russian Hill Recording (San Francisco). RHR engineers Dug Nichols and Kyle Carbone mixed live to the airwaves.*

—FROM PAGE 230, L.A. GRAPEVINE

ant, owner Paul Schwartz has now purchased the property, with the accompanying upswing in energy and plans. "Since I bought the real estate, it means more," Schwartz asserts. "Now we can really feel like it's a home."

A drummer himself, Schwartz swears by the drum sound in Studio E and tells us that the Studio 56 staff is thinking of putting together a compilation CD of historic songs—including "Mack the Knife," "Love Letters in the Sand" and "Purple People Eater"—that were recorded at the site when it was Radio Recorders.

Schwartz and president of studio operations Claudia Lagan gave me a quick update tour of the rest of the facility. Jeff Fargus, who has been associated with Schwartz for 16 years, has a film sound pre-production room on-site; Kenneth Crouch has his own writing and demo room; and Studio B, fitted with a Trident 80B console, is set up for dubbing work. Studio A, with its Neve VR 60 Series console and two Studer A820s with Dolby SR, keeps busy, often with hot mixer Booker T. Jones III, whose recent work at 56 includes mixes for Coolio, Bone Thugs-N-Harmony, Toni Braxton and Brandy.

Tucked away in an antique-filled, converted turn-of-the-century train station just a few blocks from the fashionable shops and restaurants of Old Town Pasadena, **CMS Mastering has also been making some changes.** The mastering suite itself was acoustically revamped by Steve "Coco" Brandon in June, new studio manager Kristen Farris was hired, and in September mastering engineer Ron Boustead came onboard. Boustead, who had previously spent five years at Precision Mastering, has an eclectic resume that includes releases by Counting Crows, Tom Petty, Seal and the Rolling Stones. "At Precision we did a lot of high-end alternative rock," he comments. "At CMS in addition to major label work we also do a lot of independent records, and it's very diverse—from classical and jazz to Latin and Hawaiian. I like it all, and it keeps it fun."

The main mastering suite at CMS is a streamlined, clean space with natural lighting. "It's been tweaked and tweaked," Boustead says. "It's a very good-sounding room." Boustead's workspace does not include the traditional mastering console. "There are different ways to go about it," he explains. "A lot of engineers have an old custom-built console, but in this room I work with components. That allows me the flexibility to gauge a project, figure out what it needs and then apply the tools that I think are necessary. Then I can leave everything else that isn't needed out of the chain for that specific project. To that end, I have a lot of two-rack-space units—Manley, Tube-Tech and high-end digital like TC Electronic. I mix and match based on what the project seems to call for."

Boustead's mastering approach comes in part from his background as a singer/songwriter—he sees his empathy with the artist's perspective as a useful tool. "I'm coming at this business in a bit of a unique way," he says. "I've been doing it for about 13 years, but I didn't go to school and study electronics or engineering; I started as a musician. Originally, I got engineering and editing gigs on the side to support my music habit. I was doing digital editing out of my house for a while, then I got the opportunity to go to Precision. I think being a singer/songwriter definitely helps me to get along with clients. I understand that they may have spent a year or more of their life on their project, and I know how much it means to them. I know that you have to treat their work with a lot of respect.

"I recently read something that Bob Ludwig said that kind of sums it up for me," he continues. "Your job as a mastering engineer is to evaluate a tape when it comes in—to listen to it and imagine how great it can be at its best. Then you figure out which knobs to turn to get it there. Hearing the potential, then knowing exactly what tools to use to get it there is what it's about. It's that simple."

The overall vibe of CMS reflects a personal touch. Studio manager Farris evinces a great deal of knowledge about clients and their preferences, and says, "We try to make people comfortable—I think that's part of why we have so many repeat customers. We have plans for growth in both the facility and personnel in 1999, but we intend to keep our style the same."

"We're a small shop here at CMS, and we're very service-oriented," adds Boustead. "That's reflected, I think, in the fact that 90 percent of our sessions are attended, which I'd guess is unusually high for the business." Recent projects completed at CMS include a live album for Hollywood Records' Fastball, a new Rolling Stones single, Peabo Bryson's Christmas single release "A Family Christmas," titles for the new gospel label MCG, editing for a Spice Girls single, and compilations for Virgin Records, including Cracker, Spice Girls and the Geto Boys.

PHOTO: MAUREEN DROMEY

*Ron Boustead at CMS Mastering*

Dan Vicari's equipment rental company, LAFX Recording Services, made a foray into recording and mixing about a year ago when it opened its own studio. It seems that the venture has been a success, with projects in that have cut across the board stylistically. Recent acts working at LAFX have included Flesh from Bone Thugs-N-Harmony, VideoDrone

produced by Korn's Fieldy on Korn's new Elementree label, Roger Nichols mixing a James Taylor tribute album, and projects engineered by Tommy Vicari, Al Schmitt and Ethan Johns.

The studio features a pristine 88-in, 16-bus API console (with 40 550A EQs and Flying Faders automation) that was previously owned by Christopher Cross and rebuilt by Brent Averill. The 17x20-foot control room looks out on two tracking rooms with contrasting acoustical properties that offer a choice between "ambient/live" and "intimate/close" tones; each tracking space also has its own iso room.

The facility has a Yamaha grand piano, and formats include Sony 3348, analog 24-track and, not surprisingly, as many ADAT XTs or Tascam DA-88s as needed, with a large selection of microphones and outboard also available from the LAFX rental stock. ■

*Got L.A. news? Fax Los Angeles editor Maureen Droney at 818/346-3062 or e-mail msmdk@aol.com.*

*—FROM PAGE 230, NY METRO REPORT*

surfaces."

Rak and company consulted nature for a solution. "We could have used angle reflectors," he says, "but we thought about the fact that the perfect response to a stimulus can be found in the way a calm pond handles a pebble that's dropped into it. The waves that result from this action fan out from the center and perfectly diffuse the impact. Sound operates the same way; a single 6-foot plaster globe, with three concentric plaster circles emanating from the center with a 40-foot diameter results in a beautiful 'sweet spot.' We place soloists, drum kits, our Steinway D piano from CBS 30th St., and conductors—who need to hear or project their sound with maximum clarity—right in the sweet spot. It must have worked—we've had lots of repeat business from some of the top film scorers and record producers in their fields." Recent projects include the score to *Playing With Heart*, composed by John Barry, recording of a pair of Stevie Nicks songs (produced by Sheryl Crow) for the film *Practical Magic*, and the George Fenton score to *You've Got Mail*.

Looking back over the past 15 years, Rak divides the history of the New York recording business into distinct periods. "When we opened, there were no proj-

ect studios, and MIDI was a minimal factor. I had been an assistant, and then an engineer for Phil Ramone at A&R Studios [first A-list project: Billy Joel's *The Stranger*] and was eventually going all over the world tracking for him and others. At each stop I would note what I liked about every studio, always with the thought that one day I'd like to open my own place.

"Communication—visual as well as aural openness—was critically important to me," Rak explains. Pointing to the wall of Control A (behind one of the two vintage Neve 8078 boards that Clinton owns), he adds, "We have floor-to-ceiling glass between the control room and the recording space. Anyone in either space is visible at all times to everyone else, and that's important. We're about breaking down the barriers that separate people, and creating spaces where creative ideas can commingle. Of course, putting in the best equipment and staffing the place with highly capable and sensitive people was important as well, but everything was based on the fact that getting a great ensemble sound down was the way records were made. Overdubs were just that—a separate layering process that went on after the basic tracks were recorded by a group of some sort."

MIDI came. It begat project studios. There came a time when individuals, isolated and lonely, would endeavor to create works of art on their own. The concept of overdubbing as a secondary part of the recording process gave way to something quite different. "When ADATs entered into the picture, you'd have guys sending tapes all over," Rak says, "so that a horn player could solo for eight bars, or a guitar player could add some parts. Studios like ours were getting a lot of pressure to mix these projects at rates that were competitive with project studios located in someone's apartment. We had to hold the line in the belief that our way of working was valid."

Eventually, Rak notes, musicians began to tire of the fragmented-sounding performances that come when parts are laid down consecutively. "Moving air together, at the same time, that's always been an important part of the creative process," he says. "I think the better players and producers began to miss the collaborative process of working together in a great room. Don't get me wrong—MIDI rigs and sequencing have given us some great results, both in terms of the sounds that can be generated and the way the compositional process has been expanded. That way of working still has a valid place in the recording business. However, we've noticed a pronounced return to the classic way of working, and it's a trend that has been very positive for us."

In addition to Studios A and B, with their Neve 8078s, Clinton has a third room. "Studio C is used for mastering and editing," Rak says. "We've got a Studer Dyaxis III hard disk recording system in this room. We also record voice-overs and instrumental overdubs in C. It's a superior acoustic environment."

Rak says that he's currently looking at the new crop of digital consoles. "There are times when we don't need all of the functionality that our Neves offer but could use the power and flexibility that the smaller digital boards are starting to offer. We're taking a hard look at the Mackie Digital 8 Bus in particular. Although the Dyaxis has faders and can be used as a console, we often record live to DAT or a digital multitrack. The D8B seems ultimately flexible and mixable. It would be useful in that room, and as a sidecar device in the big scoring room, and it has 5.1 capability.

"I'm also very excited about the advancements in higher-fidelity storage that are going on these days," Rak continues. "With 24-bit, the technology can now store more clearly what we send it. 96kHz sampling—and possibly beyond—will help us more clearly represent the song, the score and the magic we intend to capture."

After all this time, Rak is still amazed at the way recorded sound affects people. "I'm still surprised by how touched people are by music," he says. "It thrills me and makes me realize that I'm in the right place. I get to show up at work every day and participate in the expression of this great universal language."

On a personal note, Rak's wife, Kacey Cisyk, lost a five-year battle with cancer last year. One of New York's top session singers, Kacey was a special person. I first met her long ago, when we were both students at the Mannes College of Music. A gifted coluratura, her talent, ability to adapt quickly in the studio and kindness propelled Kacey to the top of her field. She leaves behind her husband, their 8-year-old son, Eddie, her extended family and countless friends. ■

*E-mail your New York news to New York editor Gary Eskow at scribeny@aol.com.*

*—FROM PAGE 231, NASHVILLE SKYLINE*

enues within the studio. The sale included all of the equipment and the operating name, but did not include the real estate. Current studio manager Grant Fowler will remain in his position. Seventeen Grand co-owner Dave Cline says that there will be some changes to the equipment package, including the addition of some new digital processors, mic pre/EQs, microphones and new amps for the main monitors. The studio's headphone system also will be upgraded in mid-February with the addition of Formula Sound's active headphone mixing system.

All of the mergers and acquisitions on the table make business sense. In each case, it gives both the pursuer and the target new capabilities and services. In the case of Masterfonics, it presents Emerald owner Dale Moore with a very cost-effective way to expand his studio after waiting out much of the technological arms race that Nashville has experienced over the past three years, as several large facilities have come online.

However, while the mergers have

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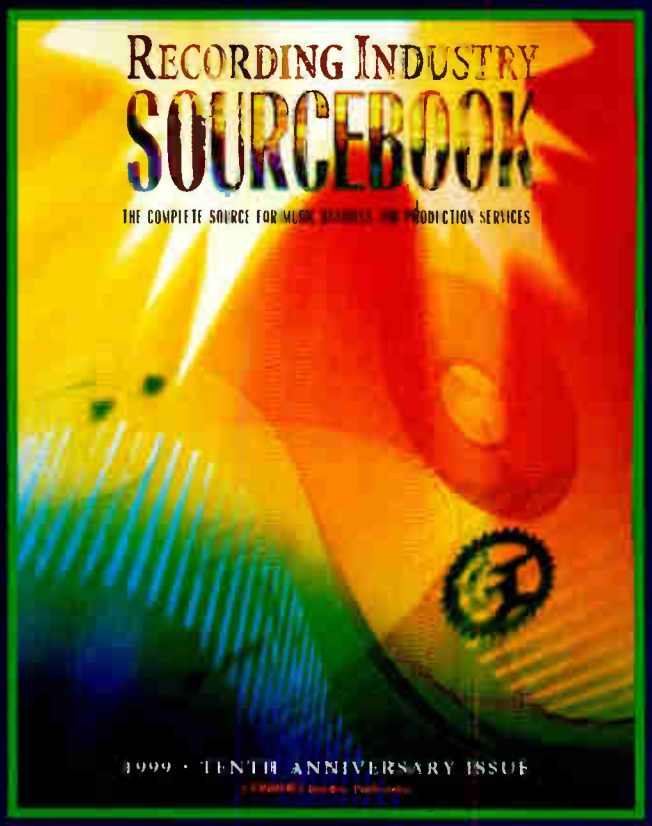


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been garnering the attention, other trends have been ongoing, the most notable of which is how studios have been developing ancillary revenue streams at a time when studio rental rates are under pressure. Several have made some of the more obvious moves, such as starting in-house music production companies and adding one-off services such as CD-R burning. But others have moved in ways that are more complex.

Emerald was one of the first to implement the service when they put in a radio broadcast division two years ago. Starting with artist radio tours via ISDN lines, the division has expanded, now accounting for a double-digit percentage of the facility's revenues, doing regular programming for Wal-Mart and other companies. General manager Milan Bogdan says Emerald is also considering adding video to the list of ancillary services. "This was definitely a response to the rate environment here that's been causing this consolidation," he says. "We had to take some of our eggs out of the music recording environment."

When mastering studio **MasterMix** opened its new facility last autumn, owner Hank Williams added MasterVision, a DVD authoring service, in partnership with two other principals, Tracy Martinson and Mike Poston. MasterVision was expected to bring in significant new revenue to the studios, particularly in light of a nonexclusive arrangement between Williams and his partners in the new venture and the BMG-owned Sonopress replication plant in Weaverville, N.C., which called for MasterVision to handle all of Sonopress's DVD authoring work.

Another move is in progress at Starstruck Studios. When the two-room/twin-SSL 9000 J facility opened two years ago, it made provisions for a small broadcast space in the rear of the building—to send satellite feeds of artist interviews to various broadcast outlets. Starting this month, Starstruck will embark on a significant expansion of that service, building three shooting areas complete with a television-grade lighting grid and a cyclorama backdrop. The service, Starstruck Broadcasting, will continue to use the same Mackie 32-bus console it had dedicated to the original broadcast operations, as well as an Otari timecode DAT and Tannoy 6.5 Limpet powered monitors. It also will continue using a fiber-optic feed supplied by Vyvx over Bell South lines, routing signals either to satellite feeds or directly to end users, which is how it has been supplying segments to infotainment TV tabloid *Access Hollywood* in Burbank, Calif.

Robert De La Garza, VP of Starstruck Studios and Broadcasting, stresses that the further development of the broadcast operations is in no way related to the fortunes of the recording studios, and he says that both the studios and the broadcast operations are doing well. However, Starstruck, like all of the other major new facilities that have opened in Nashville since 1995, has adjusted its rate structure to accommodate current realities.

Generating revenue from ancillary services has become a priority at Nashville studios. It is looked upon by some as the only way to stay afloat at a time when economic pressure continues to mount, as evidenced by the consolidation and facility shaking-out sweeping Nashville. ■

*Send Nashville news to Dan Daley at danwriter@aol.com or fax 615/646-0102.*

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*—FROM PAGE 231, SESSIONS & STUDIO NEWS*

with producer **Glen Ballard**, engineer **Chris Fogel** and assistants **Jeff Robinette** and **Jesse Gorman**. **Tori Amos** cut vocal tracks in Studio C with producer/engineer **Eric Rosse** and assistant **Michael Parnin**...**Eagle-Eye Cherry** mixed for an upcoming Sony Music release at **Skip Saylor Recording** (L.A.) with producer **T-Ray** and engineer **Anton**. La Face Records artist **Pink** was in mixing with producer **Anthony Nance** and engineer **Jerry Brown**; **Ian Blanch** assisted on both sessions...Nuevo flamenco artist **Manuel Iman** recorded his recently released EverSound Records debut, *Flowers in the Desert*, with producer/engineer **Roger Nichols** at the label's studio in Westlake Village...

**NORTHEAST**

While recording for his next Virgin Records release at **The Theatre** studio in New York City, **Iggy Pop** was joined by jazzers **Medeski, Martin & Wood**, who collaborated with the wild one on a couple of tunes. Producing was **Don Was**, and **Mark Howard** engineered...World Blue Records artist **Steve Kroon** mixed his latest in Studio B at **EastSide Sound** (NYC) with executive producer **Howard Leder**, engineer **Stan Wallace**, and assistants **Fran Cathcart** and **Gary Towns-**

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**Coming Soon—The Mix Online Audio Industry Directory!**

PHOTO: DAVID GOGGIN

*Posed at the Neve 8078 during the opening reception at the newly renovated One on One South, formerly Brooklyn Recording, were (L to R) artist, producer and studio owner Yoshiki, Music Producers Guild of the Americas executive director Chris Stone, studio director of recording Bill Dooley, MPGA national project director Tim Heile and studio engineer Doc Knight. The console was expanded to 80 full-channel inputs, all with Neve 31105 4-band EQs.*

ley...At Cotton Hill Studios (Albany, NY), Hair of the Dog mixed and mastered their fifth October Eve Records release, *Gaelic Bark*, with producer Rick Bedrosian and engineer Ted Malia...

### NORTHWEST

Singer-songwriter Patrice Ka'Ohl recorded her new release, *Island of the Sun*, at Laughing Coyote Studios (Redwood Valley, CA) and mixed at Skywalker Sound (San Rafael, CA). Spencer Brewer produced and engineered, and Skywalker's Leslie Ann Jones mixed...

### NORTH CENTRAL

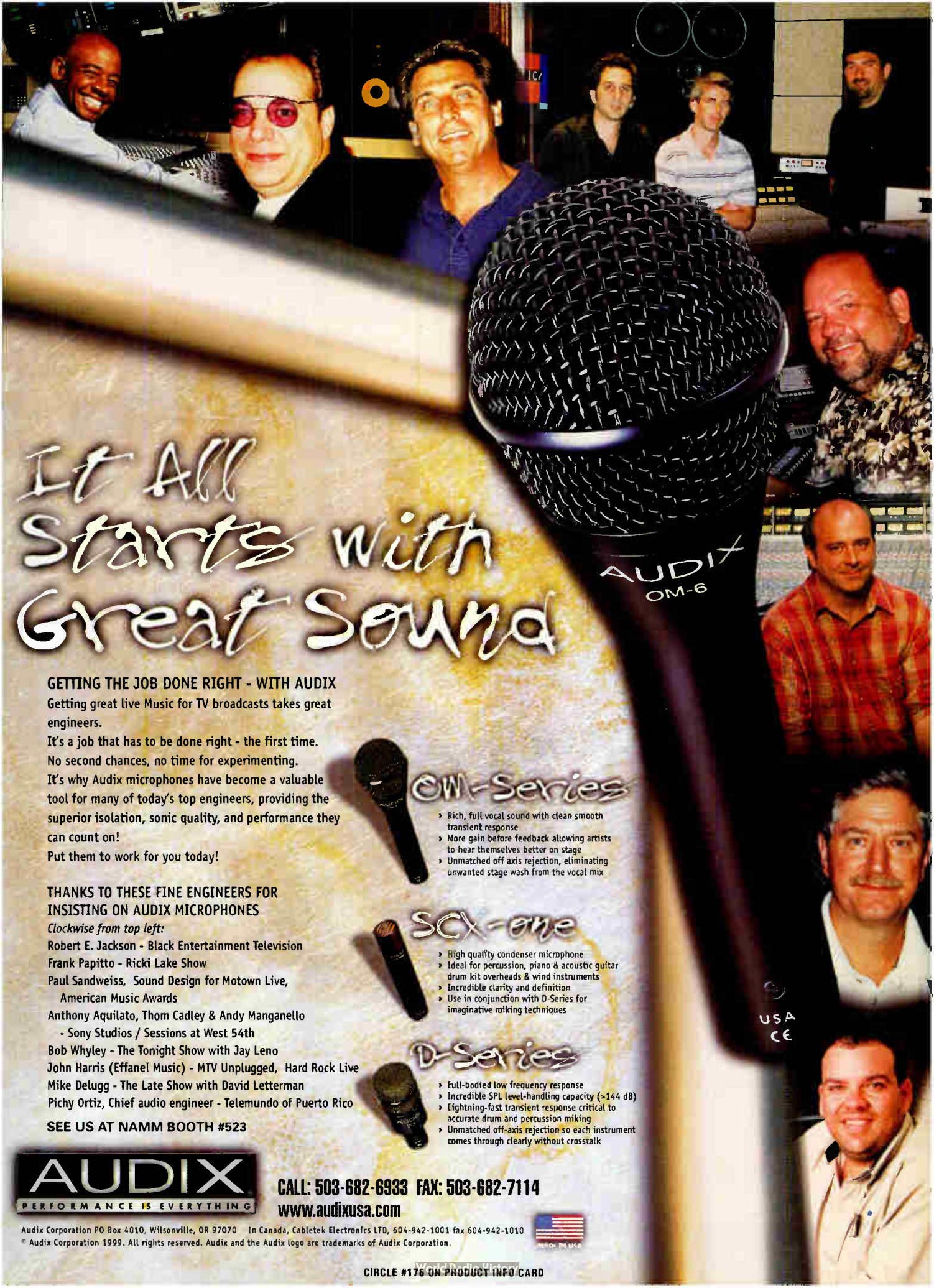
Celtic accordionist John Whelan recorded his new Narada Records release *Come to Dance* at the label's studios in Milwaukee, WI, with engineer Dan Harjung...

### SOUTHWEST

Toni Price recorded self-produced sessions for Antone's Records at Arlyn Studios (Austin, TX) with co-producer Derek O'Brian and engineer Stuart Sullivan...At Pedernales Studios in Spicewood, TX, the Great Divide recorded for Atlantic with producer Lloyd Maines and engineer Larry Greenhill...

### STUDIO NEWS

Partners Cadence Communications and engineer Skye McCaskey have opened a new facility, Strawberry Studio, in Berry Hill, TN (near Nashville). The studio offers 2-inch 24-track analog recording, as well as 16-tracks of ADAT...Future Audio in Dallas recently added a Pro Tools 24 workstation to expand its digital recording capabilities...Basement Recordings (Brooklyn, NY) added Yamaha DSP Factory digital mixing cards to each of its 25 workstations...As part of extensive renovations to its Studio A, New York City's Kampo Audio/Video installed a pair of Genelec 1034B triamplified Active Control powered monitors as its main monitoring system. Purple Dragon Recording in Atlanta installed a pair of Genelec 1039A monitors as its new Studio A mains...National Mobile Television installed 38 Neutrik patchbays in two remote HDTV trucks, along with more than 1,400 Neutrik XLR connectors...The Recording Workshop in Chillicothe, OH, installed a Mackie D8B console in its Studio C. ■

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Bob Whyley - The Tonight Show with Jay Leno
John Harris (Effanel Music) - MTV Unplugged, Hard Rock Live
Mike Delugg - The Late Show with David Letterman
Pichy Ortiz, Chief audio engineer - Telemundo of Puerto Rico

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***FEATURES–***
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- Up to 128MB sample memory
- Full MIDI controller capabilities
- 32-track sequencer
- Sampling option available
- Dual SCSI ports
- DMTi Digital Multitrack interface option for data format and sample rate conversion (Interfaces with ADATs or DA-88s)

KORG

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- Flexible, assignable controllers
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- 256 programs, 256 combinations
- Reads KORG sample DATA library and AKAI sample library using optional 8MB Flash ROM board

TRINITY *88 Weighted-key/Solo Synth*
TRINITY *76-key/Solo Synth*
TRINITY *61-key/Solo Synth*
TRINITY *61-key*

***(Digital IF, SCSI, Hard Disk Recorder, and sample Playback/Flash ROM functions are supplied by optional upgrade boards)***

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Hafler

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- 75W HF, 150W LF
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MACKIE

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TANNOY

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Truly the cutting edge of mixing technology.

Panasonic

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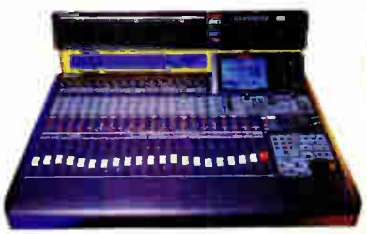

**FEATURES-**
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- Optional MIDI joystick

TASCAM

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New

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New

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**FEATURES–**
- Balanced Analog as well as Digital outputs including AES/EBU, S/PDIF, & TOS.
- 24-bit precision A/d & D/A Converters
- 5-band 24-bit stereo EQ
- Enhance - De-essing, stereo adjust or digital radiance
- Real-time gain maximizer
- Variable slope multi-band expander
- Multi-band compressor • Word Clock Sync
- MIDI section useful for controlling sequencer fades or any of the Finalizer's parameters from a remote MIDI controller.

Lexicon

### PCM81 Multi-Effects Processor

New

The PCM-81 has everything that made the PCM80 the top choice among studio effects processors, and more. More effects, more algorithms, longer delay and full AES/EBU I/O.

**FEATURES–**
- 300 Presets include pitch, reverb, ambience, sophisticated modulators, 20 second stereo delays, and dynamic spatialization effects for 2-channel or surround sound applications
- 2 digital processors including Lexicon's Lexchip for the reverb and a second DSP engine for the other effects
- 24-bit internal processing
- Dynamic patching matrix for maximum effects control.
- PCM card slot

## EQUALIZERS

Focusrite

### Green 2 *"Focus EQ"*

New

The Green 2 Focus EQ is suitable for a variety of applications combining a Focusrite equalizer section with a multi-source input section. Use it as a high-quality front end for recording applications or patch it into the send/return loop to upgrade a single channel of console eq, either way, it sounds great.

**FEATURES–**
- XLR & 1/4" inputs are similar to the Dual Mic Pre but have been adapted to cope with a wider range of levels.
- VU metering via a 10-LED bargraph
- EQ section derived from the Red and Blue range processors for superb audio quality.

## COMPRESSORS

JOE MEEK

### VC1 Studio Channel

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The Joe Meek Studio Channel offers three pieces of studio gear in one. It features an excellent transformer coupled mic preamp, a great compressor and an enhancer unit all in a 2U rackmount design. Find out why more and more studio owners can live without one.

**FEATURES-**
- 48V phantom power, Fully balanced operation
- Mic/Line input switch
- Mono photo-optical compressor
- High pass filter for large diaphragm mics
- Extra XLR input on front makes for easy patching
- Compression In/Out and VU/compression meter switches
- Twin balanced XLR outputs with one DI XLR output for stage use
- Enhancer In/Out switch and enhance indicator
- Internal power supply 115/230V AC

dbx

### Blue Series 160S Stereo Compressor

The dbx 160S combines the best features of all the great dbx compressors in a well-built unit where the craftsmanship is as stunning as the engineering is innovative. This is truly a desirable compressor.

**FEATURES-**
- 127dB dynamic range • Program dependent "Auto", or fully variable attack and release
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*—FROM PAGE 24, BIGGEST NATURAL DISASTER*

faders have become not only higher-resistance, noisier and more unreliable, but they *actually have higher distortion* due to semiconductive (nonlinear) behavior from this oxidation.

Transport bearings are a little stiffer, and spinning digital heads have a bit more drag, chatter and instability. Pots crackle, connectors snap at you. Generally, these things all go to hell a little bit more each night while you are sleeping. And if you live in a humid area, you can count on this degeneration speeding up by a factor of ten to 20.

### PUTTING THE COVERS BETWEEN YOU AND THE ENEMY

We need oxygen to live, to run our cities and our transportation, to cook and to do a thousand other things. But at the same time we eat antioxidants in an attempt to prolong our lives. We wax our cars to slow oxidation of their paint jobs. We spend a considerable amount of our personal maintenance time fighting the effects of oxygen on our stuff.

We spritz antioxidant oils and compounds on every connection and switch contact we can reach. We use expensive metals like gold on electrical contacts because they react less to the evil life-giving gas. We pay far too much for low-oxygen copper wires for our studios. All for a little protection between us and the enemy.

### SO?

Oxygen, and a little moisture, can get ahead of you in ways that you might not consider. Sure, we all know that we have to clean our studio connectors every now and then, and sometimes we have to bang on the console over the EQ section of channel 11 right in the middle of a mix to get that back-plane connector to quiet down.

But what is the state of the art in oxidation prevention, and how different is it for digital and analog? Well, you might expect the bulk of my column to follow with these answers, but...no. There are, sadly, few new answers, and those that are here are pretty simple.

1) Mechanics. Designers since the dawn of electricity have realized that you want the highest possible pressure for metal-on-metal electrical contacts. Well, pressure or wipe. Knife-edge switches have enjoyed popularity for some time, as two small wedges of metal contacting each other at a 90-degree offset can assure hundreds of pounds per square inch of oxidation-crushing pressure with a tiny 10-gram spring. TRS jacks have a very small contact area as well, to assure a high wiping pressure as you insert the plug. Pressure helps remove corrosion and helps keep oxygen away from the contact area once mated.

So your mission is to check to assure that connector and contact springs are alive and unstretched. Weak, deformed contact springs will cause you endless trouble.

**Though rust never sleeps, we certainly do. And when we wake up and cruise into our studios the next day, everything is a little worse than we left it the night before.**

RCAs are probably the most misunderstood of the lot. And since they appear often in project studios, I urge you to check often to make sure that the outer ground rings have not expanded and lost pressure.

S/PDIF connectors are these very types, and a bad ground here can cause evasive problems that may be almost impossible to locate.

2) Materials. Silver oxidizes like crazy, but only on the very surface. As it is very soft, a decent squeeze with a knife-edge contact or a good scrape as you insert a connector should remove oxidation, and the deformed metal at the contact point should keep new oxygen out for a while.

Gold is also nice and soft, and has the added advantage of being much more resistant to oxidation. Use gold when you can. But this brings up the next point.

There is an old basic rule when designing with metals: Never use dissimilar metals for electrical contacts, as in a real-world moist environment electrolysis will destroy the connections and eventually the connectors. Well, this is a nice rule, but gimme a break. How can we possibly apply this to our studios? We can't.

All we can do is try to set things up so we use as many well-maintained gold-to-gold connections as possible in our studios, and revert to silver for everything else. So if you get a portable DAT with gold S/PDIF connectors, *please* go out and buy good low-capacitance cables with *very tight*, overdesigned *gold* RCAs on the ends.

And for all those bull-chrome or tin-plated RCAs—use silver-ended cables if you can. If you must use crappy cheapies, get tight ones.

3) Chemistry. Keep all connectors, switch contacts, faders and jacks CLEAN. I know, stupidly obvious. But is it? Do you pull cards and clean-edge connectors *before* problems exist, or only when they stop a session? Yeah, right.

Never, ever use any cleaner that contains *any* abrasives, no matter how mild. They will fix *anything*...for three days. Then it's over. Snap, crackle and pop until you replace the part.

There are two families of contact-preserving chemicals, one for repetitive use and one for permanent connections. I leave it to you to decide which brands are best, but I clean everything with Blue Shower, use red and blue Cramolin for jacks and switches, and an amazing self-sealing conductive preservative called Tweak for connectors that I plan to shove together and leave for six months.

The bad news is that one or more of these products may be gone. EPA casualties, you know.

### A SECRET TIP FROM THE XTREME WORLD OF EXTREME STUDIOS

I know a studio that takes oxygen very seriously. They have tanks of the stuff hooked into the ventilation system so that engineers can work in an elevated oxygen atmosphere. This keeps them bright and alert, not to mention awake—kind of the thinking person's cocaine. Ah, but that's not all. They also have huge tanks of nitrogen—the most accessible inert gas. After these high-oxygen sessions, they flood the studio with nitrogen to slow oxidation over the down time until the next session.

If nitrogen is inert, then I guess oxygen is...ert, I guess, making it perhaps the most profound case of "what you can't see *can* ert you."

So there you have it. Breathe easy, fellow mutants. ■

*SSC told us this column was originally going to be about nitrous oxide, but he fell asleep while researching it.*

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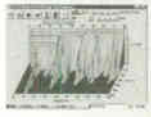

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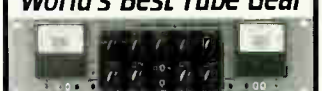
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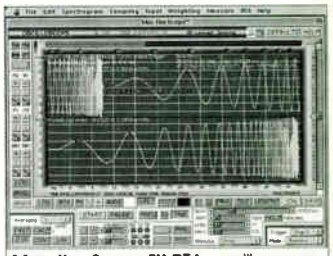

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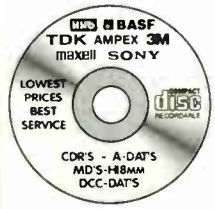


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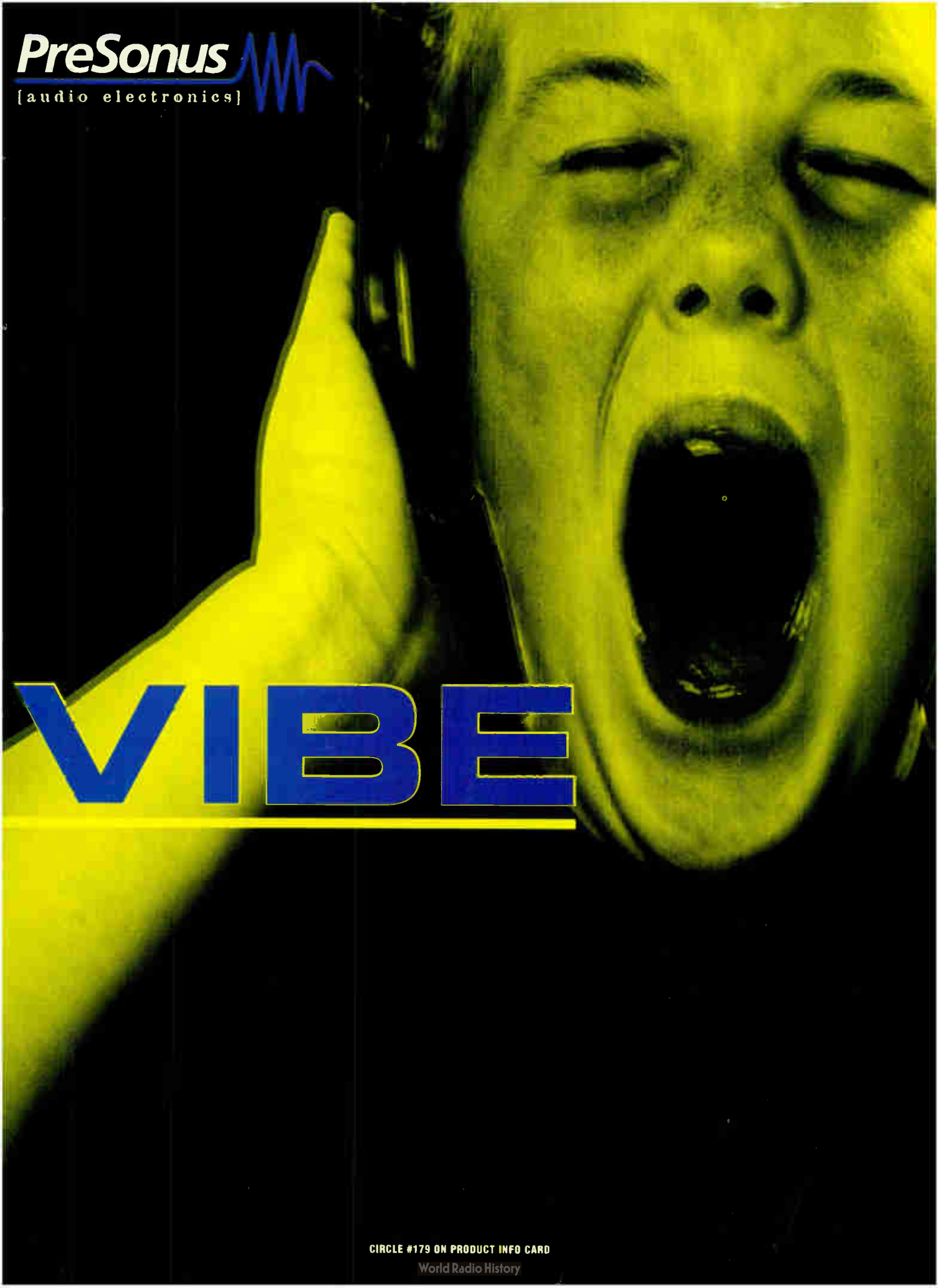


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# ROLAND VS-1680 WORKSTATION

## ROAD-TESTED TIPS

The Roland VS-1680 is capable of making fully professional recordings at a level rivaling systems many times more expensive. In fact, I produced and mixed seven cuts of an album exclusively in the VS-1680 late last year while on the road with Burt Bacharach and Elvis Costello. Although a lot of its basic functions are similar to other hard disk systems, here are a few features, often overlooked or not fully understood, that can make the VS-1680 an even more powerful workstation.

*The VS-1680 features an intuitive interface*

### EZ ROUTING

Front-panel routing access allows you to keep up with track assignments easily, which speeds up and reduces errors in the patching routine. Routing is accessed by a row of Select buttons assigned to the actual inputs and another row of Track buttons linked to the 16 internal Record tracks (each track consists of 16 virtual tracks, or V-Tracks). By holding down a given Select button, any track already assigned to that input will light up or can be activated by a button push. The reverse is also true—holding a Track button will light up any input (Select) patched to that track.

For even speedier patching, the EZ Routing feature allows you to save templates of Select/Track assignments. Since effects and EQ are also available to the input channels, it is possible to create complex input maps for, say, a whole drum kit, complete with level, EQ and compression settings that can be recalled later.

### EFFECTS

The VS-1680 can hold two optional VS8F-2 effects cards, providing four stereo effects processors. You can record tracks with effects processing if you feel that four effects won't be enough at final mix time. Don't overlook the Hi-Z Guitar input, since the VS-1680 contains a lot of the guitar amp modeling found in the VG-8 and Boss GT-5 guitar systems, as well as an array of guitar-style effects.

The effects section can be used creatively: The Voice Transformer can alter the timbre of a vocal performance as well as create duet effects; and a MIDI note can determine intervals of harmonization and/or transformer settings. The Lo-Fi effect is great for "grunging" up drums, loops, vocals and even submixes by down-converting the sample rate. The patch also works great in a send/return setup for adding grit to a track without completely annihilating the sound.

### A BOUNCING TRICK

Here's a great trick for bouncing tracks, especially if you're already out. It is possible to bounce a track to itself with additional effects and/or EQ while keeping the original performance by using V-Tracks: When you bounce a track to itself, it records over and replaces the original part, but go ahead and bounce the processed track over the original. Then hit the Undo button, which restores the original performance. Now, copy the original part to a different V-Track, then push the Redo button. The processed part will reappear on the first V-Track with the original part preserved on the new V-Track.

### SONG ARRANGE

The VS-1680 supports all time-code frame rates and synchs either through MTC or a digital input. (There is no word clock input, however.) Simply run a MIDI cable into the VS-1680 from your MIDI interface, set the proper rate and sync source, and the VS-1680 will chase your computer all day long. The reverse is true: The VS-1680 can serve as master in a sequencer setup, making it easy to create a powerful portable setup with the VS-1680 and a laptop sequencer.

Audio can be broken up into Phrases and then moved, copied or pasted with the use of Markers, providing MIDI-style editing without using additional hard disk space. Since the VS-1680 runs along a 24-hour timeline, a whole song can be copied to another time location and edited into a new arrangement, complete with any necessary synchronization offsets to maintain sync.

### AUTOMATION

The Automation section of the mixer can record both snapshots and real-time changes to practically everything in the VS-1680. A good thing to do is create a snapshot at the front of your song—even as your work is in progress—that can be recalled every time you open the song file. This eliminates setup time for later overdubs, making it convenient to work on several unfinished songs simultaneously.

And, of course, each track allows for 16 V-Tracks, which don't necessarily have to be multiple takes of the same instrument. So go ahead and pile on the tracks, experiment with effects, and automate the whole thing with the confidence that the VS-1680 is a capable and flexible studio-in-a-box. ■

**BY ROB SHROCK**

*Composer and producer Rob Shrock recently produced and played on Dionne Warwick's current release,* Dionne Sings Dionne, *and appears on Burt Bacharach's current releases,* One Amazing Night *and* Painted From Memory *(with Elvis Costello).*

# VETERAN REVIEWERS AND ENGINEERS CONFRONT REALITY. MACKIE'S HR824.

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"Mackie asserts that the HR824s are 'smooth from 39 to 20kHz (±1.5dB)' and our tests corroborated the claim. This is no mean feat for monitors this size. The HR824s performed admirably, allowing us to distinguish very fine shades of tonal color and to establish subtle timbral and harmonic relationships between sounds. If you are in the market for a pair of compact active monitors and you are not afraid of the truth, do yourself a favor and give the Mackie Designs HR824s a critical listen."

*"[HR824s] sound incredible — I was extremely surprised by the low end response. Clarity, detail and reproduction in reverb tails is real good."* Pat McMacon, Facility Director, Sony/Tree Studios


"HR824s give systems costing twice as much a run for their money in terms of sound quality... they deliver a solid low end that's surprising for their size and a flat transparent response across the spectrum."

*Very tight bass... clean mids... crystal pristine highs. There's a truth to them. Once you hear you can't go back."*
Frank Serafine, Hollywood motion picture & TV sound designer

"Performance, features and a cost-not-barred design at a retail price of $1500 a pair* make this product a very good value. In the words of one person involved in these listening tests, 'I have a feeling that [the HR824s] will become the NS-10 of the late '90s and beyond' ...ubiquitous."


*"Very musical. Very accurate. We actually move them between our five rooms."*
Glenn Meadows, TEC-nominated mastering engineer, Masterfonics



* U.S. suggested retail price.

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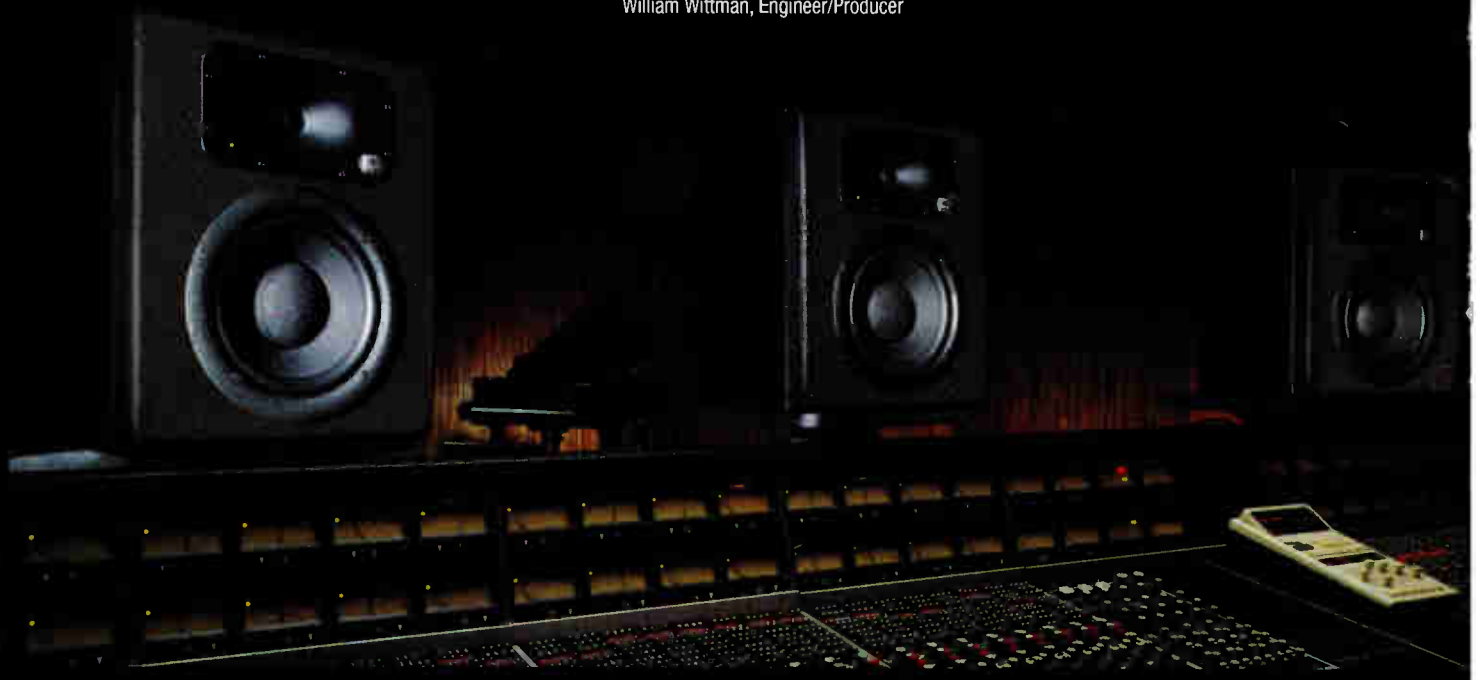
SEE US AT NAMM BOOTH #814

CIRCLE #180 ON PRODUCT INFO CARD

# "When A $2,000 System Sounds As Good As A $50,000 System, I'd Say They Got It Right."

William Wittman, Engineer/Producer



## The First Integrated Professional 5.1 Monitoring System With THX® Approval

The All-New JBL LSR Monitors are, quite literally, just that. Highlighted by a long list of performance-tailored components and customer-inspired features, they're like no other systems on the market today. The entire line, including the LSR32 3-way, 28P 2-way and 12P Subwoofer, is a technical triumph; resulting in new standards and performance levels for a rapidly emerging multi-channel recording industry.

## Performance-Tailored Components

Revolutionary transducer designs, optimized network topologies and innovative materials are some of the reasons why the LSR line is being hailed as 'the world's most advanced monitor'. JBL's all-new ***Differential Drive®*** woofer permanently dispels the notion that better linearity, higher power handling and greater dynamic accuracy are somehow an unobtainable, evil triangle. ***Dynamic braking*** produces truly accurate bass at higher SPL's with maximum reliability. Composite materials, including ***Carbon Fiber*** in the woofer as well as ***Titanium*** and ***Kevlar®*** in the high and mid frequency components, insures performance that is always optimally maintained.

## Not Just A Better Spec... A Better Monitoring System

While all companies boast about their specifications, JBL went one step further. To guarantee that every component of the LSR family worked together for optimal performance, LSR development employed JBL's unique 'system-engineered' design philosophy. Simply put: the entire line was researched and refined as one, with an overall performance goal in sight. What this means to you is a monitor and subwoofer that work together as a system; delivering stunningly uniform and accurate performance in both stereo and multi-channel applications.

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**LSR 28P**
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**LSR 12P**
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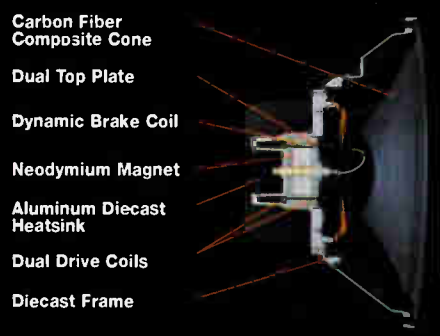


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