Bruce Hornsby's Home Studio · Weird Production Tricks · Wireless Microphones

U.S. $4.95 CANADA $5.95 SEPTEMBER 1995

MIX®

PROFESSIONAL RECORDING · SOUND AND MUSIC PRODUCTION

SOUND FOR PICTURE

- Digital Dubbers
- Master Re-recording Mixer Dick Portman
- Music and Effects For Advertising

LIVE SOUND: THE RETURN OF R.E.M.

CLASSIC TRACKS: Clapton's "Layla"

PRODUCTION MUSIC LIBRARIES

MidiVerb® 4

Clean, Quiet, Rich

Forget what you know about digital multieffects processors, the new Alesis MidiVerb 4 has rewritten the book. While the competition has been chasing the standards set by three generations of MidiVerbs, our engineers were researching ways to integrate the form and function of digital reverb way beyond anybody else's imagination...or capabilities. It makes the MidiVerb 4 the cleanest, quietest, richest sounding and, yes, the smartest machine of its kind. Here's how...

Advanced Fully Integrated 18 Bit Architecture

Alesis is the world leader in full custom VLSI design for audio applications, so MidiVerb 4's 20 Bit DSP engine is so advanced it eliminates massive quantities of discrete circuitry, making it a revolutionary blend of electronic design and functionality. And to insure state of the art performance, the input is sampled at the professional standard 48kHz sampling rate via 18 Bit,128 times oversampling A/D converters.

The Power of Great Sound

MidiVerb 4's superb reverb and effects algorithms are the direct result of our ten year mastery of the art and technology of sound. Dense, natural reverberation, and rich chorus, delay and pitch effects deliver unbeatable sonic performance. 20kHz bandwidth, 90dB signal to noise ratio, 18 Bit and 8 times oversampling D/A converters combine to make MidiVerb 4 perfect for even the most pristine digital recording.

Fast, Fun, Flexible

But great sound is only the beginning. You get 32 full Stereo configurations, as well as powerful independent Dual Channel Parallel Processing. Plus, a special Cascade mode allows the output of channel 1 to feed the input of channel 2 in any of 7 dual channel configurations. A large custom backlit LCD, data entry wheel and clearly labeled buttons comprise the front end of MidiVerb 4's fast, intuitive user interface. Four parameters are shown simultaneously and there's even screen help prompts to put you at ease if there's ever a programming question. You can tweak one of the superb 128 preset or 128 user programs, or start from scratch and get the sound you need in no time.

Auto Level Sensing™

No, this won't tell you if your car's on a hill. But, if you want to start mixing in a flash, or the drummer's starting the count and you just plugged in, our exclusive Auto Level Sensing feature automatically sets the input level for optimum use of MidiVerb 4's wide dynamic range, so you'll never have to trade off patience for excellent sound.

It's a MidiVerb

Of course, because it's a MidiVerb, you can modulate effect parameters in real time via MIDI, select programs, and automate your effects during mixdown with a MIDI sequencer.

MidiVerb 4 is based on a classic theme, but it's new in every way. And as always with MidiVerb, the best part is the price. See your Alesis Dealer.

and Smart

For more information on the MidiVerb 4, call 1-800-5-ALESIS or see your Authorized Alesis Dealer.
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Axiom

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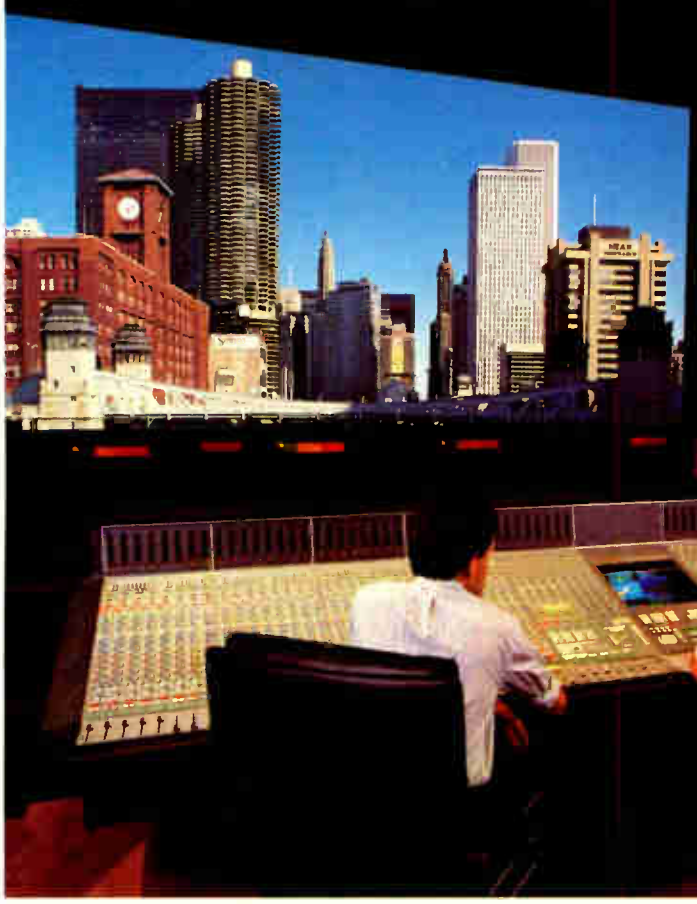

Axiom Preparation Station

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- **OPEN MEDIA INTERCHANGE**
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- Simultaneous output of master programme mix and mix stems. Configuration capabilities include a range of surround stems and stereo or mono subgroups
- Flexible routing across four separate 8-track stem mixes, plus 32 multitrack busses
- Accurate film dubber control, plus 4 serial control ports
- Optional Axiom Preparation Station (APS) provides shared access to Axiom's hard disk and I/O resources. Up to 24 tracks may be used to record, edit, pre-lay and mix material, with fully networked interchange between APS and console
- **Open Media Interchange**
  Axiom Preparation Station (APS) provides import of most major file formats

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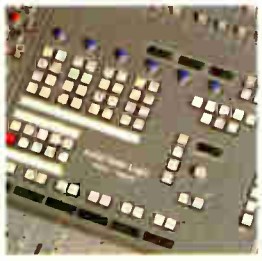

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The new PBM II series, once again, is setting new standards in the industry. Pioneering new technologies such as **variable thickness, injection molded cones with nitrile rubber surrounds** are but one fine example of our dedication to perfection. The new molded cones are stiffer than conventional cones producing more linear extended low frequency. They are better damped for reduced distortion and exhibit more naturally open and detailed midrange. They are immaculately consistent and durable for years of faithful trouble free use. From the high power polypropylene capacitors to the hardwired minimilist crossover, every component has been carefully selected for the new breed of PBM II series. When leading edge technology is so affordable, *Get Real.* Don't settle for second best.

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PROFESSIONAL RECORDING · SOUND AND MUSIC PRODUCTION

SEPTEMBER 1995, VOLUME 19, NUMBER 9

AUDIO

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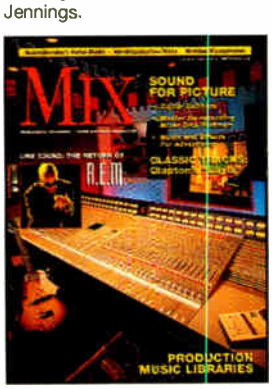
LIVE SOUND

DEPARTMENTS

Cover: Control Room "A" at the House of Blues Studio in Memphis was designed by Tom Hidley and opened in 1989. It features an SSL 4000G 56x32 with E and G Series modules, G Series computer and Total Recall. Studio A also has an API 16x4 submixer, automated to the SSL, with 550A equalizers. The monitors are Hidley-designed Kinoshita 24 Hz with TAD components. Interior design by Isaac Tigrett and Brent Spears. **Photo:** Bill Kingdom. **Inset Photo:** Steve Jennings.



STUDIOS OF THE SOUTHEAST

A special *Mix* advertising supplement on the hottest studios of Georgia and Florida follows the "Sound for Picture" supplement.

STARVED FOR LINE INPUTS? FEAST ON

Introducing the ultimate line/keyboard mixer with more inputs than nature ever intended. The new LM-3204 has 16 stereo channels and up to 40 mono inputs. In just 5 rack spaces. Serious input gluttons can add LM-3204E expander units for 80, 120 or even 160 inputs!

The LM-3204 wasn't cooked up by a marketing department. It was designed by keyboard and sequencing nuts who never have enough inputs. It's the line mixer we've always wanted in our own studios.

We cherry-picked the best features from our proven CR-1604 and then blended in new recording and monitoring capabilities. And, even though this is a "line" mixer, we garnished the LM-3204 with two of our highly-respected mic preamps for sampling, voice-overs and single/duo club acts. Yum.

This typically wordy Mackie ad is just a taste of the LM-3204's mega menu of features.

Call tollfree and then digest our brand new 40-page product brochure and Hook-Up Guide. It covers the LM-3204 in delicious detail.

More than just 40 inputs in 5 rack spaces.

Lots of companies make line mixers[1]. But only our new LM-3204 was built to handle hordes of hot inputs and still have lots of headroom.

The headroom bottleneck in any mixer is the mix amp where signals from all channels are combined. If this circuit overloads, the sound breaks up. (And bringing down the master gain control doesn't help a bit). Product specs can't express a mixer's ability to handle multiple simultaneous inputs. So you find out that you bought a line mixer with poor mix amp headroom only *after* you get it home.

Unless you buy an LM-3204. Its unique mix amp architecture lets you cram sixteen sadistically sizzling stereo inputs into the LM-3204 without getting scratchy garbage at the outputs. Need proof? Consider our CR-1604, MS1202 and 8•Bus consoles. Naturally, the LM-3204 has the same headroom pedigree.

Two mic preamps.

Mackie's mic preamp design has gained a well-deserved reputation among seasoned recording engineers — several even use a CR-1604 or MS1202's preamps instead of those on their ultra-expensive main console[2]. So we added two mic preamps (with phantom power and input trim controls) to the LM-3204. Both preamps can be patched to any of the 16 channels via standard 1/4" phone cords. Perfect for project studio sampling, live sounds or small lounge acts.

Sealed rotary controls *resist dust, moisture & other contamination.*

4 AUX sends *(2 stereo/2 mono) per channel accessed from 2 knobs.*

Signal present LEDs on every channel.

To some, –20dB "blinkies" may seem like a minor feature. To those who work with a mixer day in and day out, it's major cause for celebration.

The LM-3204 features the same "expressive" sensing design that we developed for our 8•Bus console's signal present LEDs. One famous engineer says he can practically run his board based on the behavior of our ultra-responsive LED blinkies.

Monitoring made easy.

By popular request (and our own experience), the LM-3204 has a Tape Monitor switch plus separate Control Room and Phone

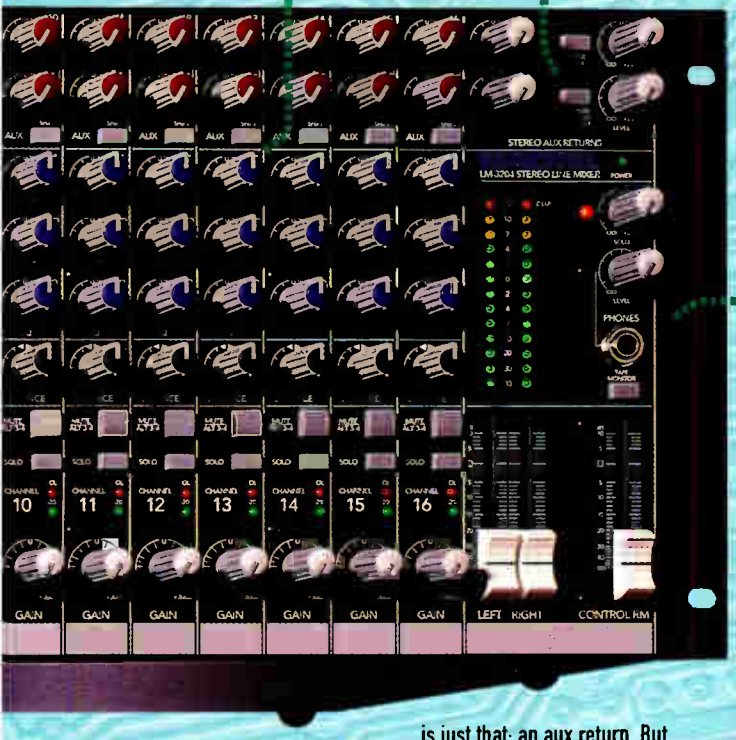
[1] In fact, we were so late in shipping the LM-3204 (what else is new?) that one of our competitors came out with *their* version before we could release the original!

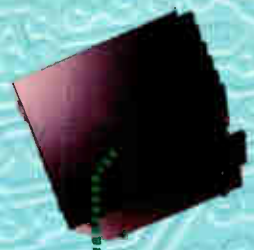
[2] Actually, we can go one better than that. What does Neumann use at trade shows to demo their finest microphones? A Mackie compact mixer with the same mic preamps as the LM-3204.

THE LM-3204.

3-band EQ. 80Hz, 2.5k and 12khz just like our famous CR-1604.

2 new Secret Buttons add mixing & monitoring flexibility (see below).





Instantly expandable.

When 16 stereo channels aren't enough, add an LM-3204E *Expander*. It's basically an LM-3204 without the master section. It connects in seconds via ribbon cable to provide 40 more inputs. And you can daisy chain two or three LM-34204Es without headroom or noise penalties.

Already making a name for itself among the pros.

It hasn't been out for long, but the LM-3204 is already distinguishing itself by the company it keeps. All the members of *Boyz II Men* are currently using LM-3204s in their project studios. *Saturday Night Live* band drummer Shawn Pelton submixes with one. Keyboard supertechs Terry Lawless (*Madonna, Paula Abdul*) and Russ Achzet (*Moody Blues, Chicago, Jimmy Buffet*) swear by their LM-3204s. Electronic percussion wizard Pat Mastellotto uses an LM-3204 on *King Crimson*'s world tour (he recently sent us a nice postcard from Paris). We could go on and on[5].

The affordable line input mixing solution.

The LM-3204 retails for $995[6]. You can add LM-3204Es for $899[6] each.

At this price, there's no excuse not to have enough line inputs. For effects or instrument submixes. As a project studio's mixer. Or for live club performance.

Call us today or visit your nearest Mackie Designs dealer.

[4] *Wet monitoring*: Monitoring with echo or delay but without actually applying the effect to the main left and right outputs.

[5] Indicates use and ownership by individuals but not specific endorsement by the group.

[6] Suggested retail price. Your mileage may vary as part of a balanced diet or when you close cover before striking. Price is higher in Canada.

Stereo AUX Return 3

Source Alt 3/4 button routes ALT 3/4 into Aux Return 3

Aux return 4

Aux Return 4 to Control Room button does just what its name indicates

Solo level control

Some of the 13-LED level indicators

Headphone level control (extra-beefy amp with lots of gain)

Headphone jack

Balance controls (these are stereo channels)

Tape monitor button

Mute/ALT 3-4 buttons

Stereo in-place Solo buttons

Rotary gain controls for each channel

45mm master L/R level faders

Separate CONTROL ROOM fader (independent of the headphone output)

monitoring outputs with their own level controls. For added convenience, we made the Control Room volume adjustment a 45mm fader instead of a rotary knob.

Both Phones and Control Room monitor the main left and right buses. If you press the Tape Monitor button, you hear the output of your tape recorder[3] (or other source plugged into the Tape In jacks). Or monitor the solo bus when any channel's Solo switch is pushed (this also overrides Tape Monitor).

LM-3204 Aux Return Bonus Switches.

Naturally the LM-3204 has our trademark ALT 3/4 extra stereo bus. It also has a special aux return circuit that lets you get even more mileage out of ALT 3/4. Normally, AUX Return 3 is just that: an aux return. But press the SOURCE ALT 3/4 button and the outputs of the ALT 3/4 bus are routed into the Aux Return 3 control and circuitry. This lets you use ALT 3/4 as a pair of submix buses...and then mix 'em back into the main L/R buses.

AUX 4 also has it own trick circuit. If we tell you that it's called the AUX RETURN TO CONTROL ROOM ONLY switch, can you guess what it does? Correct! You win a year's supply of designer earthtone patch cords.

When AUX RETURN TO CONTROL ROOM ONLY is engaged, AUX Return 4 is disconnected from the main left and right buses. It's reconnected to the Control Room Monitor and Headphone circuits. Now you can "wet monitor"[4] or play along to a cue or click feed without having it go onto tape.

[3] Speaking of taping, the LM-3204 has electronically-balanced main outputs capable of driving either –10dBV or +4dBu recorders, 1/4" TS Tape In jacks and unbalanced "RCA"-type Tape In and Tape Out sockets.

MACKIE.

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FROM THE EDITOR

The Toughest Audio Job in Show Business

There are no "easy" jobs in pro audio. Every day, thousands of pros create top-quality audio under some of the most difficult conditions imaginable. And "difficult" doesn't necessarily refer to arctic blizzards or Sahara sandstorms. Sometimes a difficult gig is no more exotic than experienced hands calmly patching around equipment malfunctions so that the client is unaware of a problem. Other situations may be as simple—yet nonetheless challenging—as a third-floor load-in when the freight elevator is out of commission. Show-biz glamor fades pretty fast when you're trudging 400-pound amp racks up six flights of stairs.

A variety of factors—some of them entirely unrelated to audio—can create arduous conditions, such as rigorous touring schedules or mediating personality (and ego) disputes in the studio. Add to this the pleasures of roadhouse food, lumpy hotel mattresses and erratic work hours, and you may be reaching for Kaopectate—rather than a Budweiser—at the end of the day.

Certainly, capturing location audio in the midday sun of the Serengeti is no picnic, but from a technical standpoint, the most complex and difficult job in audio may be live sound for musical theater. Engineers typically have to mix an orchestra, juggle dozens of vocal channels, perform split-second muting of multiple wireless mics as performers run on- and offstage, trigger sound effects, provide SMPTE sync for film and multi-image cues and deal with countless scene changes with absolute precision, while making it all seem natural and transparent to the audience. Unfortunately, theater sound mixers rarely get the accolades they deserve. I recently attended shows in London (*Sunset Boulevard*) and New York (*How to Succeed in Business Without Really Trying*), and I was thoroughly impressed by the mixers' dedication and professionalism in handling the toughest audio job in show business. Bravo!

Of course, audio's second toughest job is working at *Mix*, and we've recently expanded our editorial staff. Our new technical editor is Chris Michie, a technical writer and journalist whose studio and live sound engineering credits over the past 25 years include Pink Floyd, Roxy Music, Burt Bacharach, Blondie, Sarah Vaughan, Fripp & Eno and many more. Coming aboard as editorial assistant is Sarah Jones, a recent graduate of the sound recording technology program at the University of Massachusetts-Lowell. I'd also like to acknowledge the contributions of former assistant editor Jeff "Guido" Forlenza, who has left after five years of working at *Mix*. Jeff was instrumental in developing our "Coast to Coast" section (now handled by assistant editor Adam Beyda) and will continue to write on a freelance basis.

On another topic, *Mix* presents its bi-annual "Sound for Picture" supplement in this issue. Highlights include articles on the emerging technology of digital dubbers; the use of production music to score HBO's *Dream On*; and an in-depth interview with master re-recording mixer Dick Portman, whose career has spanned five decades and includes *The Godfather*, *The Deer Hunter*, *On Golden Pond* and, most recently, *Forget Paris* and *The Fantasticks*.

Pass the popcorn.

George Petersen

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Now's the time to use Ampex 467 R-DAT. Ampex 467 delivers the highest quality and greatest consistency of any mixdown tape. Period.

Maybe that's why more people trust Ampex for their analog and digital needs. Or why more artists, engineers and studios go gold on Ampex than on all other tapes combined. After all, our state-of-the-art, award-winning tapes have set the standard in mastering for decades.

We've even set a new standard for packaging based on your requests for better storage space. Our DATpak™ contains space for two tapes, storage room for track sheets and notes, and a plastic lockable tray to store the cassettes. Our new Album DATpak features a tray for 12 R-DAT cassettes and storage room for your project notes and floppies. All in a package that conforms to your studio shelving.

Of course, Ampex 467 is backed by a team of field service engineers known throughout the industry for responsive customer service. For more information, or the name of your nearest distributor, call **800 227-8443.**

Ampex 467. Stay on track for the gold.

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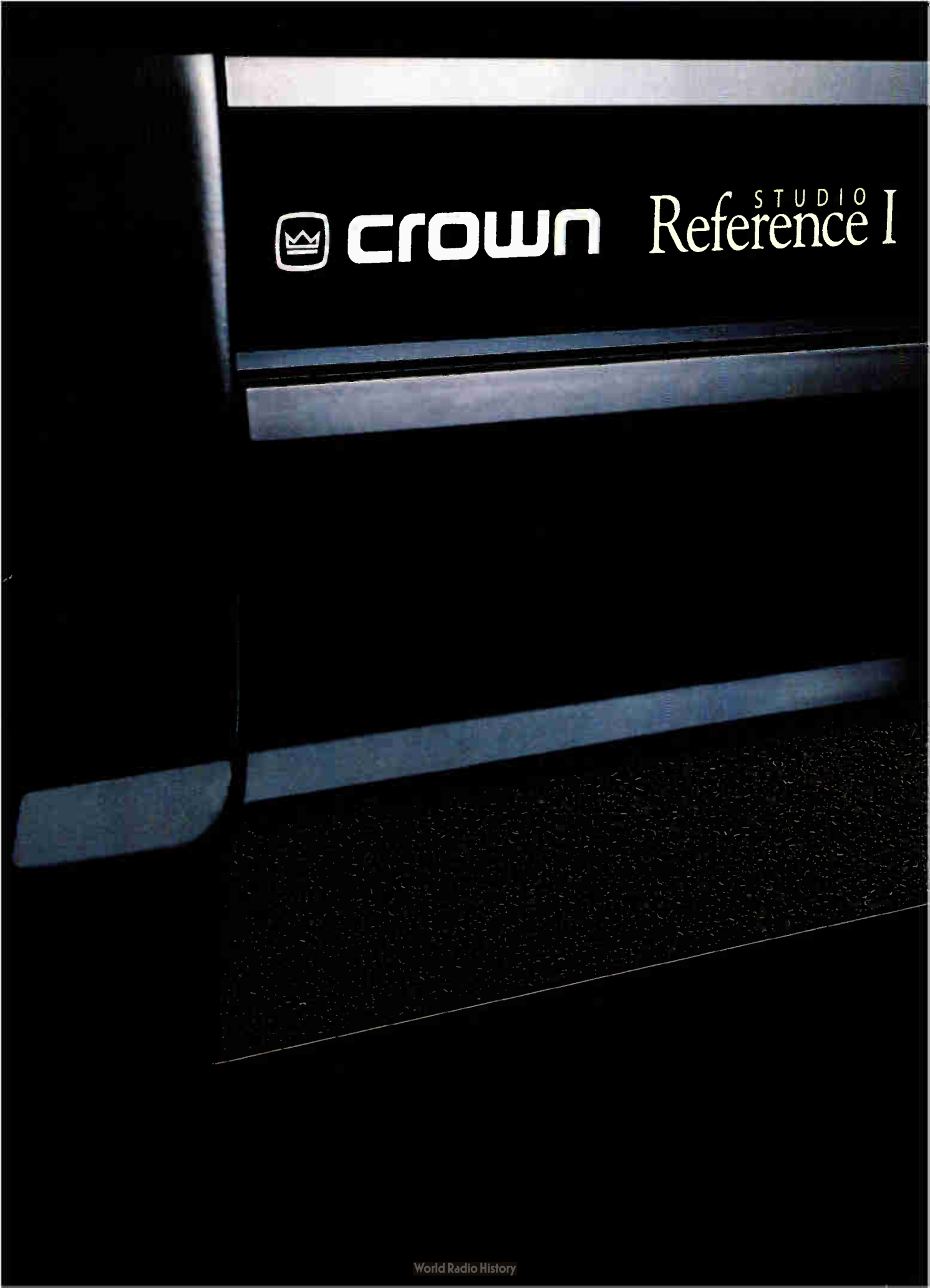

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In short, the Studio References are the best amplifiers for super-critical evaluation in the studio or home. And, they're backed with Crown's exclusive Three Year Full No-Fault Warranty.

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CURRENT

PRODUCTS SHINE AT SUMMER NAMM

by George Petersen

With a record-breaking heatwave blasting through the nation's midsection, mid-July was probably not the best time to be wandering around a music trade show in Nashville. The attendance at this year's Summer NAMM was slightly below last year's show, yet 450 exhibitors and 15,000 participants did attend, proving that not everybody was at the beach that weekend.

From a new-technology standpoint, NAMM offered plenty of action. The most talked about product was E-mu's Darwin, a stand-alone, disk-based 8-track recording/editing system in a compact three-rackspace enclosure. For additional tracks, multiple Darwin units can automatically sync to each other, to a MIDI sequencer or to an ADAT/DA-88 system. Other standard features include standard tape-style transport controls, a jog/shuttle wheel, S/PDIF digital I/O, balanced analog I/O, nine levels of "undo" and a 64x240 LCD status screen that uses a graphic editing interface similar to that used on E-mu's Emulator IV. Options include an internal 1GB hard disk (22 minutes of recording at 44.1 kHz), an MMC-SMPTE chase/sync controller card, TDIF and ADAT lightpipe digital I/O and a SCSI interface for system control via a Macintosh. Darwin begins shipping next month and is priced at $3,200 ($3,800 with 1GB drive).

E-mu's Darwin

New tube processors were hot. Inward Connections (distributed by AXI of Rockland, Mass.) demonstrated Vac Rac, a pro series of rackmount tube outboard modules, including mic preamps, compressor/limiter, EQs and direct boxes. Though the aluminum-slab front panels, gray cosmetics, analog meters and large black knobs give the units the appearance of something that was pulled out of a submarine, these are high-performance devices for serious pro users. Groove Tubes debuted its CL1 line of single-rackspace mono and stereo tube compressor/limiters priced from $1,095, along with a new series of tube mic preamps priced at $345 ($545 for the phantom power model). And Applied Research & Technology set a new price mark with its Tube MP, a $149 tube-based mic preamp built into a fuzzbox-sized chassis.

But DSP still rules the roost. Sony's DPS-V77 ($1,695) combines the power of its DPS-R7/D7/F7 and M7 into a single unit with the ability to seamlessly morph or crossfade between effects. The DPS-V77 also includes XLR and ¼-inch analog I/O, along with S/PDIF and AES/EBU digital I/O. Speaking of digital ports, DigiTech introduced an optional card that adds AES/EBU and S/PDIF interfacing to its popular Studio Vocalist harmony processor. And Kurzweil is set to begin shipping its DMTi (Digital MultiTrack interface), a box that performs real-time data conversion between the Kurzweil K2500 keyboard and Tascam TDIF-1, Alesis ADAT lightpipe, AES/EBU and S/PDIF digital formats.

Of course, NAMM just isn't NAMM without musical instruments. Korg's Trinity Music Workstation DRS (Digital Recording System) is a series of keyboards that offer onboard 16-track MIDI sequencing as well as an optional disk recording board for tracking directly to an external hard drive, with S/PDIF I/O, 4-track playback, automated mixing and sync to outboard MIDI devices. ADAT lightpipe and SCSI interfaces are either standard or optional, depending on the model selected.

—CONTINUED ON PAGE 16

KOOPER TO EMCEE TEC AWARDS, PRESENTERS ANNOUNCED

Al Kooper will be the Master of Ceremonies at what could be the biggest-ever Technical Excellence & Creativity Awards, scheduled for Friday, October 6 (the first night of the AES Convention), at the Marriott Marquis in New York City. Kooper, founder of the original Blood, Sweat & Tears and currently performing with The Rekooperators, has recorded with Dylan, Hendrix and the Rolling Stones, among many others. Scheduled awards presenters at press time include producer Tony Brown, producer and 1992 Hall of Fame inductee Phil Ramone, engineer Roger Nichols, musician Donald Fagen, renowned session bassist T.M. Stevens, film scoring engineer James Nichols and, from the CBS Late Night Orchestra, bassist Will Lee and bandleader Paul Shaffer.

The TEC Awards will begin with a reception, followed by dinner and the ceremony. Final preparations are now being made, and tickets—which will *not* be available at the door—are selling fast. To order, call Karen Dunn at (510) 939-6149 or fax information to (510) 939-1022.

TWO PROS WHO KNOW GREAT SOUND.

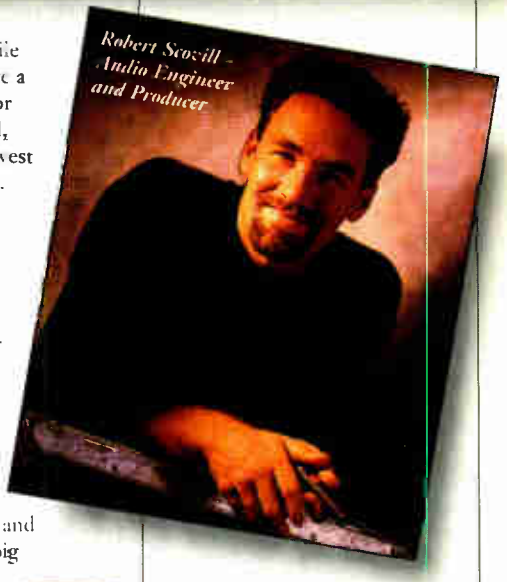
TWO MICS THAT MAKE THEM VERY HAPPY.

Mike Frondelli, Director of Capitol Records Studios, has a connoisseur's mic locker, including more than 50 Neumann mics dating back to the 1940's. Newest in the collection: The mic Mike calls "the working man's Neumann," the TLM 193. Because it sounds so good in so many applications, Frondelli recommends the TLM 193 as "the one mic to have" for Capitol acts setting up project studios.

The TLM 193 is a stripped down, cardioid-only version of our famous TLM 170. It provides oodles of headroom, has virtually no self-noise, and can immediately give your project studio that professional sound (particularly on vocals) that you've been missing. (By the way, the TLM 193 has become our biggest seller.) It carries a retail price of less than $1500.


TLM 193

Robert Scovill, live sound stalwart and winner of three TEC awards for Live Sound Excellence, knows a great microphone when he hears one. He has toured as the front-of-house mixer with bands like Rush, Def Leppard and most recently Tom Petty. "I am using the new KM 184 both out on tour and at MusiCanvas." (Robert's studio in Scottsdale.) "The KM 184 carries all of the Neumann signatures, and I have had great success on a wide variety of sources, from the subtleties of violin to the extremes of distorted guitar." The KM 184 is perfect for instruments of all kinds, and excels at overhead drum miking and capturing the elusive acoustic guitar. For professional quality at less than $700 each, a stereo pair of KM 184s can easily be a part of ANY studio.



Let's face it. While Neumann mics have a stellar reputation for rich, opulent sound, they are not the lowest priced mics around. Why? Because we have to ensure that our microphones satisfy even the most demanding engineers in hypercritical recording environments. But, we *have* found a way to take a few of the bells and whistles off a couple of our mics and still give you that big (HUGE) studio sound on a project studio budget.

The bottom line is this: before you go dropping big cash on outboard gear trying to make your studio sound good, consider the most important part of the signal path, your microphones. The only way to get great sound *out* of your studio is to *capture* great sound. And no other microphone captures sound as well as Neumann . . . not even close.


KM 184

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INDUSTRY NOTES

John Carey joined **Euphonix** as VP of marketing, based out of corporate headquarters in Palo Alto, CA...**Audio-Technica U.S. Inc.** (Stow, OH) recently promoted **Peter T. Sabin** to manager, marketing development...West Hollywood-based **Audio Intervisual Design** named HHB Communications Ltd. (London) as exclusive UK distributor for the **Brainstorm Electronics** product line...**Galaxy Audio Inc.** of Wichita, KS, acquired the **Reba** line of portable sound reinforcement products and other assets of **Mason Electronics** (Olathe, KS)...Foster City, CA-based **Otari Corp.**, in conjunction with **Bill Ray** and **John Alderson** (formerly of Studio Supply in Nashville), recently opened a Nashville factory-direct sales office at 209 Tenth Ave. South, Ste. 210, Nashville, TN 37203. Phone (615) 255-6080; fax (615) 255-9070...**Frank Cates** was appointed national sales manager at **Stewart Electronics** (Rancho Cordova, CA)...As part of an organizational restructuring, Seattle-based **Lone Wolf Corp.** brought on board **Brian Hilgendorf** as CFO and VP of finance...**Lawrence R. Kaplan** joined **Sony Electronics** (Montvale, NJ) as senior VP of broadcast systems within its Business and Professional Products Group and will be based in San Jose, CA...**Research Technology International (RTI)** of Lincolnwood, IL, named **Terry Brown** as sales manger, eastern region, for RTI and **Lipsner-Smith** products. RTI recently celebrated 25 years of service in the industry...**Roadworx Total Production Services** welcomed **Bill D. Magod** (as production operations manager) and **Jeff D. Montgomerie** (as sales representative) to their Greensboro, NC, office...**TimeLine Vista, Inc.** (Vista, CA) announced the opening of its first European sales, marketing and customer service support center in Wallingford, Oxon, near London. **TimeLine Europe** will be managed by recently-appointed European operations manager **Chris Hollebone**. **Mark Lever** joined TimeLine as western regional sales manager and will direct an additional new sales and customer support center, located at 12711 Ventura Blvd. Suite 170, Studio City, CA 916304. Phone (818) 763-9570; fax (818) 763-2187...**Bill Threlkeld**, formerly of JBL Professional, accepted a position at **The Phelps Group** (Los Angeles) as PR specialist for MI and pro audio accounts...**Sony Disc Manufacturing** announced the opening of a new facility at 123 International Way, Springfield, OR 97477-1047. Phone (503) 988-8000; fax (503) 988-8099...**Eric Mangum** has been hired to coordinate marketing at Salt Lake City-based **Rolls Corp.**...Recent hires at the lighting division of **Group One Ltd.** (Farmingdale, NY) include **Tina Miranda** as western territory sales representative and **Patrick Dierson** as customer service technician...**DOD Electronics'** international division, headquartered in Amherst, NH, has named **Greg Héritier** as its newest international sales manager...South Bend, IN-based **Bullfrog Inc.** promoted **Carl Putman** to chief engineer and hired **Don Happ** (previously a licensing rep for **ASCAP**) as sales coordinator. Bullfrog also set up a network of international distributors and is expanding its product line...**Marshank Sales Co.** announced the addition of **John B. Borja** to its staff. The Los Angeles sales firm recently celebrated its 75th anniversary...**FirstCom Music** in Dallas promoted **Ken Nelson** to senior VP and executive producer, **Carol Riffert** to VP/general manager and regional managers **Peggy Kramer** and **Kyle King** to North/East and South/West division managers...**Online Marketing** (Wadsworth, OH) appointed **Bill Rowe** to the newly-created position of marketing manager...Quincy, IL-based **Harris Corp.** promoted 25-year veteran **Chester A. Massari** to vice president/general manager of the company's Broadcast Division...**Bag End Loudspeaker Systems** (Barrington, IL) appointed **Marketing Concepts**, of Irving, TX, as the company's newest rep firm...**Big Media Circus** moved its corporate headquarters to 110 Lauderdale, Nashville, TN 37205. Phone (615) 383-6900; fax (615) 383-3080. ■

—FROM PAGE 12, CURRENT

Korg's new Prophecy is a 37-key solo synth that can create and combine various sound models, including physical modeling and analog and Variable Phase Modulation synthesis techniques. Alesis launched its QS6, a 61-note, 64-voice polyphonic synth based on 18-bit sample ROM and QS Composite Synthesis.

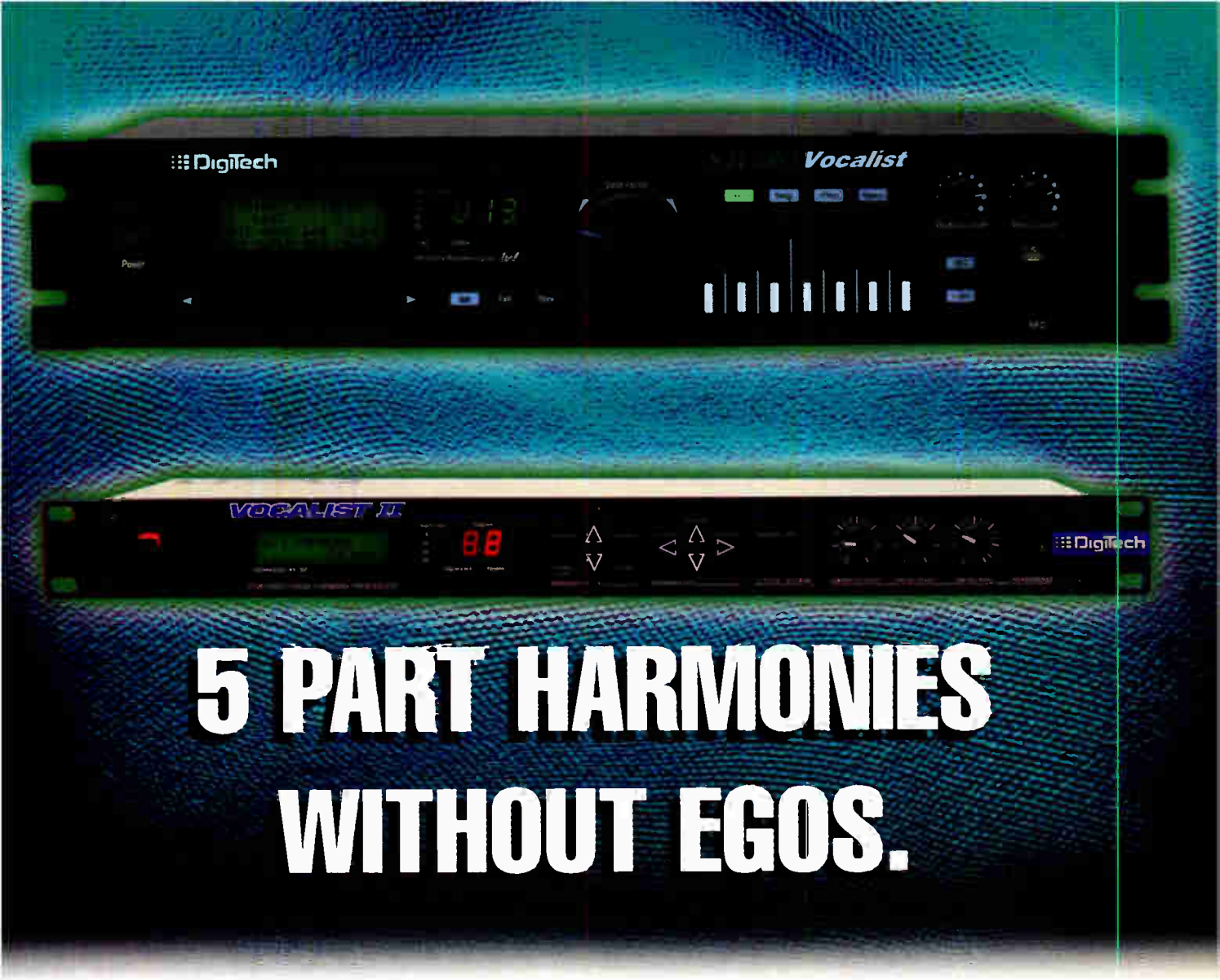
Ironically, the biggest buzz at NAMM wasn't products at all, but the number of companies announcing or planning to provide home pages and Web sites on the Internet. Meanwhile, a number of companies, such as Baudway Communications (617/450-0060) and MusicPro (615/848-5321), have emerged to offer Internet communication design services for the music and pro audio industries.

PRODUCERS' ORGANIZATION RE-PRO PLANS AES FORUM

Re-Pro, the U.K.-based Guild of Recording Producers, Directors and Engineers, plans to host a reception and forum at the October AES convention in New York. The forum, entitled "Producers & Performance Income," is aimed at increasing awareness of changes in both technology and the law that could affect producers' royalty income.

More to the point, the reception, which is co-sponsored by 3M, and the forum are a potential beachhead for Re-Pro in the U.S., where producers have historically resisted organizing attempts in the past. Re-Pro's vice chairman, Peter Filleul, told *Mix* that both technological and legal developments are going to affect American record producers in ways they're not fully aware of yet. "They're going to have to have their awareness enhanced about a number of things that are going to affect how they get their revenues," said Filleul. "We hope to show American producers how their British counterparts have benefited from organizing themselves."

—Dan Daley



5 PART HARMONIES WITHOUT EGOS.

Now there are vocal processors that don't make the human voice sound like robots and chipmunks. DigiTech's Vocal Harmony Processors are designed for demanding musicians who need high quality harmonies, vocal thickening, and pitch correction. They let you easily create harmonies with real human characteristics like scooping, vibrato, Gender Bending, even random pitch fluctuation and timing imperfections. Recording those harmonies won't take multiple passes, either - just lay down a track, then play it back in 2, 3, 4 or 5 part harmony, in a variety of styles.

With the Studio Vocalist and the Vocalist II's simplified user interface you will be producing superb vocal tracks both in the studio and on the stage. Without them, your five-part harmony may sound a bit squirrely.

STUDIO VOCALIST

- XLR & 1/4" inputs and outputs
- 5 separate outputs for each voice
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- Expanded song list
- Keystroke MIDI Out for automation
- Humanizing feature
- Vocal tuning reference
- Optional Digital I/O
- 99 User and 99 Factory presets
- 48V Phantom Power
- 48kHz Sample rate
- Gender Bending

VOCALIST II

- Single Rack Space
- XLR & 1/4" inputs
- Stereo 1/4" outputs
- Programmable Portemento and Vibrato
- Intelligent chordal, scalic, and chromatic harmonies
- Pitch randomization on each harmony
- Song List
- Full MIDI implementation
- FS300 Included

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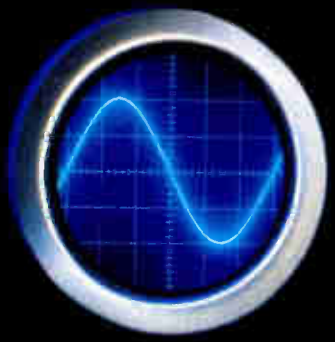


AUDIO INTEGRITY

You are busy trying to create the perfect mix, so we'll get right to the point. The new Sony DPS-V77 is a single rack powerhouse – a digital multi-effects signal processor that combines the best of our DPS Series, for an impressive array of effects including reverb, delay, modulation, dynamic filtering and more. The V77 also offers balanced and unbalanced analog and digital I/Os, with high resolution 24-bit A to D, 20-bit D to A converters and Sony's proprietary 32-bit digital signal processing. Result: great sound in, better sound out.

DUAL EFFECTS ARCHITECTURE

With 50 effects per block, the dual block architecture of the DPS-V77 makes it extremely flexible, since it allows for various serial and parallel configurations. Each block is equipped with a switchable pre or post effect EQ. You'll find 198 user presets in addition to 198 factory presets. You'll also discover several new, ear-opening effects, from intelligent pitch shifting to irregular delays, to mono/stereo conversion, and three-dimensional spatial placement. The most important feature, however, may be what this unit *doesn't* come with.

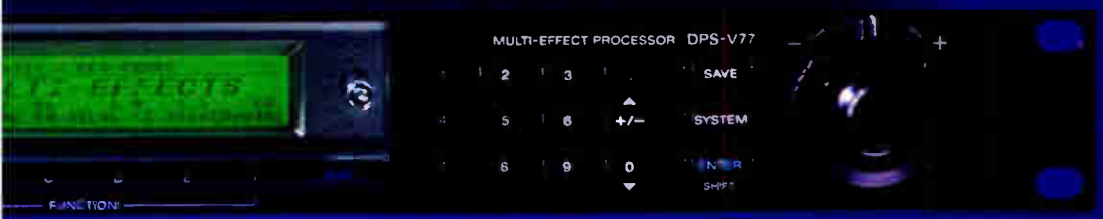
IT'S A SIGNA

IT'S A GARBA

MORPHING

Nietzsche once said, 'get rid of the junk you don't need.' Or something like that. Anyway, sound philosophy for life is sound philosophy for signal processors. So, that annoying drop-out you get switching

L PROCESSOR.



GE DISPOSAL.

between effects? It's history. Eliminated. Toast. Seamless transition – say, between the tail end of a reverb into a chorus – is now reality. With this 'morphing' function of the DPS-V77, a new effect (like a chorus or flange) can begin while a current effect (like a reverb or delay) is decaying, giving you from 0 to 10 seconds transition time.

USER FRIENDLY

Take a good look: nice, big LCD display and "jog/shuttle" knob. Numeric key pad, descriptive icons. Assignable direct access keys, located where they ought to be. Call up a preset and up to 6 of your most frequently used parameters are there instantly. All this, plus full MIDI control. So work flows quickly, smoothly, easily. As easy as calling 1-800-635-SONY, ext. DPS, for more information.

Imagine. No more fumbling, grumbling, mumbling with a whole rack of trouble. No more extraneous junk. If only the rest of your problems were this easy to get rid of. You know, flush the water, switch and whoosh. Down the drain in one last gurgle. Goodbye bills. Goodbye mortgage. Goodbye pain. Goodbye.

SONY

by Stephen St.Croix

THIS ISN'T WHAT I EXPECTED

Well, well. This isn't part two of the subwoofers column that you expected. It seems that not all the subs showed when *I* expected, so in the grand American Business tradition that we all know and love, I pass the savings on to you.

First, on a wholly unrelated note, several people (including the *Mix* editors) have told me that they didn't get the title joke in my unbelievably wordy June '95 column: "Elsie, Dee Projector Ees Here..." Do you? *LCD Projector* Is Here? Have I gone too far?

Now, on with it. This month is an update on a classic St.Croix theme: Speed, Power and the American Way. Here we go (oh, yes, you need to know that I'm a Mac guy).

Computers got faster. Thank you very much. Those of you in a hurry can stop now and walk away with enough information to hold a trendy techno-conversation at Spago's or on your next commuter flight, but there's more.

Pentiums (remember: 1+1 = 1.99422132?) are showing up with higher and higher clock speeds, and the new smaller architecture has addressed the embarrassing size and heat problems of the first generation quite nicely. The newer machines with these engines are cheaper than kitty litter (I admit that my propensity to import litter from France may be skewing this reference) and faster than Macs. I bought one.

Heresy? Sacrilege? Well, I guess you could go one of three ways on that, kind of like a Saturday night on the west end of Sunset. Windows readers might feel that I have finally seen the light, Macophiles will surely feel that I have abandoned the cause and should now be hunted down like

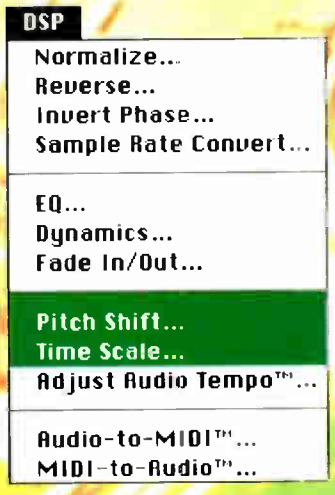
ILLUSTRATION: AD McCAULEY

Studio Vision Pro 3.0

"The most impressive software demonstration took place at Opcode's booth . . . Studio Vision Pro 3.0 in action . . . even the most hard-boiled studio pros nodded their heads in surprise."

—**German Keyboards Magazine**, May 1995 Musik Messe Report

Say you want to make your song a third higher, but the live horn section has already been digitally recorded. Just choose Pitch Shift and play a note a third up on the keyboard. Now the horns are a third higher and the timing remains unchanged!



Shifting the pitch of a digital audio track instantly, is just one of the ways that Studio Vision Pro 3.0 simplifies production. Pro 3.0's built-in musical DSP interface lets you manipulate digital audio as if it were MIDI data—pitch shifting and time compression and expansion become simple, musical edits. Contact us today and we'll show you how Pro 3.0 shifts paradigms from the technological to the musical, so you can concentrate on creating.

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the traitor that I am, and the rest of you are probably wondering what all this silly platform feuding is about, and why we don't all just get lives.

Okay, here's the deal on Pentiums as I see it. I spent the past year developing Spectral's new Prisma Music, a DAW that runs under Windows. Because this was my first Windows project, I went through the initial months in considerable discomfort, but as time went on, that discomfort evolved into a much more clearly defined...pain. Windows, my friends, is one terrible, stupid development environment. In fact, my solution was to wake up the shell, and then totally ignore the environment in every possible way—Prisma Music has no windows, no menus, nothing to tell you it's a computer at all. I found the Windows environment so useless and crippled that I chose a virtual reality approach, a complete physical emulation. Computer-literate users always make the same assumption when they see it, asking some form of the following: "How did you make that Mac so fast?"

Well, I didn't. They are seeing the shocking screen speed that a good graphics card on a PCI bus can deliver with a fast Pentium. I must make clear that I personally wrote none of the evil speed code that actually makes it fly; I just designed the human interface and operational concepts, along with the graphics. I can't *imagine* coding in that environment and walking away sane. In fact, I know a few guys who did it and didn't. I was, however, forced to learn the hardware for this project, and the bottom line is that this platform has a lot to offer for this type of application. In fact, I would go so far as to say that it is clearly superior to anything that I could do on a Mac with existing Nubus audio/DSP cards. And that is why I say it is faster—well, for Prisma Music and live action shoot 'em up games like Doom. A little $225 2-Meg Diamond Stealth 64 graphics card on a fast Pentium's PCI will blow the bits off of any Mac/Nubus solution, at any price (and high-performance graphic cards for the Mac can easily cost several thousand bucks). It's disgusting. A Pentium-running-Windows machine is cheaper and faster than a Mac but is too stupid and arcane to even automatically recognize new cards when they are put in. You have to change jumpers, chase conflicts, move, rename, remove and install new drivers every time you add a drive, a sound card or anything. Give me a break!

A Pentium-running-Windows machine is cheaper and faster than a Mac but is too stupid and arcane to even automatically recognize new cards.

A Mac always acts the same: You throw in any card you want and turn it on. That's it. The Mac figures it all

—CONTINUED ON PAGE 176

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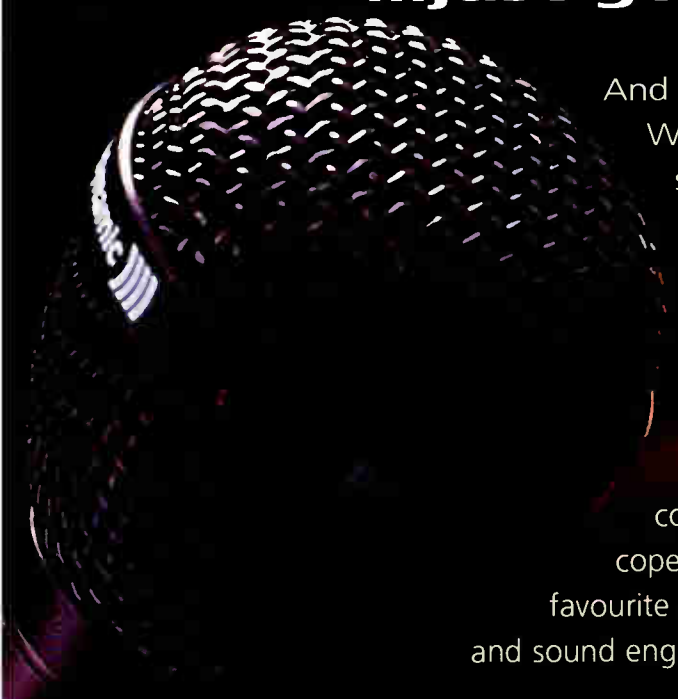
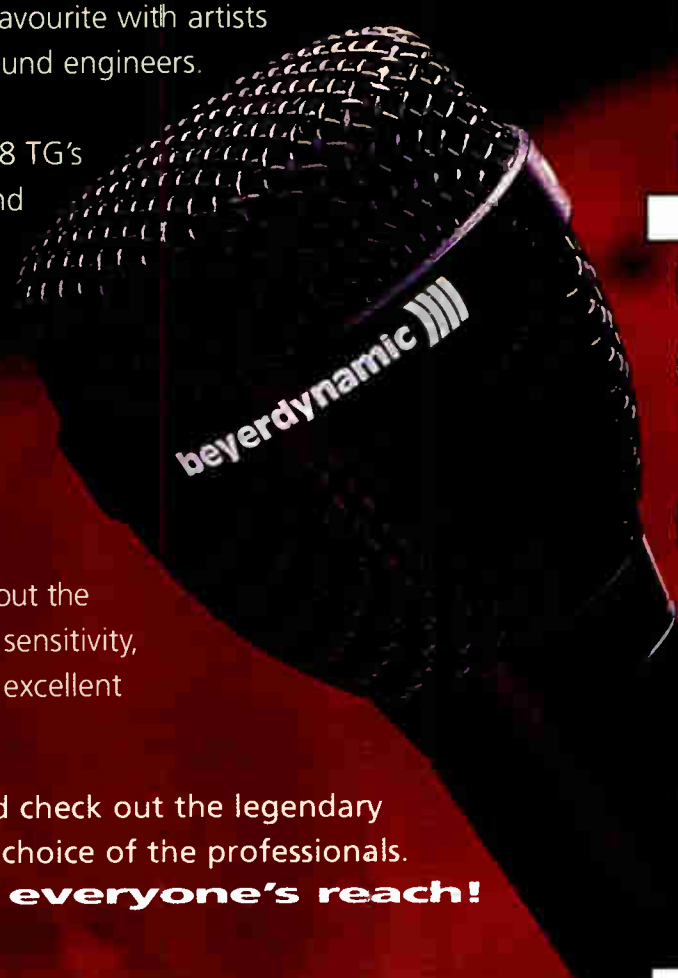


And that's *not* just our opinion. Why do 70% of world tours specify the M 88 TG in their equipment schedules? Pure quality of sound and dependable performance.

The M 88 TG's stunning performance together with a construction tough enough to cope with the road make it a favourite with artists and sound engineers.

On vocals, the M 88 TG's low proximity effect and hypercardioid response combine to give outstanding performance with fantastic feedback rejection while the high SPL capability provides a clean, clear signal with a unique sound.



For instrument use on stage, check out the M 69 TG. Its low proximity effect, high sensitivity, and extended frequency response give excellent results in almost every environment.

See your dealer today and check out the legendary M 88 TG and M 69 TG. The choice of the professionals.

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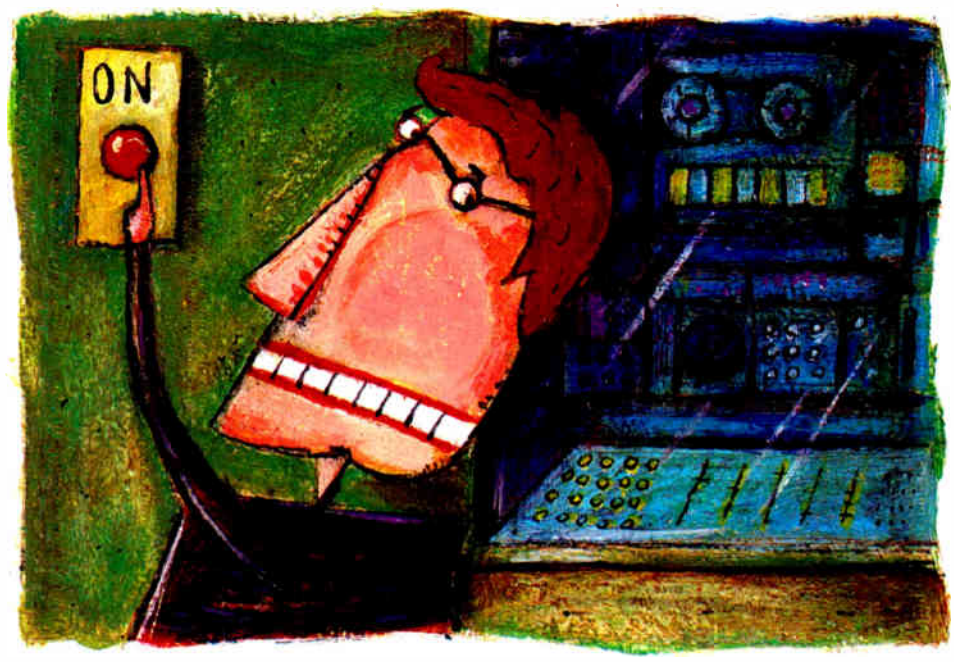
by Paul D. Lehrman



FEAR OF FRYING (MY STUDIO)

LET'S STOP PROGRESS BEFORE IT STOPS US

I get a distinct sense of dread these days whenever I fire up my home studio. I feel the same when I answer the phone and one of my students is on the line. Something horrible has gone wrong, or is about to go wrong—something that will take hours, if not days, to track down and fix, that will have me arguing with a round robin of customer support people, that will make me miss a deadline or cause my students to blow a large part of the semester.

This dread doesn't come from any change in my medications or the makeup of the current U.S. Congress. It's a result of the fact that the past 12 months have been a banner year for technical disasters of all kinds. My entire studio was down for six weeks, and it cost several thousand dollars to get it running again. In the college courses I teach, students who are supposed to be mastering sequencers, synthesizers, patch editors, samplers, synchronizers and hard disk systems, this year learned primarily about bugs, crashes, incompatibilities, trashed files and how much hair their instructor can pull out in one session.

Oh, I'll be the first to argue that serious students of the recording arts need to learn this stuff: Technical failure is part of the real world, and being prepared to deal with it will make the students highly valuable to future employers. But this year, the balance between the amount of time spent creating music and the time spent recovering from disasters shifted radically, so by the end of the semester, it felt like very little *real* work had been done.

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*Mike Lethby, *Audio Media Magazine*

INSIDER AUDIO

Down time in their studios has increased, while those intervals in which they can actually *do* work are getting briefer and further apart. It's ironic. Years ago, many of us who struggled with primitive software and hardware were telling anyone who would listen that computers would someday save all of us time and money, allowing us to realize all of our audio dreams. Now that everyone has bought into that idea, and the entire music industry is totally dependent on computers to accomplish even the slightest task, those very computers are in danger of making it impossible to produce anything at all.

How did this happen? I see three general principles at work that have recently achieved a kind of convergence: the "infinite upgrade spiral"; the "we can't test everything" syndrome; and the "we have to do it first" mantra. For the people who design and sell the tools we use, these principles may represent lots of fun and profits, but to those of us who have to use them, they are poison.

Here's how the first one works: You buy an upgrade for a piece of software, let's say a digital audio editor. You install it on your computer, only to find that in order to get it to run, you need a newer version of the computer's operating system. After you install that, you find that all of the customizations you've done to your computer over the past five years—the fax mailer, the network sharer, the E-mail gatherer, the custom keys, the automatic backup—are no longer usable. You have to get new versions of all of them, then re-install and reconfigure them one at a time.

But the new editor, combined with the new custom applications and the new operating system use more memory than the old versions, and so you have to double your RAM. You shell out for the memory (which costs an order of magnitude more than the software upgrade), but then you discover that your computer doesn't see all of it, because when its ROM operating system was designed, it had a RAM ceiling on it. Five years ago, that ceiling was plenty high, but today it's pathetic. Looking through the back pages of a hacker magazine, you find a small company in East Overshoe that will trade your computer logic board for a used logic board from the

—CONTINUED ON PAGE 207

Mr. Q. keeps adding new effects to the M5000

The M5000 Digital Audio Mainframe is unlike any other effects processor you have ever seen. By combining TC DARC™ technology with the skills of the best signal processing software engineers around the world, we have created the perfect mix of effects you have access to in the M5000 today.

But what you see is not what you get - you get more! The unique design of the M5000 hardware platform allows for future upgrading of both the software and hardware aspects. It will far outlast any other signal processor you own or can buy today.

Operating the M5000 is a breeze and upgrading it couldn't be simpler. All M5000 owners receive regular, easy to install, software upgrades - featuring the very latest state-of-the-art effects. For example, software release V1.15, our most recent package, includes a comprehensive 4-band Parametric Equalizer, the Digital Toolbox™ option, SMPTE time code patch change and much more! Add to this hardware upgrades like the impressive ATAC Remote Controller and you have a package that is unbeatable.

To some it may look like any other effects processor - but you know better. Call us for a full demonstration 1-800-738-4546 (ext 395)

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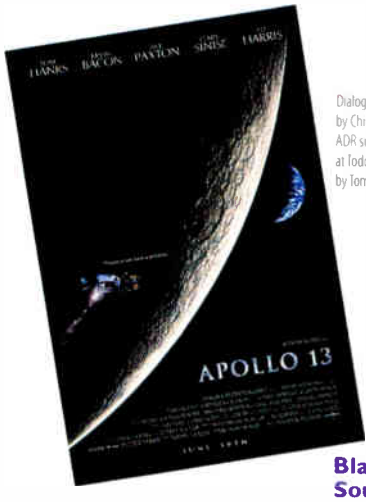
Multimedia: The New Frontier

Star Trek: A Final Unity Editing by Mark Waldrep, Pacific Coast Sound Works.

Creating sound for the Final Frontier was, well, a cosmic challenge. "With over 10,000 sound files and 20 hours of original material, Star Trek: A Final Unity was easily our largest and most complex project. The Sonic system allowed us to edit, manage and complete the project on time and in budget." Mark Waldrep, Pacific Coast Sound Works.



Dialog editing supervised by Chic Ciccolini at Hastings Sound ADR supervised by Lisa J. Levine at Todd AO/East, 20-bit music editing by Tom Drescher, Wonder Dog Music

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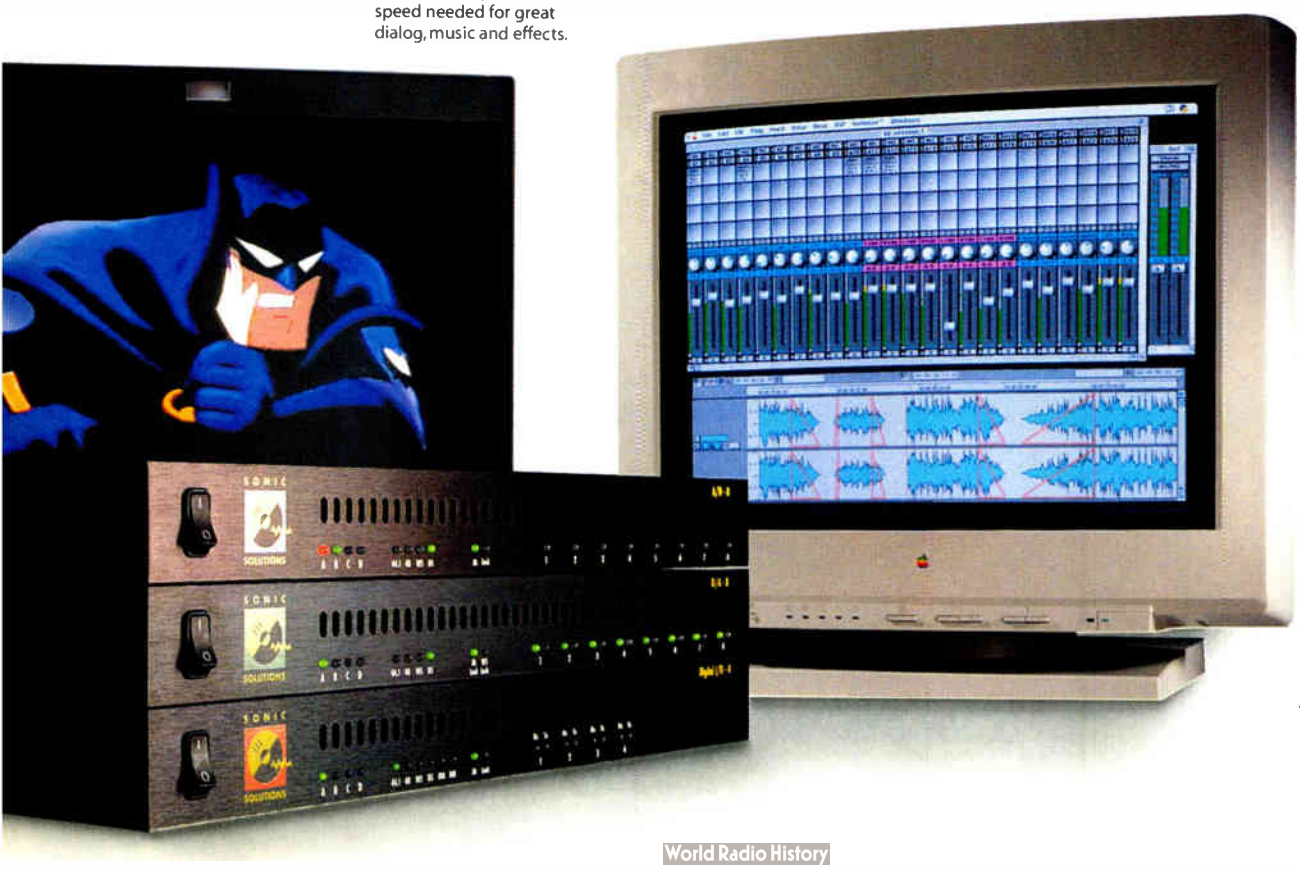
About the only problem *Apollo 13* didn't encounter was how to create great sound for the production. Their solution? Sonic. From the moon to *Bullets Over Broadway*, *Hoop Dreams*, *Just Cause* or *The Jungle Book*, Sonic delivered the power and speed needed for great dialog, music and effects.



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The Lion King
Academy Award, Best Soundtrack
Edited by Bruce Botnick, Pacific Ocean Post

The Sounds of Music

Great music and Sonic editing add up to award-winning CDs. Full 24-bit data, precise editing and superb sound quality yield stunning results, kudos and awards. It's no coincidence that over half of this year's Grammy nominees were edited on Sonic Systems.

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PRODUCTION SICKNESS SECRETS REVEALED

Sometimes weirder is better in the studio, and the really cool stuff isn't in any manual.

BY RICK CLARK

We've been told that the *Mix* recording applications features provide many constructive and useful ideas for all you budding (and veteran) engineers and producers. We've discussed compression, building mixes, miking bass, percussion and tuning rooms (among other topics). This time out, we decided to let a few bold souls share their less-than-correct methodologies for achieving desired production results. Some of the folks we approached were amused. Some wouldn't dare share production sickness secrets, preferring to stay in the closet.

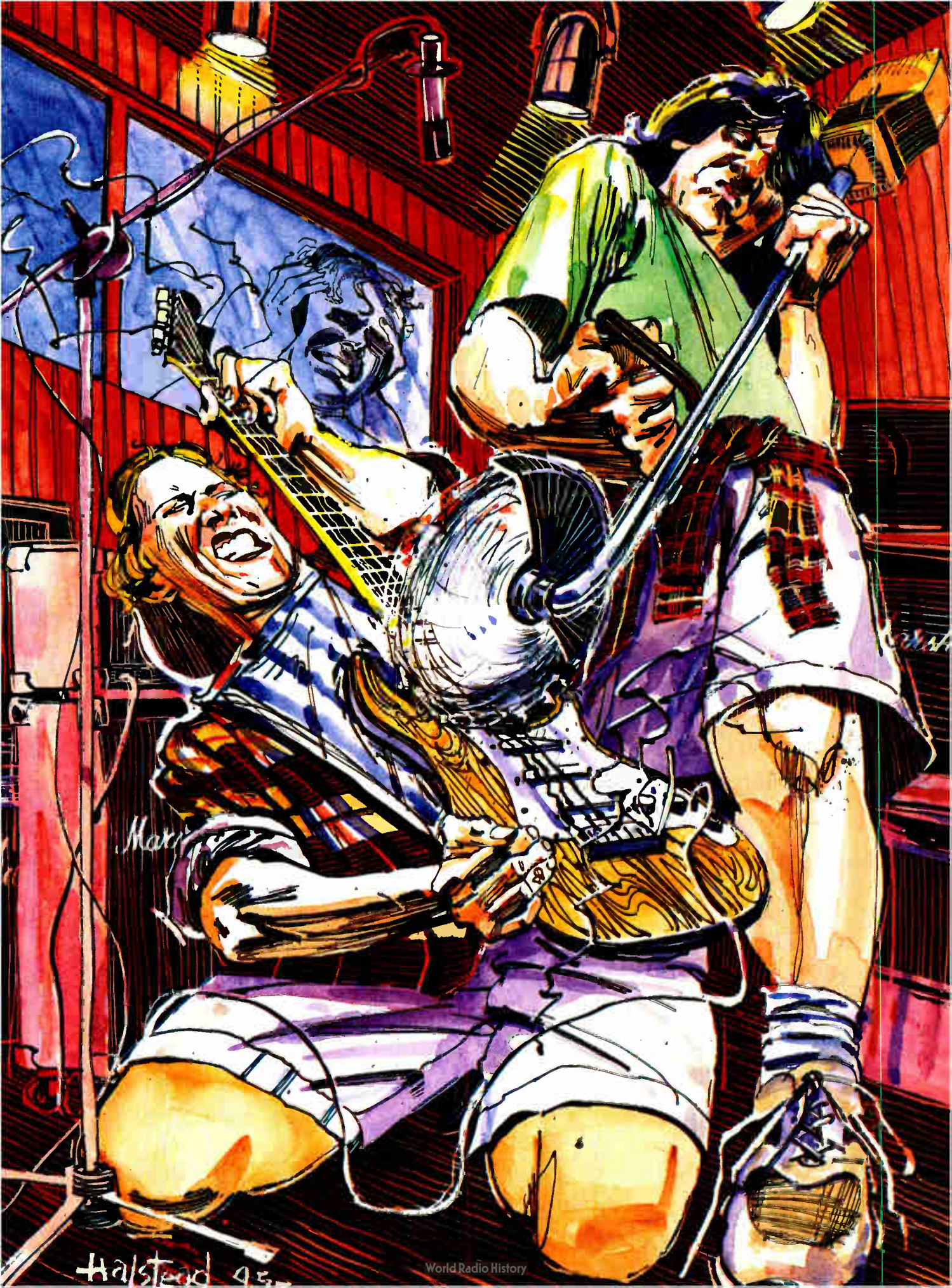
Regardless, we know there are enough of the afflicted in our readership who love off-the-wall ideas, so this one is for you. By the way, there are some of you immersed in the advanced stages of this kind of thinking who may find some of these anecdotes to be old-hat. Just remember the Mother of Invention is always looking for new victims. And if you have any sick tricks you want to share, drop us a line!

MARK FREEGARD

If you listen to The Breeders' brilliant *Last Splash* album, Madder Rose's *Panic On* or the most recent Dillon Fence release, *Living Room Scene*, one name that pops up on each of them is Mark Freegard, a resourceful British producer/engineer who, in the realm of creatively treated sound, is to the '90s what Steve Lillywhite was to the early '80s world of production weirdness.

"People are always a little surprised or concerned with the way I am using the equipment," Freegard laughs. "There is a track on the Breeders' *Last Splash* called 'Mad Lucas.' There were times when [group leader] Kim Deal

ILLUSTRATION: HALSTEAD CRAIG HANNAH



I had Kim [Deal] sing into a grand piano. It is really quite useful, because there are all these resonances from the piano that make up the reverb. I just put a couple of mics on the soundboard. —Mark Freegard

would say, 'How small can you make this sound?' She would keep saying, 'That is still not small enough, Mark.' Well, there is a guitar and a violin on that track that I managed to get pretty 'small':

"At first, I would be winding out all of the bottom end, but finally, I ran it through a little Tandy speaker that I carry with me. It's a little mini-amplifier and speaker that is pretty hideous. It's not a personal computer speaker; it's worse than that. It's a tiny little plastic box that cost a couple of pounds in England and runs off a 9-volt battery," Freegard explains. "It works well for distortion or resizing a sound and sending it somewhere else. I put the guitar through that speaker, back through the board and out through an Auratone, which I miked up in a toilet and recorded that and filtered that over again. We actually recorded quite a lot of the vocals in this toilet at Coast Recorders in San Francisco. Kim really loved it in there. Anyway, it had a really good sound.

"I also use an Eventide 3500, which has a lot of really cool distortion or Doppler effects that the 3000 doesn't have. Sometimes I find myself putting a signal through that and monitoring the return and not using very much source," Freegard says. "I recently did that with a string section on an English band called Goya Dress. We had this one song where we put on strings, but we didn't think they were working very well. I just looked for a program on the 3500 that did something to the strings on the middle eight that took them to another place. The program made them become another instrument; certainly not strings. I also used the Roland Space Echo on the Goya Dress session. I changed the pitch of a tape loop by pushing my finger up against the pinch roller. I controlled the pitch of the sustain spin like that."

For a more unique ambient touch on the vocals, Freegard found Coast's grand piano a useful tool. "On The Breeders' album, on a track called 'Do You Love Me Now,' the vocal reverb on the intro is a piano," Freegard points out. "I had Kim sing into a grand piano. It is really quite useful, because there are all these resonances from the piano that make up the reverb. I just put a couple of mics on the soundboard. She was leaning over the front of the piano, singing into the soundboard. She got quite annoyed, because I had to set the gain really high, and if she moved, we couldn't use it. It ended up being quite a special moment."

PAUL GRUPP

Since 1972, one of Los Angeles' most in-demand engineer/producers has been Paul Grupp. Grupp has worked

on dozens of the big sessions since then, including Roger McGuinn, Little River Band, Rick Nelson, REO Speedwagon, Sammy Hagar, Quarterflash, Charlie Daniels, Pure Prairie League and Michael Murphy.

"There are hundreds of things that I have done, but most of them are not worth mentioning. They're stupid things, like back in the old days, we used to dissect the old analog synthesizers and patch them into everywhere they weren't supposed to go," Grupp laughs. "Everyone did it, so it wasn't that big of a deal.

"Lowell George [Little Feat's late guitarist] taught me the trick for getting his slide guitar sound, when I was working with him on a project," Grupp says. "He told me to align this old 3M 79 tape machine at +20 dB. So I did, and it sounded really wonderful. There were tons of incredible tape saturation and compression, distortion and all of that stuff.

"The next time I did a slide guitar, I did the same thing, and I burned up a head stack," Grupp continues. "As it turned out, when I did it the second time, I did it in stereo and used two adjacent tracks. I later found out that you had to put many tracks in between, because it heated the heads up so much. I should have used track 1 and track 24, or track 1 and track 16. What I did was put the information on tracks 9 and 10, and since the two were right next to each other, there was nothing in between to dissipate heat.

"I just basically melted down a $5,000 head stack, which the owner of the studio wasn't too thrilled about," Grupp laughs. "It was at Westlake Audio. When he came to me, I said, 'Well, it should take it.' I went on about how Agfa tape, if you align it at +10, should work out fine. Then I went on about the design of the machine and this and that, and he looked up at me and said, 'I designed that machine when I was working at 3M, before I started this company! It is not designed to take *that*!' That was Glenn Phoenix.

"For mono or stereo, if you do it carefully, you can definitely see how Lowell got this unique sound," Grupp explains. "You do everything else normally, like mike the amp and so forth. You just overdrive the machine well before you start hearing something. Normally, about +6 is about where you start noticing pretty good distortion. At +12, it's history."

Grupp points out that a lot of the desired noise and impact get lost in

Lowell George taught me the trick for getting his slide guitar sound. He told me to align this old 3M 79 tape machine at +20 dB. So I did, and it sounded really wonderful. The next time I did a slide guitar, I did the same thing, and I burned up a head stack.

—Paul Grupp

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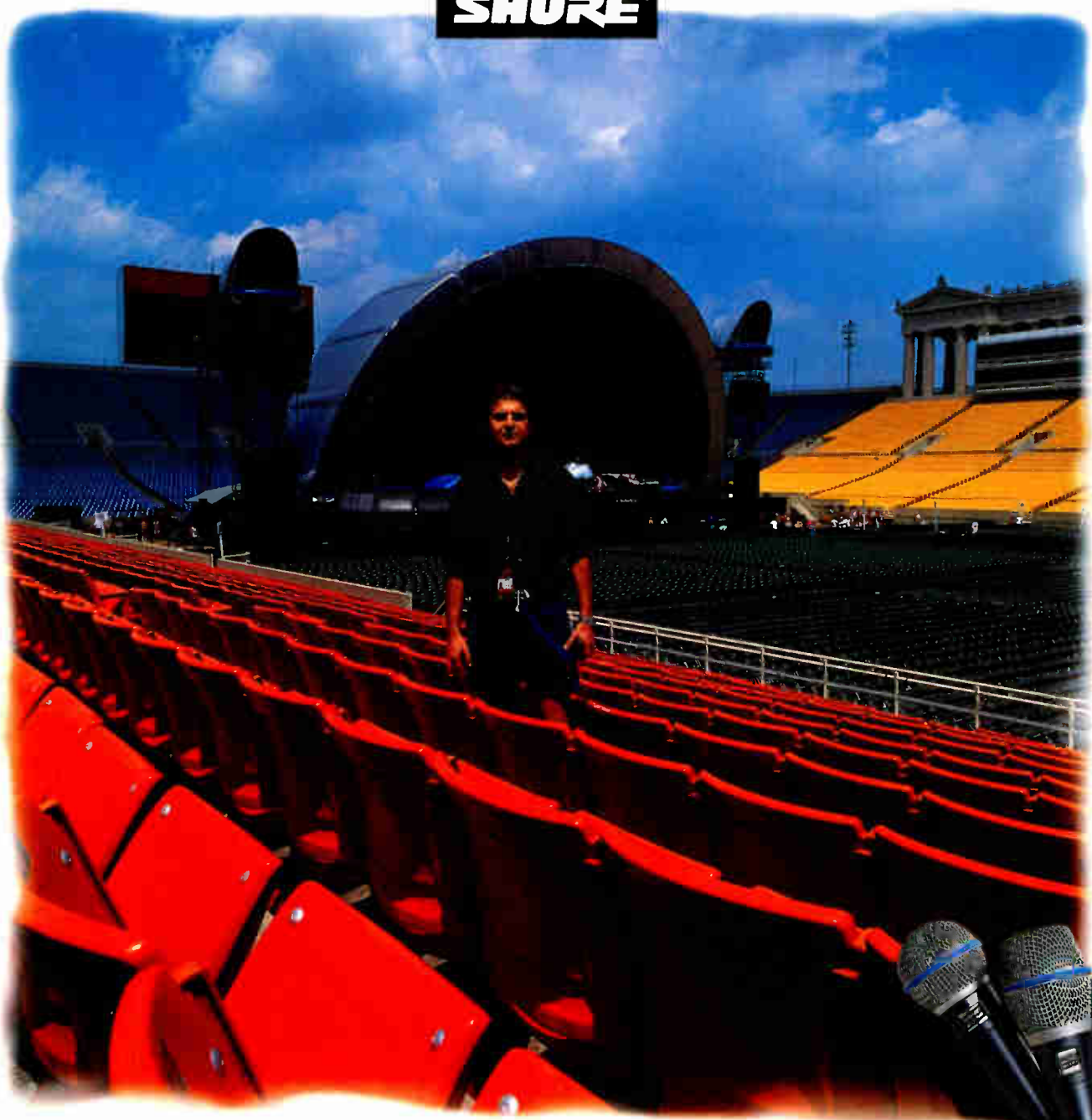

Seth Goldman, Pink Floyd Monitor Engineer, Soldier Field, Chicago.

A microphone and a speaker are the same thing. They're both transducers. One sucks, and the other blows, as I like to say. —John Agnello

the normal signal path. "See, you would distort the console and nothing in the whole recording chain would ever deliver it. It would clip the signal and prevent that level from ever getting to tape," Grupp says. "You might get +10, but you would have this distortion from all of the electronics, rather than the tape. This way, it was a matter of sending a normal signal to the tape machine and then cutting it onto the tape +20 dB hotter."

Grupp adds, "I can also tell you of one thing that I witnessed, but I didn't do myself. Lee Keiffer was a producer and engineer on the first Tubes records. He had this brilliant idea that he wanted to take a tinny 2- or 3-inch transistor radio speaker and connect wires to it and hook it up to a microphone input. He took a couple of pieces of string and put a couple of holes in the speaker and hung it from the tuning lugs of the kick drum. This speaker was hanging dead center in the back of the kick drum, where the head had been removed.

"They used it as a microphone for the kick drum, and it recorded only the sounds that caused that speaker to really move. Where the speaker was efficient and moved, the sound would propagate down the line, and the ones that it couldn't reproduce or couldn't handle, it just didn't," Grupp explains. "When you did a final mix and played it back on one of those small radios, that kick drum really stood out. It practically ripped the speaker out that you were playing back on. On a big system, you didn't really notice any big deal. His whole idea was that on small radios, the kick drum was always lost. He wanted to figure out a way to get around that. It worked great."

JOHN AGNELLO

Redd Kross, Dinosaur Jr., Screaming Trees, and Chainsaw Kittens are a few of producer/engineer John Agnello's credits. Inventiveness is something Agnello thrives on. His most recent production is Interscope Records band Dish, whom he produced at Ardent Recording in Memphis. Where Paul Grupp related his story about using a small speaker as a bass drum mic, Agnello went in the opposite direction for the Dish sessions.

"A microphone and a speaker are the same thing. They're both transducers. One sucks, and the other blows, as I like to say," Agnello explains. "When you wire the subwoofer as a microphone, it sucks. What it does is reproduce these signals out of the bass drum, which are sub-low frequencies. You can barely hear it, but you can feel it a ton.

"My only real speaker of choice is a 15-inch subwoofer, as opposed to just a 15-inch speaker, which I've tried," Agnello elaborates. "It seems like the subwoofer, for some odd reason, catches the frequencies in different ways. At least that is true with some of the ones I have had. Of course, I might just be insane, and I

am just convincing myself of this. However, at the times I've not had actual subwoofers, and just speakers, it seemed to me to be different. If you have a guy with a small bass drum, it really helps to make it sound thicker or deeper. If you've got a guy with a big bass drum, you can hopefully make it sound even bigger. It's a matter of taste, but in optimum situations, it really works great. I use it all the time. People think I'm crazy, but I do it."

Dony [Winn] found a big, old steaming pot for crawfish, and we put mics in the bucket and had the singer sing into it. It was a really nice vocal effect.
—Bob Kruzen

BOB KRUZEN

Jerry Lee Lewis, Mojo Nixon, The Radiators and God Street Wine are a few of Bob Kruzen's credits, many of which he has done with producer Jim Dickinson. Kruzen, a lover all things with big tubes and vintage gear, has worked in Memphis, Nashville, Muscle Shoals and New Orleans, among other places. As a live recording engineer, he also recorded Live Aid, Hall & Oates and the Neville Brothers.

"While recording the Panama album, which was produced by Dony Winn, we were looking for ideas to make a couple of songs a little more extreme. I had this Shure mic that is really old, and it has this strange hollow sound to it that we liked," Kruzen says. "I mentioned to them that for a lot of the old-time sessions, people would sing into a bucket for an effect. Dony found a big, old steaming pot for crawfish, and we put mics in the bucket and had the singer sing into it. It was a really nice vocal effect with a tone we couldn't have gotten any other way.

"I've got a couple of compressors that are great for weird things. One of them is an old Altec 438-A compressor," says Kruzen, who restored and modified it. "I've got it to where I have complete control over the attack and decay and compression. I can almost make it work backward to where it is expanding, instead of compressing. It has also got a nice distortion element to it.

"The great compressor for doing really strange stuff is an Eventide Omnipressor, and a lot of people don't know about it," Kruzen explains. "It has a knob on it that will do anything from extreme compression to reverse expansion with a gate, so it will actually make the transients louder and then cut off the low parts. It'll put dynamics into something, instead of taking things out. I've used it to decompress overcompressed things. It's also a great device for drums, because you can stick a point on a drum that isn't there. You can make it inside out, so when you hit a drum, it'll go away and then suck up in reverse.

"I've got a Telefunken V-72, which I basically use as a fuzz box," Kruzen says. "I know a lot of people use them for mic pre's, because they're usually looking for that 'Beatles sound.' I think it's a good mic

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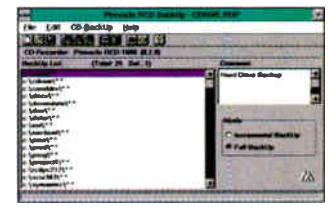

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pre, but when I overload it and use it as a distortion box, it really adds a special quality. I like it especially on the bass guitar or drums. If I want something clean and quiet, I've got some Universal Audio things that I use for actual preamps. I just use the Telefunken V-72 as an effect.

"Another thing we've done is take a Rockman and patch it into the effects send of a console, like an SSL, and use it as a fuzz box. It isn't really made to run through a console, but when you patch it in, it really sounds pretty cool," Kruzen notes. "The input/output works best, as opposed to using the cue send, because it has a really hot signal and it overdrives everything. I've run vocals, guitars and drums through it. In fact, a snare drum through a Rockman is quite a sound."

JOHN HAMPTON

John Hampton's credits range from The Cramps to Robert Cray and The Replacements to the Gin Blossoms, his most recent multi-Platinum production credit. He has also enjoyed quite a bit of success engineering and mixing hit country acts like Travis Tritt, Little Texas, George Ducas, Marty Stuart and Aaron Tippen. Hampton's most recent productions include The Idlewilds and a Gin Blossoms single for the movie *Empire*.

Some of you may know about tapping into the atom-smashing capabilities of the SSL Listen Mic compressor. For those who don't, Hampton freely shares his step-by-step technique: "If you are looking for a total out-of-control effect, a lot of times you can go to the SSL Listen Mic compressor to achieve that. It is a total 100 percent ass-bashing, trash-compacting compressor. It takes any dynamic range and reduces it to one level. If you hit a drum and then stop, the compression lets go and the room tone gets as loud as the drum hit does.

"Let's say we're doing this on mixdown," Hampton continues. "Generally, you use a regular echo send from a channel and send that to the Listen Mic input of the console. You kind of play with the echo send level and the listen mic input level to achieve the desired effect. This is done while in Listen Mic Mode. Once you've done that, the only way you can get that to tape is to hit the Listen Mic to Tape button and put a track into Record. The reader should be warned that you cannot control the level to your monitors, because the monitor volume pot is out of the loop now, as is the Cut button. In other words, you can't turn it off. The only thing you can do is unplug the speakers, or turn the monitor amps off. The end result is screwed-up and great. You record it onto another track and add it into the mix when you need it. A lot of The Replacements' *Pleased to Meet Me* album was run through the Listen Mic compressor. I've used it a bunch."

For the hell of it, we ran a Les Paul through every piece of equipment in the room that we could get our hands on. The guitar ended up sounding exactly like an elephant charging.
—John Hampton

Many things have been said about where the paths of excess lead, and Hampton is more than happy to relate one such experience:

"Joe Hardy [engineer for ZZ Top, Tom Cochrane and Jeff Healey] and I used to do lots of stupid things. We once had an old Les Paul, and we were looking for an odd sound for a band called Photons, on Line Records in Germany. The song was called 'Idle Jets.' For the hell of it, we ran the guitar through every piece of equipment in the room that we could get our hands on," Hampton laughs. "The guitar ended up sounding exactly like an elephant charging. It was totally, completely screwed up.

"I know for a fact that we started off going through an Orban 2-channel parametric equalizer. We went in one channel, maxed it out and took the output of that channel into the input of the other channel of the equalizer. We maxed that out, too, and took that through an EMT 140 plate and took the output of the plate to a Langevin passive graphic. We took the output of that to a Lexicon Prime Time digital delay and went from that to a Pultec MEQ-5. Then we took the output of that through another Pultec MEQ-5 and went into a rackmounted MXR flanger and then into an MXR phaser. We took the output of that into a Dolby unit on encode and then took that into Pandora's Time Line. We recorded that onto tape at +17, over 185 nW.

"On the same song, we took the mix and ran the left channel and right channel through separate Fender Twins, out of the board onto a separate piece of tape. The Fender sound was very distorted. As the song was ending, we would cut to the Fender amp recordings every four bars of the mix, and then to the normal signal straight out of the board—back and forth every four bars. The desired effect was hi-fi/lo-fi," Hampton dryly notes, adding that the end result was indeed very sick. He wistfully adds, "Too bad I did all that stuff when I was younger, because nobody will let me mess up their records like that anymore."

JEFF POWELL

Jeff Powell, who works out of Ardent Recording in Memphis, thrives on afflicted production and engineering.

We cranked up a Weedeater and ran it over the guitar strings above the pick-up. The Weedeater played the guitar for a few seconds, before we really dug into it and it blew it up.
—Jeff Powell

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His credits include Afghan Whigs, Primal Scream, Alex Chilton, Lynyrd Skynyrd, the Allman Brothers, and most recently, The Lemons and 16 Horsepower.

"One time, when I was working with a band on the Ardent label called Neighborhood Texture Jam, we basically needed a big disastrous noise on a track called 'The Brucification Before Pilate.' It was on an album called *Don't Bury Me in Haiti*. The song was in the key of E, and we borrowed a cheap, old Fender Strat copy from a friend who didn't care what we did with it, and we strung it up with nothing but big low E strings. The band was so broke that it took all of the band's money to afford all of the E strings," Powell laughs.

"We put the guitar on a stand and ran it through a Marshall head with all the knobs turned up as far as they would go and, at this one point in the song, where we wanted this big noise, we cranked up a Weedeater and ran it over the guitar strings above the pick-up. The Weedeater played the guitar for a few seconds, before we really dug into it and it blew it up. It took about eight seconds before the strings totally snapped and went everywhere. It was a really wonderful noise that was perfect for what we needed. It was definitely a one-take kind of thing. We added a little reverb to the sound and a bit of EQ, and it all came across on tape really well."

JIM DICKINSON

From his production work with artists like Big Star, Ry Cooder, The Replacements, Toots Hibbert, Sleepy John Estes, Jason & The Scorchers, Mojo Nixon and True Believers, to his soundtrack work on movies like *Crossroads*, *Gimmie Shelter*, *The Border*, *Streets Of Fire*, and session work for the Rolling Stones, Arlo Guthrie, Flamin' Groovies, John Hiatt, Aretha Franklin, Primal Scream and many others, Jim Dickinson synthesizes earthy instinct and a love for the theater-of-the-moment to capture wild creativity.

One Dickinson production that slipped through the cracks and never got released was Dan Penn's second solo album, *Emmett the Singing Ranger Live in the Woods*. "We recorded quite a few songs for *Emmett the Singing Ranger Live in the Woods* at Phillips Recording with Knox Phillips as the engineer," Dickinson explains. "This is where we cut a song called 'Tiny Heinies and Hogs,' which featured two live Harleys. 'Tiny heinies and hogs/funky ladies love outlaws.' It contains one of the greatest Dan Penn lines that I know of: 'This chrome hog is a rollin' rocket/A two-wheeled Caddie with a highway sprocket.'

There's a rhythm to a Harley-Davidson engine. It goes ba-da-bump ba-da-bump ba-da-bump.
—Jim Dickinson

"We recorded this with part of the

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The Monitor Magazine is a publication filled with the lastest information musicians want to know. To receive 4 issues for only $5 (USA price only) send check or money order to Monitor Magazine, Peavey Electronics 711 A Street, Meridian MS 39301 ©1995. (*suggested retail price in US only)

PEAVEY

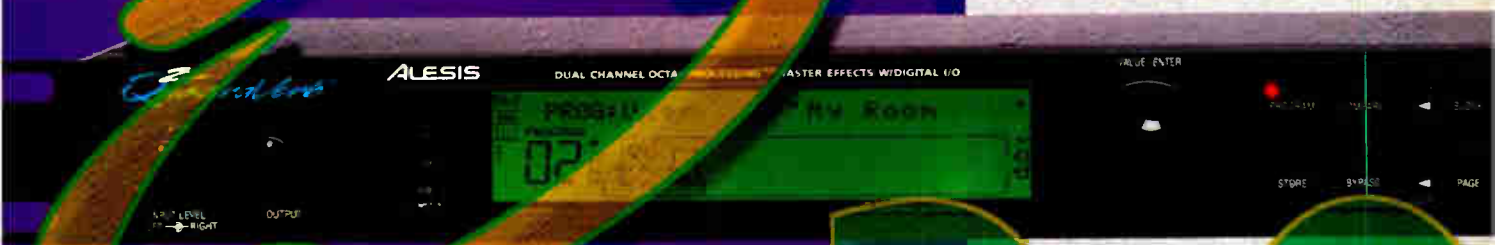
American Rhythm Section and part of the old original Muscle Shoals Rhythm Section that had been Dan's high school band, the Mark V. It was Jerry Kerrigan, David Briggs and Norbert Putnam. It is a very interesting record. It could have been a great record, but it doesn't exist now," Dickinson adds. "Anyway. Dan Penn is the master of cutting weird demos, and he had this demo of 'Tiny Heinies and Hogs,' where he was slapping on his leg like this [imitates rhythm] and making the sound of a Harley Davidson. There is a rhythm to a Harley-Davidson engine. It goes ba-da-bump ba-da-bump ba-da-bump, and that was the rhythm of his hands. Dan had Gene Christman, a brilliant drummer, write down this pattern and play this weird hambone rhythm that Dan was doing.

"I thought what we needed were some Harleys to play the percussion part, like bongos. So I got Campbell Kensinger and one of his other cronies from the [biker] family Nomads to bring their bikes into the studio," Dickinson explains. "Campbell was in the center of the studio playing lead Harley. His buddy, who didn't really 'get it,' was off in the corner playing rhythm Harley. Well the rhythm Harley was just playing—he just started the motor and let it run. Meanwhile, Campbell was actually trying to get the motor on the beat. He was retarding the spark with his screwdriver, to slow the engine down, and giving it gas with the throttle to keep it from dying, so it was sort of choking out.

"Every time it would choke out he would rev it up, and he was shooting like three feet of blue fire out of the exhaust," Dickinson laughs. "The whole studio was filling up with carbon monoxide. It was great! Eventually, Campbell got to the point where he was really playing the bike. Not only was he keeping this beat going, but when we got to his solo, he was doing this saxophone thing. While this was going on, Dan was playing acoustic twelve-string on the floor, where he insisted on singing with the Harleys live in the vocal microphones. When everybody hears the tape, they always think the bike is playing along with the instruments. Well, of course, what is happening is the instruments are playing with the bike!" ■

Memphis-based writer/producer/musician Rick Clark should know better, but if he does, he won't admit it.

Go To Your Room



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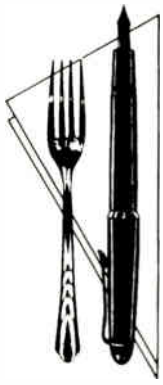
USE READER SERVICE CARD FOR MORE INFO

by Mr. Bonzai

ISAAC TIGRETT

BUILDING THE HOUSE OF BLUES



Rarely interviewed, Isaac Tigrett is the soft-spoken Southern gentleman whose vision created the Hard Rock Cafe in 1971 and The House of Blues in 1992. Today, he heads a blues empire with restaurants/music venues in Cambridge, New Orleans and West Hollywood, a TV and radio production company, and a music company. The latest additions are House of Blues recording studios in L.A. and Memphis.

The House of Blues studio in Memphis was originally built in the late '60s by Sam the Sham and was called The Sounds of Memphis. In 1987, present owner Gary Belz teamed with Joe Walsh of The Eagles to rebuild the facility, which was dubbed Kiva. Redone again in 1995 with the trademark folk art and exotic decor of the House of Blues, the studio features a new SSL console with a 16-channel API sidecar in Studio A and in Studio B a classic Neve 8078 formerly at Townhouse Studios in London. The House of Blues/L.A. studio, built four years ago by Belz and remodeled this year, features a 44-channel API console. (Belz is also partner with Allen Sides in the new Ocean Way studios in Nashville, opening in January, 1996.)

A native of Jackson, Tennessee, 46-year-old Tigrett was personally touched by the blues as a teenager while chauffeuring legendary musicians to their Memphis gigs. A few years later, while living in London, his appetite for American burgers and music resulted in the first Hard Rock Cafe, which he bankrolled for a modest $130,000.

In 1988, Tigrett cashed out of the business for $30 million and embarked on a quest for personal peace. But at the urging of Blues Brother Dan Aykroyd and Indian master Sai Baba, Tigrett decided to return to the material realm to forge a new business dedicated to racial harmony, great music and good taste.

Bonzai: Personally, in your life, what does "the blues" mean to you?

Tigrett: [Laughs] I like that—it's a good beginning. Well, I grew up in the rural South in Jackson, Tennessee. It was a very unique set of circumstances for a boy, with African-American culture as one of the primary influences on my life. You can imagine growing up in a small town halfway between Nashville and Memphis when there was so much music exploding out of both towns. It was so amazing, and I was drawn very much to Memphis, R&B, Sun Records, and the explosion of Stax. That filled the biggest part of my consciousness in the late-'50s and early '60s. I've been a board member of the Blues Foundation for a number of

PHOTO: MIM

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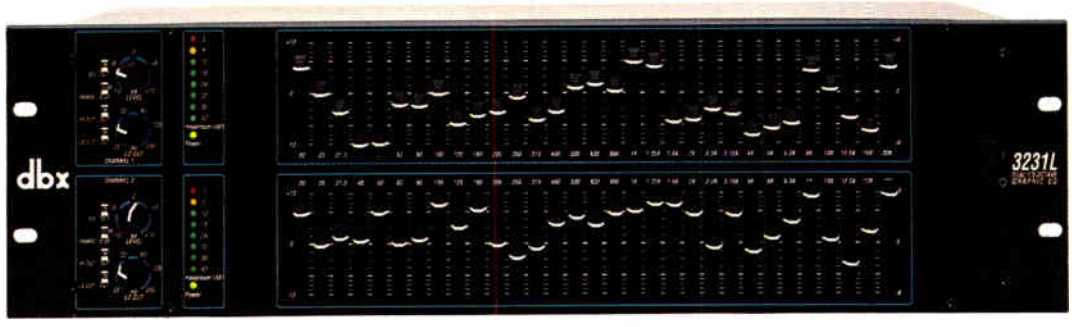

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years and have been a proponent of the culture, especially in the Memphis area.

Bonzai: Did you visit Sun Studios when you were young?

Tigrett: I believe Sun Studios had closed down by the time I was hanging out in Memphis. It had changed hands, was derelict for some time and has just been revitalized in the last five years or so.

Bonzai: Who came up with the name "The House of Blues?"

Tigrett: It's just something that came out of my consciousness. In fact, I was going around Trafalgar Square in London the other day and I remembered having seen Uganda House and Canada House—that's how they name a lot of buildings over there in Europe, where I spent 25 years. The House of Blues came to me about two-and-a-half years ago, and the whole thing evolved from there.

Bonzai: How does Dan Aykroyd fit into the picture?

Tigrett: Well, we have a unique group of partners and people that are supporting this endeavor. We are financed primarily by several institutions, Harvard Endowment being our largest investor, from Harvard University, as well as other funds, and then there are individuals like Dan.

Dan has been a dear friend for many years. What Dan and John [Belushi] did to bring a whole generation's attention to R&B music is historical and extraordinary. Dan is a real blues-ologist and he's been after me for some time, because I retired from my previous career—he's had a big influence on getting me out there again. There are other investors—Aerosmith is one of our biggest. Jim Belushi, Isaac Hayes, the Blues Brothers Band—Matt "Guitar" Murphy, Duck Dunn, Steve Cropper—are all shareholders in the company.

Bonzai: The House of Blues recording studios—I guess you go way back with Gary Belz?

Tigrett: Yes, both coming from Jackson, I've known Gary since I was about 17 years old.

Bonzai: How do the studios fit into the game plan?

Tigrett: We've got a lot of great associations in our mini-micro entertainment company. We have a TV/radio production company, headed by Michael Murphy of New Orleans. He's produced over 200 live shows

House of Blues Recording

MEMPHIS FACILITY CHANGES HANDS, AND NAMES

by Dan Daley

Kiva Studios was created eight years ago in Memphis in an apt location. The building's first recording space was built by MGM Goldwax Records for one of its 1960s prime recording artists, Sam The Sham, who with his Pharaohs, gave the nascent world of pop/rock blues-tinged classics like "Little Red Riding Hood." After Sam, the building went through a few anonymous studio stewardships as Memphis itself declined as a recording center. Chips Moman's American Studios, the locus of pop/R&B music and Sun Records' Studio where Sam Phillips cut Elvis, Johnny Cash, Carl Perkins and Jerry Lee Lewis, dissipated in the early 1970s, with much of the musical talent shifting to Nashville and Los Angeles. Just prior to Kiva's opening, the studio was called Studio K, owned and used as a home base by Stax Records' soul instrumentalists the Bar-Kays.

In the wake of Stax Records closing in the early 1980s partners Gary Belz and former James Gang/Eagles guitarist Joe Walsh opened Kiva. The facility was originally intended to be both a studio and a base to develop new acts. None of the latter panned out, much to Belz's chagrin, so Kiva became a completely for-hire facility and began experiencing the roller coaster ride that most studios have taken since the mid-1980s. Meanwhile, Belz left for Los Angeles and refurbished a studio in what was once Tito Jackson's house in Encino as Kiva West, in partnership with Dan and Peter Aykroyd.

In 1992, Belz joined as an investor with Isaac Tigrett's House of Blues, along with Walsh and Aerosmith. Tigrett had ambitious plans for his next incarnation, including a record label, an interactive multimedia department, television and radio syndication, and finally a recording studio—something Belz had to offer. As part of the deal, the Kiva facilities were renamed House of Blues Recording, and in the process, became their own best customer, recording the first five artists signed to HOB Records.

HOB Entertainment owns 50% of both Kivas in a joint venture with Belz, and the studios have been refurbished and expanded with, it is rumored, approximately $1.2 million from BMG Records. BMG in turn owns 50% of HOB Entertainment and will distribute—via BMG custom label Private Music—HOB Records. Renovations to the Memphis facility included a fourth room (Kiva already had a Tom Hidley-designed A room with a 56-input SSL G Series console with a 16-channel API sidecar, a B room with a Mitsubishi Westar console, and a MIDI suite), extensive aesthetic changes to resemble the shantytown tin exteriors of HOB clubs, and artists' accommodations.

"The studio business is down nationally; no doubt about it," observes Belz. "L.A. studio rates have fallen significantly, and a lot of studios are switching over to post. So this was an opportunity to go back to what we had envisioned in the first place. The [studio] rental business...had become passionless. And when it gets into tough times, you care less about the music than getting the purchase order. And now we no longer have to sell acts to some executive in a tower," he adds, a reference to the rebuff L.A.-based record execs gave him in his first try at artist development.

Belz sees the joint venture with Tigrett and BMG as both insurance for the studios and a way to enlarge horizons that have become limited by a fragmented studio and music market. However, back in Memphis, studio manager Gary Harwood notes ironically that the facility had its best month ever in August 1994. Harwood, who has been managing the Kiva/House of Blues facility since 1989 after leaving Memphis State, compares the studio business to a sine wave: "But the amplitude keeps getting greater," he laughs.

—CONTINUED ON PAGE 50

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for television in the last six years, and he produces *Live From the House of Blues*, which is on TBS right now. Time Warner is our partner in that. Also, we produce radio in partnership with the CBS Radio Network. We have two shows on the air right now covering about 170 markets, and we're about to produce some others. And we are a record entity—we have a blossoming record label.

Bonzai: Engineer/producer Joel Moss mentioned to me the upcoming Cissy Houston album, *The Gospel According to the Blues*.

Tigrett: Yes, that's one of our projects, and we've signed five artists just in the last six months, with the first releases coming out by the end of summer. We have a joint venture arrangement with BMG and through the label Private Music we have our own label called House of Blues Music Company.

We're an entertainment company, and having recording studios available for our artists and upcoming artists is such an important part of what the culture is all about. Gary joined forces with us, which was very important because Memphis has been struggling under a cloud for some time. I don't think there's a major label that even has an office in Memphis. Here's this

—*FROM PAGE 48, HOUSE OF BLUES*

"The good times get better, but when it's down, it hurts more."

The inclusion of the studio in the deal is viewed by the new label's nominal head of A&R as an opportunity to develop a characteristic sound for the label. "It's going to be our R&D center," explains David Z, a producer/engineer/arranger who has done records for Prince, Big Head Todd, Fine Young Cannibals and Sisters of Mercy. "We want to develop our own sound and recording techniques, and that's what having a studio of our own offers."

It also offers some economic advantages, he acknowledges, including preferential bookings and rates. "It's definitely better for the bottom line overall," he says. "As part of the label, we do get a reduced rate from what we'd pay at other studios."

Today, Belz is working on a more than two-year-old plan to build a for-hire studio in Nashville with partner Ocean Way Studios owner Allen Sides—and without direct HOB involvement. "Nashville is the only place where you can make money with a studio, I think," he says. Still, under a licensing arrangement for the name, the marketing plan calls for the Nashville studio to be named "House of Blues Studios, An Ocean Way Facility."

"We're living in a time when big-time producers and writers with home studios are putting in SSLs," Belz says. "The studio ownership business is changing. Again. It's become a fragmented market, and you have to do something if you want to stay in the studio business. I think this is it—develop and own your own content. But I also feel like music is back, and that makes me feel good." ■

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great melting pot of music, and we feel it's untapped and want very much to have a presence in the south, and especially in the capital of the Delta there in Memphis. Our last major artist and hit was "Disco Duck" by Rick Dees. [Laughs]

We're excited about what's happening in the Memphis music scene, and I think it's been overlooked by a lot of people in the industry. Our hope for the studio is to not only create a situation where artists can be inspired by recording in Memphis, but also to create a spot where we can bring along a lot of local talent that hasn't had that opportunity.

> We have included images and thoughts from the religions of the world in the prosceniums over our stages. There is a conscious effort to bring spirituality into this business.

Bonzai: Are you pumping a lot of funds into the recording studios?

Tigrett: We've got an arrangment with Gary, and he's doing a great job from a facility standpoint. I'm not a technician, by the way, so I know very little about the tech end of the business. He's redone the studio here in Hollywood, and the Memphis studio is a great room that has been continually upgraded all along. We hope to be able to create a service in several very important, key music centers.

Bonzai: How many venues will there be?

Tigrett: Not too many. I want to go into the most important cities where blues is appreciated. Chicago is obviously one of those places, as well as New York, which we are working on now. We're looking toward Paris, London, and we're actually going out to Hong Kong, as well.

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Bonzai: You did so well with the Hard Rock Cafe—what did you learn?
Tigrett: [Laughs] Twenty five years—oh, dear me. Well, I learned that music truly is the international language. It instantly transcends borders, backgrounds, age groups, and political ideals. I watched the American/British pop and rock music scene and saw that music culturally overtake the whole world. That's what I learned—music is an extraordinary, amazing, powerful medium that can so easily communicate internationally, and blues is the taproot of it all.

The House of Blues is not a Hard Rock Cafe, or even close to it. It's a totally different invention—we're a live venue for over a thousand folks, doing shows seven nights a week. It's an exciting thing, and we're really having a wonderful time with it. And what studio wouldn't love to be part of it all?
Bonzai: Has The House of Blues manifested the harmony you're looking for?
Tigrett: Having been a social activist for 25 years, I think all that you can do is plant seeds. What we do is not some devious marketing ploy. Throughout my career, I have historically given much, and continue to give lots of money, time, effort and energy to the local communities. We've done that very much with The House of Blues, our foundations, our social outreach programs. We share with many other groups, doing benefits for other organizations. The only thing you can do is plant the seeds. These are very difficult times; people don't have much trust in what's going on in society. We are in transition; the millenium is coming up. I believe you can influence the world by reflecting a particular attitude or message in the way you run your business.
Bonzai: Were you actually a chauffeur for [blues legends] Furry Lewis and Bukka White?
Tigrett: I was indeed, for one summer. I think it was Don Nix got me that job—Don is a real Memphis character. I had an old-beat-up Rolls Royce, and that summer there were a lot of gigs, and I was blessed to drive those guys around.
Bonzai: There's a hefty Eastern influence in The House of Blues...
Tigrett: Yes. For the past 20 years I have been influenced very much by a master named Sai Baba and his teachings. That's why you see the reflective messages. "Save The Planet" was one. "Love All, Serve All." "Help Ever Hurt Never." "Unity in Diversity" is one of our main messages now. We have included images and thoughts from the religions of the world in the prosceniums over our stages, because I believe all paths lead to the same place. So, yes, there is very much a conscious effort to bring spirituality into this business. It's something that I practice, and I believe it should be part of one's business.
Bonzai: Have you ever witnessed a miracle?
Tigrett: Yes, I have. As far as my master is concerned, I've experienced many metaphysical manifestations, but there is also the miracle of seeing The House of Blues being accepted, getting it from a dream state to now. This kind of creation is miraculous. ■

Roving editor Deaf Orange Bonzai has never been to Mississippi, but at least he can spell it.

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by Philip De Lancie

MUSIC & MULTIMEDIA '95

ENHANCED CD A HOT TOPIC AT CONVERGENCE CONFERENCE

June 8 was a big day in the convergence of the entertainment and computing industries, with Sony and Philips announcing their release of the Blue Book specification defining the much discussed "enhanced CD" format. An enhanced CD (official use of the preferred name—CD Plus—has been held up pending trademark clearances) is a disc that plays as a normal audio CD in a CD-Audio player, while playing as a multimedia CD-ROM in a computer-hosted CD-ROM drive. As such, it is a product with one foot in each of two worlds—worlds that are coming closer and closer together. No surprise, then, that the new format was a hot topic at one of the few industry conferences focused specifically on the overlap of these worlds: Music & Multimedia.

Held in San Francisco on May 30, M&M '95 could have provided the various parties involved in enhanced CD with a perfect venue to present a unified front like that which worked so well in getting the audio CD off the ground. The June 8 announcement conveyed the impression of this kind of unity, with appropriately enthusiastic comments from executives of Sony Corporation, Philips Electronics, Apple Computer, Microsoft Corporation and the Recording Industry Association of America (the trade group that primarily represents the interests of the six "major label" distribution companies). But after hearing representatives of these same organizations just a week earlier at M&M '95, the overriding impression left was not of unity but of uncertainty on many of the important

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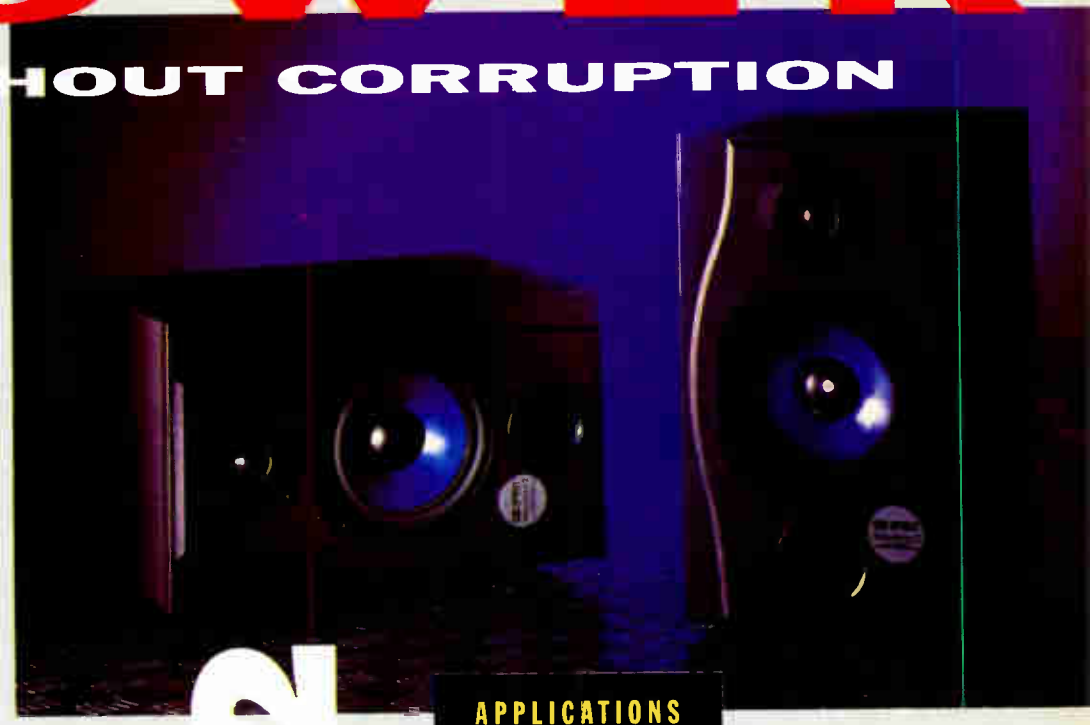

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When we looked around for an affordable speaker that matched Spirit standards of audio accuracy and quality, we found there was no such thing - so we built it ourselves. The result is Absolute 2, the only loudspeaker in its price range to deliver this much power with this much precision - a thumping 100W of professional sound.

Whatever the size of your studio, whether you're mixing music or dubbing sound for picture, the basic requirements for an effective nearfield monitoring system are the same: an uncoloured, flat frequency response, minimal distortion, and an ability to deliver high volume when you need it.

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Of course, it would be a shame if you could only appreciate Absolute quality in the studio, so we've included magnetic shielding to ensure that Absolute 2 is safe for use next to video and computer screens, and terminals for bi-wiring mean that you can also use Absolute 2 as a superior hi-fi speaker. Read on to find out how we did it...

THE INSIDE STORY

- As with Spirit mixers, the electronic design of Absolute 2 uses **high quality components**, including film capacitors and an air-cored inductor, in a circuit that embodies classically simple design principles. Terminals allow **bi-wired** as well as standard connections.
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- The **ferro-fluid cooled soft-dome tweeter** ensures minimal distortion, with excellent heat dispersion. Not only does that mean a more accurate sound, but it puts less strain on your ears after long periods of high-volume monitoring - and don't pretend you don't like it loud!
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SPIRIT
By Soundcraft

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issues, from technical standards to pricing and dual-inventory.

The Blue Book announcement itself briefly outlined a few general points. On the technical issues, it confirmed that—as far as these companies are concerned, anyway—the preferred method of storing data on an enhanced CD will be the "stamped multisession" approach championed by Sony/Philips, which adapts the Orange Book specification for recordable CDs to prerecorded (replicated) discs. A new "generic data specification" has also been defined for "the types and data formats of music-related information that can be contained on an enhanced music CD." Assuming that consumer hardware manufacturers implement them on their end, the specifications would allow "future audio CD players to display the names of audio tracks, albums, artists, type (genre) of music, liner notes and lyrics," categories of information similar to those supported on MiniDisc and DCC players.

As for the more business/marketing related issues, the statement said that a logo (as-yet-undetermined) will be issued to identify the format to the public, and that the RIAA will be "the official registration office for operating systems and platforms which support this format and will assist in its implementation." Last, the companies said that information on the specifications and logo will be made available to "licensed CD manufacturers" and "other interested parties" through Philips' Coordination Office for Optical and Magnetic Media Systems in the Netherlands (fax +31-40-732113 for information).

Overall, the announcement was quite brief, no doubt due in part to caution over mixing technical details into a release intended for general press consumption. Given that the list of interested parties includes companies such as Apple and Microsoft—and even Sony and Philips themselves—who have a history of contentious relations, it is perhaps remarkable that any kind of consensus was reached at all. But there are gaps in the available information, and efforts to fill them in have not been entirely satisfying. The new format was the subject of at least three panel discussions at M&M '95 and also crept into discussions on related topics such as cross-platform authoring. Rather than resolving the outstanding questions, however, the discussions largely highlighted the gray areas that remain.

MAJORS MYSTIFIED?

M&M '95 was produced by the San Francisco chapter of the National Academy of Recording Arts and Sciences, so it comes as no surprise that NARAS president Michael Greene moderated what was probably the highest profile panel of the day, entitled "The Majors—Marketing the Enhanced CD." The panel offered the best opportunity around to gauge the current attitude toward enhanced CD among the powerful labels. Greene's panelists were Norman Beil of Geffen Records (part of MCA), Steve Yanovsky of Atlantic Records (Time Warner), Barry Johnson of Epic Records (Sony Music) and Elizabeth Schimel of BMG. Greene described one "mission" of his segment as "trying to bring some clarity to the creation and marketing of the enhanced CD...What is it going to be and how is it going to be sold?"

The independent-label panel on enhanced CD

The process of defining the purpose of enhanced CD began with Epic's Johnson, who placed enhanced CDs in an overall context of finding alternative ways to expose artists, including online (World Wide Web) sites and screensavers. "We are looking at multimedia products both as promotional vehicles for getting artists additional visibility as well as products which have a revenue stream attached to them," he said.

Schimel added to the definition by emphasizing BMG's view that "this is a music product. We don't want this being looked upon as a CD-ROM about music. It is really a music product that offers a lot more to the consumer and offers a greater opportunity to the artist to express themselves. But it is not a full-blown, multiple-hours-of-interactivity experience. If we market it that way, consumers will be disappointed. It is truly an enhancement of the audio CD. It gives the consumer a tremendous opportunity to get more fan-oriented information about artists. It is more like interactive video and liner notes." Schimel acknowledged that BMG does not have answers to all the questions raised by enhanced CD, including how to market the product outside normal music channels without muddying its core music product identity.

Geffen's Beil outlined several objectives that his company had identified for enhanced CD, including stimulating back catalog (through both the inclusion of discographies and the reissuing of older albums in the new format), and adding value to the CD format to help compete against both home taping and alternative uses of the consumer's "leisure dollar."

Unlike other labels, Beil said, "we don't consider CD Plus as a new profit center." He did, however, mention the possibility of generating "ancillary revenue" through use of currently blank space on the CD, raising what was potentially the day's most troubling concept: the sale of advertising in the multimedia section of the disc. "We have artists who are willing, for the right price, to have their product promote another artist's product. We have done that in the past in the CD booklet, and there is no reason why you couldn't do it on CD-ROM. And if Coca-Cola wanted to pay enough to put a cool interactive commercial on, and the artist wants to do it...Because it is CD-ROM, the consumer doesn't have to click on it." Under hostile fire, Beil later retreated from the Coca-Cola example, but he reiterated the idea of selling space for "marketing that would generate revenues for the label but that the consumer would enjoy seeing on the disc."

Yanovsky added to the list of objectives by pointing out how the enhanced CD could help music companies expand their distibution into

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"Bottom line, the ProMix really does live up to all the hype. It's very quiet, it sounds great, it operates very cleanly." "One of the most amazing introductions in years."

- Recording Magazine, October 1994

"My two ProMix 01s store all the parameters of my mix and play it back exactly as I heard it at the moment of creation. More importantly, they sound great!"

- David Schwartz, Composer for Northern Exposure

"I did my latest project on the ProMix. And it's one of my best sounding yet. The ProMix 01 is really great!"

-Hans Zimmer, Composer, The Lion King

"Yamaha has done it again, just as it did in the early '80s with the DX-7 keyboard. It has created a cool piece of gear that does more, does it better, and costs less."

- EQ Magazine, December 1994

"ProMix 01 stands every chance of becoming a landmark product, changing the way a lot of people currently work."

- Studio Sound And Broadcast Engineering, July 1994

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new channels. "The person that goes to a computer store is not the same kind of person who goes into a record store," he said. "Going to buy music in a computer store may not have been in people's minds three or four years ago, but now it is kind of bearing some fruit."

Moving into the issue of pricing, differences between the labels represented on the panel became obvious. Drawing on market research conducted by his company, Beil said consumers will not be willing to pay a premium for enhanced CD over the cost of a regular CD. Johnson disagreed, saying Sony's research indicated that consumers would be willing to pay more provided that the discs deliver added value, which he defined as offering not just liner notes but extra material that is not available anywhere else. How much more to charge, he said, was not yet determined. The Sony position is significant because the company has been readying product for some time now and is expected to be the first major label to release in the format.

Yanovsky and Schimel both took somewhat of a middle ground on the issue. "Ideally, prices should stay the same," Schimel said, but she thinks products will "probably" come out at increased prices. "I would like the price to remain the same," Yanovsky agreed, to help consumers "embrace this, enjoy it and build a market." But he acknowledged that that is "a pricing model no one is willing to accept. It may take time for prices to justify the existence of this [the inclusion of extra material], by increasing prices a little bit over time. And over time, production costs will hopefully go down. So it may be just a small, incremental price increase." He also pointed out that right now consumers pay several dollars more for CDs than cassettes, presumably because they perceive an added value.

Related to pricing is the issue of dual-inventory. Should albums released in an enhanced CD format also be released in a regular CD version, or should there be only one release? Johnson argued against forcing consumers who only want a regular CD to pay for an enhanced version. And Schimel noted that the material needed for the multimedia section of the disc, including music videos, usually is not ready until after the album is released. Beil agreed, saying that album releases are very timing-sensitive, and that enhanced CDs can't be released simultaneously.

At the same time, Beil said that "retailers don't want two SKUs...Do we want to use shelf space for that? If there is extra space in a store, we should use it for back catalog." He also pointed to his research indicating that technical support for consumers having difficulties installing and using enhanced CDs "cannot be provided [by the labels] on a cost-effective basis." Given the obstacles, Beil concluded, it might be better for the labels to stay out of the software side altogether. As an alternative, he offered the idea of the labels simply putting information on discs in accordance with the Blue Book's "generic data specifications" while letting third-party developers worry about creating, marketing and supporting software interfaces that access and present the information. Addressing concerns that this plan would deny creative control to artists over how their content and image are presented, Beil said only that "the artists would be protected."

MULTISESSION OR PREGAP?

A look at enhanced CD from a more technical angle came from a discussion entitled "The New Enhanced CD: Combining Interactive and Audio Tracks on One Platform." Moderated by yours truly, the panel included David Pakman of Apple, David Baron of Microsoft, Mark Waldrep of Pacific Coast Sound Works and AIX Entertainment, Ted Cohen of Philips Media, Brett Crossley of Pacific Advanced Media and Albhy Galuten of ION/BMG.

The hottest issue for this panel was the technical form that the enhanced CD should take. The controversy boils down to a choice between hiding the multimedia content in the "pregap" before the start of the first audio track (also known as "track zero") or storing it in a separate session after the audio tracks. The multisession approach absolutely protects consumers from accidently playing data through their speakers or headphones, a scenario which is theoretically possible—though extremely unlikely—on some older CD players if the track-zero approach is used. But the multisession approach entails getting new CD-ROM drivers (the software that controls the interface be-

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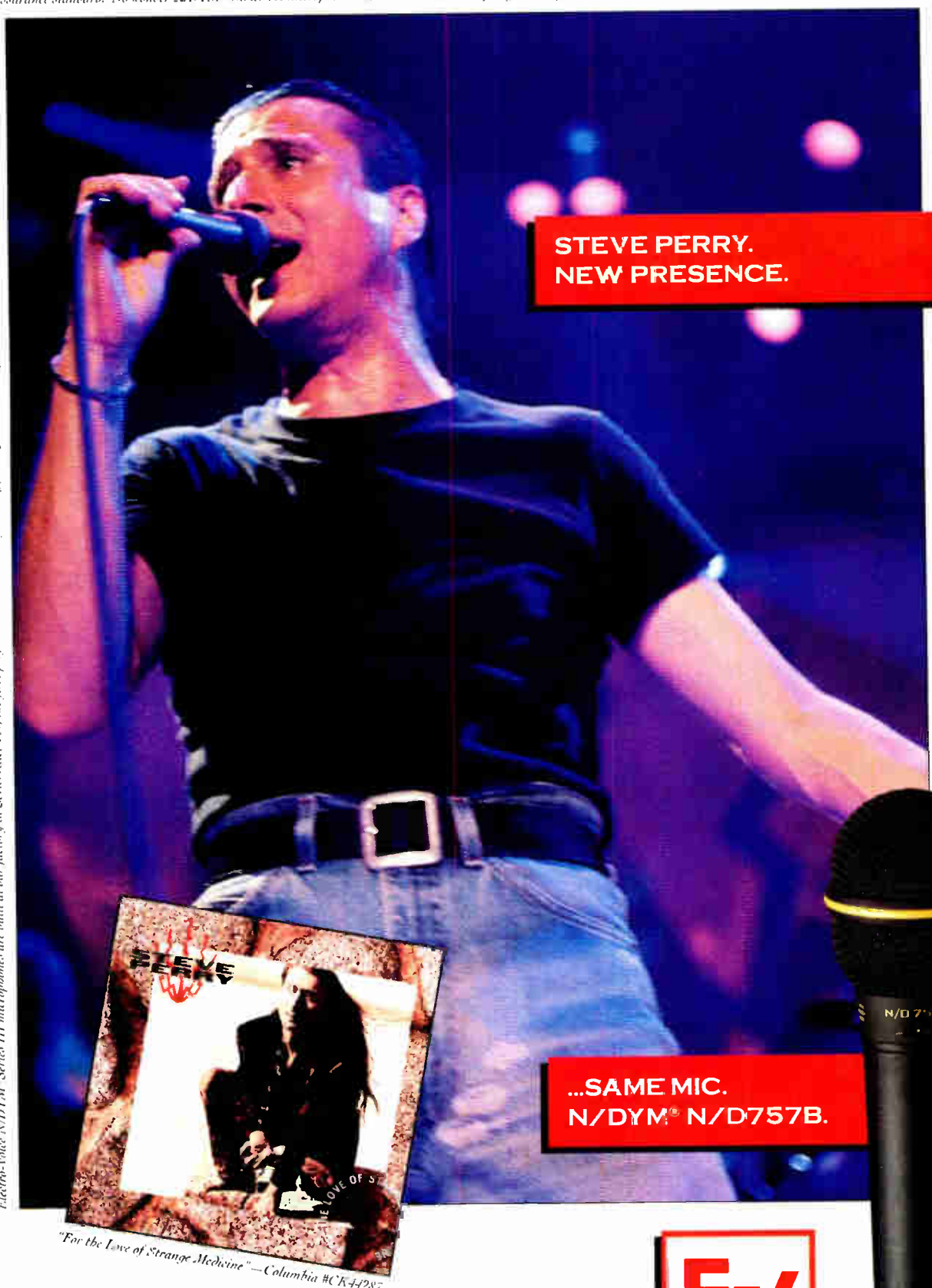

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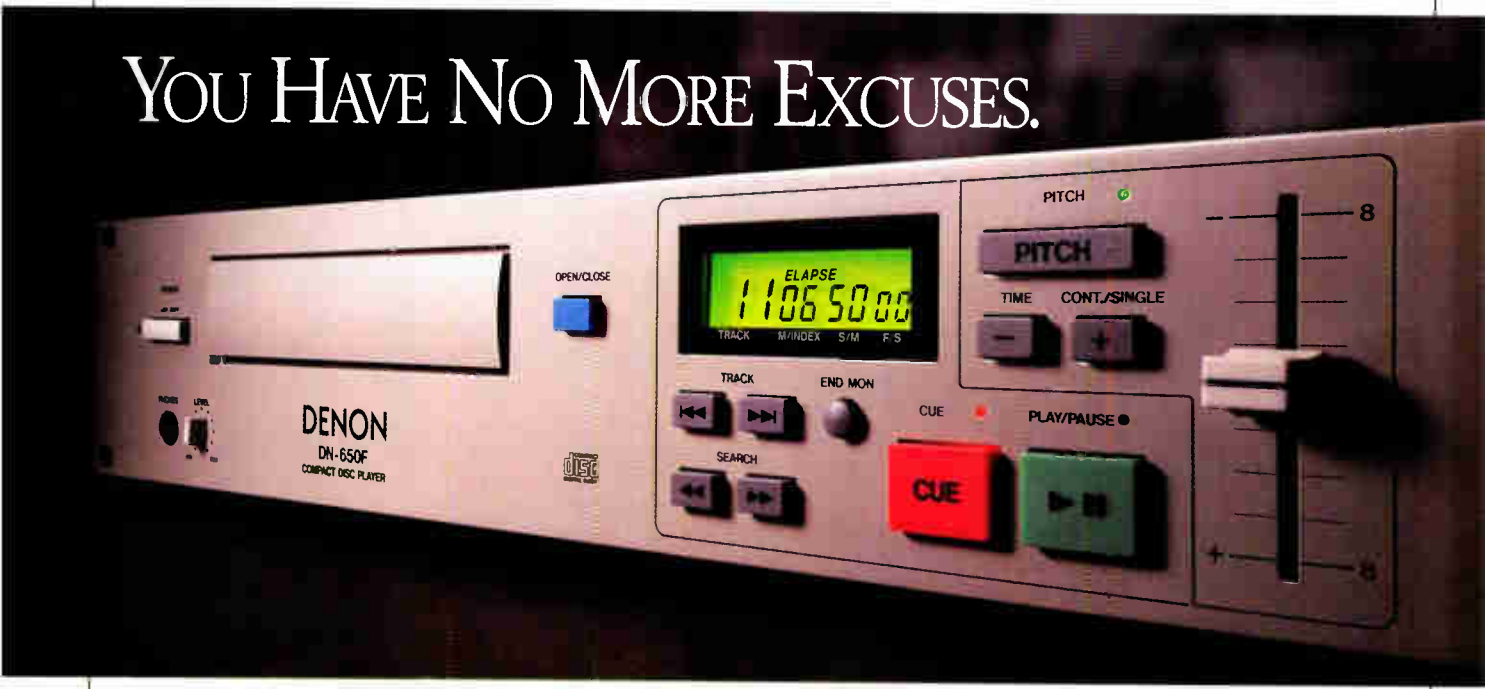

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tween the computer and the drive) into the hands of all CD-ROM drive owners. And while all drives now being sold could then read the multisession discs, the oldest 30% or so of the current installed base of drives (single session drives) would be unable to read beyond the first session even with a new driver. (This topic, discussed in these pages regularly over the past few issues, is explained in greater detail in the June, 1995 issue of Mix, page 71.)

Here again, a touch of confusion and uncertainty apparently lurks behind the appearance of unity among the major players. Explaining Apple's tilt toward multisession, Pakman said: "When we look at the different technical approaches to creating an enhanced CD, our first emphasis is on compatibility with 100 percent of CD-Audio players, and there seems to be common belief that stamped multisession is a 100 percent compatible solution with existing CD players, since those players are not capable of reading beyond the first session." But he also added that "we need a single standard that is going to be adopted by all the developers of enhanced CDs. So Apple has lined up with supporting what the RIAA has set out as their goal, and that is stamped multisession."

At this point, Galuten, who serves on the RIAA enhanced CD technical committee, jumped in, clarifying that the RIAA "is not officially endorsing any format. The RIAA...is going to look at all the formats, and there are some issues that stamped multisession addresses which are nice and would be valuable to the record labels, but at this point the RIAA has no specific stance on that." Then Microsoft's David Baron weighed in with his assessment of the RIAA's role, saying that "while legally the RIAA has to evaluate all the different formats, and they are doing that as they should be doing, they are also doing significant work on stamped multisession at the moment."

The RIAA's position is important because the group is slated to coordinate industry efforts to market the idea of a hybrid music/multimedia CD to consumers. Eventually a decision will have to be made whether to include in those efforts enhanced CDs made in formats other than Blue

—CONTINUED ON PAGE 177

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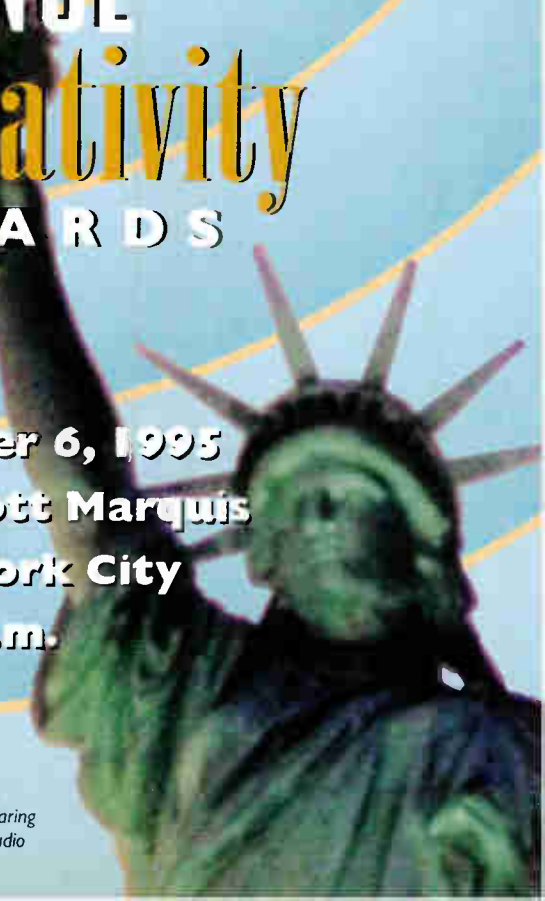


MIX MAGAZINE PRESENTS

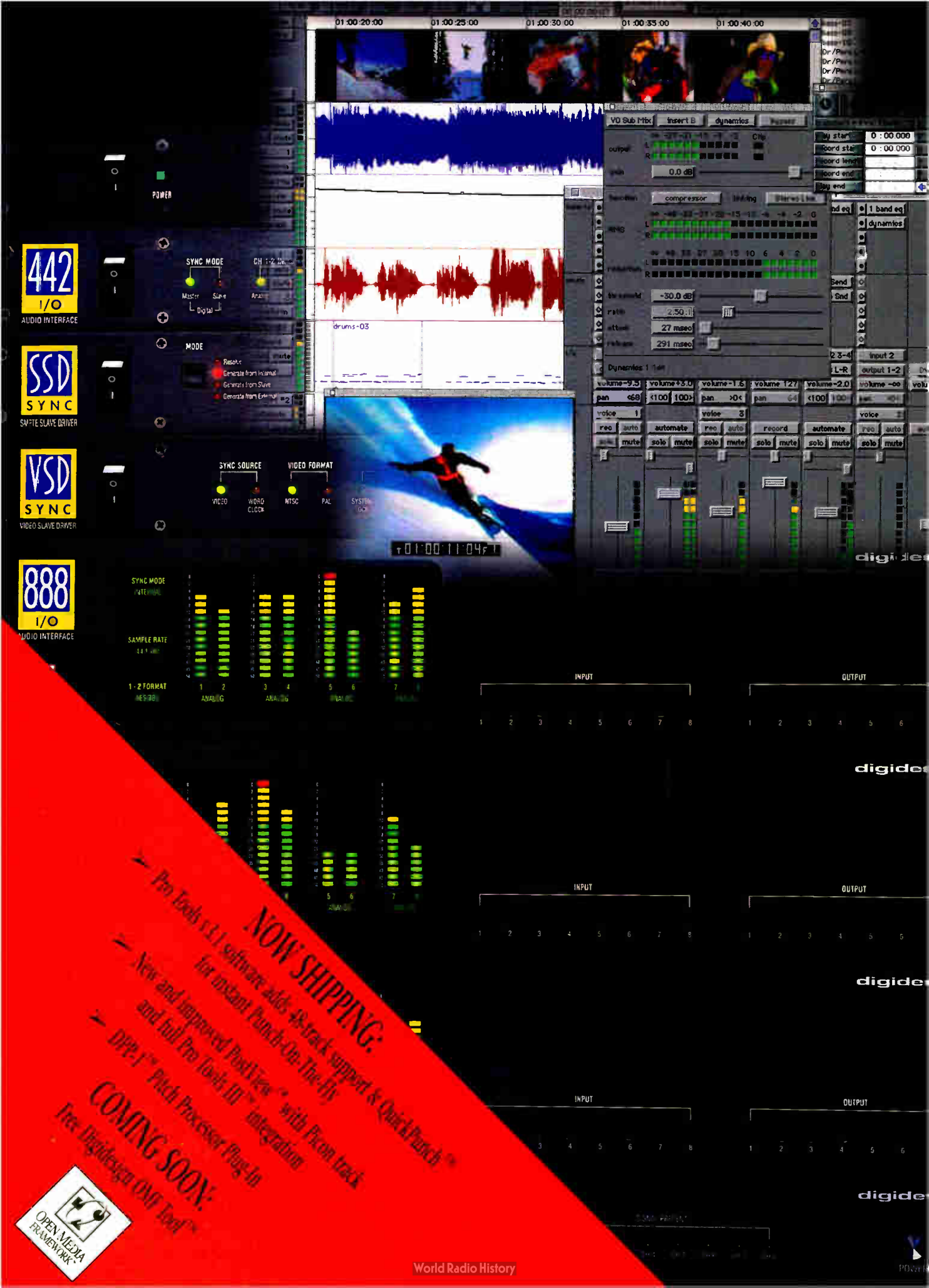
SOUND FOR PICTURE

FALL 1995

Digital Dubbers: *A Technology Overview*

Scoring With Libraries

Re-Recording Mixer Dick Portman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MIX MAGAZINE PRESENTS

SOUND FOR PICTURE

FALL 1995

On the Cover

In April, One Union Recording Studios opened the first of two rooms at its location in the heart of San Francisco's ad agency district under the ownership of facility director John McGleenan, senior engineer Eric Eckstein, and consultant Jeff Roth. In this age of ISDN, voice-overs by phone and real-time video teleconferencing, One Union's owners feel it is important to be in the center of activity.

"We were very lucky to get in this building while it was still in the development stage," says Roth, who also owns Focused Audio in San Francisco. "We're right under Varitel Video's new facility and next door to EDNet. Fiber-optic cabling and microwave dishes can connect clients to anywhere in the world. But most importantly, we're in the heart of the advertising agency district. Agency producers want to be able to walk across the street and get to work. You have to be right there to be taken seriously and to afford them access."

The facility was designed by Carl Yanchar of Lakeside Associates in L.A. (and built by Steve Milovich of Milovich Contracting) to incorporate natural light from a specially designed rear-wall window with diffusion slats. "We wanted a facility that sounds great and is a really comfortable and practical environment to work in," says McGleenan, who previously worked at TLA in San Francisco with Eckstein. "I'm a former agency producer, so I'm always able to discuss plans, schedules and projects beforehand to keep time and costs down."

The centerpiece of the room, aside from the 56-input TAC Scorpion console, is really the 16-channel Pro Tools 3.1 workstation with TDM and 4x DSP Farms, and DDP, DINR, Post Conform and DVerb software. Monitoring is through JBL 4430 mains and Genelec 1031A near-fields.

"I try to keep things as clean and straight-forward as possible when recording," says Eckstein, who came to S.F. from Nutmeg Recording in New York. "I generally route directly from the Demeter VTMP-2b mic pre to the LA Audio Classic, and from there, directly to Pro Tools or the Sony 7030 timecode DAT. Working primarily in the digital domain is fast and efficient. I rely on the tubes of the Demeter and LA compressor to give me the warmth associated with analog."

Recent sessions at One Union have included radio and television spots for most of the agencies in town, including Goodby, Silverstein & Partners (Sega), Hal Riney & Partners (Old Milwaukee), Young & Rubicam, and Foote, Cone & Belding, to name a few. The second room is currently being equipped. ■

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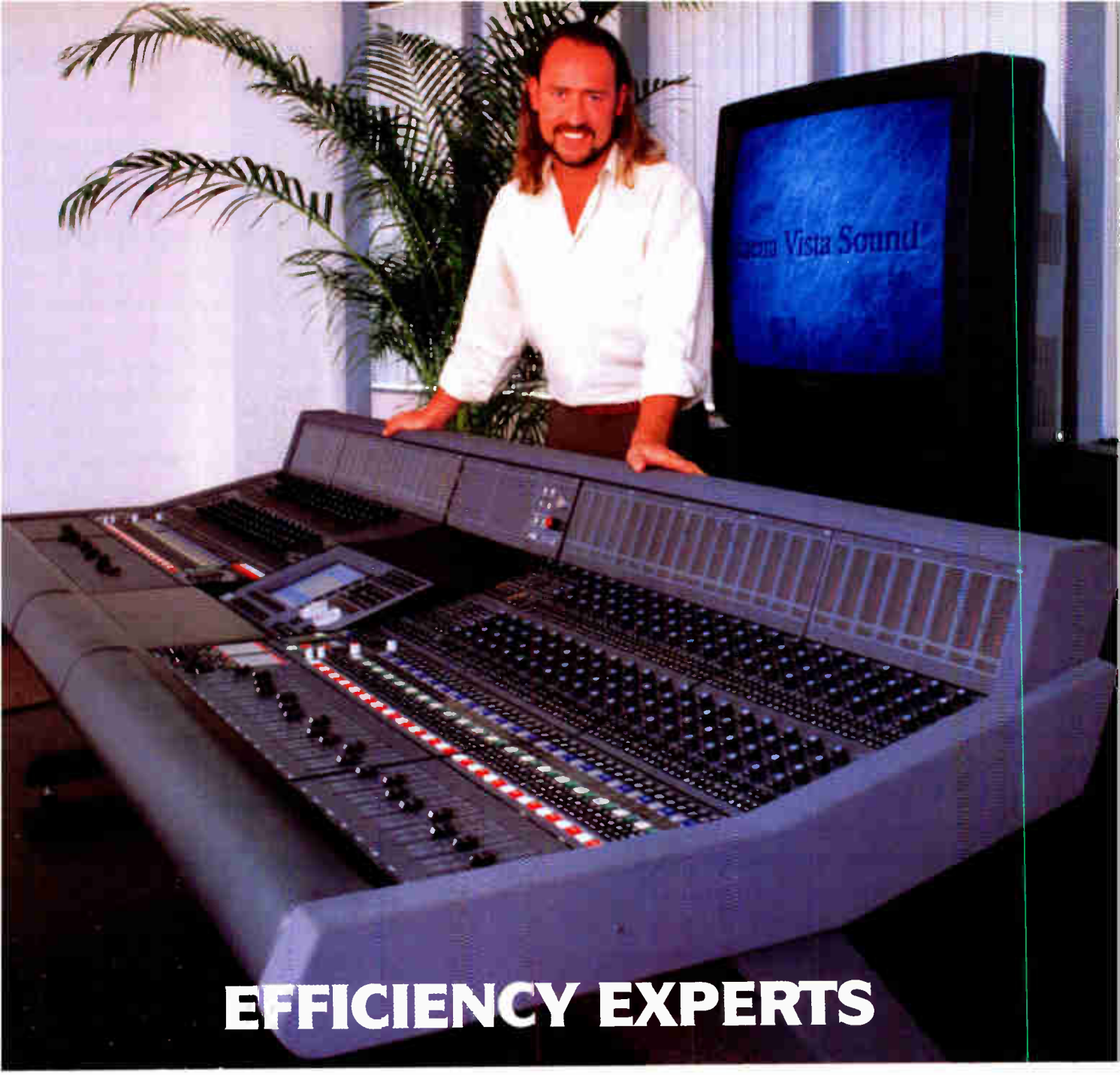

EFFICIENCY EXPERTS

Chris Carey, Vice President of Post Production Services at Buena Vista Sound, a division of Walt Disney Pictures & Television, is breaking tradition. Buena Vista Sound is building a high efficiency, non-linear audio post production suite which will offer a seamless integration between the editorial and re-recording processes. At the center of the futuristic room design is the AMS Neve Logic 2 digital audio console.

Why Logic 2? Chris Carey explains, "The Logic 2 is advanced, field-proven and equipped with the integral AudioFile hard disk recorder/editor which is capable of reading a variety of formats. Because the basics are so well covered, users can concentrate on the more exotic features. Most important, it has the speed and flexibility to respond to what we need—our engineers can reconfigure the console in seconds to suit each mixer's personal requirements."

"At Buena Vista Sound, we want to break tradition and challenge the current post production practices. AMS Neve is an ideal partner—they have demonstrated the willingness to do what it takes in providing a digital console suited to our specific needs."

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BY TOM KENNY

POST·SCRIPT

SOUND FOR FILM

The Dream Device

A CONSOLE WISH LIST

by Larry Blake

One of my favorite audio metaphors has always been the "Chef of the Future" episode of *The Honeymooners*. In this one, Ralph Kramden, with his sidekick Ed Norton, tries to sell (on a live TV commercial!) a kitchen utensil that does the work of "all of these things," pointing to all previously known utensils. The Dream Device, the ultimate Ronco tool.

I think many of us feel the same way about our consoles: We want to slice, dice and core apples—and then some. Film re-recording presents unique console design challenges for two basic reasons: one, the number of source channels—original cut elements—is so high (numbering no fewer than 25, up to as many as 500 for a given reel on a major feature film), and two, the number of simultaneous record channels at the final (averaging 18 today, going up all the time) combined with the variety of release formats make for very complicated monitoring needs far in excess of standard mix-minus capabilities of 2-channel boards.

Add to that soup the fact that film mixing is done in long stretches (10- or 20-minute reels) in a dark room to a picture, and you soon realize that the ultimate film board lies in a 50-50 combination of the incredibly complex and the stupidly simple. Console fader automation introduced in the '80s was a big leg up, but the final goal is pretty self-evident: completely automated and digital. When these consoles form the final link in the digital chain, the need for analog devices will be extremely limited, primarily for inserting favorite effects devices and equalizers into channel inputs and on buses.

In the majority of consoles today, signal passes through each channel strip, and therefore, each input needs its own set of electronics. The notable exceptions are digitally controlled analog consoles, which allow multiple channels to share equalizers, etc. I feel very strongly that, in the long run, the current 1-input/1-channel strip layout must be abandoned: It just takes up too much space. I have always felt a great degree of affinity for the concept of assignability: All you need is one set of controls for input trims/equalizers/aux sends/dynamics/effects, etc. if those functions are completely automated in a console. If you want to tweak an input channel, you "assign" that input strip to the control section. This is fine and has been implemented to a certain degree in some consoles, but very few companies have taken the concept of assignability to the next level: the faders themselves.

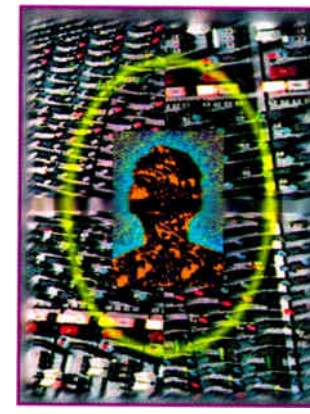


ILLUSTRATION TIM GLEASON

Current film sound wisdom generally agrees that to do a Class-A effects job you need at least 80 inputs for the FX mixer alone—and even that is sometimes tight. Because most of today's consoles were built when 72 inputs were enough for *everything*, it's standard operating procedure during final mixes to have a few 24-input, 8-bus sidecar consoles to accommodate all premixes, sweetener tracks and outputs of multiple workstations.

Adding everything up, if you want to avoid sidecar consoles in worst-case situations (since the point is to make *everything* automated, right?), you need at least 176 inputs: 96 for effects and 40 each for dialog and music. In the increasingly popular two-mixer mode (one on dialog and music and the other on effects), this means that there will be a considerable amount of chair miles. This is not to even touch upon the idea that mixers are so far from the sweet spot in the room that they might as well be using their own set of LCR near-fields (joke). Yet this is virtually where we are headed, and consoles will soon span multiple area codes.

I think that the ideal number of faders in a completely automated, assignable console would be 24 per mixer, which is about the number your hands cover when you sit down at a console with your palms resting in front of you. At the press of a button, you can change to whatever

—CONTINUED ON PAGE SFP 8

Waltstock '95

INSIDE THE BIG SOUND FOR DISNEY'S "POCAHONTAS" PREMIERE

By Evan Ambinder

When the folks at Disney began planning the premiere of the new animated feature *Pocahontas*, they decided to hold an outdoor event that would not only rival Woodstock II in terms of visual and aural pizzazz, but also be fun for the entire family. They envisioned movie screens as big as small skyscrapers, live music being played on several stages by hundreds of performers and a sound reinforcement system delivering crystal-clear audio to 100,000 guests on the Great Lawn in New York's Central Park. They hoped that, if the audience were dazzled beyond their wildest imagination, they would remember "The Premiere in the Park" for generations to come.

After almost a year of pre-production (which was overseen by Buena Vista Pictures, Disney's movie distribution division) and an intensive week of setup and rehearsal, the June 10 premiere succeeded in turning the Great Lawn into a one-time-only urban Disney theme park. During the day, five live bands played on four satellite stages, and scores of jugglers and face painters entertained the crowd. At night, a 76-piece orchestra and dozens of singers, dancers and a choir performed hits from Disney's recent animated films, then eight 70mm film projectors beamed *Pocahontas* onto four specially built 120x80-foot screens (four additional projectors were there for backup). Finally, a rousing pyrotechnics show sent the crowd home with a bang.

To ensure that each person spread over the 13-acre lawn heard every note,

—CONTINUED ON SFP 9

PHOTOS COURTESY OF BUENA VISTA (WALT DISNEY) PICTURES

Above: Pocahontas with Nakoma and Meeko; right: overview of the park and screens; below: Front of house engineer settling in for the orchestral mix at the park

Axiom Tryouts at Todd-AO, Hollywood

By Mel Lambert

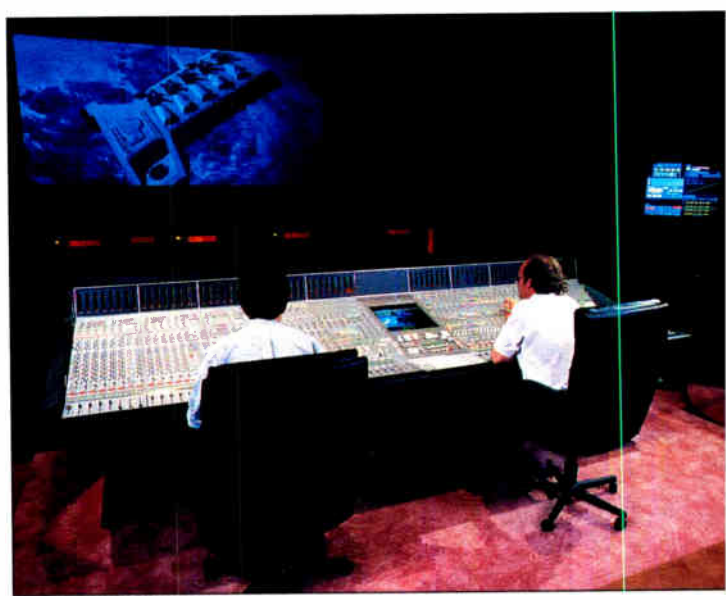
As many *Mix* readers will already be aware, from the get-go SSL's Axiom was intended to be available in several application-specific configurations. Although its first "serving suggestion" was intended for the music-recording and broadcast markets, the firm has not been ignoring the film sound community.

During early June, Solid State Logic's staff provided hands-on demonstrations of several new Axiom hardware control surfaces at Todd-AO/Glen Glenn's Hollywood facility. The new application-specific Axiom film-dubbing system offers panning and output assignments for all surround sound formats, including DTS, Dolby SR•D, HDTV, Dolby Surround, Dolby Stereo and SDDS, and provides up to 96 tracks of integral DiskTrack random-access record/replay functionality per operator position (as many as you like). All systems can be supplied with integral VisionTrack instant-access video record/playback.

A new Bus/Tape panel enables Axiom-for-Film to

—CONTINUED ON PAGE SFP 11

PHOTOS COURTESY OF SOLID STATE LOGIC



The Axiom Film Dubbing System at Todd-AO/Glen Glenn Hollywood

—FROM PAGE SEP 6, SOUND FOR FILM

combination of group masters and individual input channels you wish to use. For example, during finals of a complex show, the effects mixer might operate with 18 faders as group masters for 6-track stereo premixes, two faders for sweeteners from a workstation and four for effects returns.

To tweak, say, the center track of the "A" FX premix, the mixer would press a button to change the first 18 faders of the console to become three 6-track A/B/C effects premixes. "Zip zip," as Ed Norton would say, the moving faders would reset in *far* less time than it would take the mixer to put down the RV magazine, slide 60 faders to the other end of the console, slide back close to the sweet spot and pick up the magazine again. If you assume that the last six faders remain constant in all setups, a mixer would need approximately 12 presets to completely cover the 176 inputs in our mythical "worst-case" situation.

People have come up with many scenarios over the years to allow for flexibility in making changes to premixes. For example, if you have combined 24 tracks of sound effects down on one LCRS mix and you want to lower a track that has been combined with others, you're out of luck. One solution has been to print each track post-fader and EQ to a multitrack while making the 4-track premix, thus making the correction easy because, for the most part, if you put up all 24 tracks at unity and assign them properly, you will be able to easily match into the premix, while still keeping control over every element.

In the real world of feature film rerecording, such a technique is beyond a luxury and can't really be considered. Thus, you have to make the compromise between having control over individual elements in the final mix and having enough room on the console for everything. This is where I envision some serious advantage being taken of the multi-fader-level assignable consoles: the birth of virtual premixes.

You can have premixes and be able to separate the individual elements, too. You wouldn't record the premixes, but instead at the final mix, you would be playing the individual cut elements plus all moves—level, EQ, panning, busing, etc.—made during the "virtual" premix. This modus operandi requires the concept of fader assignability because the console might need 400 simultaneous inputs for a busy film, instead of our previously stated max of 176.

While with virtual premixing, it would be *possible* to go from cut elements direct to print master, without stopping at premix or final mix, I would heartily recommend against pushing technology this far. I feel strongly that, though there might be advantages to skipping the act of recording the premixes, to give you full flexibility in finals, the final mixes should be *recorded* on a length of tape (or hard disk!). Forgetting the fact that you don't want to have to remember to reset analog outboard gear, a final mix of a film is too important to have to rely on software to give it life. Sooner or later, they have to be recorded.

Plus, the potential savings in generation loss (five from original recording to print master on an average feature)

won't be that much of a factor with sound handled digitally on disk drives and going through digital consoles.

Regardless of whether or not there are "recorded" generations of premixes and final mixes, procedurally it is advantageous to premix individual element groups (dialog, Foley, backgrounds, hard effects, etc.) before the final mix. This "micro" premix mode allows you to give TLC to every cut track, making "macro" finals primarily a balance issue.

Metering: As useful as vertical bar graph meters are, if they are not accompanied by standard needle VU meters, they should have an "exploded" calibration mode wherein the area around the nominal operating level (which itself should be adjustable) is expandable for critical input/output tweaking. I am shocked at the small increments some consoles have on their meters. I think assignability should be brought to metering, too, with eight bar graphs and VU meters switched between all output buses, aux outputs and monitoring points. (Low-res signal presence meters on individual input channels are very helpful.)

One inherent dead end to anyone writing out a wish list for re-recording consoles is that the market is very small. To be painfully honest to any manufacturer looking to get in the field, you should be happy to sell ten consoles worldwide, and there's almost no chance that you'll sell more than 30. The only change that I foresee is that the market will grow a bit as more music and TV shows are being mixed for 5-channel discrete release.

And, last but not least, as many knobs and functions as possible should have a maximum value of 11, for when you need that something extra. Send along your wish-list ideas, and complaints about mine, to P.O. Box 24609, New Orleans, LA 70184, fax (504) 488-5139 or via the Internet: swelltone@aol.com. Next month, I'll be putting my two cents in regarding the state of theatrical digital playback systems. ■

Larry Blake is a sound editor/re-recording mixer who lives in New Orleans for reasons too numerous to mention, although being able to show visiting friends such a wonderful home town, like I will do when the SMPTE convention comes here in September, is definitely one of them.

—FROM PAGE SFP 7, WALTSTOCK '95

word and sound effect at exactly the same time, Buena Vista Pictures hired Sean Glen, president of STG Entertainment (Buena Park, Calif.), to design a sound reinforcement system "that essentially had a lot of intelligibility and as even coverage across the lawn as possible in terms of frequency response and SPL levels," according to Glen.

"The original concept was to have the screens placed in a circle 1,600 feet apart, but I, being the sound guy, said, 'That won't work for me.' So we [the screen and structural engineers] finally came up with the idea of putting the four screens side by side, creating a sound throw of only about 500 feet."

To assemble the massive amount of equipment that would be neces-

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sary for such a large and multifaceted production, Glen turned to Spectrum Sound (Nashville, Tenn.), which provided the majority of the sound reinforcement equipment. (Due to the premiere's enormous sound requirements, Spectrum ended up cross-renting extra speakers and a few consoles from Rock n' Road Audio, Eastern Stage Productions and Jonas Productions.) In the end, all four companies created a mega-sound system that spanned ten miles of speaker and mic cable, combined 300 channels of audio, pumped out more than 400,000 watts of power, and required a 38-person sound crew to set up and run.

More than 200 Eastern Acoustic Works KF850, KF852, KF853, BH852 and SB850 speaker cabinets, which were powered by more than 150 Crown MacroTech amplifiers, were installed around the giant movie screens/satellite stages, the 160x80-foot main stage, and the movie projector/delay towers. "The KF853s are a long-throw, mid-to-high box, have two horn-loaded 10-inch midrange cone drivers and a 2-inch high-frequency driver," explains Spectrum's Curtis Flatt, who was head systems engineer and crew chief for the premiere. "The BH852s, which were used as a mid-bass box, have two horn-loaded 15-inch cones. The medium-throw boxes were KF852s, which have two 10-inch horns and a 2-inch exit compression driver. The KF850s were used as near-field boxes, and the SDB850s were used for the subwoofers."

The KF853's ability to throw sound over long distances was a major deciding factor for Glen. "My delay tower positions were defined by where the movie projectors were going to be [about 250 feet away from the FOH speakers]. Thanks to some EQ compensation that deals with atmospheric attenuation, the 853s can give you intelligible sound up to 350 to 400 feet without using delays."

Keeping the *Pocahontas* audio feed from both the FOH clusters and the delay towers in sync with the picture proved to be equally challenging. "The audio was placed ahead of the movie by about 500 milliseconds. We also determined that the optimal sync line was about 125 feet from the screen, due to psychoacoustics and the fact that we had about 450 feet of audience depth before it got really soft. So we ended up delaying it out to the mid audience at about 300 milleseconds using four Yamaha D-410 delays," Glen says.

Fine-tuning the final output mix was the responsibility of engineer Phil Harris. Using the Meyer Sound Labs Source Independent Measurement system, Harris measured in real time the EQ curves of various speaker zones scattered throughout the audience. "We had 12 B&K 4003 test mics scattered throughout the lawn to pick up what the audience was hearing," Harris says. "These were then fed into the SIM, which compared what the field mics were picking up with the pre- and post-EQ'd signals going into and out of the console." Twenty-four FFT analyzers graphically displayed all the EQ curves so that Harris could then manually adjust the output of the P.A. so that it would look as close to that of the output of the console as possible.

A major logistical challenge for the FOH mixing crew was combining 300 channels of live and prerecorded music, as well as film dialog, music and sound effects. During the live shows, assistant sound designer Michael Kern of STG used a 48-channel Yamaha PM-4000 to mix the solo singers, backup singers and choir, as well as using it for the main FOH mix. Paul Freeman mixed the 76-piece orchestra on a second 48-channel PM-4000, and Lyle Dick of A-1 Audio set up the live band and prerecorded music mixes, which came off of two Tascam DA-88s, on a 56-channel Amek Recall board. Monitor engineers Randy Mitchele and Ted Jonas each used a 52-channel PM-4000M, and Curtis Anderson helmed another 64-channel PM-4000 (for the orchestra submix) to create monitor mixes. (Vocal monitor mixes were pumped out of 12 EAW SM-200s, orchestral and band monitor mixes were heard through 14 Spectrum Sound S-2s, and the FOH engineers listened to EAW JF-80s for near-field monitoring.)

Miking was done using an arsenal of transducers, which included 22 Vega UHF wireless microphones for solo singers, six Schoeps MK41s for the choir, four Shure SM57s, two 81s and six 98s, as well as several Sennheiser MD-421s and an AKG 451, on percussion instruments, six TLM170s on woodwinds and six RE20s on brass instruments.

Of all the sound mixes, the one for *Pocahontas* was the simplest. "We were going to use a special surround sound mix," STG's Glen explains, "but due to time constraints, the film's sound mixers had to finish the mix for general release. So we had a special mono mix made for the premiere, with left-, center- and right-channel sound, along with music and dialog, all mixed to two mono tracks—one for the actual soundtrack and one for backup. Since the 70mm playback heads get dirty quickly, a backup mono track was switched on so that the dirty heads could be cleaned while the movie was being shown."

In the end, not even a little rain could dampen the spirits of 100,000 moviegoers or the quality of sound that they heard. Thanks to meticulous planning and execution by Buena Vista Pictures, STG Entertainment, Spectrum Sound, and Spectrum's cross-renters, the "Pocahontas Premiere in the Park" was a sound success, and Disney's latest hit song, "Colors of the Wind," was not discolored by wind, temperature or humidity shifts. ■

Evan Ambinder would like to thank STG's Sean Glen, Spectrum's Curtis Flatt, EAW's Chris Doering and Kevan Gibbs, and Mickey Mouse for their help with this article.

—FROM PAGE SEP 7, AXIOM

be set up in a variety of 2/3-operator configurations, by providing individual control of motion control, joystick panning, PEC/Direct switching and group masters at dedicated music, effects and dialog sections. Twelve assignable pairs of bidirectional paddles provide Bus/Tape monitoring and Record In/Out switching of up to 48 tracks on single or multiple recorders, or integral DiskTrack. Programmable bus/stem reassignment and control of up to 64 premix return tracks are also available.

A new Surround Sound/Monitor Select panel provides selection of surround-monitoring formats, speaker muting and other functions, in addition to monitoring of individual channel sources and stems. External premixes can also be monitored individually, or within a soundtrack mix for Mix-in-Context.

Dynamic automation of surround-sound panning is available on all channels; pan automation information can be secured from panpots, assignable joysticks or the graphics

tablet. Other features include routing across a total of four 8-track stem mixes; 96 DiskTrack channels per operator, with concurrent access to record/edit tracks; and integral machine control via a quartet of serial ports (for controlling VTRs, ATRs, DA-88s and film dubbers). Each operator position is provided with access to an unlimited number of assignable joysticks, which enable the automation of dynamic surround sound panning.

In designing Axiom, SSL adopted the philosophy of "one control per function; one function per control." The result is a panel layout that is intended to be extremely easy to follow—no "layers" or EQ assignment panels to call up to change system parameters—and one that very closely mimics an analog console. All user controls are totally resettable and feature circular LED displays to show current settings of each knob.

The Axiom Preparation Station is a desktop unit that provides shared access to Axiom's DiskTrack for recording, editing and prelaying audio elements. APS also allows Axiom to offer Open Media Interchange, with the ability to import various file formats. The addition of an APS unit as an extension to DiskTrack frees Axiom for large-scale mixing projects, while allowing program preparation to be performed more cost-effectively through the use of shared resources.

STOP PRESS

SSL has announced the first sale of a 48-channel Axiom film-dubbing system to Dovidis, Paris, France, for installation within an existing mix-to-picture suite. The facility comprises two mix theaters and seven cutting rooms. ■

SHOWBIZ West

by Tim Moshansky

During an incredibly hot three days in Los Angeles, the ShowBiz Expo West descended on the Convention Center for seminars, conferences and exhibits for the film and entertainment industries. Of particular interest to *Mix* readers was a seminar entitled "The Revolution in Post-Production Sound," in which a panel of experts from the sound/post-production fields gave their opinions on the state of sound editing and mixing today.

Rick Larson, president of Larson Sound Center (Burbank):

"Computers and networks are allowing us to take advantage of telecommuting. We have several sound editors who have set up home editing studios. This has allowed us to expand our editing capacity without the expense of on-site facilities. We are actively working on integrating the studio into the fiber-optic communications network and soon hope to have our off-site editing studios directly linked with our main facility.

In post sound for TV broadcast, we currently produce a far better-sounding product than can ever be broadcast. However, HDTV with digital sound will be a reality in the consumer marketplace before we know it."

Bill Varney, vice president, sound operations, Universal Studios (Burbank):

"I was amazed to find out [how many] feature films have been edited completely on DAWs. And that's a far cry from what was happening six months or a year ago, when many of the big producers and directors in this town absolutely refused to edit on digital. The real difficulty that we find as managers of these departments is just how do we go. What kind of investments do we make? Is that technology going to survive? We found that a good way to really check out a system and have a feel for whether or not it's going to work in our environment is by renting first."

Jeremy Hoenack, president, Sound Trax Studios (Burbank):

"We've developed a new device called the S.A.M.M., a spatial audio motion matrix. It's kind of a three-dimensional joystick because it not only does the positioning correctly, but it also does the dynamics. For instance, if you wanted to have the illusion of a jet flying by very close, for a brief instant you would want to raise that sound as you pan it by. With the S.A.M.M. you can do that. It

also triggers a Doppler shift, and it can directly control a subwoofer to bring in a low, chest vibration effect."

Joe Melody, president, Echo Sound Services (Burbank):

"Most people who watch television or movies never knew what a sound editor was, and now before they have a chance to find out, his role is changing to more of a sound designer. This has been made possible by the advent of digital technology. Twenty-five years ago, the only criteria for a sound editor was to 'cover' the scene. He or she now has to ask themselves, did I use the best sounds, and did I contribute to, or 'tell' the story? The workstations are what have given them the opportunity and tools to do so."

J. R. DeLang, executive vice president, Todd-AO (Studio City, Calif.):

"Eight years ago, we established a formal training program within our organization. Since introducing the program we have had 300 students go through the class. We focus on editing fundamentals first, and then get them working on the computers. We rate each class, and if we need editors we hire from the group. Once they come into the company they are assigned to a senior editor who acts as their mentor. Ultimately, with all technology or wherever it goes, it becomes the person sitting behind the desk. If you just develop the people, your whole organization will be better for it."

Kim Aubry, vice president for engineering and technology, American Zoetrope Studios (San Francisco):

"It's not the digital technology that I have a problem with, but in our rush to throw everything into the digital realm, you run into a lot of problems. For example, R-DAT and ADAT and DA-88 are fairly low-cost, compact digital recorders, but absolute timecode vs. SMPTE? If you've ever tried to use this stuff, it's not as unambiguous and straightforward as old-fashioned analog machines with a timecode track, because there are all kinds of complex ways of initializing these machines."

For a complete audio cassette recording of this seminar, contact Conference Copy Inc., (717) 775-0580. ■

Tim Moshansky is a freelance writer and musician based in Vancouver, B.C. He has just completed his first book, The A to Z Guide to Film Production Terms.

New Products For Film/Video Sound

DAWN II SYNC, DSP BOARDS

Doremi Labs (Los Angeles) recently announced two new circuit boards for the DAWN II digital audio workstation. The Sync II board features lower clock jitter, VITC timecode reader, and sample rate pull-up and pull-down. The Out II output board features a built-in DSP and adds volume and fade control, features not available from the company's previous output board. Both boards may be inserted and removed from the DAWN II audio processor without removing the 3U unit from the rack.

Circle 191 on Reader Service Card

GALLERY SAMPLESEARCH UPGRADE

Gallery Software (distributed by Invision Interactive, Palo Alto, CA) has introduced Version 1.93 of its SampleSearch sound file retrieval and management software. SampleSearch 1.93 allows users to scan sound libraries and file directories for user-defined matches and can perform a range of file-conversion and batch-processing chores, including file-format translation, normalization and automatic top and tail. Gallery Software has been a Digidesign Development Partner since 1993, and SampleSearch 1.93 can manipulate all Digidesign file types, including SampleCell II banks and instruments, Pro Tools sessions and Sound Designer II files.

Circle 192 on Reader Service Card

SOUNDMASTER ION/MIDI CONTROLLER

Soundmaster Group (Toronto, Ontario) now offers users of its Integrated Operations Nucleus synchronization system the option to control MIDI devices, including digital delay and reverb units, samplers and other processors. Soundmaster ION/MIDI can send all MIDI 1.0 specification commands and also can record incoming MIDI data while building an EDL according to SMPTE timecode. Effects may thus be recorded live and later fine-tuned to sync with picture or other effects by editing the EDL. Soundmaster also announced that its ION Studio Operating Environment is capable of locking film and tape- and disk-based transports to run backward in sync.

Circle 193 on Reader Service Card

TREW AUDIO SLATE DESK

Trew Audio (Nashville, TN) introduces the Slate Desk, an aftermarket accessory for the Denecke TC-1 Time Code Slate. Designed to cover and protect the rear panel and connector cables of the Denecke TC-1, the Slate Desk also provides a useful surface for camera assistants' reports and protects commonly used accessories such as the Denecke Sync Box and Comtek receiver.

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CCS FIELDFONE CODEC

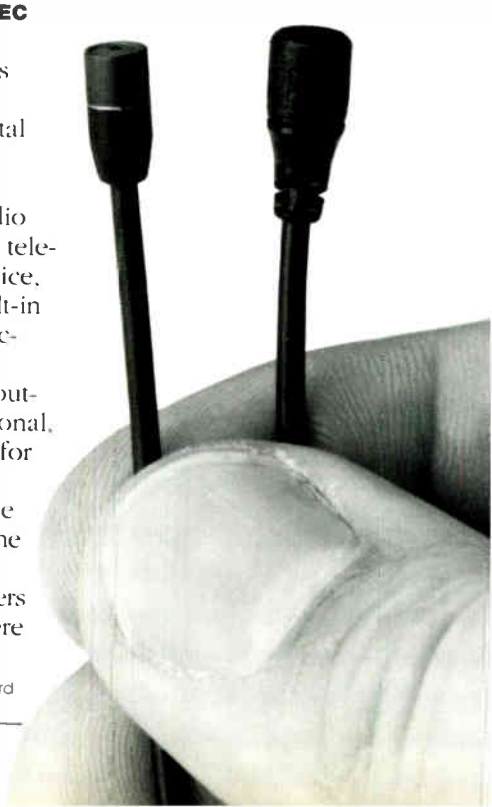
CCS Audio Products (Holmdel, NJ) says its new CCS FieldFone codec is the first digital audio codec (coder/decoder) to provide broadcast-quality audio over standard analog telephone lines. The device, which includes a built-in modem, line- and mic-level XLR inputs, and headphone monitor outputs, is fully bidirectional, eliminating the need for additional return cue lines. According to the company, the FieldFone will outperform two-line frequency extenders and will work anywhere in the world.

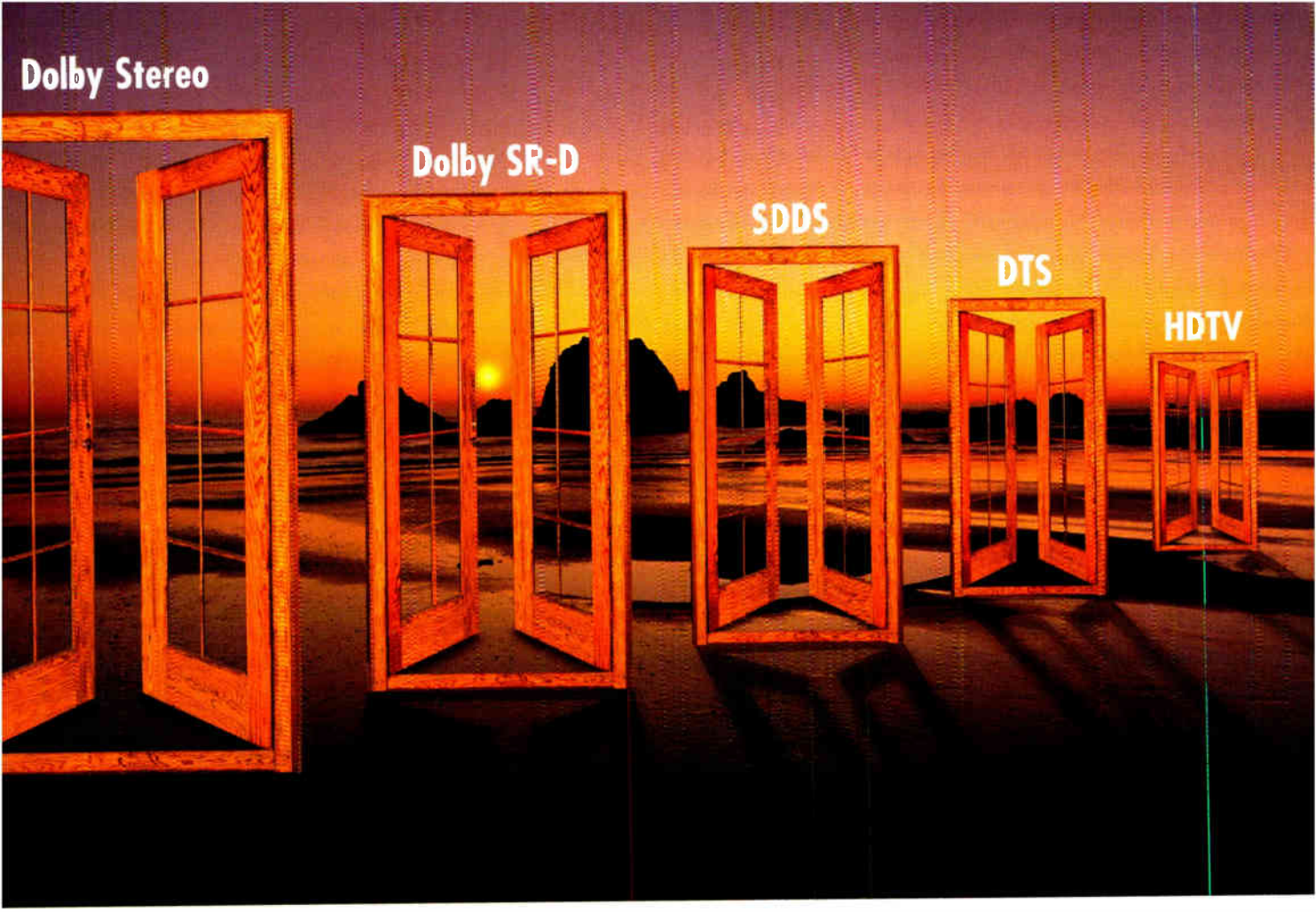
Circle 195 on Reader Service Card

SENNHEISER SHRINKS ITS MKE2 LAVALIER MICROPHONE

Sennheiser Electronic Corporation (Old Lyme, CT) has reduced the overall dimensions of its MKE2 miniature lavalier microphone by almost 20 percent (see photograph for comparison) and has improved the system's reliability in theatrical applications. The end cap is now removable, making the mic less vulnerable to sweat (which can be drawn into the capsule through the capillary effect of a mesh windscreen). The strain relief diameter has also been reduced, making the miniature microphone even more inconspicuous, yet the new model exactly matches the sonic characteristics of the old, says Sennheiser.

Circle 196 on Reader Service Card





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"Music for Dream On"

BY TOM KENNY

The sixth season of the quirky HBO hit series *Dream On* debuted late this summer, fresh on the heels of a Golden Reel nomination in the first-time category of music editing (for the episode "The Taking of Pablum 123"). Merelyn Davis and Gerry Rothschild of Burbank-based Merelyn Davis Music put together the music for each episode, and it might surprise many that the entire show, except for main title, is scored from production music libraries.

"Insofar as I know, *Dream On* is the only national TV production in the category of sitcom or drama that is scored using libraries," Davis says. "People scoff at libraries—they're always treated as second-best or something you stick in for the temp. But my feeling is that they're not generally used to their fullest potential.

"I'm a composer at heart," adds Davis, who discovered that she had perfect pitch around age three, "but I never really wanted to get into what that involves. Using production music and pulling it together to make a score is what I really love to do."

Davis, it seems, has created a niche in production music scoring for television. The advantages of working with libraries are many, she says: first, immediate audition for producer approval, then relative ease of making changes at the mix. Second, the huge variety. "I can have the London Symphony, a pop tune with vocals, a bagpipe, a solo

***Gerry Rothschild and Merelyn Davis, music editors on* Dream On**

sax," she says. "Then I can overlay percussion, which I often do. I'm not tied to any particular style, texture or era." (She does, however, acknowledge the problem of different cuts, recorded in different ambiences, bumping against each other in the mix. For that reason, the team does not add any EQ or reverb to the prelaid reels, so that the mixer has the freedom to match cues at the mix.) Third, the consistent quality of the recordings. And finally, the fact that production music can be licensed for worldwide and perpetuity. The *Dream On* production company uses Associated Production Music, though Davis has gone to other libraries on occasion, necessitating needle-drop fees.

The obvious down sides are that there is no exclusivity and, despite the fact that she tailors cues beyond recognition, there is no way that she can hit every visual cue as a composer could, or change musical moods multiple times in a single cue.

It all sounds so deceptively simple—piecing together ready-made panels and forming a quilt each week. But as anybody who has worked in the commercial world can attest, it's often difficult enough to find and edit the appropriate cues for a 30-second spot, let alone tailoring segments and score for a 30-minute program. Davis has spent the past 15 years learning and working with libraries, from her early days working off LPs at Audio Innovators in Pittsburgh to her entree into Hollywood on the show *That's Incredible* in 1982, working with Roy Prendergast at Nieman-Tiller.

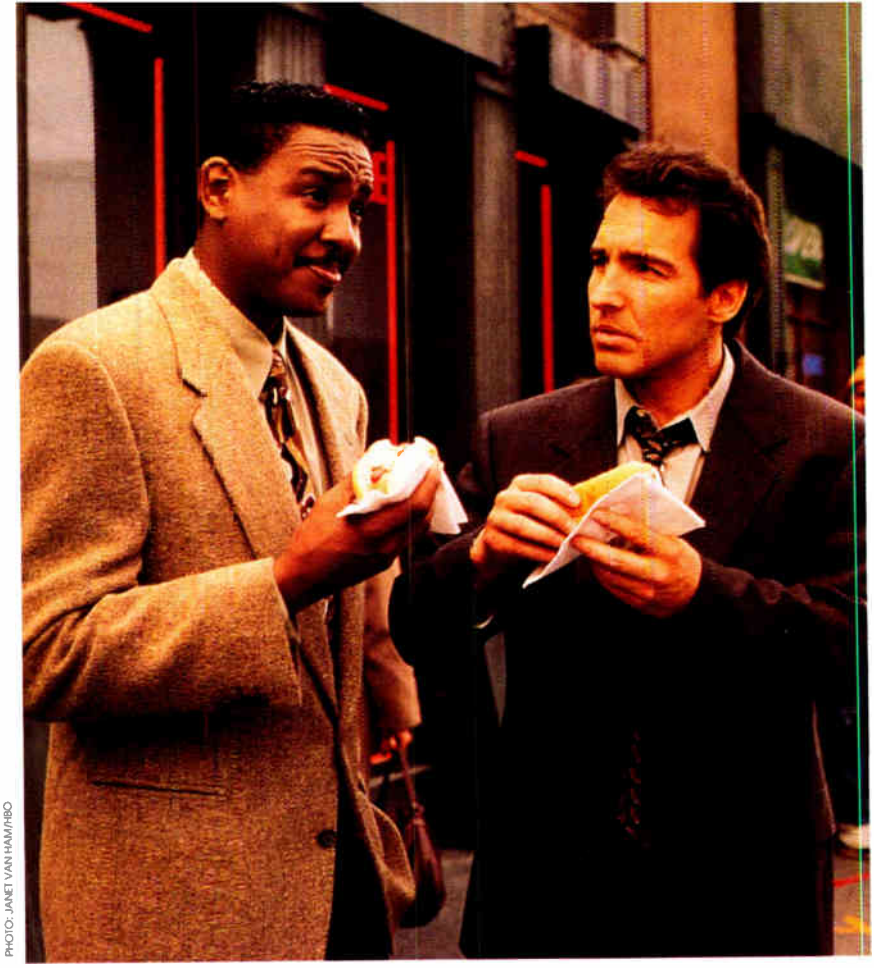

PHOTO: JANET VAN HAM/HBO

Characters Eddie Charles and Martin Tupper stop for a hot dog on the street.

"*That's Incredible* was one of the only shows done with libraries at the time," Davis says. "When I walked in for an interview, Roy asked, 'Do you have any knowledge of libraries?' I said, 'Just watch me.' He happened to have KPM on the shelf, so he gave me a segment to do, and Bingo! I had a job. Roy was one of the first people to come from a film music-editing background into television, and he was one of the first music editors to use timecode to actually prelay the show so it would be in sync with picture. I've continued that process all these years. When you're doing your own scoring, it's a brilliant thing to be able to prelay it yourself."

Insofar as I know, *Dream On* is the only national TV production in the category of sitcom or drama that is scored using libraries. People scoff at libraries—they're always treated as second-best or something you stick in for the temp. But my feeling is that they're not generally used to their fullest potential.

—Merelyn Davis

Work on the Playboy video channel followed, as did countless sitcoms and reality-based shows. Then Davis landed a gig with producer Kevin Bright on the Martin Mull series *The History of White People in America*, where she honed her aesthetic sense of using music humorously. Bright later teamed up with John Landis to produce *Dream On*, and Davis was brought on to create music for the pilot.

"*Dream On* is perfect for this type of scoring because of the clips, which take you into [the main character's] head through the use of archival footage, and because of its style of humor, which we can enhance by playing dated music or playing it really over-the-top. You have to use humor as the picture and script demand. For example, we might be in an elevator, and someone is choking. It's not funny in and of itself, but we might give it a humorous twist by using a cue to func-

GET REAL!

The final mix breathes life into the body of the visual medium. From the subtlest foley effect to the roar of jet engines, the audio must create a convincing experience for the audience. Each actor's voice must be treated like that of a skilled vocalist. The orchestral score must be combined with dialog and effects without losing detail and dynamic range. This final stage is the culmination of all the time, talent and investment that has gone into the production.

The Euphonix CS2000P provides the ultimate sound quality and digital manipulation capabilities for the final mix. Its EQ and dynamics perform well beyond other analog designs. The audio isn't digitized so it retains maximum resolution, dynamic range, frequency response, and timing accuracy. Version 2.5 software takes the complexity out of multi-format mixing. Instant reconfiguration of every control is done with the press of a button or triggered to code. Sophisticated signal processing, film panning and stemming is provided for every input.

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tion as Muzak that people might have heard in a elevator in the '60s or '70s."

The clips, those signature *Dream On* moments when the audience is taken inside Martin's psyche by the clever use of old film segments, are handled by Davis' associate Gerry Rothschild. Unless the clips involve something akin to the Andrews Sisters singing on camera, intercut with the show footage (as one episode did), the producers buy only the rights to the dialog. The music, then, must be created in a style that both matches the segment and provides insight into Martin's character. Often, in the originals, the music is married to the dialog track and must be masked by the new music.

PHOTO: ELIZABETH ANNAS

Renee Bartlett, office manager, in front of the "Wall of Sounds"

"Transitions for *Dream On* work the same as they do for any sitcom, except that we don't have a laugh track," Davis says. "I try to create some stylistic unity by using mainly an urban jazz or bluesy feel, so that the show has a semblance of being scored—though I'm trying this season to add some acid jazz and hip hop. A four-second transition can be just as difficult to choose editorially as underscoring a moment or a montage. I think the most difficult yet creative thing we do is deciding where the music is to be, what it is to be and then choosing the right cue."

The entire scoring process for each episode requires about four to five days of work for one person (including a one-day mix), though Davis and Rothschild split the time. Davis receives an offline edit and a script in advance for preliminary spotting, and she selects a number of cues to show the producer. "I like to watch a show cold and hear the music in my head," Davis says. "Then I jot down where and what I think music should be. Usually at this point, the producers have seen the show a million times, and it's often harder for them to be fresh."

Then Davis sits down with producer Rob Idels and auditions her selections. They decide on the selections and locations, and Davis spots the online with timecode in and out points. The selections are transferred from CD to ¼-inch as two copies of the online come in on ¾-inch video; Rothschild goes off to do the clips, Davis the score. When they're done, Rothschild generally does the prelay, sitting down with two Otari MTR-10 ½-inch 4-tracks in tandem. "We need all those tracks," Davis says. "One on each is for timecode. Then we do a lot of 'overdubbing' with percussion hits and the like, along with perspective cuts, alternate cues, etc. A good bit of the final tailoring is done in the prelay." (One note: Score cues are stereo; clip cues are in mono, often with optical noise added to create authenticity.) The reels are then taken over to Larson Sound in Burbank, to be mixed in Dolby Surround by David Fluhr and Sam Black.

Razor blades are still the name of the game for Davis and Rothschild, the self-proclaimed "last of the analog holdouts." The company has the two MTR-10 ½-inch 4-tracks, one MTR-10 ¼-inch machine and a 5050. ("These machines have been working day-in, day-out for 12 years," Davis says.) They use JVC 5550 U-matics for video masters, with a Cypher Shadow controller. One room houses a TAC 1042 board, the other a Soundtracs 842. The prelay and other critical listening is done through UREI Time Align 829s. ("I love them to death, and I would never part with them," Davis says.)

Davis takes a lot of playful ribbing from friends and colleagues for her lack of a digital editor, but she makes no apologies. "I'm so fast, I would love to have an edit-off," she laughs, while admitting to looking hard at Pro Tools III. "We've always managed to sound great, be on time and be on or under budget—the important things from the clients' perspective. But I've been waiting for the dust to settle a bit before committing to a specific digital system. And I think the dust has finally settled. It's a boutique business I have here, and all of our clients are longtime clients. That's always nice." ■

Tom Kenny is Mix's associate editor.

MASTER RE-RECORDING MIXER

RICHARD PORTMAN

BY JOHN MICHAEL WEAVER

The name Portman has been synonymous with "film sound" since American movies first found their voice almost 70 years ago. Richard Portman's father, Clem, arrived in Los Angeles during the late 1920s and was a pioneering force in the development of film sound techniques and aesthetics. By the mid-'50s, Clem was still very active in the industry and Richard had just completed a five-year hitch in the Marine Corps, where he had been trained as a machine gunner.

Being the son of a respected insider certainly helped Richard Portman get his foot in the door of the film industry, but it was by no means a guarantee of the kind of success he was to achieve in his own right. His first professional assignment—cable puller on the 1957 low-budget horror classic *I Was a Teenage Werewolf*—was followed by 13 years as a journeyman at various studios, during which time he became knowledgeable about every aspect of film production and developed into a veritable audio jack-of-all-trades. After relatively brief stints at Columbia, Disney, RCA, Ryder Sound and Ziv Television, in 1959 Portman landed a job at Samuel Goldwyn Studios, where he remained for nearly two decades and eventually established himself as one of the best sound mixers in the business. Since leaving Goldwyn more than 15 years ago, he has both freelanced and worked for extended periods of time at Lion's Gate, Walt Disney Productions and Todd-AO.

After 38 years in re-recording, Portman speaks candidly about Hollywood—the way things were, the way things are and the way things ought to be.

Richard Portman's ascendency within the ranks of Hollywood's most-respected sound mixers began in the early 1970s, shortly after he became a head re-recording mixer at Goldwyn. Between 1971 and 1984, he received eleven Academy Award nominations, winning an Oscar for his work on *The Deer Hunter*. He also won a British Academy Award for *Nashville* and has been nominated for three Emmys, most recently for the made-for-cable film *Citizen Cohn*.

During the past quarter-century, Portman has collaborated

PHOTO COLLAGE: TIM GLEASON

Re-recording mixer Richard Portman (center) relaxing at home, surrounded by shots from a few of the films he has worked on over the past 30 years. Clockwise from top left: New York, New York; Body Heat; Funny Lady; Heaven's Gate; Stay Hungry; Young Frankenstein *and* Papillon. *Portman Photo by John Michael Weaver.*

with many prominent directors, including Robert Altman, Arthur Penn, Hal Ashby, Mike Nichols, Sam Peckinpah, Sidney Lumet and Martin Scorsese. He has worked on literally hundreds of films, among them such classics as *Little Big Man*, *Harold and Maude*, *Where's Papa?*, *Carnal Knowledge*, *The Godfather*, *Young Frankenstein*, *Body Heat* and *On Golden Pond*. Some of his more recent projects have included *The Hand That Rocks the Cradle*, *The Pelican Brief* and *Dolores Clairborne*.

Today, after having logged nearly 92,000 hours on re-recording stages (according to union records), Richard Portman is about to go into semi-retirement from the film industry. Although not ready to give up mixing altogether, he now plans to devote the majority of his time and energy to teaching. During a recent interview at his home in Venice, Calif., Portman talked about his 38-year career in the motion picture business and shared some of his insights into the art and science of film sound. He also spoke with passion, wit and candor about "Hollywood"—his views on the way things were, the way things are, and the way things *ought* to be.

After a long and successful career as a re-recording mixer, you're about to embark on a second career—as a teacher. Why do you want to teach?

I've come to the point in life where I have to go teach out of "self-defense." Because of the general lack of knowledge of film producers—the blame has to be laid directly at the door of who signs the check—I'm being forced into retirement because I no longer can do my thing. The ability to even appreciate the order in which things have to be done and the care that has to be taken for motion picture sound recording is absolutely absent. Ninety-seven percent of the directors I work with today, particularly people who entered after, say, 1970, have no knowledge whatsoever of the sound recording arts. *Period.* So, I feel a responsibility to go back and try to teach people the right way to do it. I'm hoping I can bring back 1927 and get something going again. One, not only because it's just horrible to see the art mistreated, but, two, it will be a hell of a lot easier for lots of folks to make a living in it and not be "killed"—because it kills you when you can't do it right.

Ninety-seven percent of the directors I work with today have no knowledge whatsoever of the sound recording arts. I feel a responsibility to go back and try to teach people the right way to do it.

Some professionals who have worked their way up through the ranks in the film industry are skeptical about the value of a film school education. What's your perspective on that issue?

For me, now, the film school is "the studio," and it should be the one place where you *can* do it right. Because, if you really are a sound aficionado, you're going to be frustrated totally—completely out of your gourd—working in the Hollywood motion picture industry. When sound came in 1927, sound was king. Now, sound is Cinderella, the child that no one wants. So, it's important to go back and find out what the innovators did and how they solved problems.

The biggest problems today are the order in which work is done and the shortening of the schedules. We want to go back to the orderly progression of making a motion picture. For example, when I came along in the '50s, coming into the re-recording stage with a picture that was not locked was unheard of. Also, there is a very good technical and artistic reason not to come to the re-recording stage without your music—as a soundman, how can I balance the sounds in a reel of film until I hear all the sounds? What happens then when you don't have all the sounds to start with and you lay them up in predubs? When you pre-dub, you arrive at levels and equalizations. When the rest of the sounds and the score come along and you try to put those all together, those balances, those equalizations are *no longer valid*. Now you're locked into mistakes, and there's no time to fix them. You should *never, ever* go to a re-recording stage without your dialog, music and sound effects ready. This does not happen in today's world, and this is why it costs so much and why so many hours are expended. Now, there are those filmmakers who know this—those few, who I call the "knowing few."

When you first started out in the film industry during the late 1950s, who were some of your teachers and mentors?

My "school" was the Samuel Goldwyn Studios Sound Department. My primary teacher was a man by the name of Russell O. Hansen, the supervising recording engineer. The boss of the place, the sound director, was Mr. Gordon Sawyer, who was much-respected in Hollywood. Everything I will teach will be taught from that "book," because the Samuel Goldwyn Studios, to me, was the epitome of art and science. Everything that was supposed to point to zero, pointed to zero. There were no slipshod methods. And we had a motto: "We don't care how they do it at the other studios." We did it by the book. There were tolerances, but Mr. Hansen always told me that if you kept the small errors down, there would be no big ones. We had a regimen that we did every day on every piece of equipment in the studio. It was constant check, test, check, retest, check, keep our standards at plus or minus ½ dB. We left nothing to chance.

Did you have any technical background in audio before you started working at Goldwyn?

None. Zip. I had spent a reasonable length of time working on production. I had taken a correspondence course—RCA Institute's Basic Electronics. Mr. Hansen taught me everything practical. I was able to see the

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concept of how things worked, and I could figure out quickly what wasn't working. Because we ran a very small sound department, we did everything. I was trained in every facet of production. I'd be on a microphone boom, I'd do transfers, I loaded all of the sound trucks. If we had scoring to do, I'd set up the orchestra, set up all the microphones and do all the patching. So, when it came time for me to mix, I sat down in a room that I had been taking care of for eleven years. It was the finest equipment available. It had been maintained at the highest standards. I mean, I couldn't have had a better start.

What made you want to become a re-recording mixer? Did you see your father as a role model?

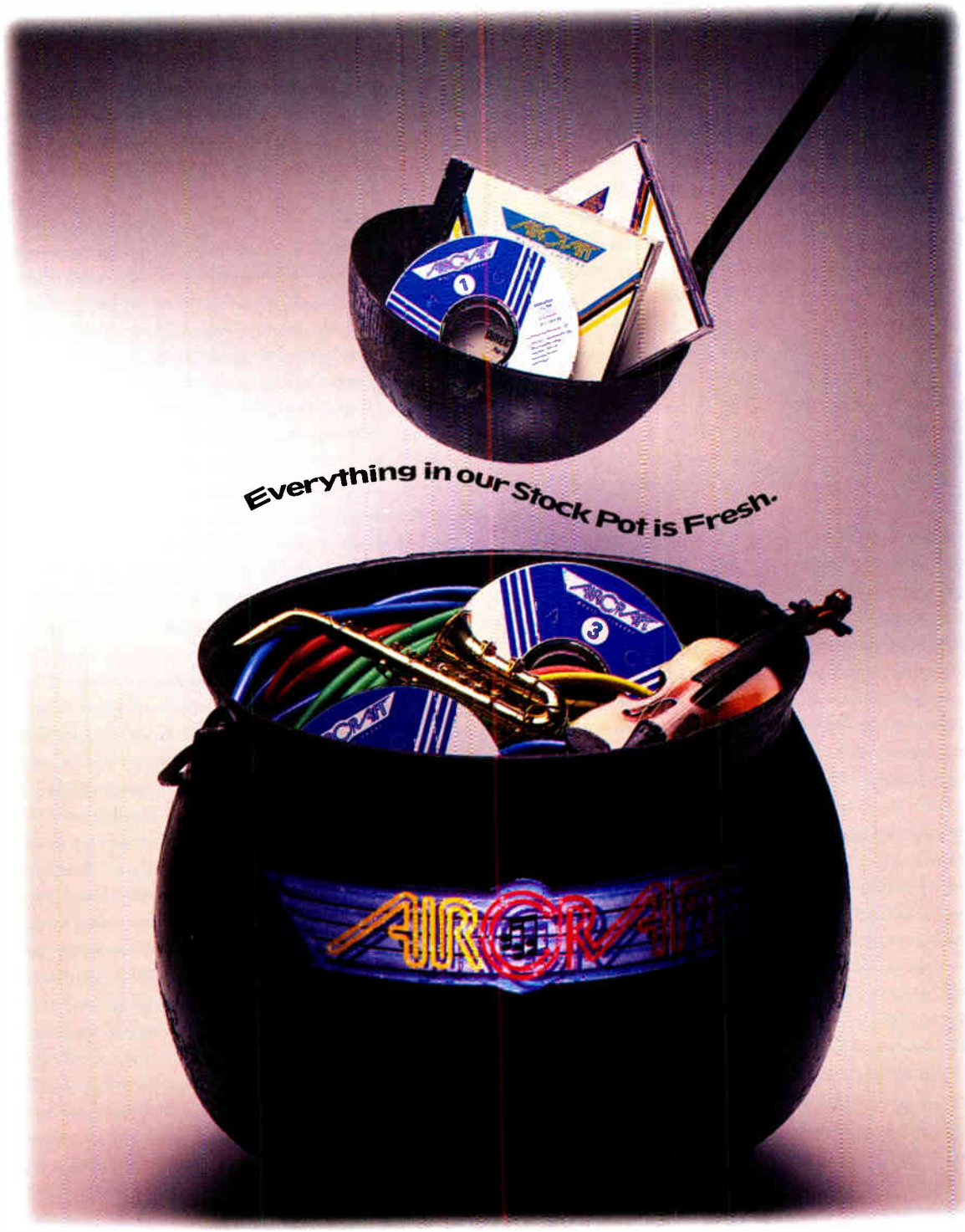
Well, not necessarily a role model. He was just "the very best." [laughs] I did work with him on the panel when I got a chance. Interesting enough, I had my job at the Samuel Goldwyn Studios something like eight years before my father came to work there. It was odd, though, to be called to the re-recording room by your father if there was some problem.

Were there other mixers who inspired you to want to become one?

Oh, yeah. The music mixer at Goldwyn, Vinton Vernon, was one of the finest scoring mixers. Today, they've gone away from the idea of "motion picture music." Nowadays, they score it, they take it off to some studio, dub it down and then bring it to the re-recording room. What is that? That's not a motion picture score. What I loved so much about scoring then was that the orchestra came in, sat down and they projected the picture on a big screen. And they did the music *to the dialog track*. If you couldn't hear the dialog, they redid it. They played lower or re-orchestrated. So, when it came to the re-recording room, it already had its "ups" and "downs." Now, they make record albums instead of music scores.

Who were some of your other teachers?

A fellow by the name of Buddy Myers—"The Silver Fox"—was the master mixer at Goldwyn when I got there. We didn't have back-up re-recording systems then. It was a live performance each time, and Buddy was the one that told me that it was just like flying an airplane. You didn't have to worry about the sound that was right there in front of you at the time, you took your ear off of that.



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Your formative years in the movie business coincided with the American film industry's transition from the "Hollywood studio system" to the current system of independent contractors. Today, the old system is sometimes characterized as an "assembly line" approach to filmmaking, which, by the 1950s, had become too staid, paternalistic and old-fashioned. You obviously believe that there were some very good things about that system.

What you're talking about is actors and actresses complaining that they weren't getting enough money, and directors and writers saying they couldn't get their projects made because of the studio bosses being restrictive. This, again, is at that power level. That has absolutely nothing to do with the *making* of a film. To get the film made efficiently, with the best-looking picture and the best soundtrack, it *has* to be run like the Navy or the Army. You *have* to do things in order. There has to be a regimen, because it is a science. S.O.P.—Standard Operating Procedures—if you don't have them, you're screwed.

So, you think that, in some ways, the baby went out with the bath water when the studio system was abandoned?

Exactly. You bet! The system they had was in place and working, and they tossed out the wrong part. They decided that they didn't have to own a construction company to build a house, and that was the last thing they should have done.

What effect did this have on film soundtracks?

The worst thing that happened to Hollywood was loss of control by one person from microphone to loudspeaker. When my father started, the recording engineer went out and recorded the location sound and took that track back to the studio and then re-recorded it. He was called the "unit recording supervisor" and was responsible for the sound of that movie all the way through. This was *very, very* good. Post begins on the set with the first slate. You've got to have somebody in charge of sound from beginning to end—a "sound director"—who is there to see to it that, one, the mechanics are adhered to and, two, that you get an artistic effort at a reasonable cost. Where is this person? The above-the-line people have forgotten completely how to run a studio. If they were in the United States Navy, the ship would sink.

How broad should a sound director's authority and responsibilities be?

Let me tell you what a sound director does. A sound director is involved with the project from Day One. A sound director is responsible for the equipment and proper functioning thereof. The sound director is responsible for the original recordings, listens to the dailies and takes corrective measures if there is anything amiss. The sound director sees to it that all the editorial procedures are adhered to and that we lose nothing in the translations. He or she sees to it that the music is recorded at the proper time and correctly for the film. The sound director is responsible for seeing to it that all of the sound pieces arrive at the appropriate place at the appropriate time in the appropriate condition, is fully knowledgeable of release formats and checks the final print.

Post begins on the set with the first slate. You've got to have somebody in charge of sound from beginning to end—a "sound director."

You often stress the value—even the necessity—of using as much of production sound in the final mix as possible. What do you believe the advantage of that is, other than the obvious one, i.e., you don't have to reconstruct it?

Well, that *is* the advantage. Besides that, there's the performance. When you take a photograph and record a soundtrack that goes with that photograph, there's a body language that goes with the dialog. So, when you don't have that track to use, you're missing half your negative. Half of the emotion of the scene is missing. When you try to replace that, everybody in the world knows it's phony. It's a matte shot. This is always the most expensive way to go and, often times, it is not a true "replacement."

From your point of view, what role should a re-recording mixer play in the filmmaking process?

It's like you bought a kit, and all the pieces are there. The role of the re-recording mixer is to put the pieces together and smooth the edges. "Time restoration" is the true function of re-recording, to make the film seem like it all happened continuously. The function of re-recording is not to invent sounds or experiment with different syncs or swap takes. On the re-recording stage, you should never have decisions to make, other than about emotional or dramatic impact. "Is it working?" But now, the re-recording room has become like an edit room. It's not time restoration, it's pandemonium, because of the lack of knowledge of the current crop of producers and directors about the process.

How do you like tracks to be prepared for mixing purposes?

A good sound editor will be a good mixer. The industry is in error by having the sound-editing people separate from the mixing people. A sound editor, nowadays, usually does nothing but bring a lot of sound to the stage, but they don't know anything about the problems of the mixer. If they sat down and mixed their own stuff one time, they wouldn't cut it the way they cut it. As an example of that, I was in New York and a young editor who had done the Foley editing came in. I looked at the cue sheets and I said, "No one in the world can mix this." A foot after a low sound is a loud sound and vice versa. So, I said, "Here, young man, why don't you just sit down here with your material." Oh, he was ever so happy to! Two minutes into the work, I hear him say-

ing to himself, "Well, why did I do this?" He never cut another reel that way again, and he's my fast friend to this day. Like-sounds stay with like-sounds. You don't put a footstep after a gunshot in the same track. Also, nowadays, you've got a hundred sounds in front of you, and they want one sound raised. Well, if you don't have it with the right sounds, you don't know where to look.

How does the amount of time spent making editorial decisions on the re-recording stage affect your ability to do your job?

It's the worst thing that can happen to the process. If you look at the older movies, there's lots of mistakes in them, but there's a *feel* to the reel. It used to be three rehearsals and a take. First rehearsal was a shambles. The second one, you were a little bit better under control. The third one, you learned most of it. The fourth time, you didn't quite know it, but you were up and you went on through. Okay, *Bang*! That was the reel. If they would say, "We love all of that, but just one little thing," then we'd cross-copy it or we'd just re-record the section they were unhappy with and cut it in. By lunch time, you've got a reel in the bag. By the end of the day, you had two reels (a "double") done. If your movie's ten reels long, how many days did it take you to mix it? Five. We did *Where's Papa?* in four days. And it's a swell job. Just fine. I think *Harold and Maude* took a little longer—12 or 13 days. My average schedule now is six to seven weeks.

Looking back on all the technological changes that have taken place during your time in this field, which ones do you consider to be truly major improvements?

[long pause...laughs] I can't think of one! As far as I'm concerned, they didn't really improve the art of re-recording at all, and, in many ways, detracted from it. For example, when they put in "high-speed" machinery—what a misnomer! Everything still has to be done at 90 feet per minute. It only means that you can go back and do it over again faster. So, when they were able to put in a recorder that could back up and go forward, directors doubled and tripled their schedules immediately. Whereas, it was often true that the three-rehearsals-and-a-take approach produced a better result because it was a *performance*, a spontaneous event. If we want to get a "technological improvement," let's get a microphone that has a real high front-to-back ratio, that, when you walk behind it, you don't hear *anything*. Now we're talking about a tool!

What's your attitude toward using console automation?

For one person to mix by themselves, it is very necessary to have a computer. I'm a solo mixer. I like to work by myself whenever I can. I don't have to argue with anybody when I'm doing it myself. When the music is supposed to go down under a line of dialog, I take it down. You get a better mix—faster—with a solo mixer working with a music studio-style second engineer. The way I like to work in New York is with the sound editor on the board handling the premixed stuff that he built back in his shop, and I take the dialog and music. This is the ideal situation.

What are the defining characteristics of an effective soundtrack?

It's uncluttered. Clarity. You have to hear all the words. When an idea is playing, *that* idea is playing. You can't have clarity with lots of sound. We're looking for subtlety more than we're looking to pound you over the head. The first thing I would do is to get rid of as much as you can. Simplicity.

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So, you advocate a minimalist sound aesthetic?

Less is best. Motion pictures are not reality. The best thing you can do is be sparing. Play what is important to "the play." If I see someone walking down the street, I know I need traffic, but I don't need a car effect for every one I see. If there's music, I don't even need the sound of traffic because I *see* the traffic. Don't play things that aren't important to the scene. What is this movie about? The traffic? No. Is it about what those two guys talking? Yes. Is it important to hear what they're saying? *Yes*!

Do you foresee a future in which it will be commonplace for one person sitting in front of a workstation to be responsible for putting together and mixing the entire soundtrack for a feature film?

You bet!

Will that be a positive development?

That depends on the person sitting in front of the workstation. What's going to happen is there won't be any more people like me—we're dinosaurs. My job will be done in the editing room.

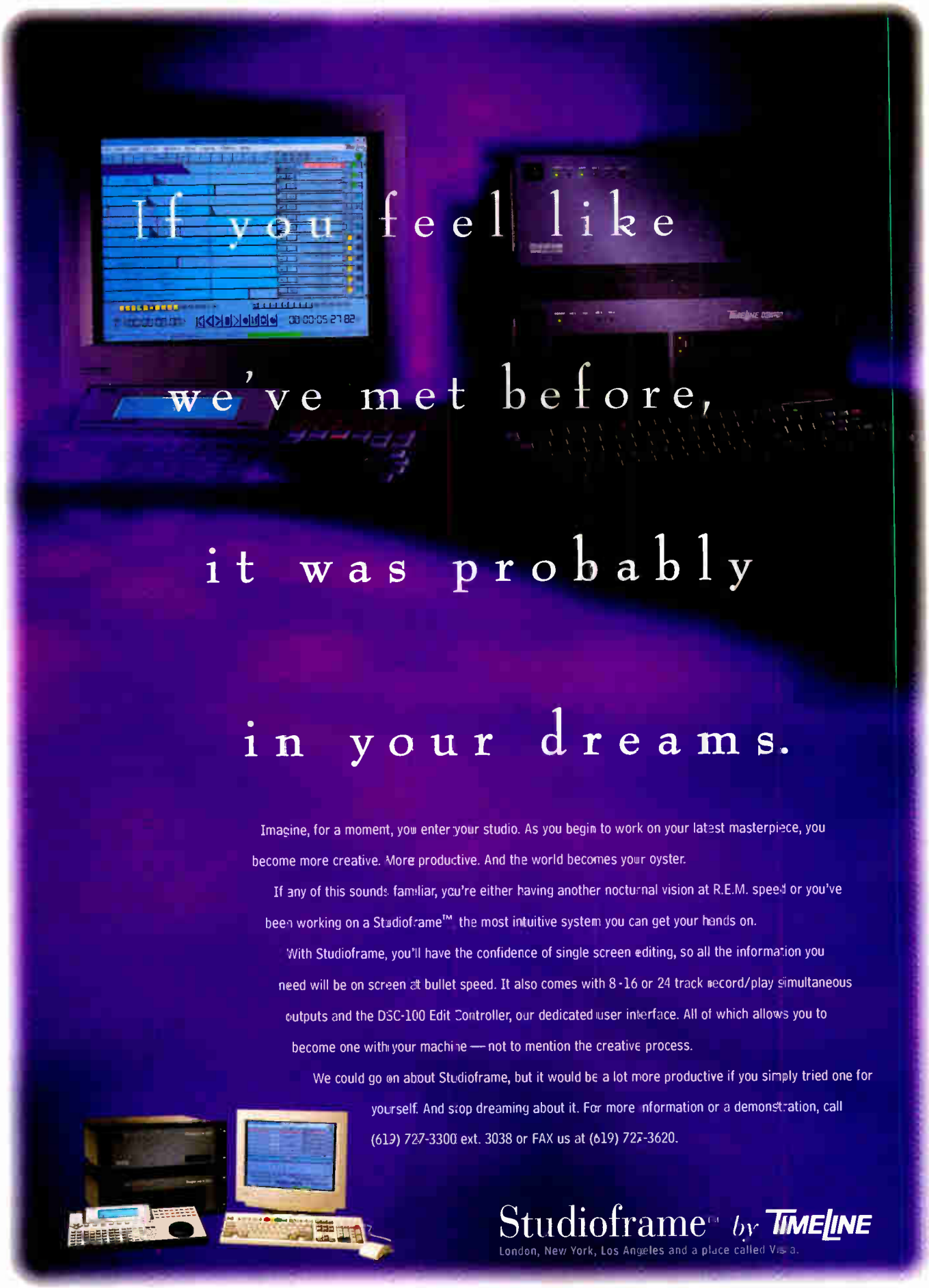
Of the hundreds of films you've mixed, which ones are you most proud of?

It's hard to say. I've got two or three that I really like. *Little Big Man* is one of them. And *Where's Papa?* and *Harold and Maude*. I also liked *The Last Detail* a lot...Alan Rudolph's films—*Remember My Name* and *Choose Me*. Altman's *Three Women* is a sensational film—it has one of the best soundtracks you'll ever hear.

Are you going to mix any more films?

If someone wants me to mix a film, and it fits within my teaching schedule, I'll be glad to do it. I'd just as soon keep my hand in. I can't think of anything more fun to do than make a film. The reason I'm going to go teach school is because it's not fun now. It *ought* to be fun, and the only way it can be fun is to go back to the basics. If I mix another film, it will have to be done the way I want it done. The first words out of my mouth will be, "Are you *ready*?!" ■

John Michael Weaver—a teacher, writer and recording engineer/producer—wishes to thank Rachel Pasternacki and Sophie Rossetti for their assistance with this article.



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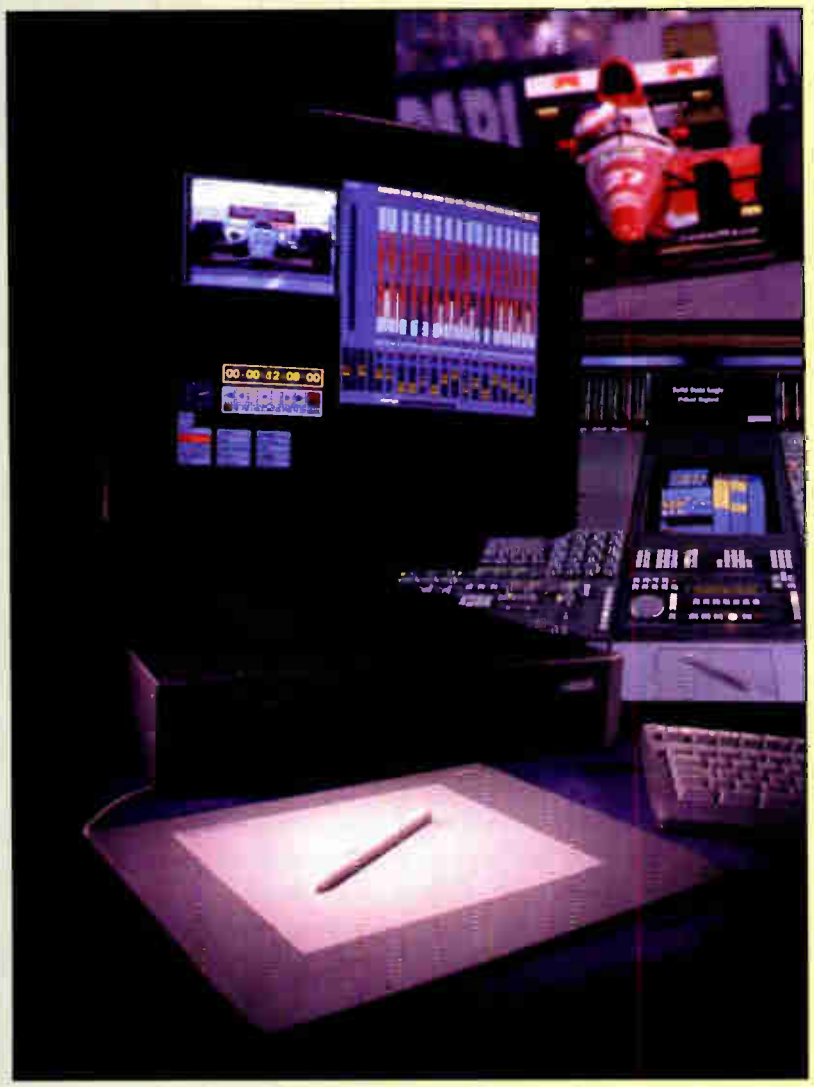
BY MEL LAMBERT

For a variety of relatively obvious reasons, the film and video industry is pretty conservative. On the surface, it will embrace whatever technology gets the job done, yet long-term buying decisions are based on almost equal proportions of cost-effectiveness and paranoia. That the new hardware has to be more efficient, creative and/or reliable (in any combination) goes without saying. After all, who's gonna move backward?

And the paranoia? For the hired help, consider that new technology might put people out of a job and/or force them to relearn new skills. For the facility owner, what about the stark reality of replacing technology that is still being amortized, or

The SoundStar DMS 1600 at Warner Hollywood Studios.

The Octavia System



for which the current investment runs in excess of six figures? No wonder the Hollywood spin doctors are being kept busy!

The "when/why/how?" quandary is at its most pressing when topics of conversation run to the subject of replay and record media. For decades, the film community has used multiple 16/35mm mag units to handle replay of the various music, effects, dialog and Foley sound elements that will be used in the final mix, as well as mono or 3/4/6-track mag recorders for the final soundtrack. The reasons are both historical and practical. The tradition of a team of sound effects editors preparing on Moviolas individual elements that can then be slipped in sync with the picture is a tried-and-true technology. The capital resources tied up in a machine room full of Magna-Tech, Albrecht and other brands of dubbers is considerable.

Obviously, the methods of film soundtrack preparation have gone through some fundamental changes in recent years. For just about every type of sound effects, dialog, foley and music editing, razor blades and sprocketed mag film have given way to hard disk systems, and in some of the more modern dubbing stages now coming online, the replay/record medium is totally nonlinear. Hybrid solutions also exist; it's not unusual to have music tracks replayed from a Sonic System or Pro Tools, with ad-

Solid State Logic's Axiom Preparation Station

ditional effects from a modular digital multitrack deck, and the final stems and multichannel surround sound mixes being laid off to Sony PCM-3324 or -3348 digital multitracks.

In the near future are "digital dubbers"—the potential disk/MO-based replacements for analog mag and tape systems. The field of such devices is changing and evolving, even as you read this, but let's take a glimpse at how the application of digital dubber systems will alter the way in which film and video soundtracks are prepared. Because this is emerging technology, consider the following a "first look." We will follow up in a future issue with comments and applications from real-world mixes.

MARKETS FOR NEW DIGITAL SYSTEMS

The advantages of these new random-access digital replay systems are obvious: instant search/rewind time and, with a suitably configured system, the ability to produce EDL/cut lists for editorial rooms that need to prepare updated temp tracks. In a nutshell, I would suggest that two complementary markets exist for digital dubber systems.

A major segment will be taken by versions of existing workstations that offer 9-pin/ES-Bus serial control from a dubbing console's automation system or master transport controller. In this way, dialog, music and effects elements can be prelaid to hard disk or MO; arranged in playback sequence using existing database information as imported timecode labels; and then triggered to play back against H:M:S:F or feet/frame locations on the stage. Any changes that might be required—either to select alternate sound elements or to move cues against timecode or feet/frame references—would be made using a very simple user interface derived from an existing workstation front end.

But for many users, even more interesting potential is offered by a fully integrated system, which would allow EDLs to be transferred *back* from the dubbing stage. Now, any picture changes would be reflected instantly in the timecode designations used to generate the component dialog, music and effects elements premixes, which would greatly reduce the amount of time required to produce subsequent temp dubs or premixes. The key, of course, is that the editing software used in the editorial rooms to prepare the cut elements can easily be updated by importing the relevant timecode or film data that corresponds to the picture changes.

And in non-film applications, including mix-to-picture for TV/video production, the innovation of serial-controllable hard-disk playback systems will dramatically speed access times and allow sound files plus EDLs that have been prepared in editorial workstations to be accessed directly from the mixing stage—either via removable media or networked hard drives and related technologies.

SOUNDSTAR DIGITAL MACHINE-ROOM SYSTEM

One of the first systems that came to my attention was co-developed by SoundStorm, an independent sound editorial house based in Burbank, Calif., and a group of computer experts headed by John Daley, VP of research and development. During the past several years, SoundStorm has worked on sound editorial for a number of landmark films, including *Clear and Present Danger*, *The Fugitive*, *Under Siege* (all Academy Award nominees), *Batman Forever*, *Cobb*, *White Men Can't Jump* and *Fatal Instinct*.

"New equipment should be invisi-

ble to the mixers," says SoundStorm president Gordon Ecker, "yet must get the job done. The SoundStar DMS [Digital Machine-Room System] provides 48 digital channels in the space of one 35mm mag dubber or 96 channels in a single-rack cabinet. DMS has the feel of a mag dubber, slips tracks like a standard mag dubber and, because it's nonlinear, keeps them slipped."

A major evaluation for the system took place in late June at Warner-Hollywood while remixing tracks from *The Tie That Binds*, a movie for which SoundStorm handled sound editorial. In mid-July, the system was scheduled to be put through its paces in earnest while mixing a new movie at Warner-Hollywood, *Steal Big, Steal Little*, for which the plan was to replay all sound elements from hard disk.

According to Ecker, "Bruce Stambler supervised all sound editing chores [at SoundStorm] using Fostex Foundations. Cut material will be transferred on MO drives to Chicago Pacific Entertainment, Santa Barbara, [a facility that recently received a prototype SoundStar DMS system] and Warner-Hollywood for predubs."

A 16-output DMS digital dubber will cost $30,000; basic systems require a Stage Interface, which adds $4,000, plus a Master Control ($4,500) that handles an unlimited number of dubber units. The system is based on a Spectral Digital Audio Engine with highly modified software that handles file management and disk interface; Spectral's new Translator 8-channel digital audio format converter handles Alesis ODI Optical, Spectral SMDAI, Tascam TDIF-1 and Yamaha Y2 digital I/O signal formats. Each system provides 128 virtual tracks per DMS, routing to the 16 analog/digital hardware output ports. Reverse playback is available for all channel outputs; scrub can be across four designated outputs.

The Master Control Unit (MCU) is designed to allow machine-room operators to handle all of the system's administrative functions, including machine status, system patching, channel configurations and remote control. Various remote units (one for each of the console operators) are linked with the MCU to the DMS mainframe via a proprietary TCP/IP Ethernet protocol. SoundStar's network implementation provides for a single controller for a stand-alone system, or multiple control points employing a customized Local Area Network (LAN) topology for larger systems that require system access from the machine room as well as each mix position.

Because of SoundStar's use of a relatively conventional networking technology, Wide Area Network (WAN) installations to link multiple stages with a central machine room are also possible. The Stage Interface handles all timecode I/O and transport control from the console automation system via conventional 9-pin serial protocols, Lynx II commands or a Ketcham Box.

"Initially," John Daley reports, "we will be using 650MB and 1.2GB MOs to transfer material from the editorial rooms into the DMS's hard drives, which are capable of handling real-time playback of 16 channels per drive configuration. Eventually, we plan to offer direct OMFI-compatibility for the system, in addition to direct importing of Foundation, Sound Designer, [TimeLine] DAW-80 and related file formats. When hardware becomes available, we also plan to implement direct playback from MO drives. Initially this will probably be limited to eight real-time playback tracks, although that will dramatically reduce the inload and offload time required during a dubbing session, and allow news materials—such as alternative dialog lines, for example, or additional sound effects—to be put online very quickly.

"Also planned is full backward compatibility with existing editorial workstations, so that picture changes and other decisions made on the dubbing stages can be made available instantly to the effects and dialog editors, for example, via conventional EDL structures."

"Although 35mm mag film, in conjunction with 24-track analog and DAT, have served as standard tools for the dub stage," Ecker says, "it is clear that a digital machine room provides advantages in flexibility, with significant cost and time savings. We've been working on this concept for almost seven years, but cost-effective technology to support it wasn't available until recently.

"SoundStar's design objective," Ecker continues, "was to create a reliable system that could be expanded; that complemented existing equipment; that used removable media; and that would be easy to use and install. DMS can be configured from a stand-alone, 16-channel system to a virtual machine room of 1,500 or more channels. The Stage Interface seamlessly blends the system into existing machine-room operations, while the master and remote control's touchscreens make for fast and easy system configuration and use."

"Working with the mixers at Warner-Hollywood [studios] helped to ensure that DMS emulates all of their present-day procedures," says Randy Heiss, VP of engineering, "and offers all their familiar features such as reverse play, scrub, jog, cue delay and advance. We refined the software to quickly configure the outputs as mono, or grouped as stereo, 3-, 4- or 6-track units. Once configured, the tracks can be advanced or delayed as a unit. Internal patching of tracks to outputs with the graphical user interface and automated track patching speeds up reel changes and is as easy as using a traditional patchbay. System output channels are routed through conventional patchbays, so the DMS can be run transparently with other source machines.

"The MCU software is optimized for the machine room to handle all of the system's administrative functions. The remote provides all of the functions that the mixers need: track status, track delay/advance and transport functions. On a JSK-equipped stage, mixers can elect to use JSK controllers they are familiar with."

TIMELINE MDR PLAYER

Currently under development at TimeLine, and being used on selected video- and film-mixing projects, is a modified version of the firm's DAW-80 workstation. MDR comprises a stand-alone rack-mounted unit capable of accepting removable media (MO or hard drives) in TimeLine, Sound Designer or OMFI-compatible formats. Each DAW-80/Studioframe-based unit plays back up to eight channels; multiple MDR Players can be synchronized to a timecode source via Film Lynx. Through networking, a multichannel system provides a virtually unlimited number of tape tracks, both forward and reverse—a feature already supported in DAW-80 workstations—plus advance/retard of individual tracks or groups of tracks from a remote PC. In addition, the DAW-80's modified StudioMaster system software can be used to access any of the online units, allowing editing operations.

TimeLine believes that the MDR will be a key enabling component to the all-digital facility: a viable digital playback source. "Elimination of the

"STATE-OF-THE-NATION" IN DIGITAL DUBBER DEVELOPMENTS

MANUFACTURER/SYSTEM (with comments from manufacturer)	Plans for a Digital Dubber?	Based on Existing Workstation?	System Format	Total Capacity	MO Format	Network Protocol	Offers OMF Compatibility?
Akai DD1500 Digital Audio Workstation	YES	DD1500	MO Networked	96 GB	1.3 GB	Ethernet	YES

Designed as a dedicated system, the DD1500 offers a graphical user interface and faster, more reliable performance than a computer-based system. Its modular design allows the DD1500 to be configured as an 8-track system using MO disks or as a 16-track system using hard drives, and includes 16 channels of digital mixing. Standard sync functions include reading/writing SMPTE timecode at all frame rates, as well as reading VITC. A bi-phase reader/generator is also included, allowing integration into film editing environments; RS-422 support provides machine control using Sony 9-pin protocols. Future expansion will provide full Ethernet network support, DSP functions such as digital EQ, time stretch, pitch-shift, reverse and more. Importing EDLs and auto-conforming will also be added. System updates are performed easily by loading the operating system from floppy disk into flash-ROM."

AMS/Neve AudioFile and Logic Series Consoles	YES Integrated into Logic Series Consoles	AudioFile	Hard Drive	TBA	TBA	Open Architecture	YES

Digital replay systems for film-recording stages will only be considered if they match or surpass criteria set by existing analog methods. The audio performance required of digital replay systems for such applications exceeds 16-bit resolution; AMS/Neve now offers 24-bit recording capability. Removable media for AudioFile has offered the same flexibility, and our active participation in the OMFI allows us to address practical compatibility issues. Our users are currently benefiting from the ability to replay audio from picture cutting systems such as LightWorks and Avid. Integrating a digital replay system with a fully automated digital console, AMS Neve provides the means to manipulate all audio parameters non-destructively, resulting in an environment which enhances the creative process."

Avid Technology AudioVision DPR and AudioStation DPR	YES	AudioVision and AudioStation	Hard Drive MO Networked Removable Media	Currently up to 126 GB	1.2 GB (limited to low-density edited sequences)	ATM Shared SCSI drives	YES Supports all OMFI formats; OMF 2.0 "coming"

The Avid Audio Digital Player Recorder combines the traditional operations of audio tape recorders and magnetic dubbers with the benefits of media integrated nonlinear computer technology, available with or without integrated digital picture. The initial DPR release of June 1, 1995, provides mag dubber' type functionality including: punch in/out, track /clip slipping, serial control via 9-pin protocol and the ability to synchronize multiple systems for additional tracks. Currently the DPRs are available in 8- and 16-channel modules; all systems include 8/16-channel analog and digital interfacing. Additional support for hardware control will be integrated to facilitate operation of multiple systems to efficiently provide unlimited audio track input/output for any size audio mix project. Additional benefits of the DPR over ATRs and magnetic dubbers include single or multiple track and sound clip alignments; slipping track copies, moves; Integrated project management; Avid media compatibility (AudioVision, Pro Tools, & MediaComposer); extensive OMFI compatibility; advanced machine control; separate time code in/out track and more. AudioVision DPRs and AudioStation DPRs are upgradable to AudioVision and AudioStation Editing Systems.

Digital Audio Research Sabre and SoundStation	YES	YES	Hard Drive MO Network	64 GB	1.2 GB	Ethernet or ATM	YES

We can currently source eight channels direct from MOI, with mix, EQ and automation data stored with project. Our digital dubber will take these MO disks or transfer the data in the background to their own internal hard drives for later replay.

Doremi Laboratories DAWN II Workstation	YES	DAWN II	Hard Drive MO Network	4.2 GB	1.2 GB	ATM	YES Via S/Link

The DAWN workstation functions as a Digital Dubber controlled through its 9-pin port. The basic dubber has eight tracks and is expandable to 32 tracks. Doremi uses the APR-24 version of the 9-pin protocol to extend the controllability of the serial commands beyond eight tracks. Today, the Digital Dubber requires a Macintosh. Doremi will release a new firmware for the DAWN in Q4-1995 that does not require a Macintosh. The user can complete a project with the stand-alone dubber and can also connect a Macintosh and run the DAWN software for sophisticated editing.

Fairlight ESP MFX-3 Dubber	YES	Proprietary platform	Hard Drive or MO	Six times 4.3 GB	1.2 GB		YES

The standard Fairlight MFX3 is currently being used as a dubber at Todd-AO, Hollywood, and we are receiving feedback on a regular basis from all the major film companies. The dedicated Digital Dubber must be inexpensive ($1-1.5k/channel), have limited editing capabilities, use some form of removable storage medium and read most major file formats. Other features that will be addressed by our machine are the ability to lock to picture in reverse, control multiple dubbers from a single control surface, and a very simple user interface. The price seems to be readably attainable. The removable storage via hard drive or MO is available off the shelf. The mixers seem to want to restrict time-consuming changes by the director of the film so they are very hesitant to have any sophisticated editing capabilities (beyond track slipping) on the dubbing stage. Most, if not all, of the potential dubber customers want us to directly access Avid, Waveframe, and Pro Tools files. Also, they desire to avoid interim conversions such as OMF. The difficulty (other than the obvious political issues) is the fact that software constantly changes and what you can read today may not be readable a year from now. However, initially, we will probably be OMF-compatible.

Fostex Corporation Foundation 2000 Digital Dubber	YES	Foundation 2000RE	Hard Drive or MO	9.0 GB	1.2 GB	Shared SCSI drives	Under development

Fostex plans to develop a dubber version of its Foundation 2000RE, supporting both disk and MO drives. Operation will be via a front-panel interface, or via remote-control serial protocols, including RS-422 and Sony 9-pin. Synchronization will be direct to bi-phase or SMPTE timecode. Electronic links to cue sheet management and project management software will also be supported.

MANUFACTURER/SYSTEM (with comments from manufacturer)	Plans for a Digital Dubber?	Based on Existing Workstation?	System Format	Total Capacity	MO Format	Network Protocol	Offers OMF Compatibility?
Roland Corporation DM-800 Workstation	YES	DM-800	Hard Drive or MO	8.0 GB	"All current formats"	Shared SCSI drives	Under development

Roland already has many customers using our DM-80 and DM-800 products for film and video post production. Eight-track stems for music, dialog and effects are being posted offline, and the multiple DM Series units are synchronized on the soundstage for the final mix. The addition of RS-422 control for the DM-800 just adds greater control options for the mix engineer. We have no current plans to develop a specific product as a 'digital dubber.' However, enhancements will continue to be added to our existing product line to offer more and more features to the film and video post user.

Solid State Logic Axiom Film Dubbing System with DiskTrack	YES	Utilizes SSL-proprietary digital technology.	Hard Drive MO Networked	"Other"	650 MB	Ethernet ATM Shared SCSI drives	YES (Future development)

There is a desire among the film community to replace film dubbers with a hard disk equivalent. This presents a few problems, both with the scale of the systems required (i.e. lots of tracks) and with file compatibility as editing rooms may have more than one brand of hard disk editor.

Scale of Storage: With the introduction of DiskTrack, SSL has already demonstrated that it can achieve the scale of hard disk storage and access required—up to 96 tracks per operator in multi-operator configurations.
Media Interchange: The recent introduction of the Axiom Preparation Station (APS) has added the ability to import a wide range of file types used in the film industry, such as LightWorks, Pro Tools, AIFF, .WAV, and enable work to be brought into the dubbing environment. It is our intention to add others.

Sonic Solutions Sonic System; MediaNet	YES	Sonic System	Networked	"Unlimited"		MediaNet, which can be either FDDI, CDDI or ATM	YES

Many of our current audio post sites are using multiple Sonic Systems on their production process: transfer, editing, dialog, sound effects/Foley and ADR are all performed on a single network where editors can share processing resources, disk drives, and even the same sound files simultaneously. Extending the network to include the dub stage is a natural progression.
Sonic Solutions is currently working with several large audio post facilities to specify and develop the key features needed in this final stage of audio post work. Because the current power of our USP-based Sonic System—16 channels of 24-bit digital I/O per card, with up to six cards per system—and our advanced networking and file-sharing architecture, Sonic Solutions feels that it is in an ideal position to offer an integrated, open-architecture solution.

SoundStar Corporation DMS 1600 (Digital Machine Room System)	YES	Spectral hardware with custom SoundStar software	Hard Drive MO Networked	"Other" limited only by size of available media.	1.2 GB	Ethernet	YES

DMS 1600 is a distributed data management design, expandable from a stand-alone 8-channel unit to a networked virtual machine room of 1,500 output channels. Designed with the help of leading mixers, the system emulates mixers' present day procedures and offers all their familiar features such as reverse play, scrub, jog, cue delay and advance.

The system is based on the proven Spectral Digital Audio Engine hardware; Virtual Machine Room application and network software are designed by SoundStar. All DMS systems are delivered configured for network operation with SoundStar proprietary TCP-IP, 10-Base-2, Ethernet protocol installed. Custom WAN configurations will be available.

With the DMS virtual dubber, tracks can be quickly configured as mono or grouped as stereo, 3-, 4- or 6-track units. Automated grouping of tracks makes reel changes a breeze. Once configured, the tracks can be advanced or delayed as a unit. Internal patching of tracks to outputs with the graphical user interface is as easy as using a patch bay.

Studer-Editech Dyaxis II	"Maybe in the Future"	Dyaxis II	MO Networked	369 GB (linear) 194 GB (AC-4 compressed)	1.2 GB	Ethernet	YES

Editech has long been a pioneer in removable media and networking functions. Our current product line is used in all aspects of film and TV production by world-class studios in all major markets. We are the only manufacturer to offer a product line that includes low cost, film-tach controllable, 4-channel units that can function as a dubber in a film chain.

Studio Audio & Video, Ltd. Octavia Workstation	YES	Octavia	Hard Drive	MO Networked	1.2 GB	ATM	YES

Octavia can be expanded as required in terms of storage, processing power and audio I/O channels. Driving the Octavia hardware is Sadie3. The system comprises one or more Octavia units, each providing 8 channels of audio input and output. Up to 10 Octavia units may be chained together providing 80 channels of digital and analog input and output, and 1.3 GFlops of processing power. Each unit will be able to play back 24 tracks from one SCSI disk. Studio Audio's Sadie disk editor has been designed to be entirely complementary to Octavia. An ideal pre-mix/dubbing configuration would be to edit M&E on Sadie and transfer those tracks, including EDLs, via the Sadie ATM network or removable media to Octavia. The Octavia modular system would then be able to mix M&E and dialog down to a 5-channel Dolby sub-mix, or whatever is needed.

TimeLine Vista StudioFrame DAW-80	YES	NO	MO	2.0 GB (standard) 4.2 GB, 9.0 GB and others (optional)	1.2 GB		YES

The MDR is a stand-alone, rack-mounted unit capable of accepting removable media (MO or R-Mag) in TimeLine DAW-80, Sound Designer or OMF formats, and playing back eight channels. The system uses technology from the TimeLine Film Lynx, for synchronization and motion control. Through the use of networking, the MDR will allow virtually an unlimited number of disks to play in sync, both forward and reverse (a feature already supported in the DAW-80 workstations), and allow advance/retard of individual tracks or groups of tracks from a remote PC. The network PC connection will also enable Studioframe editing software to be used to access any of the online units, allowing editing operations to occur as needed. The elimination of the transfer operation (to either film or tape) prior to dubbing will improve flexibility during dubbing, thereby exceeding that of film because copy/loop operations can be performed online. The ability to perform single track or multitrack editorial changes or picture conforms at the dub stage level, if desired, without physically handling the media, is truly a giant leap in film sound post-production productivity.

transfer operation prior to dubbing—to either mag film or audio tape—will improve flexibility during dubbing, because copy/loop operations can be performed online," says Michael MacDonald, TimeLine's recently appointed director of product development. "And the ability to perform single-track or multitrack editorial changes or picture conformation on the dub stage, if necessary, should also dramatically enhance film/video post productivity."

SSL AXIOM FILM DUBBING SYSTEM AND APC

The new Axiom Film Dubbing System from Solid State Logic is designed from the ground up to provide hard-disk playback and recording via its built-in DiskTrack hard disk multitrack audio recorder/editor. The system is based on Axiom's existing music recording and broadcast configurations, and SSL recently developed several new dedicated hardware controls specifically for film re-recording applications. The new application-specific Axiom Film Dubbing System offers panning and output assignments for all surround sound formats and provides up to 96 tracks of integral DiskTrack record/replay per operator position. All systems can be supplied with integral VisionTrack instant-access video record/playback.

"In designing the original Axiom Digital Production System," explains SSL's group marketing director Colin Pringle, "we elected to provide large-scale integration of hard disk storage. We are fortunate enough to have Todd-AO, Warner Bros., Universal Studios, Buena Vista, Disney, Lucasfilm and Pinewood among our [film-dubbing] clients. We have both experience of designing and building custom consoles for film dubbing, and the regular dialog that has helped us to devise a digital solution to the goals these facilities set for themselves.

"There is a desire among the film community to replace film dubbers with a hard disk equivalent. This presents a few problems, both with the scale of the systems required—it will invariably involve multiple tracks—and file compatibility, since editing rooms may feature more than one brand of hard disk editor. Central to the concept of Axiom is the storage of audio on hard disk and shared access to I/O resources. This resource management capability brings a number of advantages, both in terms of production quality and in the cost-effectiveness of installations.

"While the system's built-in DiskTrack multitrack recorder and editor is central to the appeal of Axiom, for a number of applications—such as video and film post-production—there is the additional need to record, edit and prelay audio independently of the mixing process.

"Introduction of our Axiom Preparation Station [APS] at the recent NAB Convention in Las Vegas added the ability to import a wide range of file types used in the film industry, such as Lightworks, Pro Tools, .AIFF and .WAV. Now edited sound files, tagged to timecode, can be brought directly into the dubbing environment."

APS is a desktop unit that provides shared access to DiskTrack for recording, editing and prelaying audio elements. The user can select up to 24 tracks from the maximum 128 available with DiskTrack; the remaining tracks continue to be available to Axiom. In a similar way, the APS system shares Axiom's I/O resources, removing the need for expensive duplication of inputs and outputs. The unit also allows Axiom to offer Open Media Interchange, with the ability to import various file formats.

"The addition of an APS unit as an extension to DiskTrack frees Axiom for large-scale mixing projects," Pringle says, "while allowing program preparation to be performed more cost-effectively through the use of shared resources." APS can be added on a network for remote upload/download of sound files and related editorial functions. It also provides video recording to hard disk.

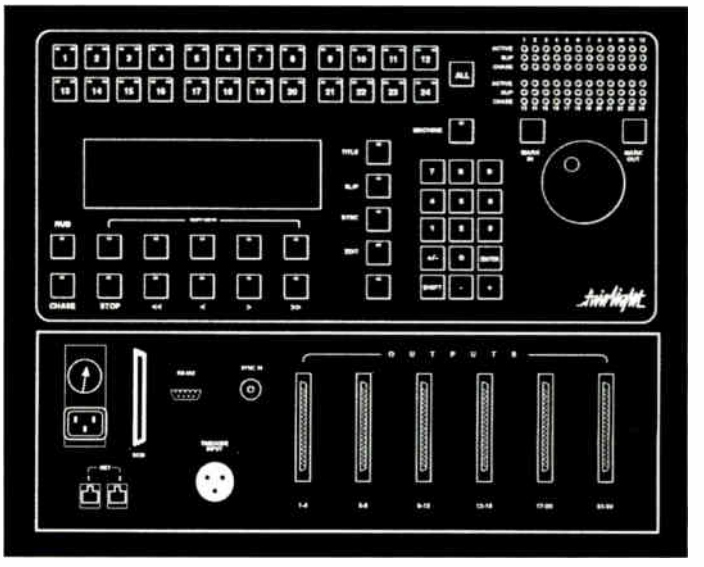
"Use of concurrent-access hard disk technology enables all DiskTrack channels to be in simultaneous record *and* playback mode, effectively doubling the number of available tracks. Also, concurrent offline backup/restore allows a current project to be backed up while a soundtrack mix is in progress."

FAIRLIGHT MFX-3 DUBBER

Currently undergoing evaluation trials at Todd-AO in Hollywood, a new version of the Fairlight MFX-3 has also been used at Modern Videofilm, Hollywood. Configured to provide a total of 64 playback channels—a pair of 24-channel dubbers, plus two 8-track models—Modern Videofilm's prototype Film Dubber System has been put through its paces while mixing an episodic-TV pilot for Saban Productions entitled *Virtual Reality Rangers*. The Film Dubber was controlled from the facility's SSL Studio Computer automation via a TimeLine Lynx controller.

"As a standard Fairlight MFX-3 is currently being used as a dubber at Todd-AO," says Fairlight CEO Wayne Freeman, "we are receiving feedback on a regular basis. Also, we recently canvassed all the major film companies; almost universally the same feedback occurred. The dedicated digital dubber must be inexpensive—between $1,000 and $1,500 per channel—offer limited editing capabilities, utilize a removable storage medium, and directly read most major audio file formats."

The final MFX Film Dubber System will provide control for up to 300 individual tracks, with basic conforming available on the dubbing stage. Storage will be to magneto-optical or conventional hard drives. Other fea-



The Fairlight Film Dubber System: (left, top) the FC-100 controller board and (below) all the connections on the rear panel of the FD-24 Audio Dubber

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tures will include the ability to lock to picture in reverse playback mode; control of multiple dubbers from a single control surface; and a simple user interface.

"We consider that price point to be readily attainable," Freeman says. "Removable storage via hard drive or magneto-optical is available off-the-shelf. We have found that film mixers want to restrict time-consuming changes being made by the film's director and are hesitant to have any sophisticated editing capabilities—beyond track slipping—available on the dubbing stage. Most, if not all, of the potential dubber customers want us to directly access Avid, WaveFrame and Pro Tools files. Also, they desire to avoid interim conversions such as OMF.

"The difficulty—other than the obvious political issues—is the fact that software constantly changes," Freeman continues. "What you can read today may not be readable a year from now. This situation creates a nightmare for our software developers and will certainly do the same for our competition. Initially, [our system] will probably be OMF-compatible."

The Film Dubber System includes two major sub-assemblies: the FC-100 Controller and the FD-24 Audio Dubber; components are connected in a network that allows simultaneous control of multiple dubbers from multiple controllers. Each rack-mounted FD-24 will replay up to 24 simultaneous channels of analog or digital audio and is equipped to play back any MFX project with the same output as an MFX-Series editor. Internally, the FD-24 features Audio Channel cards that reproduce four simultaneous mono audio clips, with up to four bands of EQ; any replayed clip can contain crossfades, performed in real time. A Master CPU card performs file handling, disk access, user interface and timecode sync and connects to standard SCSI-compatible storage units.

The FC-100 Controller can be used to control up to 24 individual FD-24 dubbers. Each dubber must be loaded with a Project created on an MFX Series workstation before it can reproduce audio. A central LCD screen displays softkey labels; dedicated Title, Slip, Sync and Edit keys change the screen menus. Increment/decrement keys slip the currently selected track(s) forward/backward by one frame (or less if a companion shift is also held down). A jog wheel can be used for scrubbing selected clips to determine revised cue points.

STUDIO AUDIO & VIDEO OCTAVIA

Studio Audio & Video's recently announced modular digital audio editing system, Octavia, can be expanded as required in terms of storage, processing power and audio I/O channels. "Driving Octavia hardware is SADiE 3, a new generation of our system software that combined powerful DSP processing with a clearer, faster and more flexible user interface," explains SAV's marketing director, Julian Mitchell.

The firm's dubbing configuration comprises one or more Octavia units, each providing eight channels of audio I/O; up to 10 Octavias can be chained together. Each unit will be able to play back 24 tracks from one SCSI disk.

The current SADiE disk editor has been designed to be complementary to Octavia. "An ideal premix/dubbing configuration would be to edit M&E on SADiE," Mitchell offers, "and then transfer those tracks, including EDLs, via the SADiE ATM network or removable media to Octavia. The Octavia modular system would then be able to mix M&E and dialog down to a 5-channel Dolby submix, or whatever was required.

"SADiE can also make use of the optional Peggy JPEG video compression board, for synchronizing audio to picture; the board will also be an option for Octavia. An integral feature of Octavia is its intelligent data cache, Shufflecache, which reduces the overhead on the processors by automatically converting 20- and 24-bit data to and from suitable formats for the disk. This function enables Octavia to be transparent between 16-, 20- and 24-bit operation. All recording and processes can thus be performed at the highest possible resolution with a final conversion to 16-bit if required by the demands of the playback media."

AVID AUDIOVISION DPR AND AUDIOSTATION DPR

"To fully realize the benefits of the Avid's development approach for a digital dubber," says Mack Leathurby, Avid Technology's audio product manager, "it is important to view our concept of providing compatible digital nonlinear solutions for the entire post-production process. For example, Avid's current 'film-style' post-production products include AvidNet ATM Networking, AudioVision/AudioStation for audio post editing/processing, and Digidesign's Pro Tools/PostView for sound design, music production and mixing.

"The newly released Audio Digital Player Recorder [DPR] continues this tradition by providing a Digital Dubber-type solution as another compatible building block. DPR combines the traditional operations of audio tape recorders and magnetic dubbers with the benefits of integrated nonlinear computer technology. The DPR, which will be made available with or without integrated digital picture, is targeted as a replacement for both ATRs and dubbers."

The DPR's initial release supports most of the traditional ATR and mag dubber operations, with the additional advantages of Avid's digital nonlinear technology. "Current dubber-type functionality for the DPR includes punch-in/out, track/clip slipping, serial control via 9-pin protocol and the ability to synchronize multiple systems for additional tracks," Leathurby explains.

Currently, the DPR is available in 8- or 16-channel modules; all systems include 8/16-channel analog and digital interfacing. Additional support for hardware control will be integrated to facilitate operation of multiple systems to efficiently provide unlimited audio track input/output for any size audio mix project. Current AudioVision DPRs and AudioStation DPRs will also be upgradable to AudioVision and AudioStation Editing Systems.

• • •

As can be readily appreciated, the current market for digital dubbers is a rapidly moving target. I would predict, however, that during the next six months (as the first films are mixed using these and other prototype systems), there will be a shakedown period: Operator features will more closely match the users' creative and technical expectations as we make the inevitable moves towards fully integrated digital soundtrack production. *Mix* will keep you abreast of developments and user reactions as they become available. ■

Formerly editor of Recording Engineer-Producer *magazine, Mel Lambert currently heads up Media&Marketing, a consulting service for pro audio firms and facilities.*

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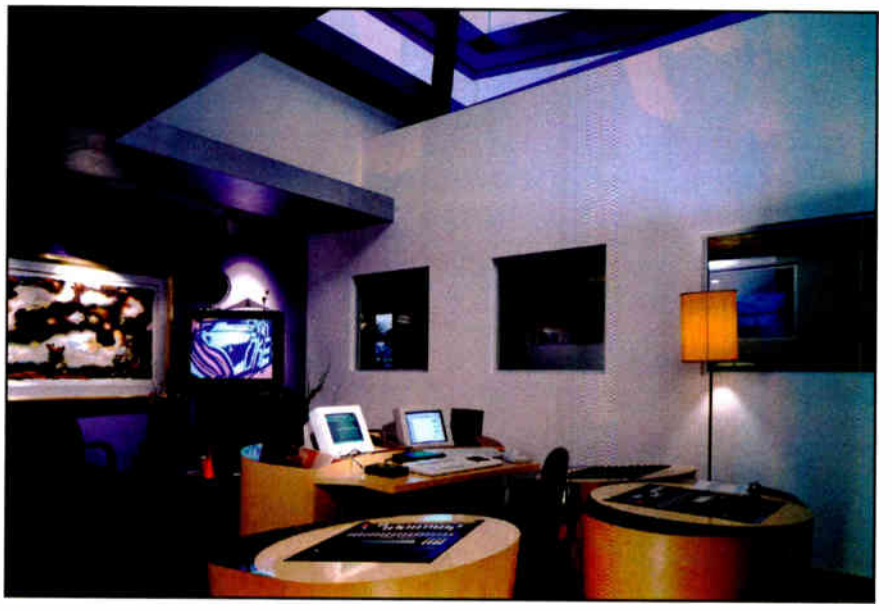
MUSIC and Effects

for the Advertising Jungle

A LOOK AT 2 FACILITIES

by Tom Kenny

It's almost a re-recording cliche that music and effects supervisors will fight tooth and nail on the mix stage in order to be heard, in feature films as well as 30-second television commercials. In theory, that problem can be minimized and projects can be handled more efficiently if the two jobs are worked on by the same house. That was the philosophy behind the opening of Machine Head in Venice, California, in 1990 and the founding of Endless Noise in nearby Santa Monica in 1994. Each facility was set up with a triumvirate at the top. Machine Head founder and sound designer Stephen Dewey brought in composer Johannes Hammer and former ad agency producer Nansi Bielanski; Endless Noise was formed by sound designer Ken Johnson, composer Jeff Elmassian and producer John Bashew.



Top: one of the sound design suites, equipment pods included, at Machine Head. Below: client conference table area.

MACHINE HEAD

Machine Head has built quite a reputation in just five years, from Stephen Dewey's relative obscurity in a rented room at Chiat-Day Advertising to first-call sound design team on some of the biggest-budget, award-winning commercials in the industry. At the most recent Association of Independendent Commercial Producers/MOMA awards in New York City, three of the six spots selected for exhibition in the museum

SMOKE & MIRRORS PHOTOGRAPHY

Above, left to right: sound effects creator Ken Johnson and composer Jeff Elmassian work on a commercial spot in one of Endless Noise's Pro Tools-based post suites. Right (from left): Endless Noise principals John Bashew, Ken Johnson and Jeff Elmassian.

had sound design by Machine Head. But let's back up...

In the early '80s, Dewey worked for the band Thompson Twins in England, putting together "guerrilla studios," which means "I sought high-tech apparatus to exploit; I learned how to streamline and filter the juiciest items for production," he says. "One of those items was the Fairlight Series III, which the group bought as a writing tool. Dewey visited the factory and became "entrenched in the Fairlight dogma," taking a job with them in 1988.

The Fairlight gig led to composer Hans Zimmer, which led to director Ridley Scott, which led to a Nissan Turbo Z commercial called "Flight Time" for Chiat-Day, directed by Scott. To this day, Dewey considers it some of his finest work. It was, essentially, the beginning of Machine Head.

For most of 1989, Dewey rented a KEM room at Chiat-Day in Venice, down the street from his house. He brought in the Fairlight and attracted the attention of Johannes Hammer, who had been hired by producer Nansi Bielanski. A year later, Dewey left with Hammer to form Machine Head. Three years later, Bielanski joined them.

"We had no money at all," Dewey remembers. "It was me, and I'd hired Johannes to help me make sounds. We got a couple of jobs, and I took the first 50 percent from each to pay the first month's rent on 1,300 square feet in the Venice Art Block. The day I got the check for the jobs was literally the day the rent was due. Everybody thought I was crazy, and I did, too. But I had a very strong sense of the style I wanted Machine Head to be, which was very professional, with a dramatic look, so that it was not just the sound coming out.

"As much as there was word of mouth about Machine Head in the early days, it was definitely augmented by our PR exploits," he adds. "I feverishly entered every competition known to man, talked up a storm at all the cocktail parties, and we were very active in all the attendant aspects of the work. I was meticulous about handling clients, from ease of parking to directions, fax machines, computers...I paid attention to all the peripheral activities so that they didn't seem peripheral. Then we grew and grew, and we kept busy.

"Although I was being asked to do sound design for commercials, oftentimes—and the situation still persists—the conception boards called for just sound design throughout. But as you start, you realize that a touch of music is required here and there, which was beyond my capability. Johannes had been doing music composition experimentally, and he evolved very rapidly. In fact, I credit Johannes with opening my eyes to the visual and architectural aspects of sound, from which I draw a lot of inspiration. That allows me to look at a scenario, or a spot, and reduce it, deconstruct it, to the purest notion of what's happening, and then build back up.

"At the same time, I refuse to spend a lot of money on technology," he says. "I learned from my time with the Thompson Twins to be very picky and pragmatic about what we'd use. I didn't spend half a million dollars on a Neve board. I bought a used Fairlight cheap and upgraded it. I bought the Yamaha DMP7 mixers, which are flexible, and when you're doing two or three commercials a week and constantly revising, you need that. I have so much praise for those mixers. We ended up with about 14 of them [they now have ProMix 01s], and the audio is beyond adequate. Pumping the Fairlights at elevated levels into the DMP7s, we were able to to get very good results. And it worked for the TV format—the audio requirements aren't as stringent as an Aerosmith record."

Fiscal frugality and a solid, steady reputation allowed Machine Head to move into a spanking-new five-room facility in Venice in June 1994, with technical design by John Hearst and acoustical design by Brett Thoeny of Boto Design. The rooms are set up as "high-tech lounges," Dewey says. "The space is open, there's a lot of natural light, and we've set up sort of a triangular arrangement, where there's a big-screen TV on a stand, and across the room is a sofa for the clients, and we're off to the side at

the workstation. I can read their reactions much better, and there's a sense of collaboration."

The Fairlights are used as RAM-based samplers, augmented by Pro Tools, Cubase, the Yamaha mixers and spare, but select, racks of outboard gear. The recording room has an Amek console and a MIDI-based writing setup. The entire facility is wired to a central machine room for exchange of sound files. ("If you were to take an X-ray of the facility, you would find that the most interesting part is probably the wiring and the network," Dewey says.)

After five years of working collaboratively, it has become obvious to Dewey and Hammer which shots call for music and which call for effects. For a recent Weiden & Kennedy spot to air in Japan, with Japanese-style animation, Machine Head was approached to do sound design only. But it became obvious to them that music was required.

"So I got sucked into the process," Hammer laughs. "These spots displayed the checkerboarding concept, sort of A-B'ing, more than any spot we've done lately. We started out with a very short music cue, maybe a second and a half, where you have to really establish what you're seeing. That was immediately followed by this unleashed barrage of sound design by Stephen, and then out of that, I weave a very short cue of music that introduces yet another barrage of sound design, going from subtle to over the top, in your face. Stephen and I respond heavily to rhythm of editing, and these had a beautiful, natural rhythm. Everything sort of fell into place. That doesn't always happen."

Machine Head produces nearly entirely original music, though some clients have an aversion to the word "synthesizer," Hammers says. Live musicians have become increasingly common, if not for a complete spot, then to augment the Fairlight. "Sometimes, I'll add a single oboe, and it pulls the entire track together, giving it that emotion that I might not get out of the sequencer. Or I'll add a solo vocalist to a Fairlight choir sample and get these incredible textures. I'm petrified of presets that come out of synthesizers. Whenever I have a down day, I'm usually dumping things out of my JD-800 and making my own sounds, whether it's tweaking something out of the Fairlight library or adding this old Sequential Circuits Pro 1, which is the backbone to a lot of my work."

Machine Head's growth has allowed them to add to the team. Jason Johnson composes, with perhaps a more conservative touch. Jon Klok was hired from the Netherlands as a fresh new sound designer. And the company took over managing the hot music/effects team known as M62.

"This is part of a new approach," Dewey says. "Machine Head is not just a sound design and music company. The analogy I'm using right now is Andy Warhol's Factory. From what I know about it, it was a place where all kinds of different disciplines were going on. So I'm talking about Machine Head becoming a modular entity—sound design as a module, music as a module, M62—and we're hoping very soon to launch a computer graphics enterprise, called the Hammers Project. Who knows what after that?"

ENDLESS NOISE

High-end commercial television spots have adopted Hollywood-style production values, to the point that some of the more creative 30- and 60-second spots now resemble mini-feature films. So it shouldn't surprise anyone that a few film sound veterans have made the leap into the commercial world, and they're trying to combine the best aspects of the two disciplines.

Ken Johnson has spent the past ten years recording sound effects for A-budget features, and some of his more mechanical effects make up the Sonic Boon CD library. Besides scoring countless TV commercials, composer Jeff Elmassian received soundtrack credit for 1993's *Inside Monkey Zetterland* and worked with Thomas Newman on *Fried Green Tomatoes*, *The Shawshank Redemption* and *Scent of a Woman*. After working together as independents, the two discovered that they shared the same approach and philosophy to soundtrack design. So they teamed up with veteran ad agency producer John Bashew and formed Endless Noise in June 1994, with the intention of starting strong in post-production sound for commercials before branching into other sound-for-picture arenas.

"Schedules are getting so tight for both production and post," Johnson says. "We feel that by doing music and sound design under the same roof, we can be more creative and efficient. We put pieces together from scratch, and we determine where in a spot music works best and where it is best served by [sound design]. From my experience, a lot of times the composer and the sound designer won't hear each other's work until the mix, and at that point sounds can crash with each other and decisions have to be made on the stage."

"There really should be more of an integration of process between the sound effects editor and the music composer," adds Elmassian, "which is one thing we would like to be involved in when we move into features, because it works in commercials. There's no reason you should have to show up at Skywalker Sound with, say, 190 tracks and that being the first time the composer is hearing the 60 or 70 tracks of Foley and effects, or the first time the sound editor is hearing the 40 or 50 tracks of music. That's what is so exciting for me about being in this company—I found a sound designer who had a true understanding of the musical aspects of sound, as I try to be cognizant of the sound design aspects of the score. I think that's something that commercials tend to address because of their need for practical efficiency, and movies are only just now starting to catch on and understand. That, to me, is a more important development in audio post-production than the actual mediums or instruments being used. Sure, if it weren't for digital editing, we probably wouldn't even be talking like this. But since there is digital editing, the question is how can people use it and how can it better serve sound in a post-production sense."

Endless Noise consists of two sound design suites, a music composition suite and a Foley/effects recording space. The common editing platform is 16 tracks of Pro Tools III, with Mackie mixers (a 1604 for Johnson, a 32x8 for Elmassian) and Tannoy PBM 6.5 and Yamaha NS-10 monitors throughout. Johnson's principal sound creation tool is an Akai S-1000 sampler, augmented by a Korg 01/W. Elmassian's rig includes Roland S-550, 750 and 760 samplers, a Kurzweil PC88 keyboard controller, Studio Vision sequencing software, an Opcode Studio 4 MIDI interface and various sound mod-

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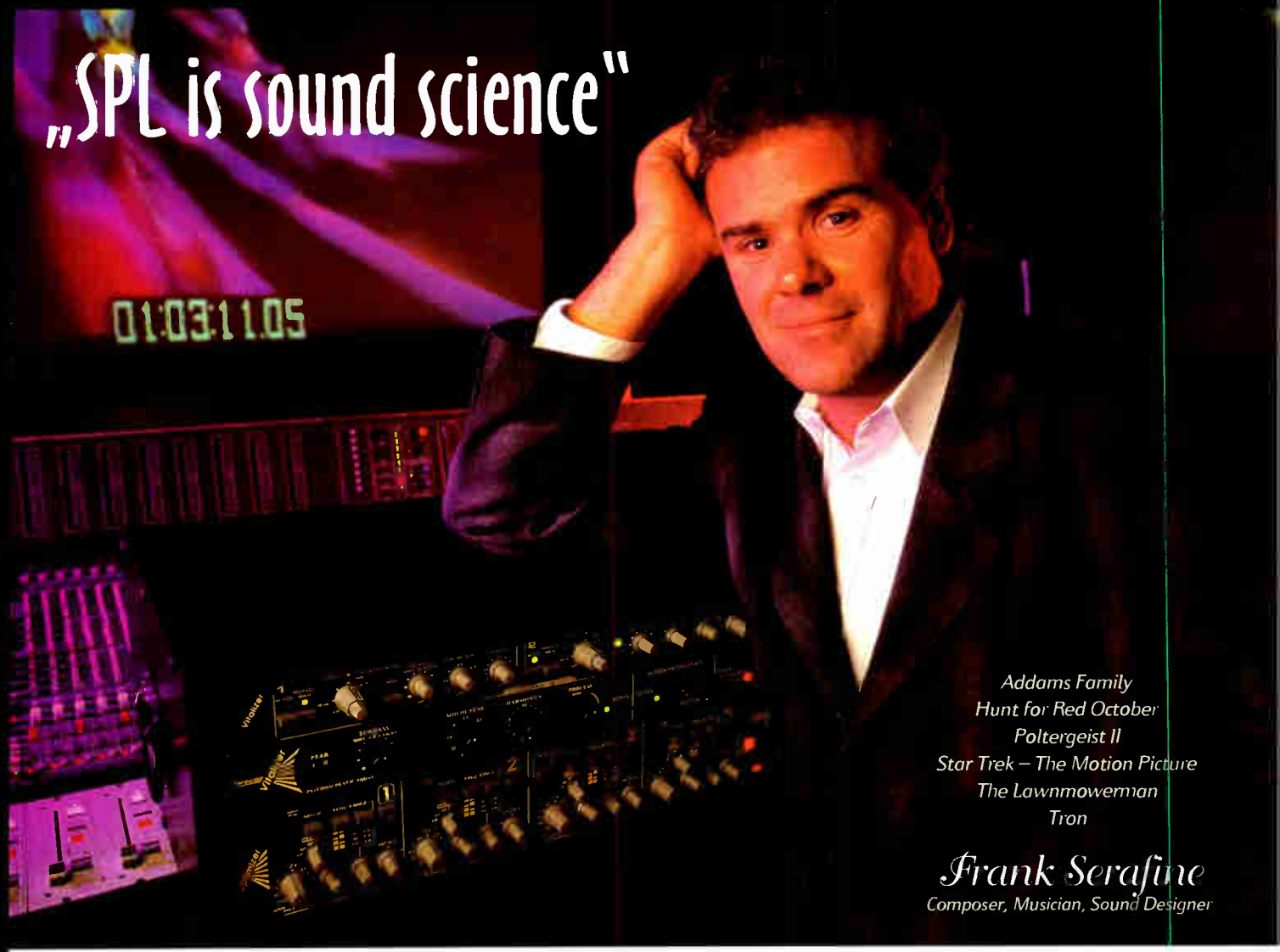

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ules, including Korg Wavestation, Proteus FX and Morpheus.

But, anybody can buy the tools and learn to operate them; as most editors will attest, sound and music creation start at the source. For Elmassian, who was trained as a classical clarinetist and worked as a session musician in various genres, that means sometimes bringing in a 40-piece orchestra and sometimes adding ethnic instruments to sweeten a track. For Johnson, it means drawing from more than 200 hours of original recordings on DAT, or recording specific sounds to match the visual.

"We had an Acura commercial where I needed some Warner Bros.-style cartoon sounds," Johnson says. "So I got a bunch of different-size wires—some threaded, some steel music—and I pulled them through a hole in a piece of metal strapped to a wooden box, which gave it a very cartoony acoustical amplification. I got all kinds of great zips and zings that you just couldn't find in a sound library.

"Then there's another Acura commercial that's just a car in front of a huge window and a light comes on," he adds. "The client didn't want the electrical zapping sounds they'd seen in our reel. They wanted something a little smoother. So I ended up using a recording I'd done some time ago of a gun fired inside a secondary storm drain, within a mile-long storm drain. We fired a blank, and it gave this incredible sound bouncing off all the walls. It echoed and made this tubular kind of sound that you couldn't possibly create with processing. So I reversed that, and it gave just the right build-up to this swoosh."

The client has come back, which is what advertising work is all about. Elmassian and Johnson say the past year has shown growth beyond their wildest expectations, and though their primary thrust has been commercials, they expect to branch out soon.

"We feel like a lot of our philosophies that we're honing in the commercial arena could work very well in the feature film world," Elmassian says. "And, needless to say, multimedia is extremely exciting. We started in 1994, which was right around the time a lot of these people were consolidating multimedia ventures, so it only makes sense that we grow along with it. The substance of what we do changes for the various forms, but the process doesn't change." ■

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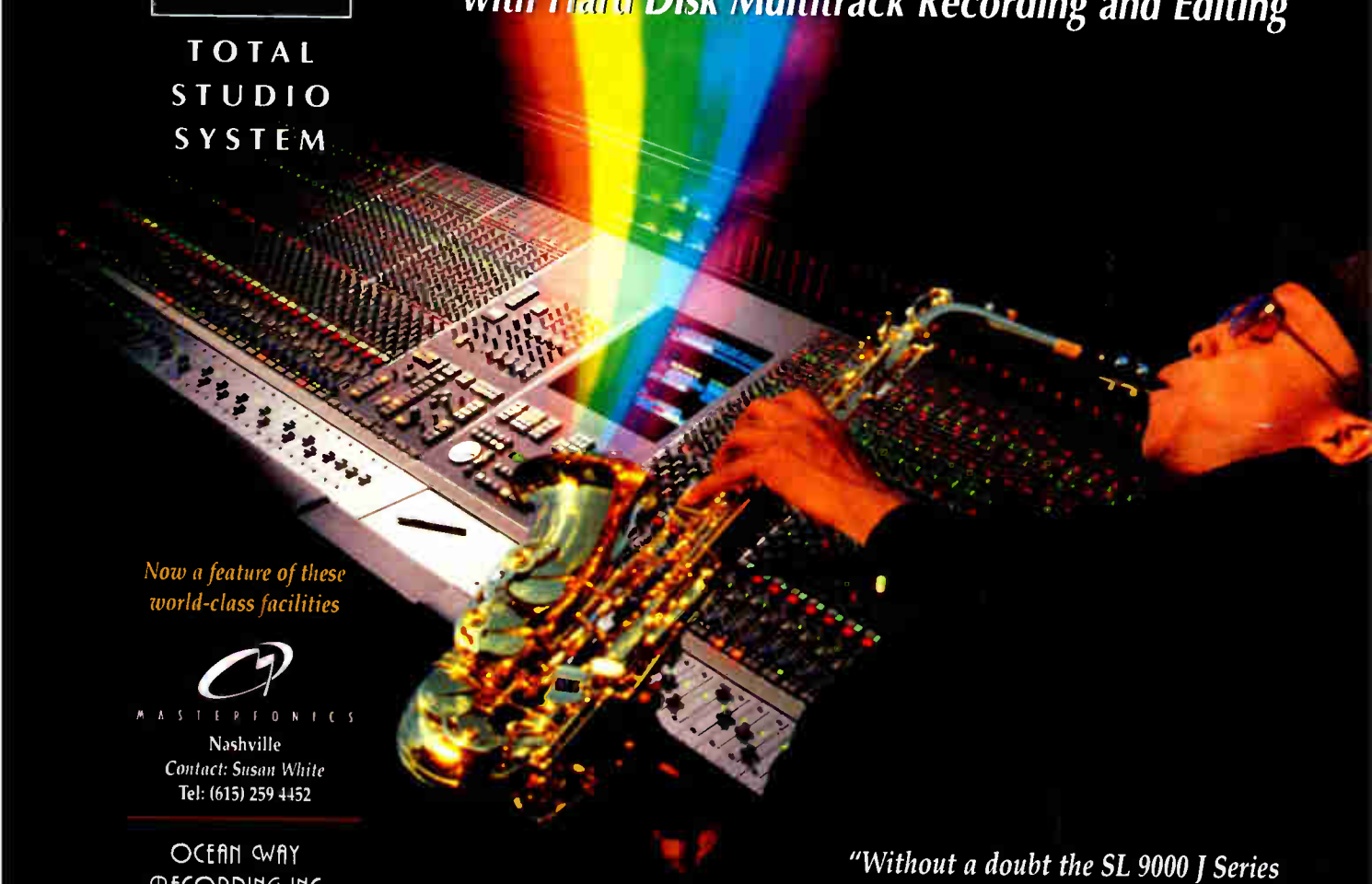

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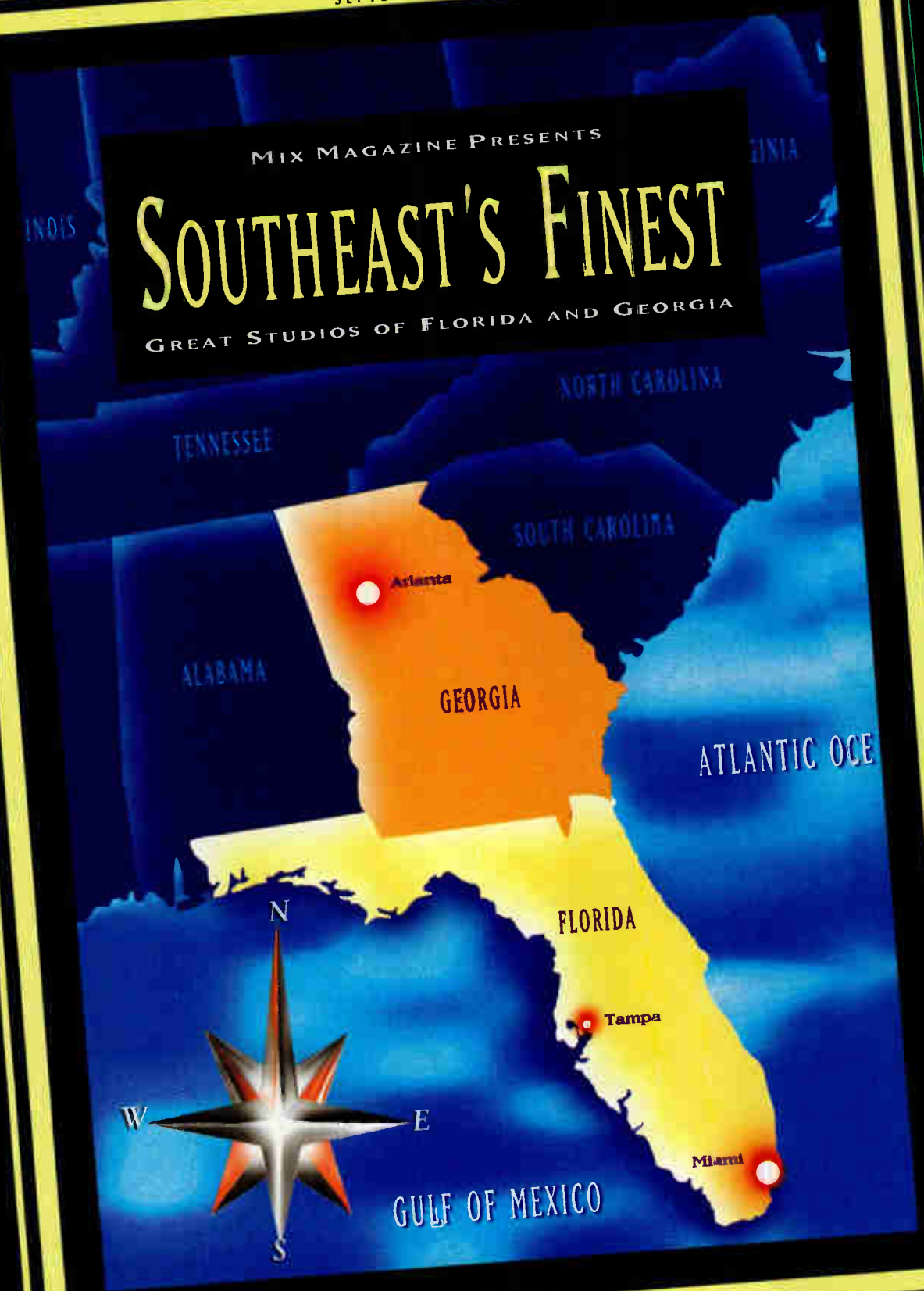

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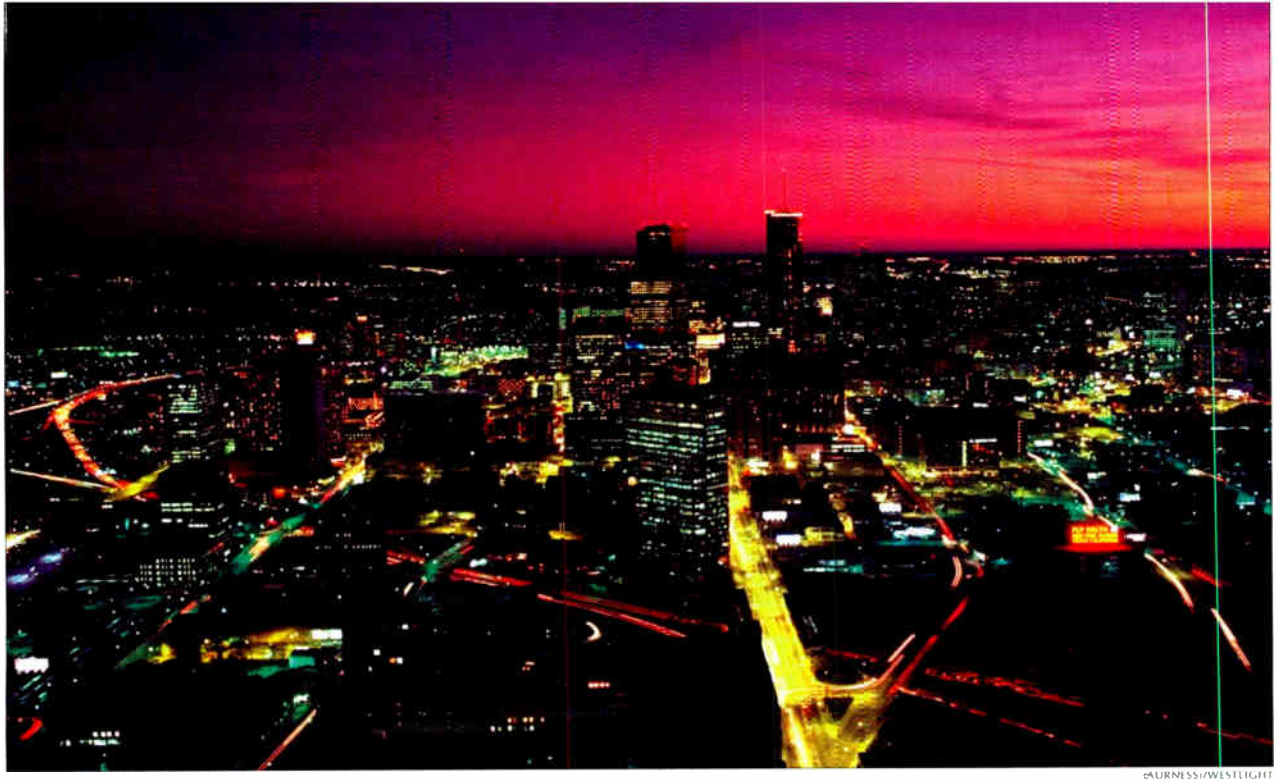
THE SOUTHEAST'S

The Southeast corridor, from Atlanta to Miami, has developed into a powerful audio nexus over the past 15 years. Both cities—and a few in between, like Orlando and Tampa—have been strong music and post-production bases at certain times in the past, but rarely have they been booming simultaneously, as they are now. Miami was a sort of vacation/work/creativity hub of contemporary rock in the mid- to late 1970s, as numerous top acts and producers like Ron and Howie Albert and Tom Dowd turned the town into a long-term stop on their career paths. It has now reinvented itself again as a multicultural version of the American Dream, with a booming Latin/Hispanic music scene, which often overshadows the fact that the city's diverse musical base has also nurtured and produced acts like the Platinum-selling neocountry act The Mavericks.

Atlanta has had an equally textured musical history. Its current status as one of the capitals of contemporary R&B—as home base for producer/artists such as Baby Face and Bobby Brown—complements its strong 1950s and '60s R&B and soul tradition, from Aretha Franklin to James Brown. That, however, often obscures the fact that several rock entities have made the city their home, from Elton John to producer/mixer Brendan O'Brien. The city has also seen shining moments of pop and country, from the likes of Joe South, Paul Davis and the Allman Brothers. (Alright, so that was Macon; "close" counts in horseshoes, hand grenades and geography.) Meanwhile, Orlando has shown tremendous promise as a "Hollywood East," as Disney and other Left Coast entities have moved productions and post-productions there to take advantage of the facilities, the weather, the locations and the favorable-to-business work laws of Florida.

In fact, both regions have developed as strong post-production bases. Atlanta emerged as a leader in this category, as headquarters to the vast and growing Turner Broadcasting empire. Georgia was the site of 13 feature films in 1994, some of the 356 that have been produced there since the state Film & Videotape Office started tracking productions in 1973. (It started, appropriately enough, with Burt Sugarman's production of the song-turned-movie *Midnight Train to Georgia*.) The arrival of the 1996 Olympics will be the crowning jewel to an increasingly sophisticated and desirable production and post-production presence.

Miami is probably best remembered for its hosting of the quintessential 1980s cop show *Miami Vice*. But it's had a long history in broadcast and film production that both precedes Jackie Gleason's early 1960s variety show and



GAURNESS/WESTLIGHT

SOUTHEAST'S FINEST

Atlanta and Florida Seeing Glowing Horizons

by Dan Daley

has outlived Don Johnson's film and music careers.

Miami *has* become the hub of the contemporary Latin music world; recording artists such as Julio Iglesias, Ilan Chester and Ricardo Montaner regularly come to the city to record. There they find a studio base that offers state-of-the-art technology and a well-developed sensibility for their requirements. "This town has really grown up in terms of music production and studios," says Joe Galdo, regional head of A&R for Island Records, producer and co-owner of South Beach Recording. "You can do anything here, from Latino to rock to alternative. The musicians and engineers and producers who understand the genres are all here, and the studios themselves are great. With everything like that going for it, there's no way projects can't consider Miami."

Nearby, cities like Orlando and Tampa have developed their own post-production and music bases, and together they have created a regional phenomenon that allows considerable diversity for producers wanting to work in the area.

Atlanta has become home base to an equally diverse collection of musical talent, as well as having developed a post-production base that is on a par with those in New York and Chicago. While urban/contemporary and R&B have become the anchors of modern music recording in Atlanta, luminaries from alternative, rock and pop have a regular presence, as well. "It's a big city with a small-town feel," is how Stanley Gaines, owner of Purple Dragon Recording, describes it. "The studios are great, and they have a real sense of community among them. It's just a great vibe in Atlanta."

Both Florida and Georgia are at the cutting edge of a demographic shift that has been taking place in the U.S. for several years now. Thanks to technologies like ISDN and EdNet—which are helping to widen the industry beyond the population centers of the U.S.—Georgia and Florida, and places like Nashville and Seattle, are challenging the traditional relationship between cities and music. Music is being made all over; even Hollywood looks to cities like Orlando and Vancouver for much of its post-production work. Both Florida and Atlanta have deep and varied histories to draw on in all areas of audio. And the paths they are on now put them squarely on the way to even greater success. ■

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CATSPAW RECORDING STUDIOS

Catspaw Productions may be home-grown in the South, but its creative talent and technological know-how are in demand nationally, by clients such as Tribune Broadcasting, MCA-Universal, Warner Bros., Turner Broadcasting, MCI, IBM and American Express. And there's a conclusive reason why this particular multimedia production and recording studio facility is chosen by a Who's Who of broadcast and advertising: Catspaw produces much more than sound.

Founded in 1986, Catspaw began in humble surroundings, in owners' Doug and Sharon Paul's attic. The current facility, situated on two-and-a-half acres in Midtown Atlanta, houses a staff of 25 and six studios that create the type of magic their clients have come to expect. An additional 11,500 square feet of adjacent soundstage and special event space is currently being developed.

Catspaw's creative climate services the likes of Sheryl Crow, The Cranberries, Blues Traveler, Seal and Sam Phillips. The company is the new home of the applauded "Live X" mini-concerts, performed and mixed at Catspaw and broadcast on WNNX in Atlanta. In fact, Toad the Wet Sprocket liked what they heard so much, they contacted Columbia Records, which ultimately released a special CD featuring five cuts, four of which were recorded and engineered at Catspaw. And in keeping with the company's "golden rule" philosophy, the state-of-the-art facility established its own record label last year to promote and support a strong local and regional artist base, offering high-tech recording services and business acumen.

Still, that only touches part of the company's capabilities. With an award-winning creative production team on board, Catspaw continues to provide unsurpassed sound design for corporate and broadcast clients, as well as film studio services for trailers for movies *The Bridges of Madison County* and *Schindler's List*. Also, members of the staff write and produce promos for everything from *Donahue* to *The Outer Limits*. Catspaw went international this year, producing audio in German, French and Spanish and Mandarin Chinese, for videos used to recruit business to the city. Known as the voice of Toyota and Calvin Klein, Doug Paul is regarded as one of the U.S.'s leading voice-over talents. His voice is the signature used to promote stations like WGN in Chicago, WPIX in New York and KTLA in Los Angeles, and can be heard on nationally syndicated programs including *Hercules* and *Vanishing Son*.

"Catspaw is true to its name, as its definition is a 'tool,'" says Paul. "We are whatever audio/multimedia tool you want us to be, because we satisfy the client's need with a solution created with only that client in mind." This was clearly exemplified by the company when it assembled three teams to venture throughout the country to create nearly 300 testimonial radio spots for American Express and agency Ogilvy & Mather. And, most recently, Catspaw has launched its national books-on-tape program.

Rising from its historic Atlanta ashes, Catspaw is creating more sound than ever.

STUDIO SPECS: Owners: Doug & Sharon Paul; Manager: Sharon Paul, gen. mgr.; Mike Loverde, prod. mgr.; Douglas Martin, scheduling mgr.; Lesley Gamwell (404-396-3996) media contact; Engineers: Bobby Tate (chief eng.), Dan Schaeffer, Ben Pizzuto, John Willyard, Jim McKnight, Tommy Noles; Dimensions: Post Pro suites 20x20, 18x19; Dyaxis suites 18x17; studios: 30x40, 20x20, 10x8, 8x8; Mixing Consoles: Yamaha DMC 1000, Neotek, TAC Magnum; Tape machines: Otari 24-, 8-, 4- & 2-track; Sony & Fostex DAT, more; Signal Processing: Lexicon, Eventide, Yamaha, Aphex, Drawmer, more; Monitors: Genelec 1024C & S30NF, Yamaha NS-10; Of Special Interest: Atlanta's first permanent Foley stage (2 dry pits, 2 wet pits), NED Post Pro & Post Pro SD (Synclavier), Studer/Editech Dyaxis II (3), ISDN digital phone patch w/Telex/Zepher, 3D2, DGS delivery, Powership: video formats include D-2, Beta, 3/4-inch & 1/2-inch; timecode DATs, great snacks

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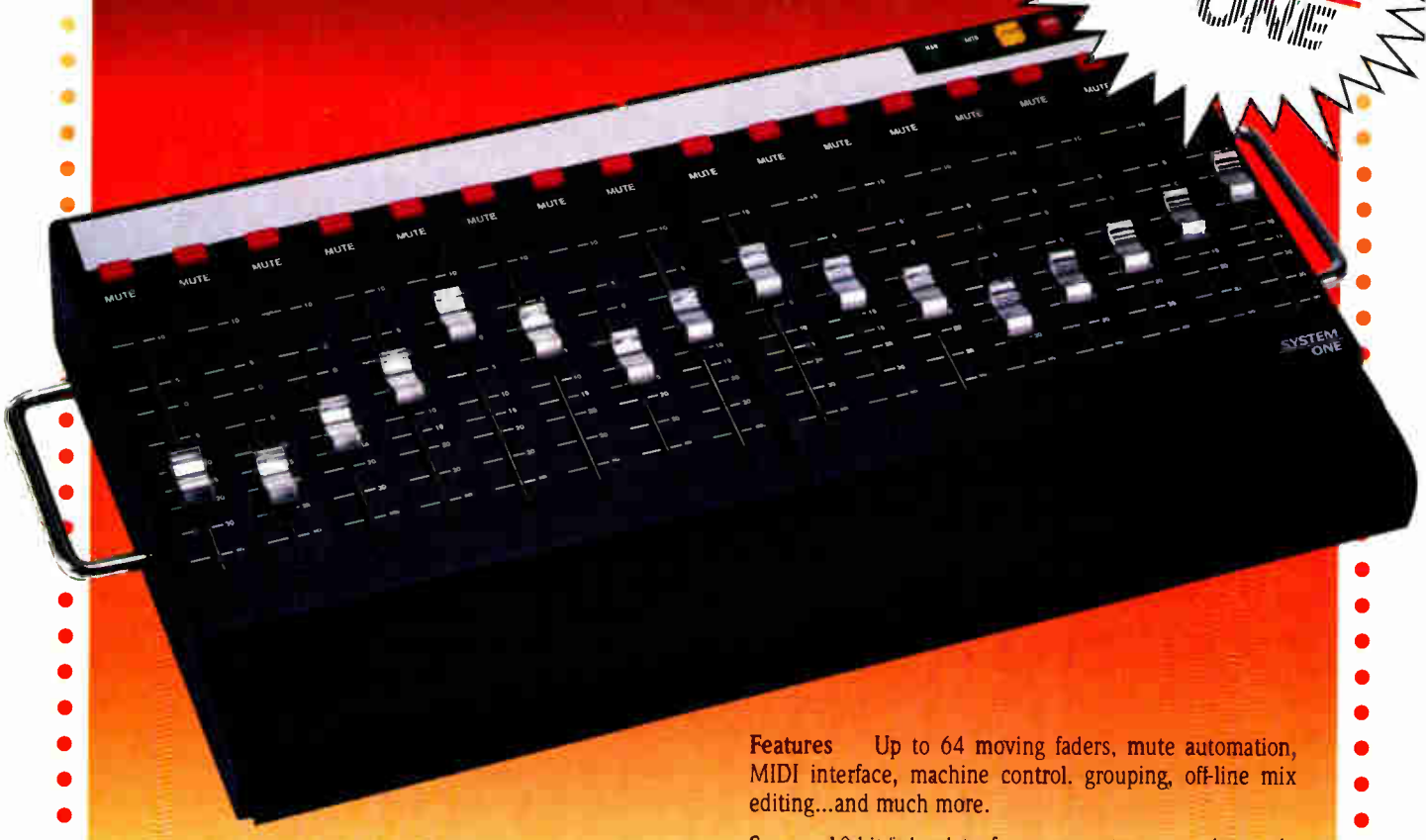

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JOE PABAN

CRAWFORD AUDIO SERVICES

Crawford Audio Services is a stand-alone facility, as well as a division of Crawford Communications, a larger entity with divisions specializing in post-production, multimedia, satellite services and computer graphics. Since the very beginning, top-quality audio has been a primary focus of the company, which was founded by Jesse Crawford in 1984.

"The point was to provide a full range of post-production audio services that covered all the bases and that, most importantly, covered them in depth," explains Steve Davis, manager of Crawford Audio Services.

Crawford offers its broadcast, corporate, film and video clients eight audio suites, including six recording studios, a transfer room and what's known as a "search" room, a very comfortable suite in which clients can audition music and sound effects to picture or direct talent via ISDN lines, an environment that Davis says emphasizes Crawford's philosophy of "creative solutions" to audio issues.

All eight audio rooms are equipped with serial control and can run any of the extensive array of video decks at the post facility. The rooms offer services from orchestral recording to Foley, ADR, SFX sweetening and voice-overs, on an array of digital media, including Post Pro SD and Dyaxis II systems, and extensive optical sound libraries.

All studios are also linked via two ISDN codecs—3D2 and CDQ 1000—that allow Crawford to interface with voice-over talent and other facilities around the world. Furthermore, the facility can distribute audio via DG Systems. Music recording is addressed in Crawford's large Studio A, with its Walters-Storyk-designed control room featuring a custom Peter D'Antonio diffractal rear wall.

In addition to sound effects, Crawford has its own Foley pits, and its sound libraries contain many original sound files and clips, as custom ones are created every day. Digital land lines were added to be able to handle the increased amount of ISDN remote ADR and voice-over work. And a large staff—13 full-time engineers—work in two shifts, reflecting the diversity and amount of work that Crawford has become noted for.

This extensive range of capabilities has been used regularly by such clients as Turner Broadcasting and its affiliates CNN, TNT, Headline News and The Cartoon Channel. Other broadcasters using Crawford Audio include The Discovery Channel and Tribune Broadcasting. Agency clients include BBD&O, Grey Advertising, Fitzgerald Advertising, Henderson Advertising and Tucker, Wayne/Luckie, for products including Nature's Own Bread, Spray & Wash, and Dow Bathroom Cleaner's famous "scrubbing bubbles." Crawford also has done the audio post-production for CBS' hit series *In the Heat of the Night* for the past three seasons. Scoring credits include *In the Heat of the Night* as well as the theme for The Discovery Channel's *Invention*.

The studio's approach is best summed up by Davis: "When it comes to audio post-production, the bywords here are do it right, do it in depth and let the experience show."

STUDIO SPECS: Owner: Jesse Crawford; Manager: Steve Davis; Engineers: Arno Baars, Greg Crawford, Greg Gause, Reid Hall, Dave Henshaw, Greg Hodge, Carl Maduri, Tom Race, Rob Sanders, Bryan Stone, Jon Thobois, Dave Wilson; Dimensions: Control A: 28x24, Studio A: 34x28x14; Mixing Consoles: 80-input Euphonix, Langley Big (2), MCI 636 w/Diskmix moving fader automation, 24-input Quad Eight Ventura, 64-input Amek Einstein; Tape machines: Otari DTR-900 digital 32-track, Sony 3324A 24-track digital, Otari MTR-90 MkII 24-track analog (2), Studer A80, Tascam DA-88 (2), Sony 7030 DAT (6); Signal Processing: Lexicon (300, 480L, LXP-1, LXP-5, 224XL, 200, PCM 70), AMS RMX 16, Eventide H3000s, more; Monitors: Custom Bill Morrison, MDM4, Genelec 1031, Yamaha NS-10M, Auratone; Of Special Interest: Synclavier Post Pro DAWs (5), Studer Dyaxis II, Akai DD-1000 M/O recorders (2), Yamaha C7 grand piano, Tama drums. Staff highly experienced at all aspects of audio post, including Foley, ADR and large-project management.

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CRESCENT MOON STUDIOS

When Gloria Estefan and her husband/producer Emilio decided to open their own studio in Miami in the spring of 1990, they made it clear that they were building a facility that would be as fully rounded as possible. "Crescent Moon was designed as a commercial facility, and it's been very well-received in that regard," says chief engineer Eric Schilling. "We decided from the outset that this would be a for-hire, profit-making venture, and we offer the full range of client services."

The studio's fashionable interior design reflects its passion for maintaining a state-of-the-art approach. But what defines Crescent Moon sonically is its four control rooms, designed by Ross Alexander and Schilling, who says the rooms' sonic neutrality is constantly validated during mastering. "I very rarely have to do much of anything to mixes that come out of these rooms," he says. "There's no guesswork when it comes to mixing here."

The four control rooms share two recording spaces and all are linked to the studio's NED Direct-to-Disk and Sonic Solutions systems. Crescent Moon was designed specifically for overdubs and mixing and has maintained its outboard signal processing, MIDI and sequencer technology at the cutting edge to complement that goal. Schilling says that research and testing of digital outboard gear in particular is constantly ongoing at the studio.

Crescent Moon's client roster runs the gamut from pop to rock to Hispanic, including Gloria Estefan (of course), Jon Secada, Extreme, Whitney Houston, Pink Floyd, Iron Maiden, Manhattan Transfer and Luis Miguel. Producers who have worked at the facility include Phil Ramone, Arif Mardin and Emilio Estefan. Other clients include Hispanic broadcasting giant Telemundo, as well as Disney and TriStar Pictures.

In keeping with the increasingly global nature of music, Crescent Moon has implemented the EdNet digital telephone interface system and has used it for both domestic clients and Hispanic music clients overseas. In the most intense application of it thus far at the studio, Eric Schilling did the mixes for Phil Ramone's production of Frank Sinatra's second *Duets* recording, transmitting mixes daily from Crescent Moon to the Los Angeles studio where Ramone was working. Crescent Moon regularly has long-distance sessions with L.A., New York and Nashville.

"The studio really tries to stay at the leading edge of technology," says Schilling. "But at the same time, it's very family-like here. I guess that comes from Gloria and Emilio. But the clients certainly get the benefit of it."

STUDIO SPECS: Owner: Emilio Estefan Jr.; Manager: Eric Schilling; chief engineer; Engineers: Eric Schilling; Dimensions: Control A: 26x25, Studio A: 11x13.5; Control B: 10x13.5; Control C: 15x19.5, Studio C: 12x14x8; Control D: 12.5x14.5 ; Mixing Consoles: Neve VR60 w/Flying Faders automation and Taurus Total Recall, SSL 8064 G-Plus w/G EQ, 48-channel Amek Big and w/28-channel Amek Big, both w/Supertrue 3.0 automation and Total Recall; Tape Machines: Sony 3348 48-track digital, 3 w/complete sampling options; Mitsubishi X-850 32-track digital w/Apogee filters; Otari MTR-90 MkIII and MkII 24-track analog; Akai A-DAM 12-track digital (2); Tascam DA-88 8-track digital, Sony APR-5000 2-track, Otari 12 II 2-track, Sony PCM 1630 mastering deck, Sony timecode DAT decks (5); Signal Processing: AMS RMX-16 and DMX, Lexicon 480L and PCM70, EMT 250, Eventide H3000 and H3000SE, Sony D7, R7 and M7, Focusrite and GML preamp/EQ, BSS, Avalon and dbx compression, much more; Monitors: Quested 412B and H208, Westlake BBSM-8, Yamaha NS-10M, Auratone 5C; Of Special Interest: AT&T DISQ digital mixing core, EdNet interface, NED 16-track Post Pro hard disk recording and editing system, Sonic Solutions Station II 12-track workstation, Sony BVU-950 and 5050 3/4-inch video recorders, Sony SLV R1000 S-VHS recorder, 48 channels of Dolby SR

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CRESCENT MOON

STEPHEN LIPSON

CRITERIA RECORDING STUDIOS

Criteria Recording first opened its doors in 1957, back when you could still get a Cuban cigar without having to stop in the duty-free shop in Amsterdam. Founder Mack Emerman started with a fascination with jazz recording and a single-room studio with an Ampex console and developed the facility into a five-room complex that became the hub of rock music in the 1970s. The studio has seen historic sessions ranging from Derek and The Dominos' "Layla" (the Baldwin piano upon which Jim Gordon created the famous coda to that track is still there) to the Bee Gees, The Eagles, CSN&Y, the Beach Boys, Count Basic and the Allman Brothers. And producers like Tom Dowd, Phil Ramone and Bill Syzmczk have used Criteria as both a studio and a creative temple, not only recording but writing music there. More recently, Jimmy Page, Extreme, the Scorpions, Screaming Blue Messiahs, Cinderella, Collective Soul and R.E.M. have made their latest releases there.

Current owner Joel Levy has dedicated himself to continuing to earn the facility's legendary status. Criteria recently added an 80-input, 96-frame SSL G Plus Series console with Ultimation (the largest in the region). The studios' designs are basically those that Emerman had created, and they remain more than valid today, as does his monitor design, devised by Emerman in 1980 with TAD drivers and an Ed Long-designed crossover system. Studio B was completely redesigned and renovated by George Augspurger in consultation with Levy. The two largest recording rooms are George Augspurger-designed Studio A—which at 46x52x22, large enough to seat a symphony, is used as a dubbing and soundstage and features a hard cyclorama wall—and Studio E (designed by John Storyk and Emerman), which is 50x50 with a 27-foot ceiling and features motorized "Acousta-Wing" units that can be remotely adjusted to various geometries. The studio also maintains a digital editing suite with a Sonic Solutions system, and Studio A has 35- and 16-millimeter film sync capabilities with Audio Kinetics Q-Lock, Adams Smith Zeta-3 and Timeline-Lynx MicroLynx synchronizers for scoring and ADR sessions.

"We're trying to simultaneously maintain the traditions that made Criteria the leading studio in Florida and one of the leading ones in the world for so long, and at the same time keep a large facility as close to the state-of-the-art as possible," explains Levy. "It's a difficult thing to do, but we feel we've done it, and I think the client list speaks for that." All that and, Levy says, while it may take a day's notice, he can still pull off a reservation at Joe's Stone Crab House for you.

STUDIO SPECS: Owner: Joel Levy; Manager: Trevor Fletcher; Engineers: Keith Rose, Mark Gruber, Chris Carroll, Mark Dobson, Steve Robillard; Dimensions: Control A: 27x25x10, Studio A: 46x52x22; Control B: 23x26x13, Studio B: 15x16x9; Control C: 15x16x10, Studio C: 25x32x16; Control D: 17x19x11, Studio D: 14x22x10; Control E: 23x26x13, Studio E: 50x50x27; Mixing Consoles: SSL 4096 G Plus, SSL 6048 E Series (2), 40-input Neve 8078, MCI JH532C; Tape Machines: Otari MTR-90 MkII 24-track (2), Studer A820 w/internal Dolby SR (2), Mitsubishi X-800 32-track digital, Sony 3348, Studer A827 24-track analog, Panasonic SV-3700 DAT decks, Sony, Studer, Mitsubishi and Ampex 2- and 4-track decks; Signal Processing: Lexicon, AMS, dbx, Neve, Focusrite, Eventide, UREI, Pultec, Drawmer, others; Monitors: Criteria Custom/Ed Long, Westlake, Altec, JBL, Fostex and Yamaha; Of Special Interest: Meridian CD-R; three live echo chambers and five echo plates; Sonic Solutions workstation; tape duplication; Symetrix telephone interface; dbx Sub-harmonic Enhancers (2), large array of microphones includes AKG C-12s (both tube and FET), AKG 414s (10), E/V RE-20 and RE-15, Neumann U47 FET and tube, U87s (10) and U67 tube; Audio Kinetics, Adams-Smith and Lynx synchronizers

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JOE PABAN

DOPPLER STUDIOS

Doppler began its life as the single-room home of a jingle company in Atlanta in 1969, founded by co-owners Pete Caldwell (past SPARS president) and Tom Wells. But as it often happens in professional audio and in life, one thing leads to another. Today, Doppler is operating seven control rooms and six studios, working literally 24 hours a day on a mix of commercial, corporate, film and music projects, proving that, if you do it right, you can do it all.

Expansions have been a regular part of the studio's history; in 1978 it moved to its present location with two studios, then a third and fourth were added. In 1985 Studio E was built from the ground up with a 10,000-square-foot building addition designed by George Augspurger, who also redesigned several other rooms at the facility. The seventh room, also an Augspurger design, was added in 1995.

"Studio E's construction was a real turning point for the facility," says manager Bill Quinn. "That's when we got heavily into audio post production in addition to the commercial and music work we'd been doing. It really rounded us out as a full-service facility." The studio also added a pair of SSL consoles and now operates seven TimeLine digital audio workstations.

The largest room, Studio E, has become a favorite of the music acts such as Boyz II Men, Toni Braxton, Johnny Gill, Pearl Jam and Aerosmith, that make up one-third of Doppler's bookings. The rest comes from a range of commercial, broadcast, film and corporate clients from Turner Home Entertainment to Delta Airlines to network television (*The Wonder Years*, *Heat of the Night*) and films (*Badlands*, *Mo' Better Blues*, *The War*).

"The key to doing all this and doing it well is the staff," Quinn says. "The equipment can and often does shift between commercials and post and music. But the trick is to have the staff know the particular demands of each project type and know how to accommodate them." Doppler has its own 24-hour in-house maintenance staff, and Quinn says that a priority emphasis is placed on keeping equipment running properly. "The attention to detail we shoot for here shows up in a lot of different ways," he says. "Right down to always spelling the names right on the tape box documentation."

Doppler's versatility and reputation are already starting to become a magnet for some of what's expected to be mountains of work generated by and around the 1996 Olympic Games in Atlanta. But while the games will come and go, Quinn notes that what Atlanta and Doppler have been experiencing over the last five years has been the arrival of more and more audio clients, from music to post, and the fact that once here, they're staying. "There's always been a strong nucleus here, but for the first time, there's a tremendous consistency to Atlanta's audio business. And we've been expanding all along to give them what they need."

STUDIO SPECS: Owner: Pete Caldwell, Tom Wells; Manager: Bill Quinn; Engineers: Joe Neill (chief engineer), Granger Beem, Curt Bush, Steve Schwartzberg, Tommy Sneltzer, Peter Blayney, Jason Shablik, Jimmy Guthrie, Kevin Sens; Dimensions: Control A: 26x28, Studio A: 17x30; Control B: 15x20, Studio B: 15x25; Control C: 12x15, Studio C: 15x20; Control D: 12x15, Studio D: 10x15; Control E: 26x28, Studio E: 35x50; Control F: 13x15; Control G: 17x20, Studio G: 11x16; Mixing Consoles: SSL 4056 E/G, SSL 4032 E/G, Euphonix CS2000, Sphere B, Ramsa 8428, Auditronics 1104; Tape machines: Otari MTR-90 MkII (4), Ampex ATR 2-track, timecode DATs, many more; Signal Processing: Lexicon, dbx, Focusrite, UREI, TC Electronic, Yamaha, Aphex, Eventide, EMT, Orban Monitors: George Augspurger custom design monitors; Of Special Interest: Seven TimeLine workstations (4 Studioframe 1000 w/V.6.0 software and 3 DAW-80), ISDN, full sound effects libraries, talent access

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RON OLMAN

MIDDLE EAR STUDIOS

Middle Ear Studios stands as a testament to Miami's drawing power as a creative center. When supergroup the Bee Gees followed their RSO Records label-mate Eric Clapton to Miami in the mid-1970s to record, they were charmed by the city and moved there permanently in 1977. In 1979 they rented a large warehouse located a mile from the South Beach area and converted it into a rehearsal stage. By the time they were finished rehearsing, they realized that the location and building were perfect for the studio they had been considering building in Miami. During a tour, their co-producers at the time, Carl Richardson and Albhy Galuten, oversaw the design of a large-space, single-studio facility within the building. Assisted by Seth Snyder and the Recording Studio Equipment Co. of Miami, the studio was ready for the Bee Gees upon their return. The first project was mixing by the Bee Gees for Barbra Streisand's "Guilty."

Originally an all-MCI facility, like many in Miami, the studio put in a Neve V3 Series console in 1985 along with a redesign of the acoustic space. The slatted-wood-covered walls are dotted with indentations into which amplifiers and microphones can be positioned to create a wide diversity of niche space ambiences. The acoustical qualities of the sizable main recording room can be augmented by opening doors at the rear that lead into an all-concrete room that is cabled to the control room for additional reverberation.

The Bee Gees used Middle Ear for their own projects and productions they were involved in until 1993, when they made the studio more widely available. "In a very real sense, the studio has been broken in in the best way," says studio manager John Merchant. "The Boys"—as he refers to Bee Gees brothers Barry, Robin and Maurice Gibb—"developed the studio into a very warm, personal and creative space. And that is part of what comes with the studio. There's nothing cold or impersonal about it. It's a single-room facility, so when an artist rents it out, it's all theirs. And everything comes with it. There are no additional rental charges."

Those who have taken up that offer include Extreme, R. Kelly, Arturo Sandoval and Capitol Records artist Nil Lara, as well as leading Latin artists, including Ilan Chester and Ricardo Montaner. The Bee Gees continue to use the studio for their own recordings and production projects, including a Kenny Rogers/Dolly Parton record, Diana Ross co-produced by Michael Jackson and a Dionne Warwick album.

"It's a large, acoustically interesting, technologically superior space that is very friendly and comfortable to work in," says Merchant. "It's very Miami: international and friendly."

STUDIO SPECS: Owner: Barry, Robin and Maurice Gibb; Manager: Dick Ashby, general manager; John Merchant, studio manager; Engineer: John Merchant; Dimensions: Control room: 20x18x12; Studio: 28x38x12; iso: 6x6; Mixing Console: Neve V3 w/ 56 channels of Flying Fader automation; Tape machines: Mitsubishi X-850 w/Apogee filters (2), MCI JH-24 2-track, Studer A820 1/2-inch 2-track, Ampex ATR 2-track, Sony 1610, Sony and Panasonic DATs; Signal Processing: AMS RMX (2); AMS DMX (2); Eventide H3000S; Lexicon 480L; Lexicon PCM70 (3); dbx, UREI, Teletronix and Avalon compressors, Aphex and Drawmer gates; API Lunchbox; Focusrite stereo mic pre; Monitors: Tannoy FSM w/custom subwoofers, Meyer HD-1, Yamaha NS-10, Tannoy PBM-8, Auratone; Of Special Interest: Studio includes large instrument collection including MIDI gear, 9-foot MIDI'd Baldwin concert grand, vintage guitars and amps, large selection of Neumann and AKG microphones, and great coffee

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CHRIS COWIE

MORRISOUND RECORDING

Morrisound Recording epitomizes the evolutionary cycle of contemporary recording facilities. Like the genesis of most significant studios, it was engendered by a passion for music and recording, in this case by founder Tom Morris, who spent his early career as a chemical engineer before making the transition to audio engineering. Morris slowly built a recording center in his home that eventually blossomed into a full-blown recording facility in 1981, moving in 1985 to its present location on a tree-shaded acre in Tampa. "I was one of the original project studio guys, and this is what it's led to," he laughs during a break in a session.

What it led to is an innovative design by Morris himself, in which two tracking studios, a Sonic Solutions digital editing/mastering suite and a MIDI pre-production studio cover a wide range of client technology, acoustical and budget requirements. Studio A's 1,200 square feet, 25-foot ceiling and variable acoustics make it an extremely versatile room that has handled tracking of artists from Saigon Kick and Warrant (the studio's first Gold recording) to 45-piece orchestras (the studio offers a Yamaha conservatory grand piano) and 103 voice choir recordings. "We've run the gamut from metal to classical," he says. "One of the keys lies in being able to change the decay times of the room to suit the artists' needs."

Other, less technical but equally important artistic requirements are also reflected in the facility's amenities: a basketball half-court, patio with barbecue, private lounges and a full-service kitchen in a wooded setting that is as bucolic as it is productive.

The studio's equipment choices reflect its ability to address a wide range of needs, from its SSL 64-input 4000 Series/Total Recall console in Studio A to the effective but cost-efficient Sound Workshop Series 34 board in Studio B. A sizable collection of MIDI gear is available for both pre-production and production, and projects can be digitally edited and mastered in Morrisound's Sonic Solutions suite.

"Tampa Bay is definitely participating in the growth of the entire South Florida music market," says Morris. "But our location means we have to serve a broader variety of clients, from major labels to independents. So I went with what I believe is a good diversity of equipment that can handle a lot of different types of projects and budgets. And so far, it's worked out very well."

In addition to Warrant and Saigon Kick, clients at Morrisound have included the Dixie Dregs (guitarist Steve Morse lives nearby), Starship's Marty Balin, Robin Zander of Cheap Trick producing artist Tia Carrera, Henry Paul of Blackhawk, the Beffamy Brothers, Brazilian metal heroes Sepultura, and live radio broadcasts featuring Little Feat, Robert Plant and The Rembrandts.

"We get a lot of different types of music through here, from America to South America to Europe," says Morris. "The entire region is really becoming a music machine."

STUDIO SPECS: Owner: Morrisound Recording Inc.; Manager: Tom Morris; Engineers: Jim Morris, Tom Morris, Judd Packer, Scott Burns, Mark Prator, Rick Miller; Dimensions: Control A: 500 sq. ft. w/14-ft ceiling; Studio A: 1,200 sq. ft. w/25-ft. ceiling; Studio B: 480 sq. ft. w/14-ft. ceiling; Mixing Consoles: SSL 4064 G Series w/ Total Recall; Sound Workshop Series 34 w/automation; Tape machines: Otari MTR-90 (3), ADAT (3); Signal Processing: Lexicon 480L & 224XL, Eventide H910 & H3000, TC Electronic 2290, UREI LA-4 & 1176LN, Yamaha, dbx, BSS; Monitors: UREI 815B, Yamaha NS-10M, Auratone 5C, JBL 4312; Of Special Interest: Sonic Solutions mastering suite, MIDI pre-production suite, 8-channel headphone cue system

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PHILLIP VULLO

PURPLE DRAGON STUDIOS

"It's a vibe, man." Purple Dragon Recording owner Stanley Gaines can be quite loquacious in describing both his facility and the Atlanta recording scene, but it generally gets summed up in that succinct, pithy statement. Gaines, a former advertising creative director and current recording artist, opened the studio in January, 1992, as a personal facility with a TAC Scorpion console and an Otari MX-80. It quickly grew, however, into the sophisticated two-room facility it is today.

As one might expect from the name, the color purple is a pervasive motif throughout the studio design by Russ Berger, who did the original room and the second studio, which was added in May of 1994 in response to increased bookings. But Gold is starting to sprout; the studio got its first Platinum disk for Outcast's debut *Southernplayalisticcaddillacmuzic* on LaFace Records in 1995.

Although Purple Dragon participates heavily in the urban contemporary scene that dominates Atlanta's music industry (acts like Veronica, TLC, UGK Underground Kings and Monica are regulars), the studio also hosts rock and alternative artists, including Crash Test Dummies, 10,000 Maniacs, Chris Isaak, Matthew Sweet, Lenny Kravitz, Jessie Dupree of Jackel and the Indigo Girls.

Both studios are tielined together and can function as one, and the rather ambient lounge and bathroom areas are often pressed into service as tracking spaces. The result, says Gaines, is a facility that can cover the direct recording needs of R&B producers, such as Organized Noise (Outcast, Sunny Soul), as well as the ambient requirements of rock producers such as Jeff Glixman (Kansas). All clients appreciate the Ultimation and Total Recall capabilities of the SSL 4048 console.

The studio also has a core of specialized outboard gear, including eight Neve 1083 modules and a rather specialized—what he calls "fashion-forward"—marketing approach: Gaines offers free studio time to clients whose projects result in Gold or Platinum records.

"We try for two things here," says Gaines: "State-of-the-art and being comfortable. I keep the place as spotless as I can, but it never gets less than cozy. You try to come up with a sense of not being in the middle of a major city, yet you have Atlanta right outside your door. And that's been a big pull for both clients from within Atlanta and the ones who come in from out of town to tap into what I believe is the finest R&B base in the world."

STUDIO SPECS: Owner: Stanley Gaines; Manager: Stanley Gaines; Engineers: Tim Harrigan, Mark Lowe, Rich Issaacs. Dimensions: Control A: 21x18; Studio A: 25x22; Control B: 20x15; Studio B: 10x12; Mixing Consoles: SSL 4048 G w/8 channels of 242 EQ, Ultimation & Total Recall; Neotek 48-input w/Audio Kinetics VCA automation; Tape machines: Mitsubishi X-800 32-track digital, Otari MTR-90 MkII 24-track analog, MX-80 24-track analog, 24 channels Dolby SR, Sony TC DAT, Panasonic SV-3700 DAT; Signal Processing: Lexicon 480L, PCM70, PCM42 (2), AMS RMX-16 reverb; Neve, UREI, dbx and Summit compressors; Neve 51083 and 31118 mic pre's; Focusrite ISA 115HD 2-channel mic pre/EQ; Medici and Summit stereo EQs; Tube-Tech MP1A 2-channel mic pre; Monitors: Meyer HD-1, Dynaudio ppm3, JBL 4435 w/TAD 15-inch drivers, Yamaha NS-10; Of Special Interest: Power Mac 8100/110 and Mac IIci w/8 MB RAM & 1.6 GB hard drive, 4-channel Pro Tools, Sample Cell, Sound Designer II, Opcode Studio Vision, large microphone selection. Dragonwear clothing and jewelry line available

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SOUTH BEACH STUDIOS

There is perhaps no other studio facility that epitomizes the renaissance of Miami's South Beach section as well as the one named for it. South Beach Studios is ensconced within the pastel-walled Marlin Hotel, one of scores of recently rejuvenated Art Deco hostelries that serve as a backdrop to the boisterous crowds that jostle along the beach's bar and bistro strip.

Owned by legendary producer and Island Records founder Chris Blackwell, who also owns Compass Point Studios in the Bahamas, South Beach is something of a hidden treasure. One enters a different world as you pass through the stylized lobby, bar and pool table area and past a large wooden door that leads down a corridor lined with lithographs of album art from the '60s, '70s and '80s. Once there, though, the main studio dominates the area. With its diner-like lounge off to one side, the Ross Alexander design makes ingenious use of the space, with a long, narrow mixing room hosting a 72-input SSL 4072 E/G console. "Ross is the only certifiable genius I can say I know," says Joe Galdo, president of South Beach Studios, as well as head of regional A&R for Island Records and a Grammy-nominated producer in his own right. "The acoustics in a room of these dimensions are incredible; there are simply no reflections. Everyone who mixes here tells me how accurate it is." The studio, which opened in 1992, also has a comfortable isolation booth, which has been used for small tracking sessions. (A second studio, a small pre-production room with Pro Tools, is also available.)

The client list speaks for itself: Toni Braxton, Nine Inch Nails, Jimmy Buffet, R. Kelly, Talking Heads' Tina Weymouth and Chris Franz, and Iron Maiden; producers Tom Dowd, Jeff Glixman and Ron St. Germain; and engineers Tom Lord-Alge, Joe Blaney and local hero Cesar Sogbe.

Sogbe and Galdo teamed up to make the equipment choices, traveling to a variety of studios to hear various monitoring systems in place before agreeing on the Genelec 1034A main monitors. "What you have here in terms of equipment is a sort of intergenerational mix," says Galdo, who though born in Cuba considers himself a Miamian first. "I'm from the older school and prefer things like Pultecs; Cesar has 20 years on me, and he brought in things like the Medici EQ. The combination has been amazing. And we've made it a policy that it all comes at no additional charge to the client." Neither do amenities like studio manager Nancy Mraz's ability to get clients VIP admission into the hottest clubs on a moment's notice, even if the moment happens to be 2 a.m., as she did for R. Kelly one night.

"James Michener called Miami 'the capital of the Caribbean,'" says Galdo. "People come here for what is truly a multicultural experience, and the studio is designed to accent that."

STUDIO SPECS: Owner: Chris Blackwell, Joe Galdo; Manager: Nancy Mraz ; Engineer: Cesar Sogbe (chief); Dimensions: Control room: 15x27, iso: 15x15; Mixing Console: SSL 4072 E w/G modules & G computer, 16 E EQs; Tape Machines: Mitsubishi X-880 digital 32-track with Apogee filters, Studer A820 analog 24-track w/Dolby SR, Studer 820 analog 24-track 1/2-inch w/Dolby SR, Sony 7030 and 2700 DAT; Signal Processing: Lexicon 224XL and 480L w/ARC, AMS RMX-16 digital reverb, EMT 240 stereo plate w/remote, Pultec EQP-1, Neve Prism rack, Focusrite, Urei and Neve compressors, Eventide H3000 SE2.; Monitors: Genelec 1034A, Yamaha NS-10, Tannoy 6.5, EV Sentry 100A; Of Special Interest: E-mu E-III, E-II, Emax and Akai S1000, Performer and Vision software, Roland, Yamaha, Korg keyboards, occasional late night visits by Grace Jones and entourage.

MIKE DISCHE

SOUTHERN TRACKS

Southern Tracks has almost as much history as the region in which it's located. The original studio, a converted schoolhouse, was founded by legendary music publisher Bill Lowery in the mid-1950s. Lowery discovered such classic songs as "Be Bop A Lula," "I Never Promised You a Rose Garden" and Joe South's "Games People Play." When the original site became a Metro Atlanta Rapid Transit station in 1983, Lowery built a new studio from the ground up at the present location.

Designed by George Augspurger, Southern Tracks was originally intended as a workshop for Lowery's writers and productions. However, the studio's ambient room quickly gained favor among Atlanta's rock elite. Eventually, as longtime studio manager and now co-owner Mike Clark explains, "Bill had trouble getting time in his own studio."

In August 1993, Clark and Lowery brought Southern Tracks to state-of-the-art when they installed the South's first SSL G Plus/Ultimation console. Successful young producer Brendan O'Brien has since made the studio his production base for artists like Stone Temple Pilots (*Purple*), Pearl Jam (*Vitalogy*), and Matthew Sweet (*100% Fun*), as well as mix projects for Bob Dylan and Aerosmith. Other artists who have recorded at Southern Tracks include Collective Soul, Black Crowes and .38 Special on the rock side, and Dionne Farris, Silk and Keith Sweat on the R&B side.

"Since this is a one-room facility, once you're here this is your studio," observes Clark, who has worked with Lowery for almost 30 years. "You can go out back and play basketball. We have a lounge with a big card table, a full-service kitchen and an available chef. It's very private, very focused, and as a result, very productive."

George Augspurger's design embraces a variety of acoustical environments in a single space. The large main studio is surrounded by three spacious isolation booths, each with variable acoustics. "We've been collecting vintage gear for a long time," adds Clark, who points to the studio's vast rack of outboard equipment featuring Neve modules and Pultecs. An impressive collection of microphones includes tube mics by Neumann and AKG and the rare Neumann QM69 quadraphonic mic.

"Atlanta is a great place to make music," Clark says. "We have a big musician base, lots of great restaurants and hotels and several first-rate studios. And of course, Southern hospitality."

STUDIO SPECS: Owner: MI-Bill Consultants; Manager: Mike Clark; Engineers: Caram Costanzo; Dimensions: Control room: 24x28; Studio 25x40x18; iso 1: 15x18, iso 2: 16x20, iso 3: 8x10, all w/Variable Acoustics; 12x12 alcove; Mixing Console: SSL 4064 G-Plus w/Total Recall, Ultimation; Tape machines: Studer A827 analog (2), Mitsubishi X-800 32-track digital w/ Apogee filters, Studer A80 1/2-inch 2-track, Panasonic SV-3700 DAT (2), Tascam DA-30 DAT (2); Signal Processing: EMT, Lexicon, AMS, John Hardy, D.W. Fern, Neve, Demeter, API, Pultec, GML, Tube Tech, Summit, Teletronix, Eventide, UREI, more Monitors: Custom Augspurger, Wright, Yamaha, Tannoy, Dynaudio; Of Special Interest: EMT 250, Active cue system, Yamaha/JBL stage monitor system for tracking, Marantz CDR6000 CD recorder

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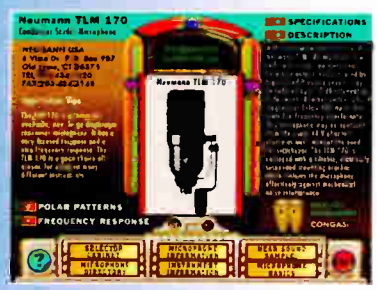

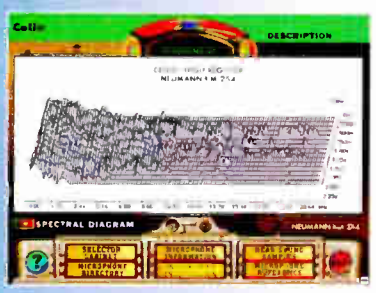

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SAM TURNER

TRICLOPS SOUND STUDIOS

"The initial concept behind Triclops was to have a studio that would make artists feel comfortable and facilitate all their needs," says Triclops' owner Rick Meyer. "Everything at this studio is focused on helping artists achieve the great sounds they're looking for. And I really think we've made that happen here, and happen consistently."

Meyer's experience in music includes work as a musician, performer and songwriter for more than 25 years. He is also a collector of music-related memorabilia and gear. A glass cabinet in Triclops' lobby displays vintage amps and lap steel guitars, while music posters from various eras line the studio's corridors, as does a framed ticket stub from the 1965 Beatles concert in Atlanta he attended that triggered his passion for rock music.

Triclops Sound Studios opened in 1990. "I saw a lot of studios over the years, and the idea of having one focused primarily on a comfortable, creative, productive environment that was developed from the artist/musician perspective was something I had rarely seen," Meyer explains.

The facility covers 5,500 square feet with a 2,000-square-foot main recording room lined with stone tiles halfway up to the 14-foot ceiling, which slopes slightly from either side towards the middle of the room creating, as Meyer explains, "a natural compression effect that's also incredibly ambient. The beauty of that is that it's very easy to control the sound via amp and mic placement, giving you endless possibilities. Between that, the size of the room and the Neve/Studer combination, you get an amazing transparency of sound on to tape. The clients love it."

Meyer is proud of his staff, which is highly client-oriented and understands the need to balance creativity and speed. Just as important is maintenance of the recording gear and the large collection of vintage instruments and amps. Triclops offers a 1959 9-foot Steinway grand piano, Hammonds, Leslies, a Mellotron and a wall lined with classic Marshall, Fender, Ampeg and Mesa amps and cabinets.

Among those who have availed themselves of Triclops are Smashing Pumpkins, who recorded their multi-Platinum *Siamese Dream* there, Courtney Love and Hole's *Live Through This*, Allman Brothers' lead guitarist Warren Haynes' solo record *Tales of Ordinary Madness*, and overdubs and mixes for the Indigo Girls' *Swamp Ophelia*. More recently, Brother Cane (Virgin Records), Fig Dish (Polydor-Atlas) and Menthol (Capitol) have recorded forthcoming releases there. Other major artists who have made recording appearances at Triclops include Drivin'N'Cryin, Peter Buck and Mike Mills of R.E.M., Jason Bonham, Chuck Leavell and several members of Soul Asylum. "The best way to understand the vibe here is come and feel it," says Meyer.

Meyer is equally supportive of Atlanta's robust musical scene. But the essence of his enthusiasm is perhaps best captured in his amusing citation of what frequent air travelers have come to know well: "They say that even on your way to Heaven or Hell, you have to pass through Atlanta."

STUDIO SPECS: Owner: Rick Meyer; Manager: Rick Meyer, general manager; Donna Almond, office manager; Engineers: Jeff Tomei (chief engineer), John Nielsen, Tony Adams (drum tech); Dimensions: Control Room: 20x22; Studio: 40x50; iso 1: 12x12; iso 2: 12x14; Mixing Console: Discrete 48-channel Neve 8088 MkII (original Rupert Neve design) w/Flying Faders automation; Tape machines: Studer A800 MkIII analog 24-track; 24 tracks of Alesis ADAT; Ampex ATR-102 half/quarter-inch 2-track; Tascam DA-30 and Panasonic SV-3700 DAT; Signal Processing: NTI EQ3, compressors by Neve, UREI and dbx; EMT 140 tube stereo plate and 250 and 251 digital reverbs; Ampex tube mic pre's; Lexicon, Aphex, Pultec, Publison, Roland, Yamaha, more; Monitors: UREI 813 original issue, Tannoy DMT-10, Yamaha NS-10M, ROR, tube mics by Neumann U47, Sony C37A (2), other Neumann, Sennheiser, AKG Shure and EV; Of Special Interest: 5-station, 12-channel Mytek Private Q headphone system

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by Iain Blair

HARVEY KUBERNIK

SPOKEN-WORD PIONEER

For some 20 years now, producer Harvey Kubernik has been tirelessly championing that underdog of the recording scene, the spoken word, and such colorful artists of the genre as Charles Bukowski, Wanda Coleman and Henry Rollins. The 42-year-old Los Angeles native, who started his career as a music journalist writing for the likes of *BAM*, *Melody Maker* and *Crawdaddy*, also brings his own rich personal background to the crusade.

During the late '70s, Kubernik worked as head of West Coast A&R for MCA Records and moonlighted as a percussionist and background vocalist for Phil Spector and Kim Fowley, appearing on records by artists such as Leonard Cohen, The Ramones and Dion. In 1981, Kubernik started his own label, Freeway Records, as an outlet for the spoken word, and he went on to produce albums for such diverse voices as Bukowski, Jello Biafra and Exene Cervenka, among others, as well as co-producing music albums including Black Flag's *Family Man*. His recent work with New Alliance Records and the company's boutique label, Issues Records, has included a double-album, *A Jazz Audio Biography* with jazz great Buddy Collette, and two sports titles: *Bill Walton: Men Are Made in the Paint* and *John Wooden: A Life in Basketball*. Upcoming releases include Noah Young's *Freaks: No Fear of Contagion*, and Quincy Troupe's *Root Doctor*.

PHOTO: HEATHER HARRIS

Recently, Kubernik took time off his busy schedule to discuss the value of the spoken word and the artists he's worked with.

How did you first get into recording the spoken word?

The recording aspect was really an outgrowth of all the music interviews I did as a journalist in the '70s. I like conversation with a tape machine and microphone, and I even enjoyed the tedious chore of transcribing the tapes, and to this day, I still feel it's nicer to hear people talk than read them in print. You get more of the personality. My recording career naturally gravitated to the spoken word because I wasn't in a band, and I didn't really want to make rock 'n' roll records. I didn't want to be a music producer full time, so I started going into dialog recording and spoken-word recordings. I also had a background of studying literature in college, and I like words and books, so when I did interviews, I liked talking to the lyricists best.

When did you first start actively recording spoken-word projects?

It was in the mid-'70s. It wasn't really professionally so much as documen-

tation and cataloging, because I'd met people like Allen Ginsberg 20 years ago, and they're very documentation-oriented. They'd keep handbills and wire recordings and early FM recordings, and that reinforced in me the need to record and capture a lot of this stuff. It didn't really dawn on me that it could ever become commercial, so I'd say the first ten years were exploratory, and the last ten have been more in the fields.

What's the value of spoken-word projects for you?

When I recently produced the Buddy Collette jazz audio biography, it really brought it home to me. I told him how much I'd enjoyed making the album and how excited I'd been about the project, and he said, "Well, you're getting the real L.A. story, the truth on tape. How often do you get the truth in society?" And I suddenly realized that what I, and others, have been doing is getting parts of the city on record that just aren't available to people. They've either been hidden or covered up or deemed unworthy of documentation, so it's become almost an archaeological and sociological process. I've been recording a lot of L.A. natives, and I feel that if I wasn't around to do it, you just wouldn't hear of some of these people. So the value to me is discovering and unearthing a real L.A. voice. It's a body of work that I feel is culturally and historically very important.

As a native of L.A., has it always been very much about the city?

I think so. It definitely became that way, although it wasn't mandatory in the early days, and it still isn't. I just think, right now, recording Los Angeles post-Watts riots in '65, the pre-1992 uprising, and now "the new natives," the people who've moved here, is important, and I enjoy exploring all the links. For instance, when I worked with Buddy Collette, I found out we both went to Los Angeles City College on Vermont Avenue, a real nerve-center street, and because he went there 30 years before I did, I get a sense of history and continuity. There was a real flourishing but undocumented beat scene on the West Coast, and it

The value to me is discovering and unearthing a real L.A. voice. It's a body of work that I feel is culturally and historically very important.

wasn't all in San Francisco, either. I remember seeing The Doors in the late '60s, and Morrison read "Celebration of the Lizard." So all that is part and parcel of what interests me about L.A.

Is there a sense in which these spoken-word projects also address the social unrest L.A. has seen?

Very much so. This is the flower-child aspect of me, but there is a healing membrane that's sort of coming through these records. It's something we call "reveal and heal." You reveal a segment of musical history, or whatever, and it helps heal the wounds. So Buddy Collette tells you about Charlie Parker in L.A., and it reveals stuff you didn't know, but it's also a healing process because someone is commenting on the wound. And I also feel that in an era that's so fixated on

—CONTINUED ON PAGE 119

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[A]Continuous sine wave power limited by current rating of line fuse.

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Unlike traditional condenser mics, the capacitive transducer in Sennheiser condenser mics is part of a tuned RF-discriminator circuit. Its output is a relatively low impedance audio signal which allows further processing by conventional bi-polar low noise solid state circuits. They achieve a balanced floating output without the need for audio transformers, and ensure a fast, distortion-free response to audio transients over an extended frequency range.

MKH 20 P48U3 Omnidirectional

Low distortion push-pull element, transformerless RF condenser, flat frequency response, diffuse/near-field response switch (6 dB boost at 10 KHz), switchable 10 dB pad to prevent overmodulation. Handles 142 dB SPL. High output level. Ideal for concert, Mid-Side (M-S), acoustic strings, brass and wind instrument recording.

MKH 40 P48U3 Cardioid

Highly versatile, low distortion push-pull element, transformerless RF condenser, high output level, transparent response, switchable proximity equalization (+4 dB at 50 Hz) and pre-attenuation of 10 dB to prevent overmodulation. In vocal applications excellent results have been achieved with the use of a pop screen. Recommended for most situations, including digital recording, overdubbing vocals, percussive sound, acoustic guitars, piano, brass and string instruments. Mid-Side (M-S) stereo, and conventional X-Y stereo.

MKH 60 P48U3 Short Shotgun

Short interference tube RF condenser, lightweight metal alloy, transformerless, low noise, symmetrical capsule design, smooth off-axis frequency response, switchable low cut filter (-5 dB at 100 Hz), high frequency boost (+5 dB at 10 KHz) and 10 dB attenuation. Handles extremely high SPL (135 dB), ideal for broadcasting, film, video, sports recording, interviewing in crowded or noisy environments. Excellent for studio voiceovers.

MKH 70 P48U3 Shotgun

Extremely lightweight RF condenser, rugged, long shotgun, low distortion push-pull element, transformerless, low noise, switchable presence (+5 dB at 10 KHz), low cut filter (-5 dB at 50 Hz), and 10 dB preattenuation. Handles 133 dB/SPL with excellent sensitivity and high output level. Ideal for video/film studios, theater, sporting events, and nature recordings.

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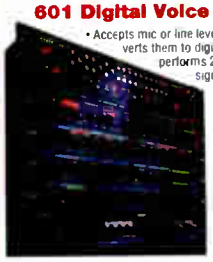

- Accepts mic or line level analog signals, converts them to digital (18 bits) and then performs 24-bit digital domain signal processing.
- Processing includes fully parametric EQ, shelving EQ, notch filtering, dynamic filtering (noise reduction) de-essing, delay, chorusing, gating, expansion, compression, AGC and DC removal.
- Combination of 128 factory presets and 128 non-volatile user programs guarantee predictable and repeatable effects from session to session, performance to performance.
- Has XLR-balanced (analog) monaural mic and line inputs and XLR-balanced stereo output. XLR-balanced and S/PD/F (RCA) inputs and outputs. MIDI input/output supports connection to virtually any type of MIDI control device for programming or controlling the 601 in real time.
- Ideal for a variety of recording, broadcast, live sound, and post production applications.

488 Dyna-Squeeze

8-Channel Compressor/Interface

- Can easily increase average recording levels on your digital or analog tape recorder by 10dB with no side effects.
- Tracks processed by Dyna-Sqeeze have presence and increased articulation. Subtle sounds become more up front.
- Many professional mixing consoles have output levels that are much hotter than digital recorder inputs. The 488 matches any console to most any digital recorder.

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TASCAM

DA-88 Digital Multi-Track Recorder

The first thing you notice about the eight channel DA-88 is the size of the cassette - it's a small Hi-8mm video cassette. You'll also notice the recording time - up to 120 minutes. These are just two of the advantages of the DA-88's innovative use of 8mm technology.

- The ATF system ensures that there will be no tracking errors or loss of synchronization. The DA-88 doesn't even have (or need) a tracking adjustment. All eight tracks of audio are perfectly synchronized. What's more, this system guarantees perfect tracking and synchronization between all audio tracks on all cascaded decks - whether you have one deck or sixteen (up to 128 tracks!).
- Incoming audio is digitized by the on-board 16-bit D/A at either 44.1 or 48KHz (user selectable). The frequency response is flat from 20Hz to 20KHz while the dynamic range exceeds 92dB. As you would expect from a CD-quality recorder, the wow and flutter is unmeasurable.
- One of the best features of the DA-88 is the ability to execute seamless Punch-ins and Punch-outs. This feature offers programmable digital crossfades, as well as the ability to insert new material accurately into tight spots. You can even delay individual tracks, whether you want to generate special effects or compensate for poor timing. All of this can be performed easily on a deck that is simple and intuitive to use.

FOSTEX RD-8 Multi-Track Recorder

Fostex has long been a leader in synchronization and the RD-8 redefines that commitment. With its built-in SMPTE / EBU reader/generator, the RD-8 can stripe, read and jam sync time code - even convert to MIDI time code. In a sync environment the RD-8 can be either Master or Slave. In a MIDI environment it will integrate seamlessly into the most complex project studio, allowing you complete transport control from within your MMC (MIDI Machine Control) compatible sequencer.

- Full transport control is available via the unit's industry-standard RS-422 port, providing full control right from your video bay. The RD-8 records at either 44.1 or 48KHz and will perform Pull-Up and Pull-Down functions for film/video transfers. The Track Slip feature helps maintain perfect sound-to-picture sync and the 8-Channel Optical Digital Interface keeps you in the digital domain.
- All of this contributes to the superb sound quality of the RD-8. The audio itself is processed by 16-bit digital-to-analog (D/A's) converters at either 44.1 or 48KHz (user selectable) sampling rates, with 64X oversampling. Playback is accomplished with 18 bit analog-to-digital (A/D's) and 64X oversampling, thus delivering CD-quality audio.
- The S-VHS transport in the RD-8 was selected because of its proven reliability, rugged construction and superb tape handling capabilities. Eight tracks on S-VHS tape allow much wider track widths than is possible on other digital tape recording formats.
- With its LCD and 10-digit display panel, the RD-8 is remarkably easy to control. You can readily access 100 locate points and cross-fade time is fully controllable in machine to machine editing. Table of Contents data can be recorded on tape. When the next session begins, whether on your RD-8 or another, you just load the set up information from your tape and begin working. Since the RD-8 is fully ADAT compliant, your machine can play tapes made on other compatible machines, and can be controlled by other manufacturers ADAT controllers. Your tapes will also be playable on any other ADAT deck.

Panasonic

SV-3700/SV-4100 Professional DAT Player/Recorders

Panasonic's SV-3700 and SV-4100 are designed for professional applications. They have highly accurate and reliable transport systems with search speeds up to 400 times normal play speed. They also feature advanced, high-quality analog-to-digital (A-D) and digital-to-analog (D-A) converters and input/output circuitry designed to interface with the widest variety of devices.

- When recording via the analog inputs, a front panel switch permits selection of the sampling rate (44.1kHz or 48kHz). When recording through the digital inputs, it automatically clocks to incoming frequencies of 32kHz, 44.1kHz or 48kHz.
- Ramped record mute and unmute with three seconds fade-in and five seconds fade-out provides automatic level changes at the start and end of a recording.
- High speed transport enables searching up to 250x normal speed. High-speed search up to 400x normal speed is possible once the tape has been scanned in Play, Fast-Forward or Reverse mode.
- Built-in shuttle wheel has two variable speed ranges. 3 to 15x normal speed in Play mode and 1/2 to 3x normal speed in Pause mode – an ideal way to find tape locations.
- Comprehensive display includes program numbers, absolute time, program time, remaining time and Table of Contents, which displays total recorded time and total PNO count for commercial prerecorded DAT tapes.
- Has XLR-balanced and unbalanced (phono) digital inputs and outputs. Also has XLR-balanced analog stereo inputs and outputs. Output level is selectable between +4db and -10db. The input level is +4db.

SV-4100 Has All the Features of the SV-3700 PLUS:

Offers enhanced performance required for professional production, broadcast and live-sound systems. Features instant start, external sync capability, additional digital interfaces and exceptional 20-bit audio.

QUICK START WITH TRIM AND REHEARSAL

- With 8MB of memory holding five seconds of audio data, the Quick Start function provides sound almost instantly after a play command is executed. Other DAT recorders lag about 7 second, making them unsuitable for professional applications.
- Easily adjust the Quick Start position and specify it by A-Time, Start ID or PNO. Recording via Quick Start is also possible, allowing two SV-4100s to be used for frame-accurate punch-in/punch-out and assemble editing.
- You can adjust the Quick Start position with 1-Frame resolution over a range of ±50 frames.
- Without playing the tape, you can monitor the level of stored data to check your Quick Start position. This preview capability is handy before actual editing or on-air play. Repeated play is also possible, using about 1.5 seconds of the data to create a kind of sampler effect.

FRAME ACCURATE INDEXING AND EDITING

- Using the trim and rehearsal functions, you can accurately determine points to write, start and skip IDs. These IDs can be written, rewritten or erased at any point in the recording and automatically renumbered.
- With two SV-4100s connected via the 8-pin parallel remote terminal, synchronized frame-accurate editing can be performed. Continuity of edit points can be checked by rehearsal playback. By entering and editing end position in one of the Locate buttons, you can determine a punch-out point as well.

FLEXIBLE SEARCH

- Easily and accurately access your A-Time. You can specify hour, minute, second and frame.
- In most modes, the currently displayed A-Time can be assigned to one of the Locate buttons. Then from Stop, Pause or Play you can rapidly cue to any of these four addresses by pressing its Locate key. In addition, Locate Last takes you to the most recent Quick Start A-Time position.
- Search is also possible by Start ID or program number.

5-MODE EXTERNAL SYNC

External sync is essential for applications such as video postproduction and stereo submix recording. It assures uniformity of timing between different equipment so the audio data consistently matches up with the target media. Select from 3 video external sync modes (25, 29.97 and 30 frames per second; or use the word sync or Digital Data modes (which lock to the input sampling frequency).

MULTIPLE DIGITAL INTERFACES

- Has XLR-balanced digital input and output plus unbalanced digital coaxial and optical inputs and outputs. Analog inputs/outputs are XLR-balanced and output level is switchable between +4dB and -10dB, providing compatibility with other equipment.

3-WAY REMOTE CONTROL

- GPI input allows simple triggering of Quick-Start Play. 8-pin parallel remote terminal connects to another DAT deck, computer or wired remote. Includes wireless remote control.

Roland DM-800

Digital Audio Workstation

The DM-800 is a compact, stand-alone multi-track disk recorder that provides an amazing array of features at an unbelievably low price. Whether for music production, post production or broadcast, the DM-800 will make your work simpler, faster, more productive and more profitable. A full function workstation, the DM-800 performs all digital mixing operations from audio recording, to editing, to track-bouncing, to final mixdown. It fully supports SMPTE and MIDI time codes and also features a built-in Sample Rate Resolver to synchronously lock to any time code.

TASCAM DA-P1

Portable DAT Recorder

- With rotary two head design and two direct drive motors the DA-P1 offers one of the best transport in its class.
- XLR-balanced mic/line inputs (with phantom power) accept a broad range of signal levels from -60dB to +4dB.
- Analog line inputs and outputs (unbalanced) plus S/PDIF (RCA) digital inputs and outputs enables direct digital transfers.
- Uses next generation A/D and D/A converters for amazing quality.
- Supports multiple sample rates (48, 44.1 and 32 kHz) and SCMS-free recording.
- Included in its design is a MIC limiter and 20dB pad to achieve the best possible sound without outside disturbances.
- To monitor your sound there is a TRS jack and level control for use with any headphones.
- Built tough, the DA-P1 is housed in a solid, well-constructed hard case. It includes a shoulder belt, AC adapter and one battery.

SONY TCD-D7

DAT Walkman Player/Recorder

- Long Play (LP) mode allows up to 4 hours of record/playback of 12-bit audio on a single DAT cassette.
- Equipped with digital coaxial and optical input connector. Maintains the highest signal purity for recording and playback of digital sources with all information retained in the digital domain.
- Also has analog Mic and Line inputs for recording from analog sources without external adapters.
- High-speed Automatic Music Sensor (AMS) search function finds and plays tracks, skips forward or back up to 99 tracks, all at 100x normal speed.
- Has a Digital Volume Limiter System (DVLS) that increases listening comfort and sound quality by automatically adjusting for sudden level changes of the recording. It also helps prevent sound leaks through headphones.
- Two-speed cue-review lets you hear sound while player is in fast-wind modes, up to 3x or 25x normal speed.
- Compact and portable, it has an anti-shock mechanism that permits accurate recording and playback even while in motion.
- LCD display with backlit windows clearly shows recording level, track number, operating status and 4-segment battery indicator, even in low ambient light conditions.
- Optional RM-D3K System Adapter Kit for complete digital interface. The kit is equipped with the input/output connectors for both the optical cable and the coaxial cable. Therefore you can use it as a relay between the TCD-D7 and other digital equip-

TCD-D10 PRO II

Portable DAT Recorder

- Has balanced XLR input, switchable microphone (-60dB) or line (+4dB) inputs. A 12-pin digital connector provides interfacing with AES/EBU digital signals of 32.0, 44.1, or 48.0 KHz sampling rate. This means that compatibility with other digital systems is assured. It also provides the convenience of digital dubbing and editing without any degradation.
- Equipped with a comprehensive self-diagnostics function that constantly monitors the rotation of the head drum, capstan and reels. The tape transport mode and load/unload time are continuously checked as well. Upon detection of trouble, the tape is brought to a forced stop and unloaded automatically to protect the tape and the recorder.
- Up to 99 start IDs can be recorded in the subcode area. When the record button is pressed, the start ID is recorded automatically for 9 seconds. During recording, it can also be added manually to any position of the tape. Search for these start IDs is performed in two modes at 100 times normal speed.
- Offers a maximum spooling time of 140 x normal speed. A two hour tape can be rewound or fast forwarded in under a minute.
- 20-segment digital peak level meters include overload indicators. Closely tracks input signal for accurate level indications.
- During playback, the date and time of recording is displayed.
- Has a 5-segment battery indicator. The last segment blinks on and off, notifying you to change batteries.
- To eliminate distortion caused by unexpected peaks, the TCD-D10 PRO II incorporates a record-level limiter with a fast attack time of 300ms. The microphone attenuator prevents distortion by suppressing the signal level 20 dB.
- Immediate playback is possible through a built-in speaker.
- A wired remote controller is supplied to control the record, play, stop, and pause functions of the recorder. The top end of the controller is designed to accept a microphone holder. Two microphone stand screw adapters are also supplied.
- The supplied NP-22H rechargeable battery pack provides 1.5 hours of continuous operation. The optional NPA-D1D battery adapter enables 1 hour of continuous operation on AA-size batteries. With the use of the supplied ACP-88 AC power adapter, it can also be operated on 100-240 VAC, 50–60 Hz.

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MIX

—FROM PAGE 114, HARVEY KUBERNIK

sound bites and little snippets of information, it's great to hear 18 minutes on Charlie Mingus completely uninterrupted. How often do you get that today? And it's great to listen to a 72-year-old guy like Buddy Collette talk and reminisce about musicians like Eric Dolphy and Charlie Mingus.

What studios do you use?

I primarily produce at Theta Sound in Burbank. In fact, I've worked there for the last ten years and done 20 records there. I've done all the Issues records there, the five double albums, including Buddy Collette. They have a Ramsa board and two AKG 414 microphones, which are then fed into a Sony DAT machine. What's great about the studio is that they have an isolation chamber, so sometimes if I need some music tracks, I'm covered. It also turned out that Buddy Collette had recorded at Theta over the years, so he felt very comfortable. The studio also does a lot of TV and movie scoring and dialog work, which is helpful for what I do, and what's interesting is that I brought in a tape on a poet called Harry Northup—he's also an actor and was in *Silence of the Lambs* and *Bad Girls*—and the engineer, Jim Latham, immediately recognized his voice. It turned out he'd done some location recording of Harry years ago. That shows how tuned in they are to voices and dialog.

Recently, I've also done some recording at a studio in Long Beach called Casa Destroy. It's owned by Greg Ginn of SST/New Alliance Records. The engineer I work with there is Andy Batwinas. They have a Trident 80-AB board, and they use Neumann U87 microphones. What's interesting about Casa Destroy is that it's where a lot of the grunge music is recorded, and they have both a cement and a wooden floor. I've done some recordings there of Kathi Martin, Bill Mohr and Harry Northup. Casa Destroy recording sessions are also a different experiment in terror because it's in a tough area, and it seems that everyone's had their car stolen or broken into. So you're always wondering, "Are my wheels still outside?" at the end of the session. But that also lends to the dynamics of tension, and they also master at the studio. So I can go down there, record something and know that six months later, the same engineer will be mastering that take in the same room. I like that continuity.

PHOTO: HEATHER HARRIS

Buddy Collette and Harvey Kubernik at Theta Sound Studio in Burbank, Calif.

The two studios must have very different sounds.

Yes, and there are various subtle differences, too. For instance, at Casa Destroy, they specifically use TDK, while at Theta the engineer prefers Sony, so everyone has their quirks. I can hear the difference recording someone with a cement floor, and

that's not to say that just because there's a carpet at Theta you get a damped sound. But it's interesting to get some bounce off the cement. It's crisp, and they record a lot of live sessions there with rock groups and trios. And, of course, the microphones are very different. The AKGs at Theta aren't as location-dependent because you get a lot of room tone. I've also had the chance to do some experimenting at Casa Destroy. I recorded Kathi Martin on a wood floor, and then did Bill Mohr and Harry Northup on cement. Kathi has a husky voice, and I thought the warm bounce from the wood floor really complemented her voice well.

Do you always use the same engineer?

Pretty much. The principal guy at Theta is Jim Latham, and what's interesting about him is that he actually has a degree in music from Harvard, and he was also in the *Fame* band in the late '70s playing bass. So he has a very musical approach to engineering, which I really like. It was especially beneficial on the Buddy Collette album because Jim Latham has a good knowledge of jazz history, to the point that I used his transcriptions as the section titles on the record. He'd write a title like "Parker/Mingus—Blacklisting," and I'd use that as the title. And then I found out he'd jammed with Milt Hinton, a bass player that Buddy has worked with over the years, and he'd seen Buddy Rich lecture at college. So it's a great advantage having a musician-engineer on these sorts of projects. I asked him what he thought of the stuff we got on Charlie Parker, and he said, "I'd like to hear more." So that's when we went back with Buddy and recorded another 20 minutes. So I was actually feeding off Jim's enthusiasm, and I don't do that too often with engineers.

What about editing facilities?

What's great is that Theta has Super 8 or hard disk editing facilities, so you can actually edit on the screen like you can with Pro Tools or Sound Tools. And this equipment has been there for years and allows you to cut within a millisecond. That's been a real blessing because I produced a couple of soundtracks to a laser disc project called "L.A. Journal" that came out on the Voyager company, and which had 14 voices, including Wanda Coleman, Marisela Norte and myself, each doing 58.5-second glimpses of Southern California. We were all writing to the visuals for the first time, so you had to be extremely precise. That was how I started to use the equipment there, and I really enjoy working in that room. Over at Casa Destroy, they don't have the hard disk or Pro Tools or Super 8 editing facilities, but it's not a problem in the '90s when you just go DAT to DAT.

Tell us a bit about the actual sessions.

All those Issues records were done with [the artist] sitting at a desk. We'd set up with one microphone above and one on the desk, and you probably can't tell that Buddy Collette is sitting at a desk. It sounds like he's alone and right next to you, when in fact, the marathon sessions had myself and other people asking questions. That's a tribute to the engineer and the placement of the microphones, as well to Buddy himself, who's been around microphones for over 60 years. The guy was in *Citizen Kane*, playing in the pit band, and he's had a microphone in his sightline since 1938. Similarly, Bill Walton is right at

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home with a microphone in a studio. For many years, he's been a TV basketball analyst, and he's done a ton of radio broadcasting, so he's not at all intimidated. And no one wears headphones. They're very informal in that sense. You show up, sit down and just go, and that way you get a naturalness that's very important to these types of records.

How much do you have to edit a typical session, and do you work with the artists?

That's the hard part of this whole business. For instance, I recorded 14 hours with Buddy Collette, and I could only use two hours and 13 minutes on the CD. The problem is you can only get 74 minutes maximum on a CD, and I cram in as much as I possibly can. I remember after one of the first sessions with Buddy he said, "We didn't even get to Ellington," and I had to say, "I'm not putting out a boxed set already." So there are some emotional choices I have to make. I do work with the artists on the editing. I gave Buddy a rough cut of five hours' material. So I'll start with 14 hours and cut it down to five or six. Then Buddy said, "It's your solo," and I did the final cut. So it's not a nitpicking back and forth process. And you also hear room sounds and mouth noises and a naturalness that I keep on tape, too. Most radio stuff today is so edited—all the breathing is removed. So editing is a painful process and often takes months—not the actual chopping up, but I'll live with the tapes for months. Then I'll go back and edit.

You were somewhat of a lone voice when you started doing this, but now there's a huge explosion in spoken-word recording. Do you feel vindicated?

Absolutely. There's always been this myth about comedy records or spoken-word records, that you only want to play them once. That's simply not true of the stuff I've produced. You want to listen to them again and again, and maybe I'm breaking more ground than I thought, perhaps because I don't approach them from a technical background. I come at it from a more literary and sociological standpoint. I want people to listen and get involved, and the great news is that that's what's happening now. ■

Iain Blair is a freelance writer based in Los Angeles.

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PRODUCTION

Music Libraries

THE CHOICE IS OBVIOUS

BY GEORGE PETERSEN

Music libraries are one of the most misunderstood aspects of professional audio production. The sonic quality of current production music libraries has never been higher, and the days of overblown horn arrangements or mushed-out string sections that bury the melody are long over.

Meanwhile, the variety of styles on today's CD production music libraries covers just about any genre of music, including classical, folk, country, jazz, rock, fusion, rap, dance, religious, new age, ethnic, children's, period pieces, traditional, patriotic, historical, electronic, and, of course, everybody's all-purpose favorite, middle-of-the-road. Whether you're in the market for jingles, commercial backgrounds, or music to set the mood for A/V, films, television, radio, spoken-word programs or a high-level sales presentation, the bottom line is that production music libraries have something to suit any need or production application.

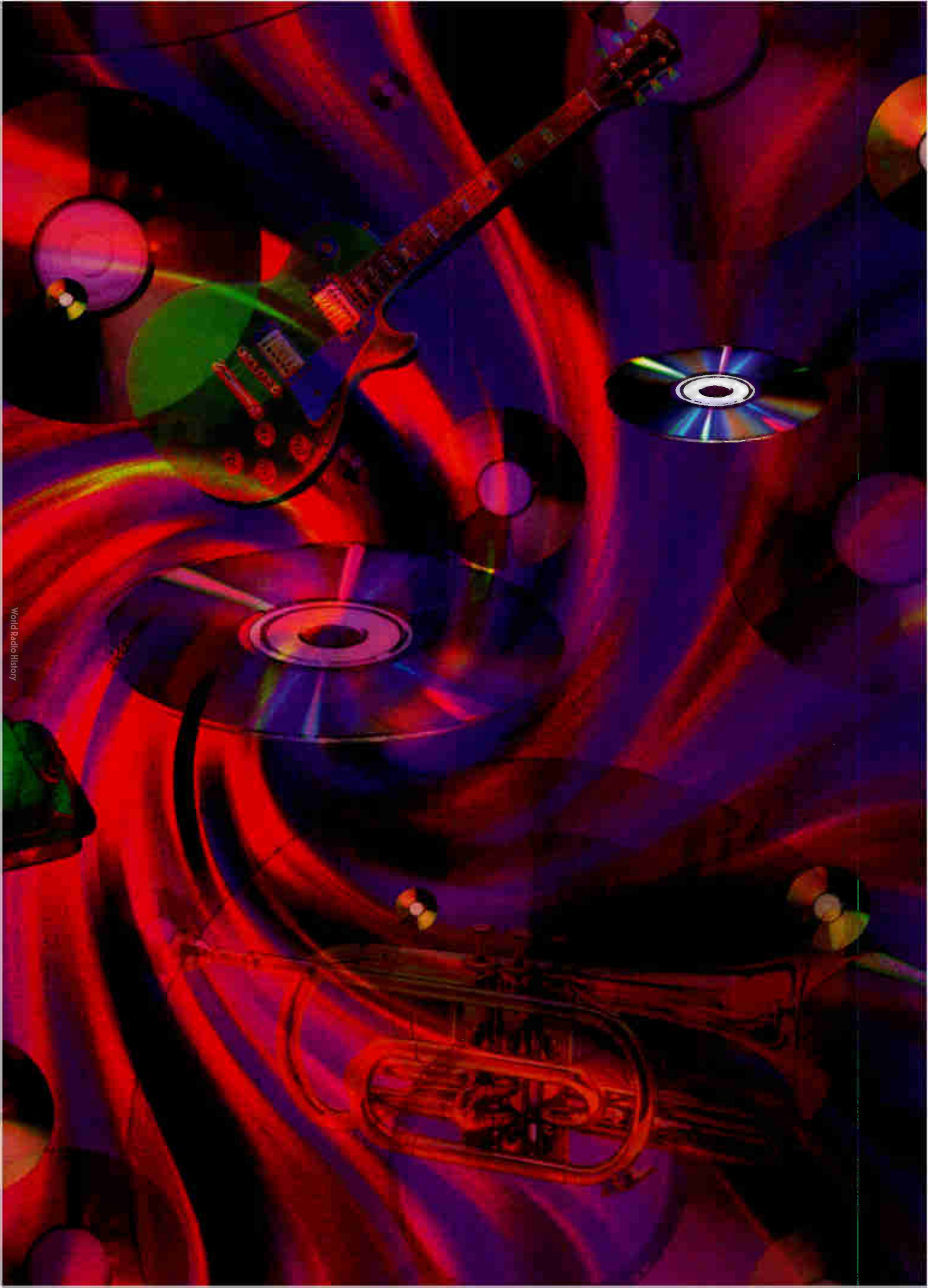
In many situations, production music is a real lifesaver. Let's say you need a 15-second clip of Handel's "Messiah" for background walla as a film character walks by a church. Several options exist:

- You could hire an arranger, conductor, orchestra and 40-voice choir and spend a week rehearsing and recording a new rendition, but that could be too expensive, unless you were working on *Waterworld*;
- you could spend a couple of weeks negiotiating with the legal department of a large classical music label;
- or you could make a few phone calls to production music libraries and—Federal Express willing—in a few days, have several CD renditions of the music available for you to audition, all obtainable for a relatively modest fee. The choice is obvious.

I recently produced a three-hour OSHA training course on hazardous-material handling on the jobsite and wanted some background music to mix behind the narration. I suppose I could

—CONTINUED ON PAGE 130

ILLUSTRATION: TIM GLEASON



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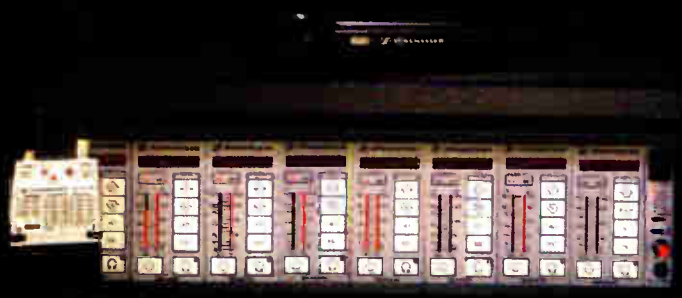

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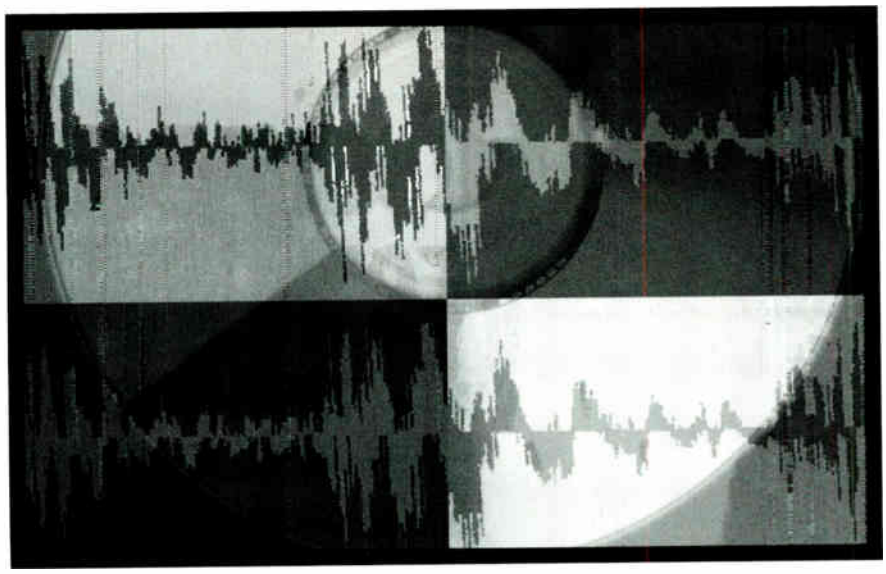

ILLUSTRATION: TIM GLEASON

PRODUCTION MUSIC LIBRARIES ON AUDIO CDs

The following section lists companies having production music collections on audio CD, ranging from small "boutique" suppliers to large operations with hundreds of discs from several libraries. Phone numbers are listed so that you can contact the companies directly for additional material and/or demos. The bracketed data under each company's name indicates the type of products offered: "Buyout PM" refers to production music available on a one-time purchase; "Signatory PM" indicates production music licensed on needle-drop, per-use, per-production or annual blanket arrangements.

—George Petersen

AirCraft Music Library
[Signatory PM]
617/482-7447, 800/343-2514

Associated Production Music
[Signatory PM]
213/461-3211, 800/543-4276

Audio Action
[Signatory PM]
818/845-8020, 800/533-1293

Audisee
[Signatory PM]
206/382-1901

Broadcast Music Library
(Formerly Airforce Broadcast Services)
[Buyout PM]
905/886-5000, 800/387-3030

Brown Bag Productions
[Signatory PM]
303/756-9949

Canary Productions
[Buyout PM]
610/825-5656

Capitol Production Music
[Signatory PM]
213/461-2701, 800/421-4163

Comprehensive Video Supply
[Buyout PM]
800/526-0242

Creative Support Services
[Buyout PM]
213/666-7968,
800/HOT-MUSIC

Davenport Productions
[Buyout PM]
704/535- 4171, 800/951-6666

De Wolfe Music Library
[Signatory PM]
212/382-0220, 800/221-6713

Energetic Music
[Buyout PM]
206/467-6931, 800/323-2972

Firstcom/Music House/Chappell
[Signatory PM]
214/934-2222, 800/858-8880

Fresh Music Library
[Buyout PM]
603/643-3438, 800/545-0688

Gefen Systems
[Buyout PM]
818/884-6294, 800/545-6900

Gene Michael Productions
[Buyout PM]
616/684-0633, 800/955-0619

Golden Plains Publishing
[Signatory PM]
316/838-8442, 800/392-5539

Hollywood Film Music Library
[Signatory & Buyout PM]
310/246-1590

Impact Music Library
[Buyout PM]
414/779-6434, 800/779-6434

James & Aster
[Signatory PM]
212/982-0300, 800/572-2236

Killer Tracks
[Signatory PM]
213/957-4455, 800/877-0078

Manchester Music Library
[Buyout & Signatory PM]
203/846-3745

Manhattan Production Music
[Signatory PM]
212/333-5766, 800/227-1954

—CONTINUED ON 129

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4. Ultra High speed devices give greater transient response. (True 3-D Sound)
5. Ultra wide traces on the PC board lowers thermal noise

6. Output levels at consumer (-10 dB) or pro level (+4 dB) on 1/4" and Elco
7. The Output card will support up to a 50 milliamp current which can drive very long runs or high capacitance cable with no signal loss.
8. Fully DC coupled, allowing no phase shifting in the audio band
9. Increased headroom for more dynamic devices (Like Drums)
10. Clear Lexan top allows access to the volume controls and provides visual inspection for normal user maintenance.

"These cards make a very noticeable improvement in both audio and user expandability" – Stephen Pirtle, Studio Owner & Technician

"Your input cards are the closest thing to a straight wire with gain that I have encountered. They have much more 'Air' and dynamics than the mods that I've done. Your input and output cards sound incredible."
– Larry Seyer,Engineer, Austin, Texas; 5 time Grammy award winner

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—FROM PAGE 127

Metro Music
[Signatory PM]
212/229-1700,
800/697-7392

MusiCrafters
[Buyout PM]
215/368-7488,
800/HOT-TUNE

Narrator Tracks Music
[Buyout PM]
800/448-6467

Network Music
[Signatory PM]
619/451-6400,
800/854-2075

NFL Films Music Library
[Buyout PM]
609/778-1600

Non-Stop Music Library
[Signatory PM]
801/531-0060,
800/554-6462

Omnimusic
[Signatory PM]
516/883-0121,
800/828-OMNI

Philadephia Music Works
[Buyout PM]
800/368-0033

Production Garden
[Signatory & Buyout PM]
210/641-6677, 800/247-5317

Promusic
[Signatory PM]
407/995-0331, 800/322-7879

Prosonus
[Buyout PM]
800/999-6191

QCCS Productions
[Buyout PM]
503/345-0212

Raymond Scott Archives
[Signatory PM]
201/653-1063

River City Sound
[Buyout PM]
901/274-7277,
800/755-8729

Scharren Studios
[Buyout PM]
419/241-5432,
800/841-8191

Signature Music
[Buyout & Signatory PM]
219/921-0205,
800/888-7151

Soper Sound Library
[Buyout PM]
415/321-4022,
800/227-9980

Sound Ideas
[Signatory PM]
905/886-5000,
800/387-3030

Sound Patrol Ltd.
[Signatory PM]
212/213-6666,
800/SONGS-4-U

Southern Library of Recorded Music
[Signatory PM]
213/469-9910

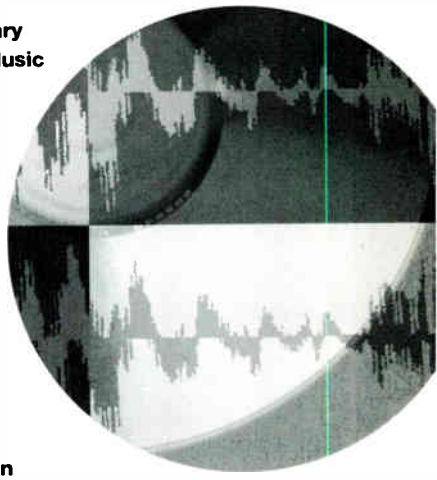
Sweetsong Productions
[Buyout PM]
304/428-7773

TM Century Inc.
[Signatory PM]
214/247-8850

TRF Production Music Libraries
[Signatory PM]
212/265-8090,
800/899-MUSIC

27th Dimension, Inc.
[Buyout PM]
800/634-0091

Valentino, Inc.
[Signatory PM]
914/347-7878,
800/223-6278



Well-Tempered Music Library
[Buyout PM]
617/354-7012

Who Did That Music
[Signatory PM]
310/657-7111,
800/400-6767

Zedz Music
[Buyout PM]
617/324-1989 ■

—FROM PAGE 124, MUSIC LIBRARIES

have taken the time to write, perform and record a couple hours of nonthreatening background tunes, but in this case, production music was exactly what the doctor ordered, and the production came in on time and under budget.

Offering excellent sound quality, 70-plus minutes of storage capacity, resistance to scratches, quick cueing and the ability to quickly audition different cuts, CDs are an ideal music storage medium for fast-paced production, whether it be audio for film/video, radio-spot production, or books-on-tape and other long-form narrative works.

The emergence of CD-ROMs, Internet communications and commercial online services has increased interest in multimedia production, and a number of companies are now releasing production music clips in computer-ready formats such as .WAV, SD and AIFF files. Another relatively new development is the fact that companies such as Blue Ribbon Soundworks ([404] 315-0212) and Soundtrek ([404] 623-0879) offer software packages that generate custom music on a buyout basis.

Many audio CD production music collections offer several versions of the same tune, providing commercial-length (10/20/30/60-second) edits, as well as full-length themes. The latter are also often available in standard and no-melody forms, allowing the producer to edit longer versions more easily or create new variations by replacing the lead instruments.

But perhaps the most compelling reason for using production music is the avoidance of liability. Low-profile productions, whether done by in-house groups, cable TV or multimedia producers or other unknowing individuals, often use commercial music as backgrounds or main themes without obtaining proper clearances, and may leave their companies or (deep-pocket) clients liable for damages sought by the lawful copyright owners. Ignorance of the law is no excuse for violating copyrights, and there's no reason that such misuses should occur when production music libraries offer a legal, affordable alternative.

Music libraries fall into two groups: those operating on a "buyout" basis, and those operating on a per-use or unlimited-use "blanket" licensing arrangement. Typically, a buyout agreement allows the unlimited use of music for a one-time charge. Depending on the library, there are certain restrictions that may apply to the music use. For example, some libraries operating on a buyout basis may require additional fees if a music selection is used for the main theme in a major film or network TV show.

IGNORANCE OF THE LAW IS NO EXCUSE FOR VIOLATING COPYRIGHTS. PRODUCTION MUSIC LIBRARIES OFFER A LEGAL, AFFORDABLE ALTERNATIVE.

Licensing contracts and rates can take a variety of forms: "Needle-drop" refers to the use of a partial or entire music selection in a single segment of a production. Some companies prefer the term "laser-drop," when referring to CD production music, but the two terms are essentially interchangeable. When working on a needle-drop (or laser-drop) basis, if the same theme is used in two different parts of a video presentation, then two needle-drop charges would apply.

A "per-production" rate allows the unlimited use of a particular library or selection in a single production for a set fee, which depends on the audience market size/type, distribution medium and the project's total length. A "theme rate" covers the use of a particular selection on several projects, especially in jingles, television ads and

master pieces

n an era of mixed analogue and digital audio echnology, the requirements of mastering ngineers have never been more precise. It is in esponse to growing demand that Focusrite has eveloped two new products, designed to ddress the key processing functions of equali- ation and dynamic control.

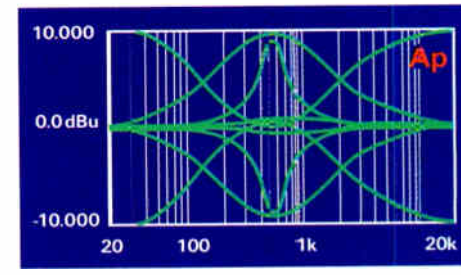
he Blue 315 Mastering EQ and the Blue 330 lastering Compression Limiter both make use f the highest quality switches for all rotary unctions. These provide precise and repeatable ettings in units of unequalled build quality, nsuring long-term reliability and performance.

Blue 315

was the widespread desire to see the legendary SA 110 Equaliser available for mastering which led the creation of the Blue 315. The simple request as for rotary switches on all functions, but of course here is a great deal more to mastering than recall- bility of rotary switches alone.

Mastering is the process by which a mixed product is refined – the fine-tuning and assembly for particular medi. Private discussions with individual mastering engineers, coupled with careful research, revealed many small differences between a programme equaliser and a product designed for top-quality mastering. These differences were the starting point in the design of the impressive 315.

The frequency ranges have been gently expanded to allow for finer resolution and the Q controls boast higher resolution and wider low-end range. In addition, the boost and cuts are designed with small increments close to the null point and larger steps at the extremities. The filters have minimum ripple roll-off and the extra-fine variables of the input gain controls allow for absolute precision.



Mastering will always be a very personal skill, and it is with this in mind that the 315 has been constructed to allow simple adjustments according to individual preference.

This technological 'masterpiece' has been achieved without any sacrifice of Focusrite's traditional standards. You are assured of the best performance parameters (often superior to digital), the highest quality components and construction, along with both transparency of sound and ease of use.

"The Blue EQ is a superb sound sculpting tool. It allows me to develope textures no other equaliser enables you to achieve"

– Tom Coyne, Sterling Sound, New York.

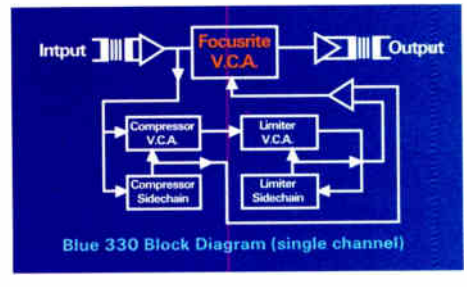
"In almost a year I've used my three old EQ's three times. Any other questions?"

– John Matousek, Masterworks, Los Angeles.

Blue 330

Also the product of customer demand and extensive esearch, the Blue 330 represents the transformation f the Focusrite Red 3 Compressor and Limiter into Mastering format. Unique and unrivalled in all its ttributes, we feel it genuinely deserves masterpiece tatus alongside the 315.

The structure of the circuits is very different to hat of other compressors/limiters. The 330 separates he compressing and limiting processes, which are hen implemented by one signal path VCA through ombined controls signals. You are able to compress nd limit in turn, meaning that the limiter only com- resses the peaks that remain after the completion of he compression process. The overall result is clean- r and less intrusive than that which can be achieved with a compressor that rolls over into limiting.



Blue 330 Block Diagram (single channel)

Our diagram shows that the main signal path has only the Focusrite proprietary VCA between input and output. Its feed is from two separate sidechain circuits – compressor and limiter – each with their own VCA.

Just like the 315, the 330's control ranges and sensitivities have been suitably adjusted to meet the needs of fine-resolution mastering. The input gain and make-up gain controls are of the same sensitivity, allowing tandem contra operation, so that all other settings can therefore be raised or lowered without re-adjusting each control.

Both the Blue 315 and the Blue 330 are now available for evaluation, either direct through Focusrite in the UK, or via our appointed distributors elsewhere in the world. To find out more, please contact us today.

Focusrite Audio Engineering Ltd.

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USA: Group One Ltd. 80 Sea Lane, Farmingdale, NY 11735 Tel: (516) 249 1399 Fax: (516) 753 1020
West Coast: (310) 306 8823 Canada: Sonotechniqu e Tel: (416) 947 9112

radio spots. An "annual blanket" offers unlimited library use for a yearly payment.

With an extremely wide range of possible applications and audience markets for production music, an equally wide range of charges could apply. For example, a needle-drop fee for a bed used on a local radio spot may be as low as $25; however, if that same piece of music is spotlighted in a network television program or theatrical film release, the license fee would undoubtedly be much higher. Libraries offering music on a licensed basis generally distribute music CDs for a nominal charge (usually $10 to $15 per disc—*not* including usage fees), or provide a collection of CDs as part of a blanket license. As an alternative, some companies will loan discs on an "approval" basis, allowing the producer to audition material before committing to a license. The latter is commonly applied to specialty CDs—such as historical, classical, international or ethnic music—when there is only an occasional need for such material.

Choosing the right production music library requires some research to find a library whose music and use arrangements best fit your needs. Buyout, per-use and blanket licenses all afford different advantages and disadvantages, depending on your particular situation, and it's best to weigh all the facts before you decide. In some instances, it may be preferable to have a little of both worlds, by using a buyout or long-term license library for everyday "bread-and-butter" production chores, and adding occasional needle-drop cuts for variety.

Of course, there's no law that says you can't use two or more different libraries—as dictated by your budget and/or production needs. In fact, the ability to pick and choose from several sources provides the greatest possible flexibility for the producer.

Some decisions are simple: For example, a hot collection of 30- and 60-second jingle beds is an inappropriate choice for the dramatic film producer. The subjective evaluation of the quality of a library's offerings is a more difficult question—after all, no one knows your musical needs better than you. Fortunately, all the companies listed in this report will provide demos upon request. ■

INTRODUCING

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by Dan Daley

BRUCE HORNSBY'S "HOT HOUSE"

Most of the attention directed at project studios seems to focus on either the low end or on the flashy (such as an E! Entertainment video press release on how Sting can carry his studio around with him). The broader truth is that the whole notion of recording close to home is now deeply ingrained and has become integral to the music recording industry. This fact was illustrated by a recent conversation with Bruce Hornsby, on the eve of the release of his fifth RCA Records recording, *Hot House*.

This is the second record that Hornsby (who rocketed up the charts in 1986 with "The Way It Is,") has done in the studio that he had built in a 1,900-square-foot building a few yards from his family's home in Williamsburg, Va. The studio was designed by Ross Alexander and includes a modest-sized control room. The console is a vintage 32-channel Neve 8068 (acquired from Unique Recording in New York), the center section of which was replaced with eight more newer Neve modules after the VCAs were removed and Flying Faders automation was installed. Storage is to a pair of Sony 3324 24-track digital decks. The facility itself has a sizable recording area, which doubles as a rehearsal space for Hornsby and his band, and two iso booths, one of which is dedicated to Hornsby's pianos (a Steinway grand and a Baldwin grand retrofitted with Gulbrasen KS-20 MIDI actuators). In addition, there is a pretty nice selection of microphones, with an accent on tubes, and outboard gear.

This all came about due to Hornsby's previous recording experiences—in discussion it becomes clear that he didn't build his personal studio so much because he could, but because he needed to.

"We lived in L.A. from 1980 to 1990 and we were fortunate—we had gotten what we went there for, and we got out," he says, expressing a sentiment commonly heard about L.A. in places like Nashville. Once back in his native Virginia, Hornsby reviewed his recording experiences: the first record with Elliot Scheiner, the second with Neil Dorfsman and the third with Don Gehman and Ed Thacker, recorded for the most part at major facilities including Ocean Way, A&M Studios and Conway. Hornsby was equivocal about the experiences—he particularly liked working with Gehman (who introduced him to Ross Alexander after the designer had done John Mellencamp's studio in Indiana), but he butted heads with Scheiner (who produced "The Way It Is") at the mix stage, and Hornsby wound up remix-

FINALLY A PROFESSIONAL MULTI-CHANNEL AMPLIFIER...

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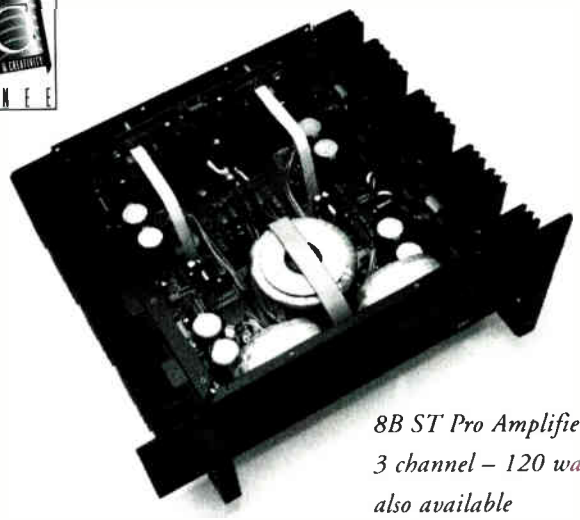

8B ST Pro Amplifier, 5B ST Pro 3 channel – 120 watt version is also available

Bryston is pleased to announce our new 8B ST Pro four channel audio power amplifier. With today's studio demand for surround and multi-channel mixing, the 8B ST Pro provides state-of-the-art performance with the unquestioned value and reliability that only a Bryston delivers. The 8B ST Pro is an extremely versatile amplifier which can be instantly connected in 2, 3, or 4 channel configurations, or connected to run multiple sets of near field monitors from a single amplifier source. The 8B ST Pro is also available as a fully certified Lucasfilm THX amplifier. All of this along with Bryston's unlimited, transferable 20 year warranty. So what are you waiting for? Do yourself a favour and audition the Bryston 8B ST Pro today.

	8B ST PRO
WATTS	Four channels at 120 watts, 8 ohms Two channels at 400 watts, 8 ohms One channel at 400 watts, 2 channels at 120 watts, 8 ohms
DISTORTION	Less than 0.007% from 20Hz to 20kHz at 120 watts or 400 watts, IM or THD
NOISE	>106dB below full output
SLEWING RATE	Greater than 60 volts per microsecond in 4 channel mode Greater than 120 volts per microsecond in 2 channel mode
POWER BANDWIDTH	Less than 1 Hz to over 100kHz
DAMPING FACTOR	Over 500 at 20Hz, ref. 8 ohms
INPUT SENSITIVITY AND IMPEDANCE	1.0V in for full output, 50k unbalanced 2.0V in for full output, 20k balanced
FEATURES	Four independent power supplies Over 6,400 cm^2 of heat-sinking, over 9,600 cm^2 with chassis Regulated power supplies to all voltage gain stages Gold plated input and output connectors Switchable balanced XLR-1/4 inch and RCA unbalanced inputs Remote power turn-on 12V, AC/DC (optional) Warranty: 20 years parts labour, shipping one way
DIMENSIONS	19 x 5.25 x 15.5 inches, 48.25 x 13.33 x 39.4 cm, wt. 44lbs, 20kg

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ing seven of the nine tracks himself. Though Hornsby and Scheiner met up recently and put that behind them, Hornsby nonetheless realized over time that producers, engineers and even the studios themselves were as often a barrier to expressing what he was hearing in his head as they were a conduit for his musical conceptions. This, coupled with his desire to spend more time with his family, made Hornsby realize that a personal studio was the only answer, artistically and emotionally.

In 1993 Hornsby made the first recording at his studio, *Harbor Lights* — his first record in nearly four years (he spent much of that time guesting on other artists' records and touring as one of the Grateful Dead's keyboardists). Both he and his house engineer Wayne Pooley concur that mistakes were made on the record. But both say the music came through, and to Hornsby, that was the key.

"I have always been a very slow learner in the studio," Hornsby admits, "and I had never really been satisfied with what we had done in the usual studio environments. There is a psychological component to having to pay $150 per hour and then kick yourself into gear to get going. But the more relaxed way of doing it near home, where it can just be me and a bunch of friends sitting around playing music, I think is much more creative.

"On *Harbor Lights*, we were guinea pigs in our own studio. Wayne had never recorded a high-profile record before, and even though I was producing myself [Hornsby was co-producer on all his recordings previously], I just wanted to be able to be the singer, the songwriter and the musician. Each one of those is a career in and of itself."

The record got made, with Hornsby's organ player J.T. Thomas augmenting Pooley's engineering skills. "It was a steep learning curve," says Hornsby of the process. "But it was the most satisfied I'd been creatively up to that point. Once we had gotten to *Hot House*, we knew better what we were doing. And the ironic thing, in retrospect, is that my first two records, which were my most successful, were the most hellish. My approach to making music is idiosyncratic and very personally based. Having other [producers'] input colored and changed what I wanted. On the second record, for instance, Neil Dorfsman wasn't a fan of my band. That led to a lot of potential conflict. So with *Harbor Lights* you hear more of the jazz influences that I never got into the earlier recordings. It's more harmonically extended."

> I have always been a very slow learner in the studio, and I had never really been satisfied with what we had done in the usual studio environments.

Mistakes or not, *Harbor Lights* sold upwards of 700,000 units, and

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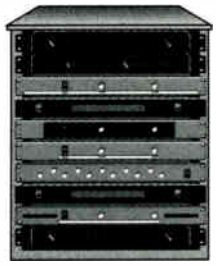

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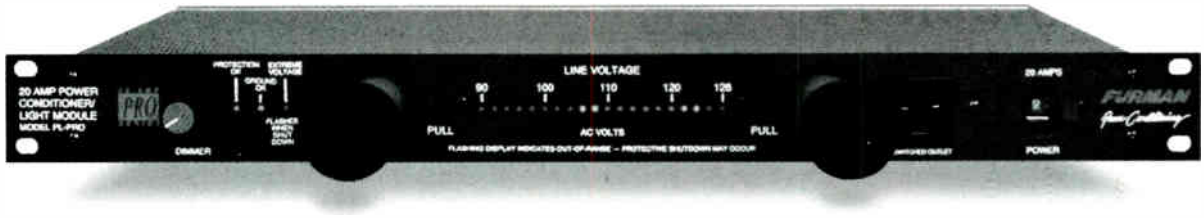

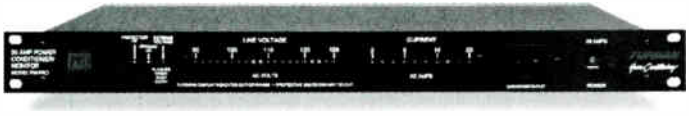

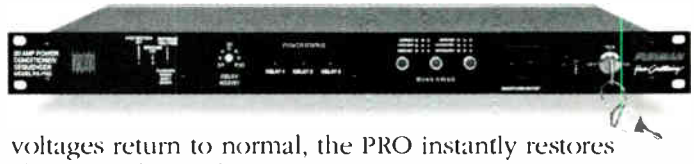

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Hornsby says after the experience of being able to more quickly and accurately realize his musical vision via a personal studio, he could not go back to working the other way.

At his own studio, Hornsby's approach varies with how he feels on a given day and depending on who is or isn't available. Sometimes the band rehearses new songs in the main room before cutting tracks. Hornsby does his vocals alone with a Sanken microphone and the Sony multitrack remote nearby to do his own punches. Other times, he'll come in and simply play an entire song to tape alone, with the MIDI'd Baldwin recording to a sequencer as well as the tape machines with timecode. Hornsby also will punch piano tracks, a challenge given his often busy style of playing. More often, though, he will record up to four pairs of stereo piano tracks and then comp them into a single stereo pair later. "I got to watching people like Pat Metheny come in and do overdubs for me and seeing how he could have five or six tracks of solos," he laughs. "I wanted that kind of luxury for myself."

His choice of piano is determined by the song, with the Steinway being used when a more sharp attack is desired and the Baldwin for the lighter tracks. And though guests like Metheny will add guitars to his records, Hornsby now eschews electric guitars live. "Playing piano in a rock band is hellish," he says, "and it's especially hellish against electric guitars. The only time you can hear it is when you're pounding on the top range of keys. So we just bypass guitars now. And I can hear the wood in the pianos on record now, what I refer to as 'warm brightness.' You know, I essentially took the mixes away from Elliot on that first record because the pianos sounded so harsh. But when I hear 'The Way It Is' on the radio, it sounds fine. That's the way the piano was recorded, and it does work for radio. It just didn't work for me."

And that's pretty much how Hornsby sums up his career in other people's studios. Now that he has one of his own, we'll be hearing what he believes is a more accurate portrayal of what he's held in his head for so long. ■

Dan Daley is Mix's East Coast editor. That's just the way it is.

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ALESIS
STUDIO ELECTRONICS

BY BLAIR JACKSON

PHOTO: PIERRE SCHENK

X: (L to R) D.J. Bonebrake, Exene Cervenka, John Doe and Tony Gilkyson

John Doe and X
PUNK UNCLOGGED

by Barbara Schultz

ACOUSTIC X

There are men lost in jail,
crowded 50 to a room
There's too many rats in
this cage of the world
And the women know their
place, sit home and write
letters
And they visit once a year
And they both just sit there
and stare
See how we are
Gotta keep bars
in between us
See how we are
We only sing about it once
in every twenty years
Oh, see how we are...

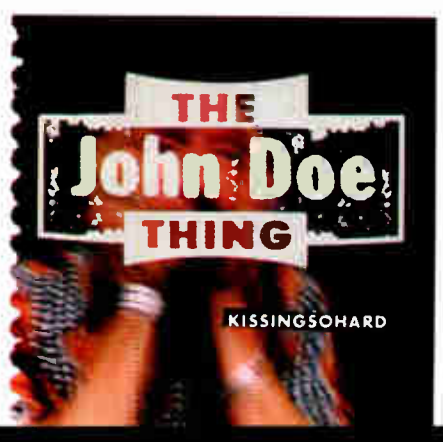
Do these lyrics sound "punk" to you? Whether you answered yes or no, you are correct. X is an L.A. punk band that started making records in the early '80s. Back then, they had all the trappings of the scene: scary hair, torn clothes, attitude and really punk names: D.J. Bonebrake on drums; the yellow-pompadoured, smiling Billy Zoom on guitar; and Exene Cervenka and bassist John Doe harmonized and traded vocal parts on songs that had their fans bashing into each other and raising angry fists in the front of clubs like L.A.'s Whisky A-Go-Go. They sounded like George Jones and Tammy Wynette meet Motorhead—like rockabilly gone even wilder.

But X also had something a lot of punk bands (and bands in general) lack, and that's the talent and sensitivity to write truly great songs—lyrics with beauty, grit and substance, and tunes that bring the basics of rock 'n' roll into the present. The song above, "See How We Are," on the album of the same name, is an obvious example of the band's depth: a tender and lonely invitation to take a rare, hard look at our world. But, given a careful listen, almost any of X's songs stands up this way. And the proof is in their latest release, *Unclogged* (on the band's Infidelity label), a collection of songs that span the band's 15-year history, played live in spare, acoustic arrangements.

The band is still composed of the original members, with the exception of a different guitarist, Tony Gilkyson, who has been playing with X for eight years and was their studio rhythm guitarist before that. The performances took place over two nights at San Francisco's Noe Valley Ministry, an old wood-frame church that doubles as a performance space and community center.

John Doe explains in

—CONTINUED ON PAGE 143



Clair Marlo Does It Herself

by Bruce Pilato

When Clair Marlo starts talking about the recording of her latest release, *Behaviour Self*, you can never be sure just what is going to come out of her mouth. On a Saturday afternoon this past spring when she sat down to talk to *Mix*, it happened to be the story about recording tracks, dressed only in her underwear, drenched in sweat.

"We have an in-wall air conditioner," says Marlo, breaking into a slight laugh. "We recorded the album in the summer, and it was unbelievably hot outside. We'd have to turn the air off because it was too noisy. Alex and I would be able to work 20 minutes, then we had to go into another room and cool off. Then we'd go back and record again. I was in the studio, recording my parts, in my underwear, dripping wet. It was pretty weird."

Fortunately for Marlo, *Behaviour Self* was recorded in the privacy of her home 24-track ADAT studio. She made the record with her musical partner and husband, Alex "Ace" Baker.

Marlo is something of a rock 'n' roll renaissance woman. She not only sang, wrote or co-wrote all but two of the songs on the album, she also played many of the instruments,

PHOTOS: EDWARD COLVER

Clair Marlo's studio

did the arrangements, engineered most of it, and produced it on her own. In fact, she also played an important role in the design of the couple's home studio and in equipment selection. Not bad for a Queens, N.Y., native who spent the formative years of her music education playing Croatian folk songs on the accordion.

—CONTINUED ON PAGE 147

CLASSIC TRACKS

Derek & The Dominos' "Layla"

by Blair Jackson

By 1970, Eric Clapton was already feeling burned out by the pressures of stardom, and he wanted to retreat. Cream—the original "power trio"—had broken up messily at the end of 1968 after selling more than 15 million records worldwide and firmly establishing Clapton, Ginger Baker and Jack Bruce as rock gods. (Actually, "Clapton Is God" graffiti started turning up on London walls as early as '65, when the guitarist was still in John Mayall's Bluesbreakers!) Blind Faith, a "supergroup" featuring Clapton, Baker, Traffic's Steve Winwood and Family bassist Rick Grech, was certainly the most *hyped* band of 1969, and they did put out one very successful album and were one of the first bands to play a tour of American arenas (rather than theaters). But the experience left Clapton cold in many ways, and following the breakup of Blind Faith, he opted for the relative anonymity of playing guitar in a band fronted by Bonnie and Delaney Bramlett, who had the opening slot on the American leg of the Blind Faith tour.

In January 1970, Clapton began recording his eponymous first solo album at Village Recorder in L.A., produced by Delaney Bramlett and using most of Delaney's band as sidemen. The record was quite a low-key affair, focusing on concise, melodic songs rather than guitar pyrotechnics, but it proved to be a

—CONTINUED ON PAGE 150

Derek & The Dominos

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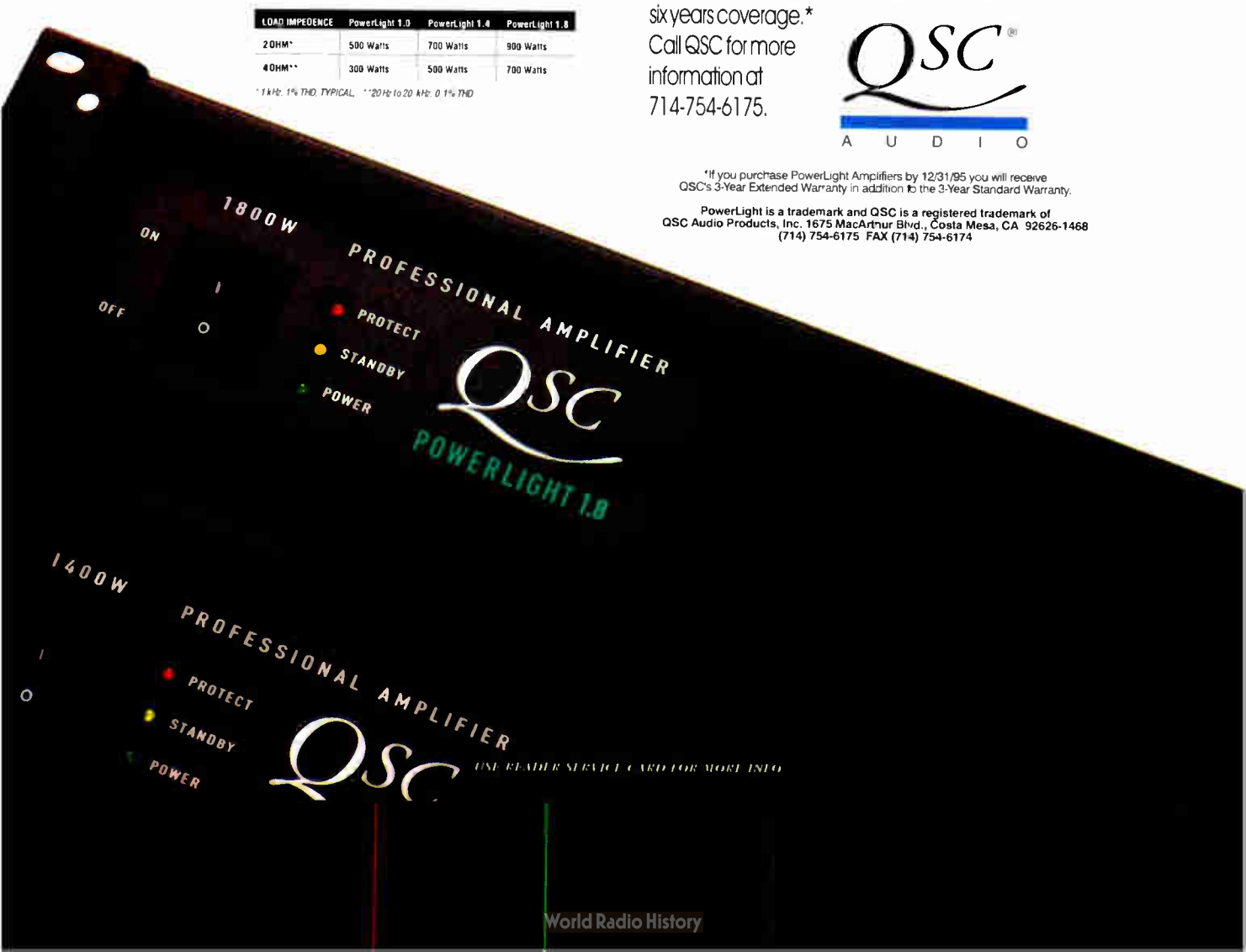

PHOTO: ZHENYA NESTEROV

John Doe

—FROM PAGE 140, JOHN DOE AND X

the liner notes how the band ended up going *Unclogged*: "After a year of blowing our ears out touring with X for the *Hey Zeus* record, John Chelew, a friend from McCabe's Guitar Shop, said he wanted X to play a full-on electric show on the 150-seat, sit-down, back-room Guitar Shop stage. We said, 'Not possible. How about an acoustic performance?' He hated the idea but wanted X one way or another. So we played six shows in three nights. All of them were recorded direct-to-DAT, more as a sound document than anything else. And, to our surprise, it didn't suck. It didn't sound particularly great either, and there was no way to change the mix. So we thought we'd try it again."

So the band began rehearsing and fine-tuning the acoustic arrangements. "The songs fell into three categories," Doe explains by phone from L.A. "One group lent themselves to that sort of arrangement. Those are 'I Must Not Think Bad Thoughts,' 'The Have Nots,' 'See How We Are,' which we hadn't been playing much on the last tour because they are difficult to pull off with a big electric thing. Others like 'Because I Do,' 'I See Red,' 'Unheard Music,' those were kind of developed as we played and rehearsed them—we had a general plan about how to reinterpret them. And then there were others that we didn't change the arrangement much; they just seemed to work, and that would be 'True Love' or 'White Girl.' They're not noticeably different; they're just on the bluegrass side.

"It's encouraging as a songwriter to see that you can reinterpret your own stuff in a different format, and it still holds up. It's like a different line reading for an actor. I think with a song like 'The World's a Mess [It's in My Kiss],' it makes it a little sadder and it emphasizes the lyrics, which are fairly pensive. That was another song that we just kind of fell into. I did that bass line differently, and it just happened. And we got a chance to see how pretty the melody can be, and, well, it is sort of sad that the world's a mess."

The "Unclogged" shows were coordinated by the folks at Slim's, a San Francisco club, and recorded to ADAT by X's live sound engineer Mark Shoffner, with the help of engineer Michael Rosen. "When X asked me to check out the possibilities of recording," Shoffner says, "I started calling mobile units. My main concern was getting good mic pre's to get something to tape, but everything was really expensive and seemed like it was going to be cumbersome. I had put together a studio with Michael Penn, who I'd worked with a lot, using ADATs and an assortment of outboard mic pre's—a hybrid kind of thing. I called Michael Rosen to see if he'd help me on this, and we decided to build a studio in the back room of the church. We just lined up the gear, went in a little early and put it together. I know John's and Exene's voices pretty well, and I knew pretty well what was going to be coming at me, so we just mixed and matched mics and mic pre's and went straight to tape, using practically no EQ.

"For vocals, we were just using

Neve V72s, big old '60s tube mic pre's and [Shure] Beta 58s, for the obvious reasons, and we had some Avalon stuff, some GML stuff and some Neves. We used some Neumann 87s on the kit, and Michael had some [AKG] 414s. That's what we ended up with on [D.J. Bonebrake's] vibes, which I think is one of the coolest sounds on the record.

"Those shows were like inviting X into your home," Shoffner continues. "It was like they were going to make music on what was in your room. You just come in and sit around, get to know each other, and pick up whatever's there and make music. For me, what I'm most proud of on the whole project is the honesty. I don't know how many bands could get away with something as raw and honest as this."

The record was mixed by engineer/producer Don Gilmore (Pearl Jam, Best Kissers in the World) at Travis Dickerson's Recording Studio—the name for X's L.A. studio/rehearsal space. The facility, which Doe refers to as "quite a little clubhouse," is equipped with a Soundcraft 2400 console and Yamaha NS-10 and custom Augspurger monitors. Gilmore says he always uses the NS-10s because "they make you work harder to make it sound good.

"It was recorded really well," Gilmore says of the raw material. "Mark Shoffner did a really good job with clean mic pre's. At first, I was a little leery of that old Soundcraft; I was shocked at how cool this board turned out to be. I used a Neve 33609 and some GML EQ on the vocals—just tried not to compromise the integrity of the music. I tried to keep everything as real and live-sounding as possible."

Still, the mixing project was not without challenges. "It was done on ADATs, and the console was not automated," Gilmore says. "So I would mix down to tracks 23 and 24. I would be monitoring tracks 23 and 24, and I would punch-in on the whole mix. With an automated console, you enter your moves in the computer, and you just sort of sit back and watch the faders move, but we didn't have that luxury, so I'd set up an auto-punch in Rehearse mode, do my moves and just mix the song a section at a time. But mostly it was really pretty simple because it was a live record, so we didn't get into a lot of fancy moves."

"*Unclogged* was easy and kind of a gift, because it was all there," Doe says. "We didn't fix anything because we couldn't. There was so much bleed, and that adds to the atmosphere, just like rockabilly or Motown or '60s rock records: What we had was what we had. This stands up as a document. But, of course, after we tour with this record for about two weeks, we'll be doing it five times better than the record, as usual. I don't know when you ever get the chance to actually know the songs you're recording."

THE JOHN DOE THING

X fans can look forward to hearing some new songs this fall on John Doe's second solo release, *Kissingsobard*, on Rhino Records' Forward label. It's an electric rock 'n' roll record, honest as they come. Like on X's records, the raw nerves of lost love, poverty and loneliness are exposed, but this time by a single voice.

"We tried a couple of these songs with X," Doe says, "but there was not as much of a double voice from the narrator's perspective." The treat of that is that Doe's lone vocal is truly a wonder—sweet, rich and wide with emotion from the first song, "Fallen Tears."

The accompanying band—whom Doe calls the John Doe Thing—includes Blasters guitarist Smokey Hormel, Brad Hauser of Edie Brickell & New Bohemians on bass (which Doe says freed him up to work harder on his vocal), and Joey Waronker (Beck, Walt Mink) and Cracker's Chalo Quintana trading off on drums. Exene Cervenka, D.J. Bonebrake and Sandra Bernhard guested on a track each, and the song "Liar's Market" features a final scream from one of Doe's children. "She has a Fay Wray-type scream," Doe says. "I asked her to scream into this DAT recorder, and that's what she came up with: 'You're fired!'"

On *Kissingsobard*, Doe again worked with Don Gilmore, this time in Seattle at Bob Lang's Studio, where most of the tracks were recorded live. "It's a really big stone room," Gilmore says. "We had a club-sized P.A. set up there and ran the kick and toms through it. We tried no headphones, but then we just went ahead with headphones, so the drums would sound nice and isolated.

"On a few of the songs, there was like an echo chamber there, and on

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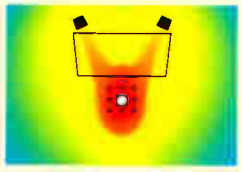
Any PA can fill a room with noise. The goal of Linear Activation design is to fill the space with high definition, detailed, studio monitor quality sound. Linear Activation design concepts apply the lessons learned in years of professional touring sound reinforcement to "near field" sound reinforcement applications.

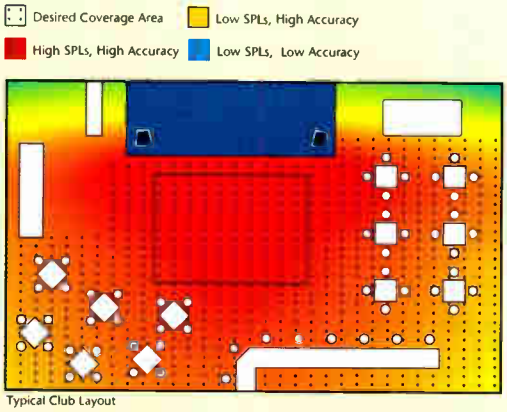
THE NEAR FIELD: TWO DEFINITIONS

In the studio, "nearfield" means a spot where the direct output from the loudspeakers is the only factor determining sound quality. Room reflections arrive so late and are so much softer than the direct sound that they play no part in the listening experience. Studio nearfields are designed to operate at a distance of 1 – 4m (three to fifteen feet) and provide a reference to one or two listeners. Because the coverage area is so small (about one square foot, the size of the average human head) and reflected sound is not a factor, the only essential requirement for speakers of this type is flat on-axis frequency response. This can achieved through the use of active or passive equalization. High SPL output capability is not required, since the listening distance is so short.



Studio monitors provide an accurate reference – but only in a small "sweet spot" a few feet away from the speakers and directly on axis to both of them.

Typical Recording Studio Layout



Typical Club Layout

Linear Activation loudspeaker systems are designed to project "studio monitor" definition, detail and dynamics, but over a broadly defined coverage area that encompasses the whole audience.

In typical live sound reinforcement applications such as clubs, corporate presentations, or worship services, "nearfield" means the entire listening area within roughly 15 – 65 feet from the loudspeakers. Much of the audience will actually be closer to the side or rear walls than to the speakers, so the reverberant field is a major part of the sound. The coverage area is hundreds or even thousands of square feet – extremely high output capability is required to provide "adequate" levels throughout such a space. Sound quality should be consistent throughout, so that all listeners can hear and appreciate the performance. When the reverberant field is very different in tonal balance from the direct sound, the ear is confused, intelligibility is low and the sound quality is perceived as "hollow" or "harsh." Hours of tweaking with equalizers cannot solve this problem, because equalizers cannot change the dispersion and coverage angles of the loudspeaker system.

TOTAL ACOUSTIC OUTPUT

Linear Activation design recognizes that it is the loudspeaker's total acoustic output that determines how it activates a given listening area. When total acoustic output is optimized, coverage is consistent, the spectral content of the reverberant field matches that of the direct sound field (as it would in an unamplified performance) and every member of the audience can have a satisfying listening experience.

One of the keys to Linear Activation design is the requirement that the dispersion angle as well as the on axis amplitude remain consistent throughout the frequency range. Consistent coverage angle must be designed into the system from the beginning – it cannot be added later with equalizers.

In the course of optimizing the total acoustic output of the new LA Series of Linear Activation systems, EAW engineers have developed innovations such as the Elliptic Conical Waveguide used to control high frequency dispersion. But these new technologies are only useful because they are integrated into professional loudspeaker systems that produce Linear Activation of a small to medium size venue.

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'My Goodness' and 'Field of Dirt,' we set up the drums in there and went for a real boomy, open sound. Just a pair of overheads above the drums and a mic on the kick for kind of a different sound."

Lang's studio is centered around an old API 2488 console. For mics, Gilmore used AKG D-12s and 421s on the drums, and one Shure SM57 on snare. "I haven't been using a second mic on the snare for a while because it does a weird phasing thing to my ears that I don't dig that much," Gilmore says. "What I've been doing lately is, if I missed the sound of the snares, I'll put an Auratone on top of a tambourine on top of a snare when I mix, and then send a signal of the snare out to the Auratone and mike the bottom of the snare. Then I have control of the lower snare. It works if you want that rattle-y, underneath snare sound in conjunction with what you've got on tape. I've been using B&K 4011s on the overheads. They have a real nice open, airy sound." The room mics were a pair of Sony C-37As.

On bass, Hauser uses a Tubeworks DI, which Gilmore had never used before, but he says he came to like its low, midrange punch. The bass cabinet is miked with an EV RE-20, and on guitars it was Shure 57s and 87s.

Doe's vocal is captured with a Shure SM7, which then goes through a Vintage Audioworks mic pre and then to a Neve 33609 compressor. "That's been my setup for a while," says Gilmore. "That compressor's got a limiting section, so if it's a real dynamic song, I can flip on the limiter, and it holds the vocal in place. On a few of the mellower songs, we wound up using a C-37A—a condenser tube mic—but mostly it was the SM7."

Doe says there was a lot of spontaneity to the sessions, which he sees as key. "That song 'My Goodness' happened by me detuning a guitar and a film crew showing up from Portland after we had finished the last note of the last song that we knew we wanted to track. We had tried the song in this other funky jazz way, and it didn't work, so we gave it a couple of tries while the film crew was there, and it happened. Smokey played with a drumstick on his guitar for half the song, and he'd pick up a 9-volt battery and use that for a slide on something else. And luckily we didn't suck that spontaneity out of the production. You have to be very careful to maintain that. If you can clean up too many rough edges, it becomes just a machine doing it."

Gilmore dumped all of the tracks onto ADAT, and then he and Doe did the overdubs in X's studio. They transferred the overdubbed material back to 2-inch and mixed on to the Neve V Series at Cornerstone in Chatsworth, Calif.

The John Doe Thing will go on the road this fall, almost right on the heels of the X tour. "And now we're going to do a vinyl edition of the John Doe thing and the X thing," says Doe. "The X thing will be sold at our shows. I think we're going to use old record covers. We're going to take the old records out of the old record covers and put our stuff over it. That's what we've been doing so far, and it works really well. There was one that was a Belinda Carlisle record. I have nothing against Belinda Carlisle. She's nice enough [laughs], but having the blood kind of spurting on top of her head—I think she'd probably get a kick out of it." You can take the man out of punk...

"I wish that more people knew that X was still a viable creative source," Doe says. "A lot of people who think of themselves as being hip believe that we recorded two records and then ceased to exist, and it's insane. We've been playing all the time for the last four years, and people say, 'Oh, God, are you guys back together?'" Maybe some people just don't recognize them without the safety pins in their T-shirts. Maybe some people should have their ears unclogged. ■

—FROM PAGE 141, CLAIR MARLO

"When I was young, around 13, I was listening to the Alan Parsons Project and reading the credits," Marlo says. "I thought he was great because he put it all together: the writing, the producing the engineering, the arranging and the performing. I knew early on that I wanted this kind of control."

Released on the UNI/MCA-distributed indie label Wildcat Records, *Behaviour Self* is a remarkable display of contemporary musical vision. From the album's eerie opener "Wish," to "Goin' Down to Liverpool," the peppy world beat-flavored

duet with former Wall of Voodoo member Andy Prieboy, and the poignant closer, "Dominique," *Behaviour Self* effectively blends traditional pop with folk, reggae and even light jazz styles.

The daughter of Croatian parents, Marlo first learned accordion but switched to classical piano at age nine. She formally studied music through her graduation from Boston's Berklee School of Music in the early 1980s. Intrigued with the art of recording and how the best musicians were able to use the studio as an instrument, Marlo had worked as an intern in a small Manhattan studio as a teenager, before taking extensive recording courses at Berklee.

"It was this combination studio and mastering facility called Variety, located in the heart of the Combat Zone on 42nd Street," she says. "Their main thing was Spanish music and soundtracks to porno films. They thought it was funny that I worked there and was so eager to learn the trade. They would play me all these really rude bits from the films, and I had to mix music underneath them. Needless to say, I learned a lot of the basics there, and by the time I arrived at Berklee, I was one of the few women in my class to really know my way around a studio."

After graduating from Berklee (along with future pop star Aimee Mann), Marlo spent nine months on the road in a Holiday Inn cover band, playing guitar, keyboards and accordion. Then, one night after she had had enough, she took the advice of Horace Greely and decided to go west.

"I left Boston with a guitar, a trunk full of clothes, $300 and the promise of a job in the music business," she says. "By the time I got to L.A., the money was gone and the job had fallen through. I only knew one per-

Altan (from left): Ciaran Curran (bouzouki), Dermot Byrne (accordion), Mairead Ni Mhaonaigh (vocals, fiddle), Daithi Sproule (guitar) and Ciaran Tourish (fiddle, whistle)

Altan, Ten Years Later

Irish traditional band Altan recently released a compilation CD entitled *The First Ten Years: 1986/1995* on Green Linnet Records. The collection traces not only the band's history but their increasing success, from their early releases, *Altan* and *Horse With a Heart*, which were recorded at Dublin's Lansdowne Studios, to *Island Angel*, which the band co-produced with Brian Masterson at Windmill Lane. The tracks on the compilation were selected and remixed by Bothy Band founder Donal Lunny.

—Barbara Schultz

son in L.A., who was kind enough to let me sleep on her couch for three months until I got a gig."

Marlo skipped from band to band, playing everything from country to alternative. During this period, she gradually began gaining a name and reputation as a session player, arranger and producer in L.A.'s tight recording circuit. By 1989, she had landed a job producing Harry Chapin's posthumous release, *The Last Protest Singer*. That led to other projects and an alliance with Doug Sax, owner of L.A.'s Mastering Lab and the audiophile record label Sheffield Lab Recordings.

Sax hired Marlo to produce a few jazz fusion acts for the label and eventually signed her to record her first solo album, which she made with help from members of Toto and Little Feat. "My first record was called *Let It Go*, and it's totally different from this one," says Marlo. "It was more of a jazz album with pop vocals." Although she made a slight dent in the Adult Contemporary charts, *Let It Go* went mostly unnoticed in the U.S. Abroad, however, it saw considerable success, especially in the Philippines, where the single "Til They Take My Heart Away" went to Number One.

"I learned the most about recording from Doug Sax and working with the Sheffield label," Marlo says. "I got a chance to listen to a lot of incredible stuff. He has a very high standard, and I learned to aim for that standard. I learned about what a good mic would do, and how to place a mic to get the maximum potential out of it."

During the four-year gap between *Let It Go* and *Behaviour Self*, Marlo continued her work as a hired gun (she wrote and sang music for the blockbuster film *The Firm*). She also met keyboardist and producer Ace Baker, whom she eventually married. "He's better at some things than I am, and I am better at other things than him," says Marlo. "Together, we're pretty powerful."

Inside their modest Los Angeles home, they gradually built the studio where they recorded and mixed *Behaviour Self*. Most of the tracking was done in either the garage or the living room. The couple has two control rooms in the house, as it is not unusual for each of them to be working on separate projects at the same time.

In the main control room, Marlo has a Mackie 24x8 with a 24E expander module. There are also two

Mackie 1604s, which she used as submixers, along with a Kawai MX8SR. Marlo is quick to credit the high sonic quality of her home recordings to the fact that she and Baker equipped their room with excellent outboard gear. These include Mastering Lab and GML mic pre's, a Lexicon LXP-1, Boss SE50s, Roland SRV2000, Yahama SPX90s and D-1500s, Tech 21 PSA-1 SansAmp, Alesis QuadraVerb, ADA Microcab, and a wide variety of Aphex outboard gear.

She and Baker drive the gear through Macintosh computers on a variety of sequencing software programs; Mark of the Unicorn provides the main MIDI interface software.

Marlo used an extensive collection of keyboards and drum machines on the record, including the Yahama KX88, several recent Kurzweil samplers and synth modules, E-mu Proteus 1 and 2, Ensoniq VFX, a Korg Wavestation, and nearly every Roland model on the market.

Vocals were recorded on a Neumann TLM 170 and A-T 4051s. She also used various Sennheiser and AKG mics to record some of the instruments. *Behaviour Self* was made on 24 tracks of ADAT, with BRC. "I learned to use the ADATs pretty effectively," says Marlo, who spent six months writing and recording the album. "In some cases, I had 24 tracks of background vocals, which I bounced down to a few tracks. I thought that was really cool."

According to Marlo, getting the new album released was much more difficult than the writing and recording. "I tried for a long time to get a major-label deal with a few demos, but I couldn't get signed. Nobody wanted to know about my stuff. I just couldn't get a deal, and I was really frustrated. Eventually, Alex and I just decided to do it ourselves, and my manager decided to put it out on his own label, Wildcat, which is distributed by UNI/MCA."

Today, Marlo says it was the best decision she could have made. "I am so glad that I did this album this way. I had all the freedom to do it the way I wanted. We made it for not too much money. I might not have had this album the way it is if a major had been involved. I might have had an A&R guy telling me to change the songs because he didn't hear a hit. Nobody was standing over me with this. It was great.

"Today's music industry has forced everyone to be more creative," she adds. "That was the case with this. I had to spend what money I had to get the most out of what I had. I think this is a good thing. People are going to have to find new and interesting ways to get their music out there."

As Marlo winds down the interview to go back to work, she ends our talk with a question: "All the crap that the major labels signed in the 1980s, almost all of it is gone today. So, what does that tell you?" ■

—FROM PAGE 141, DEREK & THE DOMINOS

hit when it came out that summer, thanks in part to the single "After Midnight." Clapton split with Delaney & Bonnie after a brief American tour in the winter of 1970, and by the end of that spring, he had formed a new band around three of the players from that outfit: drummer Jim Gordon, bassist Carl Radle and keyboardist Bobby Whitlock. They went by the moniker Derek & the Dominos (another futile attempt by E.C. to avoid the spotlight), and they mainly played small club gigs in England before traveling to Miami's Criteria Studios in early August 1970 (the same month *Eric Clapton* was released) to cut an album with the enormously respected R&B producer Tom Dowd.

Dowd had been working on the second album by an up-and-coming Georgia group called the Allman Brothers Band, and it was he who arranged a meeting, after an Allmans show in Miami, between Clapton and the incredible young guitarist Duane Allman, whose work Clapton knew from records by Wilson Pickett ("Hey Jude") and others. Clapton and Allman spent the entire next day and evening jamming at Criteria, and a day later, Clapton invited Duane to play on the album that would become *Layla and Other Assorted Love Songs*. "I knew Duane, we were friends," Bobby Whitlock told writer Mike Metler a few years ago. "He was excited to be involved in this project. He was *into* it. Duane was like a shot in the arm—he fit the band like a hand in a glove. His playing was so simple, so tasty."

Most of the songs the band was recording were intensely personal blues-based tunes about the agony of unrequited love, drawing on Clapton's own experience: He had fallen deeply in love with Patti Boyd Harrison, the wife of one of his best

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friends, Beatle George Harrison. (His ardor was no doubt fueled by the time he spent in the summer of '70 working on Harrison's solo debut, *All Things Must Pass*, with the other Dominos-to-be, under producer Phil Spector, who also produced two songs for the fledgling Dominos.) A friend of Clapton's gave him a copy of a book called *The Story of Layla and Majnun*, an epic 12th century Persian tale of a doomed romance, and Clapton immediately saw himself as the suitor driven to madness by the power of his love. The songs on *Layla* are dripping with a palpable—but beautiful—agony, from "Why Does Love Got to Be So Sad" to "I Am Yours," "Bell Bottom Blues" and, of course, what would become the most famous song on the album, "Layla."

Allman, Clapton and the Dominos managed to track 11 songs in their first week at Criteria, working with Dowd and a handful of staff engineers, including Ron and Howie Albert, Chuck Kirkpatrick, Criteria owner Mack Emmerman, Karl Richardson, and piano specialist Albhy Galuten. On the morning of September 9, the group cut a version of Jimi Hendrix's "Little Wing." That afternoon, with Albert at the board, they tackled "Layla," a tune Clapton had described as "just a little ditty." It was Duane Allman who encouraged Clapton to speed up this "ditty" to a full-throttled rocker, and Duane who conceived the memorable guitar hook. The basic tracks were cut live in Studio B, which was equipped at the time with a custom 24-input MCI console designed primarily by Emmerman and Dowd. "It was only 16-out, so you had to patch the last eight tracks to get to 24," remembers Richardson. "The recorder [an MCI 16-track] had this huge electronic doghouse built on top of the tape deck—it was like this kitchen cabinet above it. The transport and the motors were down below, and then there were support columns and on top of that a huge box that contained the tape electronics. I loved that machine; it was great.

"One thing that happened on those sessions, though, was a girl from the band's entourage came into the studio, and she had put a cup of coffee on top of the machine. The machine went into rewind, and the coffee went into the master tapes of 'Layla'! Tommy Dowd and I happened to be in the room—and I think

Ronnie Albert was there, too—and of course we freaked. I remember sitting there with Tommy, and we ventilated the tape: We put the machine in a very slow rewind or fast forward mode, and we used Chem-Wipes all over the tape to get rid of the coffee. Fortunately, it worked."

Richardson says that in those days, Studio B was mainly wood with a carpeted floor. It had a custom wood diffusion system built by Criteria's in-house carpenter. "The room had a rock 'n' roll tone," Richardson says. "We didn't have a drum booth at that time, so Jim [Gordon] was right in there with everyone else, and it sounded fine."

Surprisingly, both Clapton and Allman used small Fender amps for their parts: mainly Champs and Princetons. "We closed the top of the piano and set the amps up on it so that the Champs were at ear level," Ron Albert says in Scott Freeman's excellent recent biography of the Allman Brothers, *Midnight Riders* (Little, Brown, 1995). "It was the only way that Eric and Duane could hear themselves. You'd turn them up to '10,' stick a microphone on them and go." Richardson's recollection is that the main guitar mics were Shure SM58s, with Neumann U87s used on a few things.

"The way the band liked to work," Richardson says, "is they'd cut tracks, and then the next day, they'd come in and listen to the playback. They'd all go 'thumbs up' or 'thumbs down,' and if it was 'thumb's down,' that meant, 'We can go out there and beat it!' So a lot of times there were multiple sessions of the same song, only because the band and Tommy probably felt they could beat it."

And, of course, anyone who knows the album well is aware that there are *dozens* of overdubs—indeed, if there is a criticism that can be fairly leveled at this masterpiece it's that in places it sounds cluttered; it's almost too much of a good thing. On the song "Layla" alone, for instance, there are some ten guitar tracks, with three and four axes frequently going at once. As far as who played what in this sea of guitars, Duane said at the time, "For anybody who doesn't know and cares enough about it, I play the Gibson, Eric plays the Fender. If you can tell between a Gibson and a Fender, then you'll know who played what." Naturally, all of the bottleneck parts are Duane's.

As originally recorded, "Layla" is

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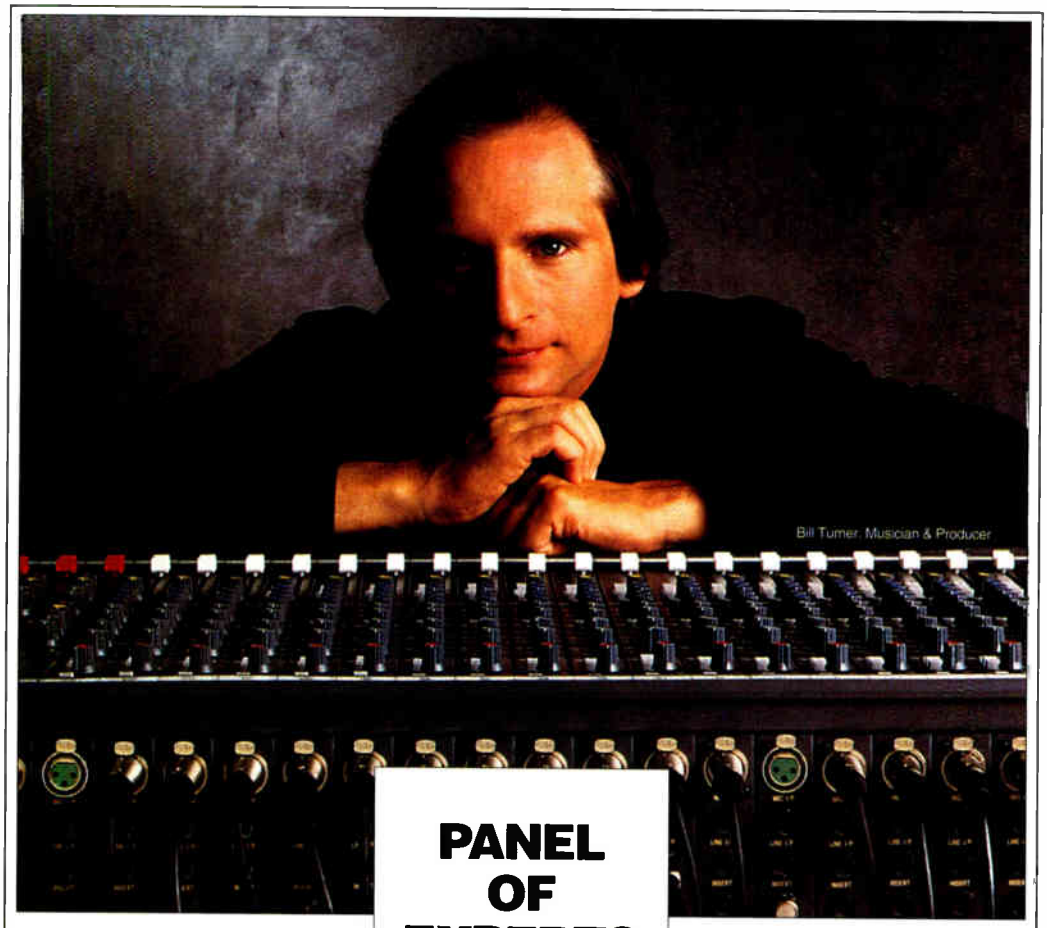

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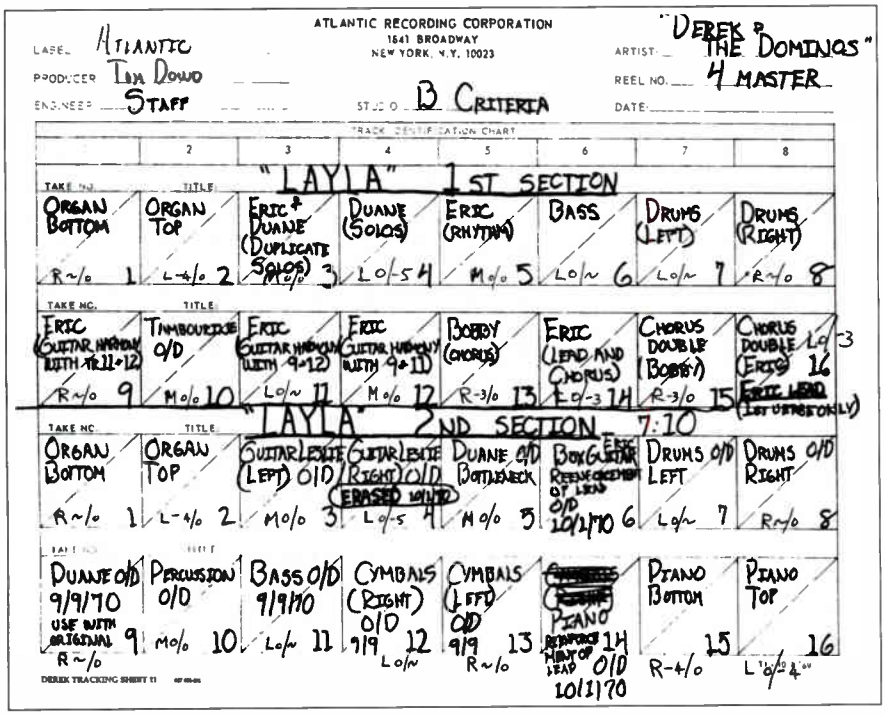
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ARTIST: "DEREK & THE DOMINOS"
REEL NO.: 4 MASTER
DATE:

TRACK IDENTIFICATION CHART

	1	2	3	4	5	6	7	8
TAKE NO. / TITLE	"LAYLA" 1ST SECTION							
	ORGAN BOTTOM R~/o 1	ORGAN TOP L-4/o 2	ERIC & DUANE (DUPLICATE SOLOS) M/o 3	DUANE (SOLOS) L0-5H	ERIC (RHYTHM) M/o 5	BASS L0/~ 6	DRUMS (LEFT) L0/~ 7	DRUMS (RIGHT) R~/o 8
TAKE NO. / TITLE	ERIC GUITAR HARMONY WITH 9+12 R~/o 9	TIMBOURINE O/D M/o 10	ERIC GUITAR HARMONY WITH 9+12 L0/~ 11	ERIC GUITAR HARMONY WITH 9+11 M/o 12	BOBBY (CHORUS) R-3/o 13	ERIC (LEAD AND CHORUS) L0-3 7H	CHORUS DOUBLE (BOBBY) R-3/o 15	CHORUS DOUBLE (ERIC) 16 L9-3 ERIC LEAD 1ST VERSE ONLY
	"LAYLA" 2ND SECTION 7:10							
TAKE NO. / TITLE	ORGAN BOTTOM R~/o 1	ORGAN TOP L-4/o 2	GUITAR LESLIE (LEFT) O/D M/o 3 ERASED W/HUM	GUITAR LESLIE (RIGHT) O/D L0-5 4	DUANE O/D BOTTLENECK M/o 5	BOB GUITAR ERIC REENFORCEMENT OF LEAD O/D 10/2/70 6	DRUMS O/D LEFT L0/~ 7	DRUMS O/D RIGHT R~/o 8
TAKE NO. / TITLE	DUANE O/D 9/9/70 USE WITH ORIGINAL R~/o 9	PERCUSSION O/D M/o 10	BASS O/D 9/9/70 L0/~ 11	CYMBALS (RIGHT) O/D 9/9 L0/~ 12	CYMBALS (LEFT) O/D 9/9 R~/o 13	PIANO REINFORCEMENT OF LEAD O/D 10/1/70 1H	PIANO BOTTOM R-4/o 15	PIANO TOP L 6/0 4" 16

DEREK TRACKING SHEET 11

Original track sheet from "Layla"

really just a three-minute song. The famous instrumental coda that begins (at 3:07) with a simple solo piano line and then builds majestically into a soaring chordal progression accented by the bird-like cries of Duane's slide guitar, was not even meant to be part of the song originally. "Jim Gordon wrote that and had been secretly going back into the studio and recording his own album without any of us knowing it," Clapton told an interviewer. "We caught him playing this one day and said, 'Come on, man. Can we have that?' And we made two pieces into one song." Actually, Dowd himself did the edit, and then Duane added his intricate slide parts under the piano line by Gordon (rather than Whitlock). Clapton only plays acoustic guitar on the coda.

Tracking and overdubs for the entire double-album took just two-and-a-half weeks, and the complicated mix just a few days. The mastering engineers had their work cut out for them, too: On "Layla," the tempo minutely shifted several times over the course of the song because it was mixed down on a temperamental Ampex 351. That explains why generations of young guitarists trying to play along with the record found it to be "out of tune" in places.

The public at large didn't know and didn't care about that, of course. And when the album was released in late November 1970, the public didn't seem to care much about the album as a whole. The first single, "Bell Bottom Blues," barely cracked the Top 100 when it came out in February 1971, and the follow-up, "Layla," released the next month, only made it to Number 50. "The pity of it was that it took a year for it to hit," Tom Dowd says in *Midnight Riders*. "When it didn't hit in the first six months, I thought, 'The public is just a bunch of assholes. They don't know what the hell is good or bad anymore.' Then six months later, [Layla] was like the national anthem."

True enough. Album rock radio continued playing the track through the summer and autumn of '71 and into '72, so "Layla" was re-released as a single in the spring of '72, and this time it was a massive hit, reaching Number 10.

Derek & the Dominos—sans Duane—would stay together less than a year before Clapton's increasing drug dependency effectively sidelined him for an extended period. Duane Allman died in a motorcycle accident in the fall of '71. Jim Gordon had a successful career as a session drummer until he had a psychotic break and murdered his mother; he's still in jail. Carl Radle died of a drug overdose in 1980, and Bobby Whitlock died last year. A couple of years after "Layla," Clapton successfully wooed Patti Harrison, and the two were married in 1974. Their union lasted until 1988. The songs inspired by Clapton's longing will last forever. ■

NEW PRODUCTS

TRACER TECHNOLOGIES DART

Tracer Technologies (Dallastown, PA) offers its Digital Audio Reconstruction Technology software. Retailing at $399, DART is designed to remove surface noise, pops, clicks and other disturbances from any audio source. After recording with any Windows-compatible sound card, DART applies a Smoothing processor to smooth/reconstruct the signal at the first stage of the noise-canceling procedure; a Postfiltering processor to remove surface noise, hiss and other constant distortion; and an Outlier detector, which removes impulsive noises. The software allows auditioning of the removed noise in a separate file and previewing of numerous takes of the same sound file. Included is an 8-band graphic EQ, cut and paste editing, splitter and a variety of filtering and marking options.

Circle 226 on Reader Service Card

SENNHEISER HD265 HEADPHONES

Designed for critical listening are Sennheiser's (Old Lyme, CT) Model HD265 headphones, featuring two-layer diaphragm technology and neodymium-ferrous magnets for deeper bass without boominess. Acoustically neutral, sealed circumaural earcups provide maximum isolation from ambient noise.

Circle 227 on Reader Service Card

BI-TRONICS COMBO-12 SOLDERABLE PATCH PANEL

Bi-Tronics' (Tuckahoe, NY) Combo-12 is the first solderable, ¼-inch/XLR combo patch panel. The unit accepts male XLR or ¼-inch mono/stereo connectors, eliminating the need for costly adapters. A 12-jack, single-rack-space panel sells for $139.95.

Circle 228 on Reader Service Card

SRS FFT ANALYZER

The SR780 from Stanford Research Systems (Sunnyvale, CA) is a 2-channel FFT spectrum analyzer with a frequency range of 102.4 kHz, dynamic range of 90 dB, and a fast 100kHz real-time bandwidth. Measurements include FFT, time record, transfer function, coherence, cross correlation, cross spectrum and auto correlation. Features include ANSI standard real-time octave analysis (⅓-, ¼-, ½-octave), swept sine measurements (145dB dynamic range), transient capture (2M samples) and optional computed-order tracking. A built-in low-distortion (-80 dBc) source generates sine, two-tone, chirp, white noise, pink noise, burst chirp, burst noise and arbitrary outputs. The SR780 performs band, sideband and harmonic analysis, GO/NO GO testing and real-time math operations on your data. It features 8 MB of memory (expandable to 32 MB), up to 800-line frequency resolution, built-in floppy drive and RS-232 and GPIB interfaces. List is $9,950.

Circle 229 on Reader Service Card

DYNATEK CD-ROM RECORDING SYSTEM

DynaTek (Bedford, Nova Scotia) announces the CDM 200 CD-ROM recording system for use with Windows-based and Macintosh computers. The system combines an external, SCSI-based, double-speed CD recorder with everything needed to produce CDs, including all the necessary cables, blank CD-R discs and DynaTek's DiscMaster software. Retail is $1,695.

Circle 230 on Reader Service Card

ROLLS RP220 TUBE PREAMP

Now shipping is the RP220 dual-tube mic preamp from Salt Lake City-based Rolls Corporation. The unit uses two 7025 vacuum tubes in the gain stages, and each channel features true transformer-balanced XLR inputs with switchable 48VDC phantom power and a ¼-inch unbalanced instrument input. Two unbalanced ¼-inch outputs and one balanced XLR out are also standard. The 220 also has a five-segment LED ladder on each channel for output level indication. The preamp retails for $499.99.

Circle 231 on Reader Service Card

EV FX70 ROTARY SPEAKER SIMULATOR

Electro-Voice (Buchanan, MI) introduces the Fx70, a digital, rotary speaker simulator. The Fx70 uses the same processor as its predecessor, the DLS 223, but with improved software. This software-enhanced, 24-bit digital processor continually evaluates wave algorithms, producing a simulation of that famous rotary sound, eliminating the need to use a heavy wooden loudspeaker cabinet. The unit can be operated via its front panel or MIDI.

Circle 232 on Reader Service Card

TL AUDIO MIC PREAMPS

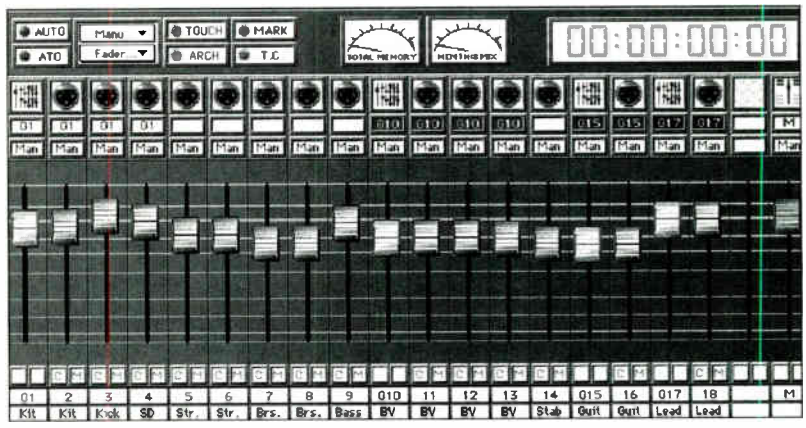
Distributed by the Sascom Marketing Group (Pickering, Ontario) are two new mic pre's from TL Audio, each offering two channels of tube preamplification, phase reverse and 48VDC phantom power. The top-of-the-line Dual Pentode features balanced, transformer-coupled mic inputs; front-panel unbalanced instrument ins; balanced line outs switchable for -10dB or +4dB operation; and switchable filters. The dual-tube preamp/DI features balanced mic inputs on XLR connectors, unbalanced instrument inputs on ¼-inch with switchable sensitivity and balanced outs on XLR connectors.

Circle 233 on Reader Service Card

TASCAM M-5000 AUTOMATION

Tascam (Montebello, CA) debuts its M-5FA MixPilot Automation package for the M-5000 production console. The package provides the necessary hardware to add automation to an existing M-5000 console, while the MixPilot software for the Macintosh offers long fader VCA and cut-group automation. The automation employs bidirectional communication, enabling changes to be made at either the console or the computer. In addition to full-color support, the automation has moving fader views, a comprehensive cue list and controls for MIDI event triggering, enabling one Mac to control the console as well as other devices via MIDI messages. Retail is $6,500.

Circle 234 on Reader Service Card



WEISS GAMBIT A/D CONVERTER

The Gambit Series ADC1 20-bit A/D converter from Weiss Engineering (distributed in the U.S. by G Prime, NYC) features modular converters that can be upgraded to a new chip. (Line and mic preamps are also built into modules.) Features include a DSP chip (for redithering to 16 bits, soft clipping, level metering, filtering, etc.), external or internal sync, input sensitivity variable from -12 dBu to +24 dBu (line input), -12dB pad, optional mic preamp, separate AES/EBU input, AES/EBU and SDIF outs and word sync output.

Circle 235 on Reader Service Card

SYSTEM ANALYSIS PRODUCTS

Tempe, AZ-based System Analysis offers its Studio Wavelength Absorbing Linear Structure and the Wavelength Absorbing Bag, both designed to handle large absorption needs in studios. Employing nine layers of materials of different densities, S.W.A.L.S. reduces sound levels by 20 dB. They come in durable laminate finishes in black or white Formica and unbleached muslin on the front panel and are available in 4-/5-/6-foot heights (custom sizes on request). Prices start at $750. The W.A. Bag offers 10dB reduction, with a near linear absorption rate in low, mid- and high-frequency spectrums. Prices start at $125.

Circle 236 on Reader Service Card

LEADER
JITTER METER
The LE 1852 from Leader Instruments (Hauppauge, NY) measures the jitter associated with CD and CD-ROM drives, servers and disc production systems. It provides simultaneous measurements of jitter and EMF/RF levels, with play speeds of 1x, 2x and 4x (2.2x and 3x available on special order). Jitter detection operates in both peak and sigma-weighted modes, and RF level reads out in peak-to-peak volts to indicate the 3T and 11T bit levels.
Circle 237 on Reader Service Card

ART TUBE MP PREAMP
Applied Research and Technology Inc. introduces the Tube MP mic preamp, a single-channel, 12AX7-based unit housed in an all-steel tabletop chassis. Features include balanced XLR and unbalanced ¼-inch TRS inputs, balanced XLR and ¼-inch TRS outs, individual in/out level controls, a 70dB range of gain (input to output), switchable 48VDC phantom, phase reverse and input pad switch.
Circle 238 on Reader Service Card

BEYERDYNAMIC MCE 83
Beyerdynamic's (Farmingdale, NY) MCE 83 microphone is designed for studio applications. The cardioid mic employs back-electret technology, and its wide 40-20k Hz frequency response makes it ideal for all recording formats.
Circle 239 on Reader Service Card

NEW FRONTIER
SURGE-X SERIES
New Frontier Electronics (New Hope, PA) announces its new line of AC line surge supressors, the Surge-X Series. Using patented Series-mode surge supression, Surge-X protectors do not contaminate the safety ground wire of 120-volt power lines. Instead of shunting large surge currents instantly to the safety ground—as with parallel surge supressors—the Surge-X returns the surge to the neutral wire at a controlled rate. Available models include the two-rackspace SX215R (12 outlets), the 8-outlet SX120R and two stand-alone, 6-outlet models.
Circle 240 on Reader Service Card

RE AN CLASS 1 PATCHBAY
Re an Products (U.S. headquarters in Fairfield, NJ) re-introduces its 96-way Class 1 Patchbay. Aimed at the broadcast market in particular, the Class 1 features die-cast jacks mounted in groups of 24 on an extruded aluminium chassis. Normaling switches feature high-grade Palladium contacts welded to solid nickel silver spring leaves for maximum contact pressure.
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HOT OFF THE SHELF

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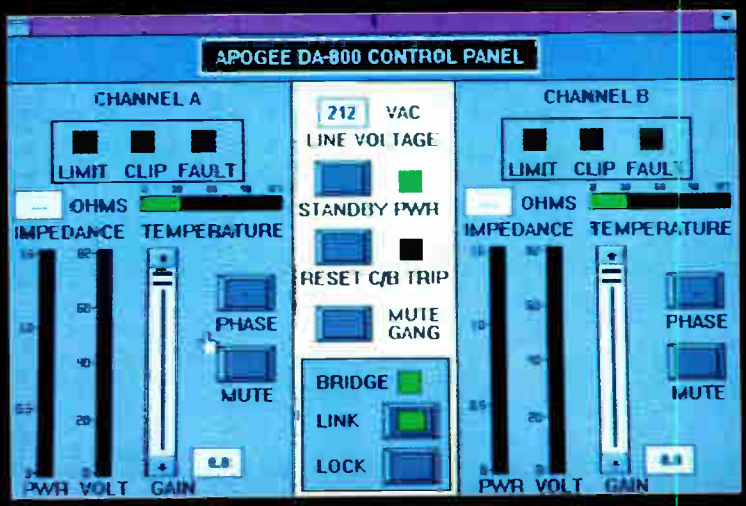

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APOGEE SOUND INC.

by George Petersen

BRÜEL & KJAER 4040

TUBE MICROPHONE

"Legendary" is a term too often misused in the audio industry, but anyone who's worked in pro audio is aware of Brüel & Kjaer's 4000 Series microphones and their uncompromising reputation for accurate reproduction. In fact, B&K microphones are routinely used as tools in measuring the performance of audio systems and over the years have become the accepted standard by which other mics are compared.

B&K does not issue new microphones very often; it was six years ago when I first heard that this Danish company was beginning to design a tube microphone for studio applications. At every Audio Engineering Society convention since 1989, I've been badgering the reps at the B&K booth for details and updates. A year ago in San Francisco, the truth was revealed, when B&K finally unveiled the 4040. It was more—and less—than I expected. Let me explain.

THE "LESS" PART

- Production of the 4040 has been limited to 100 (hand-built) units worldwide.
- During my six years of speculation, I somehow expected a fairly sizable, side-address design, along the lines of a Neumann U47. Yet like other B&K mics, the 4040 is a front-address (and fairly compact) probe-style design.

THE "MORE" PART

- The 4040 marks B&K's first entry into the large-diaphragm microphone market.
- Retailing at $8,999—including preamplifier, mic clip, cable and carrying case—the 4040 is priced a bit higher than the competition.
- The mic includes both tube and FET electronics, which can be used simultaneously, allowing producers and engineers to A/B the two "sounds" of the mic and choose the one (or create a blend of the two) that best complements the source.

THE DETAILS

The entire 4040 package is first-class in every respect. The 9-inch mic body is gold-plated and has a hand-

engraved serial number for that personal touch. A rotatable window on the mic body allows visual inspection of the tube *and* FET electronics housed inside. The carrying case is a locking Samsonite model with custom-fitted foam, and the five-meter mic cable included with the package uses audiophile-grade Mogami wire.

The cable is long enough for most applications, but it is a custom, 8-conductor design with Lemo connectors. If I owned this mic, I'd fabricate or order a second cable, as I have a feeling that spares aren't readily available at Radio Shack.

The preamp output is line-level, and according to B&K, the preamp output can drive a signal up to 300 meters (984 feet). The preamp can be powered by either 100-127 or 200-240 Volts, and there is an LED "power on" indicator but no AC switch. Some care should be taken when connecting the mic and preamp, as a massive transient occurs on power-up. The preamp has an 8-pin mic input connector and two separate three-pin XLR connectors for the tube and FET outputs. A three-position (-20/-10/0 dB) output attenuator switch is standard.

The 4040 is a pressure-gradient, true condenser design with a fixed omnidirectional pattern. The capsule is actually 23.77 mm in diameter—just shy of an inch. Sensitivity is rated at 90mV/Pa (±2 dB).

IN SESSION

My first session with the 4040 was lead and background vocals on a pop album project, so just to be sure, I checked out the mic the day before. After getting over the power-up transients, I liked what I heard from the FET electronics, but the tube output was decidedly distorted whenever the light on the music stand was on. I have never experienced any sort of interference from 15-watt AC lights, so I was puzzled. Then I noticed that the rotating glass cover on the mic was half-open. The vacuum tube is light sensitive, and the cover must be closed whenever using the mic. Once passing this hurdle, I was on the way.

The 4040 is extremely sensitive to breath noise, so some sort of pop filter should be used in close vocal miking situations. A nylon stocking-type screen filter was just the thing:

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It handled nuisance breath noise while retaining transparency. Unlike other B&K studio mics—which are designed for flat, accurate response—the 4040 has a noticeable high-end rise (about 4 dB/octave) peaking at +7 dB at 8 kHz. This presence boost adds a nice bit of punch to vocal tracks without being overbearing, and the top-end response doesn't roll off until about 22 kHz, where it drops off sharply. The result was an airy, open sound that was especially well-suited to the female voice, particularly on backgrounds. No mic is ideal for every voice or vocal style, but the 4040 performed equally well on male vocals, and over three weeks of sessions, the 4040 was my choice for about 80% of the singers.

Acoustic instruments were also flattered by the 4040. Six- and 12-string guitars were full with clear upper harmonics. Cello was rich, with a warm bottom end and precise bow attack as the rosin hit the strings. And the 4040 didn't disappoint on solo trumpet or sax, with punchy transients, smooth mids and ample lows.

The 4040 is an omnidirectional design, and its off-axis response was virtually identical to on-axis sources. This proved to be a real advantage when miking vocalists who like to move around or shake their heads while performing; however, the omni design has severe limitations in placement. Despite the fact that the 4040 can handle SPLs of up to 144 dB, the omni pattern would preclude its use as a snare mic. Unfortunately, I didn't have a pair available to use for stereo drum overheads, but I made some tests using a single 4040 as a mono drum overhead. Combined with a Sennheiser MD-421 on kick, the combination was pleasant, providing just the right balance between the snare and toms and a nice silkiness to the cymbals.

One of the 4040's main features is its dual (tube and FET) electronics. This, of course, precludes using it with other preamps. However, the equivalent noise level of the FET section is an impressive 7 dBA, although the same spec of the tube section is 10 dBA, which is far better than most studio mics anyway, so noise obviously wasn't a problem. The frequency response of the tube section extends to 40 kHz; the FET section goes out to 100 kHz. While tracking with the 4040, I would always print both outputs to tape, yet invariably, I would go with the tube output when mixing. Part of this is due to the unique character of the 4040's tube output, combining a warm sound with smooth, wide-bandwidth response; the FET output is more akin to the sound of B&K's 4006 omni, but with a more pronounced presence boost.

The entire production run of Brüel & Kjaer's 4040 is limited to 100 pieces, so if you're interested in buying one, you'd better move fast (at press time, over half of the supply had been sold). At $8,999, the 4040 is not inexpensive by anyone's standard, but those seeking a unique, world-class mic should check it out.

B&K studio microphones are distributed by B&K/TGI North America, 300 Gage Ave., Kitchener, Ontario, N2M 2C8 Canada; (519) 745-1158, fax: (519) 745-2364. ■

by John C. Baker

ELECTRO-VOICE RE2000

STUDIO CONDENSER MICROPHONE

Discovering that an old name in American electronics manufacturing was moving into the high-end condenser microphone market was surprising enough. Finding that the design is a true condenser, "large" capsule (I'll explain the quotes later), with a transformer and a heater was intriguing. As a classical recording engineer, I wanted to know more, and after a couple of phone calls to Electro-Voice, two RE2000 mics were on the way.

My initial test was unique, as it took place in England under less-than-ideal conditions in famous venues with very rigid criteria concerning placement, appearance and wiring. The event being recorded was the tour of an American a cappella classical chorus, starting at St. Paul's Cathedral, working through Westminster Abbey to Hereford, Gloucester, Liverpool (R.C.) and Blackburn Cathedrals, and Tewkesbury Abbey. Temperature, humidity and environmental conditions varied greatly from cavernous St. Paul's to fairly intimate Hereford filled with approximately 1,500 people with a downpour outside.

The mic resembles a somewhat larger AKG 414, but with fixed supercardioid pattern, with switches for 130Hz roll-off and -10dB attenuation. These are serious mics. The word "precise" comes to mind: From the first time I turned them on in St. Paul's for a sound test against the massive organ in that cathedral, I knew that the reproduction was as true as I'd ever experienced. Further, as I was to find out over the next few weeks, sounds I'd never heard before were picked up clearly by these mics, including the shoes of the choral director twisting on the stone floor.

The mics are promoted as "extremely low noise" and designed from the ground up for the digital market. These aren't old designs for pre-digital analog standards. If, as specified, these mics were true studio condenser mics, then low noise is taken for granted. Electro-Voice has gone further. And because of what I continued to hear out of these mics, including the sound of a member of the chorus scribbling a note on his music during a CD recording session, I talked to the design team about this product.

According to Bill Spence, one of the original design engineers on the project, the RE2000 project began nine years ago, when EV decided to enter the home studio market with a condenser mic. EV had, in the past, designed other condensers, generally handheld electret mics for live sound applications. Not thinking about the high-end market, the designers initially used RF bias technology. However, this approach tended to have little stability at the top end of the performance mode in either the electronics or the capsule—so the design team could get low noise, but not with the stability they required on the output. The project was shelved by early '92.

Two years ago, EV president Paul McGuire resurrected the project as a high-end mic. The company literally started over again, keeping only Bill Spence's exceptional output section, which used Deane Jensen's transformer design created specifically for this circuit (his last design before his untimely demise).

First to undergo a major design change was the transducer. For the mic to be extremely low noise, this section had to be extremely efficient. After extensive and exhaustive research, it was determined that reduction of stray capacitance was critical, and backplate design played a key role in this. The backplate design was optimized for maximum active area and minimal resistance (which included beveling the inner edge of the backplate seal, creating an appropriate environment to minimize stray capacitance in the transducer housing).

The horsepower that the transducer places in the first stage of the microphone is unchanged throughout the circuit. As with other microphones in this class, there is no voltage gain anywhere in the circuit. The rest of the circuit deals with impedance conversion, which ultimately means the transducer's higher output produces higher output at the console, so no additional gain is required at that point. As a comparison, several of the Neumann transducers have a sensitivity of 11 mV/pascal, while the RE2000's is 20 mV/pascal at all times. A recent field test of the reintroduced AKG C-12VR tube condenser noted that its sensitivity could be changed from 10 to 32 mV/pascal via internal switches (see "Field Test," March 1995). If you require that kind of sensitivity, the RE2000 is always near that level.

The design team determined that the capsule had to be maintained within a stable environment to preserve a low-noise design. The Jensen transformer had already ensured that the distortion inherent in high LF levels caused by poor-quality transformers would not be a problem. Therefore, a heater element was added to control that environment, creating both consistent frequency response and stability. Any engineer who has ever experienced the strange "popping" sound of a condenser reacting to changes in humidity will find these sounds absent with the RE2000.

I asked the design team why they chose the specific capsule size, which is about ⅝-inch in diameter. By increasing the damping in the RE2000 capsule, and choosing the size that EV did, the capsule's frequency response is flattened out over the whole spectrum. The size EV chose is midway between a small capsule and large capsule mics, but with much higher design specs in the circuitry. It works.

Were there any surprises? A radio station in Chicago testing one of the units had an RF interference problem. The interference wasn't particularly significant, but the RE2000 was so quiet that the interference was noted. On an Audio-Technica, AKG or Neumann unit, that interference disappeared in the typical (but still low) noise level of these other high-end units. The station made comparative tests, and proved it to themselves. This problem has been corrected by additional RF suppression added to the final design.

The power supply provides both phantom and heater power to the mics through a 5-pin connector into the bottom of the mic. There is a "Y" to the cable, with a normal XLR connector on one end, and the power supply on the other that has an AC wire attached to it. However, if you want to bypass the heater, you can provide phantom power from your board, and the mics still perform admirably. EV has allowed for this in its design, although the company recommends that the heater be used at all times.

When I first received it, I thought the power supply was somewhat ungainly, but based on my experiences in England with the heaters, I've

found the consistency between recordings to be superb—no matter what the venue. The constraints in England were high. One of them was that I was unable to use any AC source within the cathedrals, so my units were powered by 12-volt batteries (the type used with camcorder lights) and special cables, separate from my DC-powered digital recorders.

In fact, with the the combination of the heater for environmental stability and the transformer, the mic sounds sounds fairly consistent no matter what preamp or console you're using. Electro-Voice has resolved almost any problem I can think of, except price. At $2,499, the mic is pricey, although the SRP and the actual price paid will clearly vary. But then again, it's going head-to-head against mics with long-established reputations. And there's never been an American competitor before, at least not at this level.

Another innovation that EV has provided with the mic is a small, clip-on external pop filter. Designed for both broadcast and vocal recording applications, it's a nice touch. The filter, along with the mic, the shock mount, and the stand connector (similar to the RE20's), fits neatly into an aluminum carrying case, so the complete system is always available, if needed.

The purity of the sound that comes out of this mic just asks to be used for vocals where the artist wants a natural, unadulterated vocal sound such as, for instance, Mary Chapin Carpenter's. But tests run with acoustic guitar, brass and a complete symphony orchestra with chorus have all provided outstanding results. So Electro-Voice has produced the first American, high-end true condenser microphone with a transformer, which may be the precursor to things to come from both this and other American manufacturers for the first time in many decades.

Electro-Voice Inc., 600 Cecil St., Buchanan, MI 49107; (616) 695-6831; fax (616) 695-1304. ■

John C. Baker, an independent producer/engineer, owns John Baker Recordings and Scotia Audio in Lawrenceville, N.J., and is a frequent contributor to NPR's "Performance Today."

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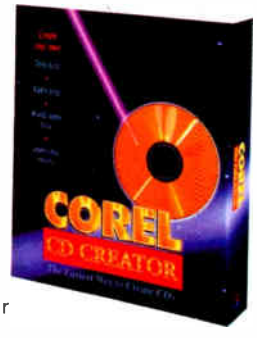

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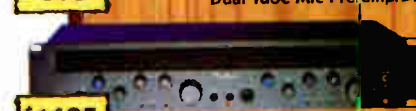

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by Bob Hodas

APHEX 107 TUBESSENCE

THERMIONIC MICROPHONE PREAMP

I must say up front that I have always liked Aphex gear, as my past reviews attest. But as an owner of a Class-A Avalon preamp and an E.A.R. tube preamp, I was skeptical that there would be anything endearing about the $599 Aphex Model 107 Tubessence. Could anything so inexpensive sound good? I had to find out.

The dual-channel 107 combines patent-pending tube circuitry with solid-state technology in a very small, lightweight, single-rackspace package.

There are no input transformers, and Aphex uses a matched-transistor front end directly coupled to the tube circuit along with no overall feedback loop in the first stage. To avoid switch noise due to aging, gold-contact relays were used for audio circuit switches. As with their other products, Aphex has maintained high quality with the 107.

The front panel has all the usual preamp controls, plus some new twists. The microphone XLR jack is located on the front not the back. Though I find this inconvenient, Aphex legitimately claims a purer input path with input circuitry closely clustered on the PCB. Also unique is a channel-mute LED that indicates when the channel-mute switch is engaged via a back-panel footswitch jack. There is the gain pot and a switchable -20dB pad with LED. A polarity switch and 80Hz lowcut switch, both with LEDs, round out the controls. Additionally, there is a peak LED and "OK Level" (signal presence) LED that illuminates at 24 dB below reference level.

The rear panel holds the ¼-inch remote mute jack, allowing a footswitch to control on/off channel functions. Another ¼-inch jack will accept either TRS or TS plugs for balanced or unbalanced output. There is also a user-selectable switch for -10dBV or +4dBu operation. This switch allows Aphex to serve both the pro and home markets without compromising either. An external adapter (wall wart) provides 24 VAC to an internal-switching power supply.

The manual leaves no possible question unanswered. It is not only a manual on operating the 107 but also includes extensive application notes, discussions of stereo mic technique and a complete primer on wiring. There will be no connection mistakes made if the user reads this manual.

That's the basic description of the Tubessence. Not much, but hey, how many controls do preamps have? What really counts is the sound, and that's what follows. My first experience with the 107 was replacing dialog for Disney's production "Snow White on Ice." The Disney staff insisted on using the original RCA ribbon mic (notoriously low-output, requiring mondo gain) on the sessions. We were replacing dialog that had been recorded with another preamp that

had put too much noise on the tracks. I couldn't believe that we ran the 107 wide open and did not hear a bit of noise. The dialog sounded rich, as well, and we got great tracks. My other experiences have been live recordings using B&K spaced omnis for a 150-voice choir and a concert documentation with B&K cardioids in XY configuration. Both recordings yielded plenty of depth and a good, warm sound. I liked the detail and articulation on the choir, in particular. Neither headroom nor gain noise was an issue, even with distant miking.

With these great experiences, I felt that maybe I should get a reality check from some of my peers. So I solicited impressions from three prominent engineers.

Kevin Leonard, engineer at Whitney Houston's BKB Studios in New Jersey, says, "The first thing that you hear is the wide bandwidth and dynamic range. I have been using the 107 on everything from snare drum to vocals. I use it in my vocal chain with an AKG C-12 and a Teletronix LA-2, with no EQ, straight to tape. On a female vocal, it's very warm with a presence that gives the voice a separation in the mix that's often hard to achieve."

Gary Baldassari, an independent engineer who has done a lot of work for Disney and countless broadcast performances, as well as recordings for the Cexton, Riverside and Arbors jazz labels, observes, "I used the 107 with B&K 4011s for the final vocals of the Super Bowl XXIX halftime show. The only change in my regular setup was the Tubessence, and it produced a fatter sound than I had previously experienced. The next item I used it on was a direct bass. Again, it produced a new sound for me, adding depth to a normally up-front direct sound. Very usable. I also tried it on trumpets in an orchestra for a Bally's Las Vegas show. This time it was B&K 4012s via a 2812-2. With the -20dB pad, the 107 produced a nice, round, legitimate trumpet sound and still had the edge for the Harmon mutes. On harp with a Schoeps Collette, the results were silky and open. On the pianissimo parts, there was a lack of the typical tube noise I have experienced in the past."

Rick Sanchez is a recording engineer/editor/mixer for CD, film, television and concert sound. His credits include Thomas Dolby, Bruce Hornsby, *Home Improvement* and *Star Trek 3*. "The first thing I used it on," he says, "was a recording of dialog and vocals to be used in a theatrical performance. I used a Stephen Paul-modified U87, a high-gain, high-performance microphone. It was very smooth and natural-sounding with a clear top end and full, rich bottom. The OK and Overload lights seemed to be doing what they were supposed to do, and I had no problem setting it to get optimal signal-to-noise. The Overload LED was quite bright and gave me sufficient warning of possible problems.

I was skeptical about the Tubessence. Could anything so inexpensive sound good? I had to find out.

"I was also impressed with how the 107 performed with a low-gain RCA 77-DX ribbon microphone," Sanchez continues. "Even with the preamp cranked four-fifths open, it was quiet. Then I used it on a Foley stage at Talking Pictures in North Hollywood. I recorded rustling clothes with the preamp wide open using both a Schoeps and a Neumann KM184. I was able to get plenty of level with negligible preamp noise, and it did not break up when my Foley artist threw that pile of metal and glass down on the cement floor. I also recorded Indian tom-toms and banjo for the upcoming Walter Hill film *Wild Bill* and was very happy with the result: good transient response and plenty of headroom."

So, if you are looking for a mic preamp and don't have a lot of money to spend, then this is the ticket. Even if you do have a lot of money, you will most likely find a space in your rack for the 107, just as I did.

Aphex Systems Inc.,11068 Randall St., Sun Valley, CA 91352; (818) 767-2929; Fax: (818) 767-2641. ■

Engineer/producer/acoustician Bob Hodas has recently been in L.A. tuning studios with his SIM® System II.

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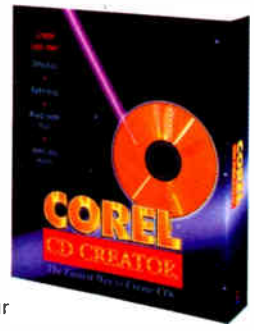

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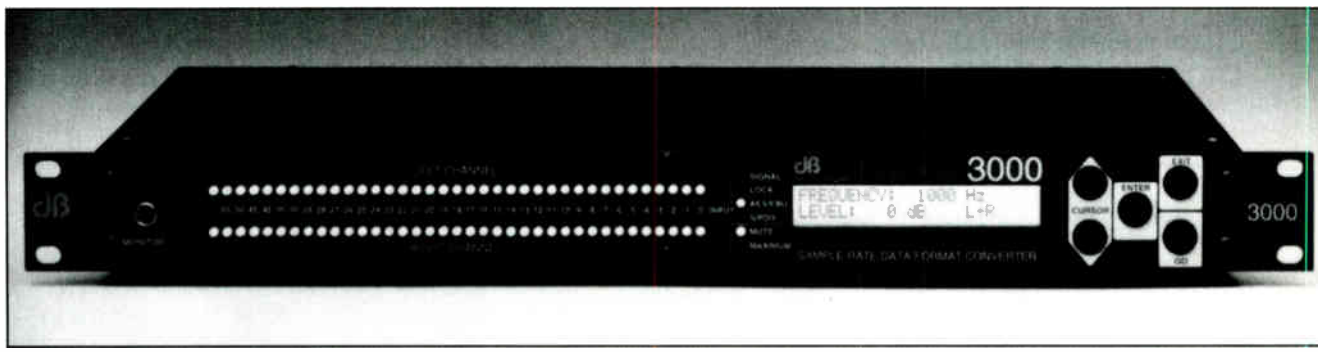
by George Petersen

dB TECHNOLOGIES dB3000

DIGITAL OPTIMIZER

Audio technology is full of ironies. Engineers spend countless hours trying to create the best possible product, and then somedody wants to release it on 8-bit CD-ROM, mono television, AM radio or some other low-fi format. And in cases of digital recording or mixing, engineers submit to a sampling rate of 44.1 kHz, even though better-sounding sample rates (i.e., 48 kHz) are available. In short, after making a product sound as good as it can be, you may later wind up doing bit-reduction truncation or downward sample conversions to squeeze it into something it was never intended to be.



In the past, such processes have had some seriously unpleasant results, particularly in the area of bit-rate reduction. Many software-based workstations include onboard sample rate conversion and bit-rate reduction schemes, and the majority of these are truly awful. The few that are passable—some even good—provide the user with limited options or tweakable parameters.

Of course, it's not real time. Unfortunately, software/computer-based solutions are inherently non-real-time. Want to hear a change? Load in your new parameters, click the mouse button and watch the cute little whirling clock hands/tapping fingers/hourglass sands animation on screen and wait while the computer does some heavy-duty number crunching. You wait. And wait. And wait some more. If you're processing a large file (100 MB or more), you may as well just break for lunch. It's a far cry from the good ol' analog days of spin-the-knob and hear the change.

The severe audio restrictions due to multimedia formats present a formidable challenge to the recording engineer. If you're in the studio and mixing for eventual release on a multimedia platform, you have numerous options—such as compression to reduce dynamic range or equalization to gently roll off those nasty higher-than-Nyquist frequencies—before the signal leaves the console. However, as the bit-rate reduction or sample rate conversion takes place in the computer—in non-real time—any attempts to experiment with pre-DAT compression or EQ become more difficult, especially when a quick A/B comparison is all that you need to determine the proper cor-

rective response.

Finally, somebody did something about this dilemma. Designed by Bruce Hemingway and Dan Lavry of Seattle-based dB Technologies, the dB3000 Digital Optimizer is a real-time, digital-domain processor that handles sample rate conversion and bit-reduction processing, along with a few other tricks, such as: reference metering of digital signals, digital format conversions (AES to S/PDIF and vice versa), digital sine wave generation (variable from 20 to 20k Hz in 1Hz steps), SCMS removal, emphasis switching, digital black generator, jitter removal, distortion metering (THD +N) and signal analysis to display the type, sampling frequency and bit resolution of an incoming signal. The unit retails for $4,350, which may seem steep, but as I've explained, the dB3000 offers a lot in return.

The dB3000 is housed in a single-rackspace chassis. The back panel has an AES/EBU digital input and two AES/EBU outputs, all on XLRs, along with S/PDIF I/O on RCA jacks. All of the digital I/O ports are transformer-isolated, and the outputs are active at all times, which is useful in studio recording, duplication or broadcast situations where several decks are fed simultaneously from a single digital source.

There is no AC power switch, but the power supply is internal, with a standard IEC removable power cable. The front panel has a headphone monitoring jack; two high-resolution, 37-LED ladder displays to indicate input level; six status LEDs that indicate signal presence, lock, AES/EBU or S/PDIF input, mute or maximum (peak); two-line (by 24-character) alphanumeric, backlit LCD; and five buttons for entering or changing parameters. Ten RAM (user-defined) and 15 ROM (factory) memory locations are provided for quick access to stored settings.

The spartan appearance of the front panel controls belie the power and complexity of the unit. As an example, the first 30 LEDs on the metering are calibrated in 1dB steps (-5dB steps below the -30dB mark). Normally, this offers a 0dB to -55dB scale, although users may set the scale to read other ranges, such as -90 dB to -145 dB, which is ideal for examining what's happening to signals that are down in the dither. A "fine" mode changes the scale around a user-determined reference point to read in 0.2dB increments, and the brightness of the meter and status LEDs can be set to suit individual tastes.

This level of control is appreciated, but as with nearly all dB3000 functions, it requires multiple button pushes to page through various pages on its tiny two-line LCD to get where you want to be. There's no physical volume control for the headphone output: Selecting the low, medium or high volume setting is done via front panel keys. Such operations can get involved, even with simple routines such as increasing the volume from low to high. To do this from the main screen page requires pressing the cursor-up key three times to select the monitoring page, hitting the enter key four times to get the cursor into position, pushing the cursor-up key two more times to increase the volume, pressing the "go" key to execute the change and then pressing the exit key to return to the main menu.

This lengthy procedure makes the process seem more complicated than it actually is; however, this is one trade-off when dealing with a small LCD window and a minimalist design. A more sizable LCD and a few dedicated keys (or user-definable softkeys) would be nice, even if it required going with a two-rackspace chassis.

One minor quirk involves the labeling of the five control buttons. The up/down keys marked "cursor" don't move the cursor at all: They are used to select pages and increase parameter values, and should have been should be indicated as "data +/-" or something similar. The key marked "enter" moves the cursor, and the "go" key (which in my mind implies "go to" or "go away from") is used when you want to execute the changes from the edited screen. To be fair, this is a fairly minor point, as ten minutes after using the dB3000, I was completely comfortable with its operations and could tweak parameters readily.

The dB3000 offers an abundance of parameters to tweak. Rather than merely clicking a mouse to select the bit-reduction process, the unit offers a choice of four noise-shaping curves, with (or without) two forms of dither (highpass or flat). Noise

It May Come As A Shock To You...

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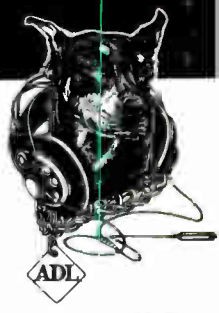

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shaping without dither is an undesirable combination, so whenever the user turns off the dither, the unit automatically defeats the noise-shaping algorithms. In multimedia processing mode, the unit offers four different noise-shaping curves that are tailored to lower-bandwidth applications and to further improve performance. dB Technologies includes the Decimator, a software utility program used when storing multimedia output from the dB3000 as AIFF files on a Macintosh equipped with a digital I/O card.

The dB3000 provides bit reduction on signals with up to 24-bit resolution. Whether handling 20- to 16-bit reduction or 16- to 8-bit processing of multimedia files, I was not surprised to discover that there was no single dither/noise-shaping combination ideal for all styles of music and/or audio files. But as the dB3000 operates in real time, users can try different combinations and quickly find the setting that is best suited for any program material.

dB Technologies refers to its combination of noise shaping and dither as Acoustic Bit Correction™. It works, and it works well. The sonic difference between files processed through the dB3000 and software-based, bit and sample converters built into workstations was immediate and obvious, with dB Technologies winning every time. The unit's sample rate down-conversion is about as good as it gets and was virtually undetectable when handling routine 48kHz-to-44.1kHz chores. And the dB3000's excellent bit reduction on 20-bit files taken to 16-bit, compared with standard truncation (straight wire 20- to 16-bit transfers) was no contest, sort of like A/B'ing between a mint Neumann U47 and a carbon telephone mic.

Clearly, at $4,350, the dB3000 doesn't qualify as an inexpensive device. However, it offers a combination of features, audio performance and real-time operation convenience that cannot be found in any other unit on the market. Its faults are few and don't affect audio performance, but for anyone who's serious about digital audio, the dB3000 is in a class unto itself.

dB Technologies, distributed by Audio Intervisual Design, 1032 N. Sycamore, Los Angeles, CA 90038; (213) 845-1155; fax: (213) 845-1170. ■

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—FROM PAGE 22, THIS ISN'T WHAT I EXPECTED

out instantly, and you are up and running. Want four monitors on your Mac for one giant wrap-around desktop screen? No problem, just throw in three cards, hook one of the monitors to the onboard default video, and the Mac does the rest. You can move and offset each monitor, change the resolution and color depth of each if you want, use different-size monitors or even different brand graphics cards—it makes no difference, it works, and it's painless. But Nubus can't throw pixels at the screen as fast as PCI can. So...

Awhile ago, PowerPC Macs came out with 601 engines and, more recently, PCI buses. Nice, but no first place in the Grand Prix of PCs. But now the 9500 is out—132 MHz *604s* with a new, cleaner PCI, and out from under the shadow of Big Blue comes a nice powerful Apple; the first-place winner, in fact. Daystar even has a clone that uses the exact same motherboard but will ship with up to *four* high-speed 604s on the processor daughterboard. These machines kill *any* Windows platform in existence.

Isn't life wonderful? Two platforms, each now made by several manufacturers, violently battling for first place in the Speedwars, each raising the ante a little every month, even as they converge toward a common platform in the near future! And we are the winners! We get speed improvements and price reductions at a rate that no one ever expected, a rate that would never have existed if this platform feud hadn't developed. One man's misery certainly seems to be another's joy in this case. Think of what these companies go through to try to win share. Literally, the day the first Pentium was shipped, the design for the new smaller, faster, cooler one was going into proto. As soon as the PPC guys saw how well the Pentiums really worked (1.9903281948 notwithstanding), they put even more bucks into pushing the 604 out the door, and next, the Totally Awesome Fersher, the Best 620—the engine from Hell, the engine that will make us all feel that light itself is kinda slow. Anyway, better them than me. Let them build them, and I will certainly come buy them.

But because there are no really powerful modern audio DSP cards for the Mac at this time, I personally own a Pentium for Prisma Music and those select violent real-time action games, but Macs for all other work, including graphics and video. I do use a Digidesign Audiomedia II card for some 2-track audio work, and a few new products that I have just developed for the Mac also use that card. It's an old card, but it is a reasonably painless way to get a 56 online, and apparently, there are some 20,000 or more Digidesign cards out there somewhere.

So what's going to happen as both platforms develop a large installed user base of PCI machines? Shared hardware? Cross-platform OS swapping? Windows programs running (well) on Macs? Mac stuff living in a Windows window? Dogs and cats lying together? Pins 2 *and* 3 hot? I think we will see all of this. And if we don't, I will write that *I* did, just so I look good. ■

Stephen St.Croix remembers NASA spacecraft flying around on four HP 41 handheld calculators but now owns a Mac that can do three-dimensional photo-realistic color fly-bys of the surface of Mars from a few flat photos. He plays pinball on it.

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—FROM PAGE 63, MUSIC & MULTIMEDIA

Book. Panelists Crossley and Waldrep both have a direct interest in this question: Both men's companies prepare and market enhanced CDs using a pregap approach. As a label owner, Waldrep's position is pragmatic: He is using pregap because it is available now; if multisession becomes the standard, he is prepared to switch to that instead.

For Crossley, the stakes are somewhat higher. His company developed and markets ActiveAudio, one brand of track-zero CD, which has been used for releases including a gf4 CD single on BMG Australia. Crossley advocates track zero not only because it is do-able today but because, he claims, tests show that putting the multimedia data at the start (center) of the disc makes for faster playback performance than putting it after the music at the outer edge of the disc. Not everyone believes that this makes much real difference in performance, however. Pakman, for instance, said that the difference "has yet to be definitively established and would become less and less important anyway as CD-ROM drives become faster and faster."

Performance aside, Crossley took issue with major label concerns that track zero provides less protection than multisession against consumers accidentally playing data through their audio systems. "Most modern CD-Audio players won't let you cue back past track 1," he said. "Of those that do, our tests have shown that about 85 percent will mute automatically if the head is positioned in the data. We have added to that protection with a two-minute buffer zone between where the data stops and the music starts, and we put warning messages into that buffer zone advising the user not to cue back any further. To date, we have had no problems with this approach. We sold roughly 50,000 copies of the gf4 disc, with zero returns based on problems with playback in an audio player and no audio playback problems reported to our technical help line."

Perhaps the most revealing comments on the subject came from Ted Cohen, who noted that he was "up here representing a Philips company...For the Cranberries disc we are working on right now, we use a pregap solution. We have had very good luck with it. We started working with CD-I Ready, which was the first pregap solution, in 1991, and we basically have had no problems. We run a very strong tech support service, and the complaint frequency is basically nil. So while we were waiting for the multisession standard to settle in from a different area of the company, we found that the results we were getting from the pregap approach were so strong that we decided just to stay on that path with this particular title, though that is not to say that down the road we wouldn't try out multisession."

The Cranberries title is not the only pregap disc out of Philips Media; the company also distributes two such titles from Memphis' Ardent Records. So should the music industry do as Philips says (multisession) or as it does (pregap)? If the idea is to access the maximum number of CD-ROM drives out there, CD-I Ready may be an idea whose time has finally come (even if CD-I itself continues to languish).

WHERE'S THE BUZZ?

There was much more to M&M '95 than enhanced CD, of course. Other panels (17 total) covered diverse subjects ranging from getting "unplugged" (music on the Internet) to tools for multimedia sound design. (Tapes of the seminars are available by calling 800/301-2341.) Some 25 exhibitors set up shop to sell their products and services to the 1,000 or so attendees. And an evening of premieres showed what is in the pipeline as far as new music-related multimedia titles, including *Control*, a CD-ROM magazine for pro audio heads, and works in progress from the Beastie Boys and Sting. My vote for the most fun title of the evening goes to *Virtual Guitar* from Ahead Inc., a goofy effort that lets you "play" guitar along with Aerosmith (using a pick plugged into the mouse port), working your way up (if you cut it) from a small nightclub to a stadium gig.

Overall, the event was well organized and executed (kudos to executive director Kent Simmons, committee chair David Schwartz and scores of other unsung heros) but lacking some of the raw energy (at times a bit too raw) of last year's debut. In part, that may have been due to the venue, with a main theater that was too large (thus making many of the day's theater forums feel underattended) and seminar rooms that were too small and crowded. (Simmons expects to book a different location next year.) Also, the one-day event was held on a Tuesday, which probably limited attendance. (Simmons is looking into a two-day event next year with one weekend day.)

The generally restrained vibe may also have been a reflection of where things are currently at with multimedia. Last year, with multimedia hype reaching a crescendo in mainstream media, there was excitement in the air—a feeling of being in on the ground floor and seeing the pieces fall into place. This year, it felt to me as if the giddy high had worn off, replaced by the realization (unintentionally demonstrated by a number of titles in the premieres) that it takes more than tools and bandwidth to bring all the elements together into interesting and entertaining music multimedia. ■

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by Mark Frink

SOUNDCHECK

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WIRELESS MICROPHONES—NEW TECHNOLOGY AND PRODUCTS

Competition between manufacturers has ensured the constant evolution of wireless microphones at competitive prices, improving audio and transmission quality, flexibility and stability. True-diversity designs that eliminate drop-outs in correctly operated systems are almost a standard feature. Although many manufacturers assert that their new systems are indistinguishable from hard-wired microphones, few claim 120dB dynamic range or full, 20 to 20k Hz frequency response. No wireless system can match the performance of "hard-wired," but many high-end products come close enough to meet the needs of most pop singers, and the freedom and convenience make them extremely attractive. New products are being introduced by every manufacturer this year.

Many are already familiar with the details of wireless transmission, but a basic understanding might benefit someone considering investing in this technology. Just like your television and FM radio stations, wireless microphones transmit audio signals using frequency modulation (FM). At the transmitter, the audio signal is used to modulate the frequency of a broadcast "carrier" signal, operating at millions of cycles per second (MHz). This carrier signal is picked up at the receiver and then demodulated back into an audio signal. Also, just like with TV and radio, signal reception can be interfered with by "shadowing," multipath reflections and intermodulation from other nearby frequency transmissions.

Because of the limits of FM technology, wireless microphone systems use a compression and expansion (companding) scheme, along with a pre-emphasis and de-emphasis process, to maximize both the signal-to-noise ratio and the dynamic range. The transmitter boosts high frequencies above 2 or 3 kHz, and then the signal is

—CONTINUED ON PAGE 186

Shure SM58

Sony WRT-867A

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TOUR PROFILE

R.E.M.

BACK FROM THE BRINK

by Rudy Trubitt

When R.E.M. announced their first tour in five years, the fan excitement came as no surprise. But when drummer Bill Berry's sudden illness suspended the tour before reaching U.S. shores, excitement turned to anxiety. The band's quick announcement that no replacement drummer would be used cast the tour in doubt almost before it began. Much to everyone's relief, Berry bounced back with surprising speed, and R.E.M.'s "Monster" tour arrived in the states last May, beginning with a few days' rehearsal in Oakland and then three nights at the Shoreline Amphitheater in Mountain View, Calif.

At the helm of the Clair Bros. P.A. is Joe O'Herlihy, U2's house engineer practically since the band's inception (O'Herlihy was also audio design consultant for Woodstock '95). Two more U2 "Zoo TV" tour alumni are on hand: Vish Wadi is handling monitor duties, and Clair's Jo Ravich is the system engineer. The tour is carrying a standard Clair arena house system with 72 S4 Series II cabinets, 12 P-4s center fills, 12 sub-bass boxes and an ATI Paragon console. *Mix* caught up with O'Herlihy and Wadi after their second U.S. date.

R.E.M.'s Michael Stipe demonstrates his famous 58 mic-cupping technique.

Mix: How did this gig come about for you?

Joe O'Herlihy: Several different members of R.E.M. showed up a lot on the Zoo TV tour—Peter Buck was a regular visitor. And, Pat McCarthy was the engineer on *Monster*, and he worked on *The Joshua Tree* album. R.E.M. has played shows with U2 through the years, and the bands are very friendly.

House engineer Joe O'Herlihy and independent monitor engineer Vish Wadi

R.E.M. came to Dublin in September of '94 to launch the *Monster* album. U2 was in our "sabbatical mode," a year-and-a-half into a two-year break. The band's manager rang me, and I said I'd love to do it. I ended up in Atlanta in October for rehearsals, and the tour started in Perth, Australia, on the 5th of January. Australia was an education, the first time the band was onstage in five years. A lot of new lessons to be learned, and old ones to be re-taught. It was good, because whenever you're starting a tour, you have to find your feet and experiment.

We were having fantastic shows in Europe, sold out everywhere. In Milan, every single person was on their feet singing the words of every song, a spine-chilling experience. It was

PHOTOS: STEVE JENNINGS

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about two-and-a-half weeks into [the European leg] when Bill was taken ill onstage in Lusanne, Switzerland. It knocked us all off our high horses, as they say.

I'm amazed that we're here at all, so soon. He's one of the lucky ones. My wife, Marion, lost her best friend about three years ago to a double-aneurysm. We had ten days in the hospital but she didn't make it, and this rekindled all of that for me. You just hope and pray that it all works out, and thank God it did. So, we're back with a couple of days' rehearsal in Oakland and a couple of shows under our belt, and it's looking pretty good.

Mix: Certain songs must be challenging from a musical standpoint—they've got two or three loud guitars roaring away nonstop (two additional players alternating between keys and guitar round out the band's live arrangements).

O'Herlihy: Well, the record is very much a get-up-and-get-at-'em guitar-oriented sound. It's challenging to get the vocal out above all of that. Michael [Stipe] as a vocalist in particular, because of the creative way he uses the microphone and stand! It's something that you have to dial in each night. I tend to try and keep it as close as I possibly can to what the record is all about, without losing the adrenaline of the live performance—that's the essential commodity.

Mix: The first three or four tunes were very thick, almost relentless, but when they got to "Man on the Moon," it opened up.

O'Herlihy: It's nice that you say that they were quite different, because that's the approach. It's show dynamics; at the start you're getting pounded by guitars, then we end up with more subtle acoustic things, where Peter [Buck] has the mandolin and Scott McCaughey plays the acoustic. There's a lot of blend.

QUICKTIPS

The '90s have been called the "communication decade." Communication during large, multi-act festivals is the key to success:

• The first line of communication is the intercom. Having headsets onstage at both the monitor console and the stagebox can save time during the heat of a midshow crisis. Since house mixers usually have headphones around their head, try to have a telephone-style handset for the FOH mix position, besides the headset.

• An effective way to get the house person's attention without using a buzzer or a police beacon is to modify the house console so that an intercom line can be plugged into it, and, when the call signal is flashed, a relay shuts off the console gooseneck lights and/or the meter lights momentarily. This mod takes an hour, an XLR connector and a relay.

• International hand signals that work over distances of hundreds of feet:

a) Circular hand motion: "play something/anything on the CD player."

b) Hand motion across throat: "turn it off."

c) Clapping hands over ears: "put on the headset so we can have a real conversation."

• Before each show, decide that the talkback to stage mic input at the monitor console (often abbreviated "TB" on the input strip) will be called the "ten bucks" mic, (as in "if you shut this off, you owe me ten bucks"). Dedicate either a mic with a switch on it, or a Crown Differoid™ mic. You can special-order from Shure an "SM58S," which has a switch, and it can then also be split to the FOH console and used for both "voicing up the mains" and making announcements.

• There's usually a need for an onstage announce mic for radio station personalities, etc., at festivals, and these people will come at you at the most inconvenient times wanting to talk to the audience. Put a bright yellow foam windscreen on this so it is easily identifiable and place it downstage, to the side. This is the other "ten bucks" mic, to be left on during each stage change.

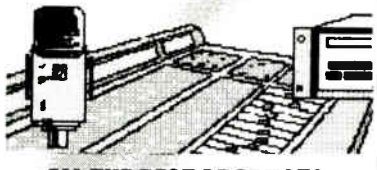
• Small powered speakers with a mic input (TOA, Fostex, Anchor, etc.), placed at each console and connected through spare snake lines to switched mics at the opposite console can be much easier than intercom headsets.

• During line checks, the house engineer can always talk to the "mic-scratcher" over the talkback mic, and hear what's being said back by cueing up the nearest mic.

• During stage changes, the "mic-scratcher" can re-initiate this line of communication by clapping hands over ears and pointing to a nearby mic. If the house mixer is busy (doing what housefolks do when not watching the stage), you can get their attention by either talking into the mic-with-switch connected to their powered speaker, or by going to the announce mic (the one with the yellow foam windscreen) and "thumping" it once with your hand (and if it's turned off, collect your ten bucks later).

• Posting multiple copies of the day's performance times backstage, used in conjunction with a very large "festival clock" hung in view of the band at the monitor console, is a very effective communication device for keeping the festival running on time.

• Always reinforce this schedule by pointing at the wrist and then holding up one finger ("one more song") at the end of a song with five minutes to go in the set. And yes, this is the stage manager's job, but he/she is backstage making sure the next band is ready, and that's why they hired your sound company anyway.■



It's like a sketch pad—you color it as best you can to fill it out.

Mix: Your effects-usage seemed pretty restrained.

O'Herlihy: I try to keep it as natural as I can, as subtle a treatment as possible. A few repeats, the voice is touched here and there. It's no big deal, just the right amount to carry it through. We do have all the usual stuff there, the 480, the H3000, a couple of SPX990s, but no bizarre gizmotrons, nothing as funky as "Zoo TV" by any means. It's the same technology, but used in a subtle way, no distorted vocals or anything like that. All the dynamics are onboard the [Paragon] console. The only things outboard are the effects and a couple DAT machines for show tapes.

Mix: It doesn't seem like a very rigid set—players are trading instruments all over the place.

O'Herlihy: It's a real communal approach. It's quite exceptional that someone could just pick up an instrument and start playing, but it works. There are 46 songs, and it could be any of those on a given night. You get a set list, but Michael might hear something from the audience, and they'll play it. It happened tonight with "Wichita Lineman," which wasn't on the set.

But that spontaneity is great. We don't have any sequencers or video sync. [Visuals are provided by free-running film projectors.] There's no technology dictating the pace—like the [tempo-synchronized] guitar tremolo effect on "What's the Frequency, Kenneth?" Instead of having a click track like most bands would do, they play to the tempo of the tremolo on the guitar amplifier.

It's a bit of a breath of fresh air from having my head twisted around backward and upside down from all the video on "Zoo TV," having to be at *x* place at *y* time so *z* can happen. It takes me back to my old Rory Gallagher days where you had guitar, bass, drums, a Hammond organ and off you went.

Mix: How about microphones? Michael really throws his 58 around.

O'Herlihy: It keeps bouncing back. We rotate through a half dozen 58s on a regular basis. We've tried everything else, and we're back to the old reliable. All the Vox guitar amps are on 57s, a 421 and Countryman DIs on the bass. On the Hammond, I've got 421s and a Beyer M88 on the Leslie low. The Wurlitzer and Roland pianos are DI'd. On the drum kit, we've got an M88 on the kick, 56s on the snare top and bottom, AKG 460 on the hi-hats, overhead left/right and ride cymbal. We've got the little egg-shaped EVs on toms with Latin Percussion clamps, so there aren't a lot of stands around.

Mix: How's Sulan Studios, your place in Ireland doing?

O'Herlihy: Ah—you remembered! It's going very well. We just finished an artist called Paul Brady—Tina Turner recorded a couple of his songs recently. We have a local Irish group in for six weeks called the Saw Doctors, they're a little like The Waterboys.

Mix: But it'll be awhile before you're back there—this tour is scheduled through the end of November?

O'Herlihy: Yes, it's going to be one hell of a year. They're an incredible bunch of people to be with. They go up onstage and have a really good time, and I think that transfers to the audience; you can see the reaction there. It's great to be able to bounce back from total catastrophe and get up and going again. It's a good feeling.

THE VIEW FROM THE STAGE

Mix: Things are pretty straightforward out front, is that the approach you're taking onstage?

Vish Wadi: They're a really musical band. Everything is balanced on the stage, and I balance the rest with [the bleed from] the house. I don't believe in blasting wedges onstage, which is a problem for the FOH. And, the low-frequency stuff onstage—bass and kick—is compressed to keep a very tight

low end. The real bottom comes from Joe and the house. Otherwise, we're just going to fight each other.

Mix: What console are you using?

Wadi: A Yamaha PM4000 monitor board, running 22 mixes.

Mix: What are you doing for each bandmember?

Wadi: Peter [Buck] is a great musician. He doesn't use any guitars in the monitors, because of the time-delays [from the backline]. He hears guitars from behind him, and we balance the drums in his wedges. So, if he wants a little more timing information, he can move forward to his wedges, or step back if he wants to hear more guitar. He believes in hearing things live from where they are supposed to originate from on the stage.

For drummer Bill Berry, I've got two Clair 12AM wedges on one mix, and two ML-18s and two R-2s for the drums. He gets a basic mix of drums and bass with a little guitar and keyboards, since he's behind the backline. A lot of timing things come from guitars, so for some songs we work to make sure that stuff is there in his mix.

We are using some fills for stage right, where [bassist] Mike Mills moves back and forth. When he's all the way down stage, he gets wedges, and when he moves back toward the keyboards, I have a Clair R-4 covering that area. Mills has one Radio Station ear monitor, which he wears on his left ear, in the direction of the rest of the band, since I can't put a fill out there.

Mix: I suppose one ear monitor *and* wedges or fills might be the best of both worlds for a musician. How is it for you?

Wadi: It's nice for them because they don't get isolated [from the stage ambience], but it's really hard for me. You don't know where they are, especially at a venue like Shoreline where I'm isolated from the main P.A. They're hearing more of the P.A. In an indoor situation, using one ear is okay for me because I can hear everything. If they're not using ear monitors at all, then I can use my cue wedge to something similar to what they're going to hear. But wearing one, it's really hard because I have no reference.

Mix: How about Michael Stipe's vocal mix?

Wadi: He has one ear monitor, too, and sometimes he will put on both earpieces, depending on what he's hearing around him. Especially on "Tongue," he'll normally do that, but on real uptempo stuff he doesn't wear any at all. His voice is there everywhere, pretty loud. [Stipe used four 12AMs at his primary down-stage position.]

His voice is all over the stage because everybody wants to hear it pretty loud. But it blends—the way he likes to hear himself is a blend with the stage, not too much of himself. He only wants to hear his voice and reverb in his mixes, but not to overpower [the music]. He likes it balanced to what's going on onstage.

Mix: I'm sure that makes things a little easier.
Wadi: Yeah, it does! They're a great band—I enjoy working with them. ■

David (Rudy) Trubitt often amuses friends and family with his cover of the Talking Heads' "Psycho Killer" sung in the voice of Marge Simpson.

—FROM PAGE 180, WIRELESS MICS

compressed by about 2:1 before modulating the signal onto the carrier frequency. The receiver demodulates the carrier and then uses complementary expanding and high-frequency de-emphasis to try to restore the signal to its original form. A large amount of modulation of the carrier frequency, called "deviation," offers better high-frequency response and more dynamic range, but this also puts limits on how close other transmitters can be placed on nearby carrier frequencies.

Television channels 2 through 6 cover the broadcast spectrum from 54 to 88 MHz, and just above that are commercial FM radio stations (88 to 108 MHz), which is why you can sometimes get the audio for TV channel 6 at the low end of your FM dial. TV channels 7 through 13 (174 to 216 MHz) transmit within the frequency spectrum covered by contemporary VHF wireless systems (160 to 250 MHz). There are areas below channel 7 (160 to 170 MHz) and above channel 13 (220 to 250 MHz), which are free of interference by regular TV transmissions. These allow fixed-frequency VHF systems to travel from city to city without having to worry about the various television transmissions they will run into, but there are a limited number of these VHF "traveling frequencies."

Several years ago VHF wireless products proliferated with the introduction of low-cost systems. Thousands of VHF wireless systems have been sold and, even though they are low-power devices, the chance of meeting another user on the same frequency is greater every day. Many readers have heard of multi-artist concerts where one guitar player's wireless has interfered with another's or with one of the sound company's handheld units, an increasingly common occurrence. Besides interference from other users and TV stations, VHF systems are also susceptible to emissions from digital devices, such as portable computers or CD players, and other machines. All of this said, a fixed-frequency

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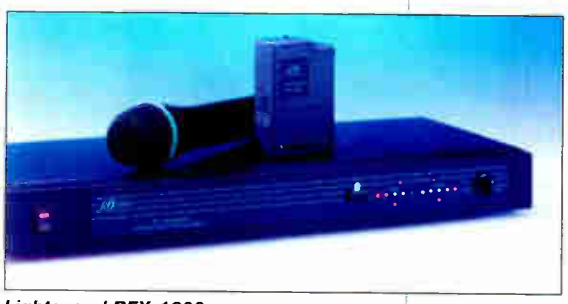
VHF system, which does not tour or is used in a predictable, stable RF environment, can be a cost-effective solution.

TV channels 14 through 69 (470 to 806 MHz) operate on much higher frequencies and fall within the range of carrier frequencies of UHF wireless systems (450 to 960 MHz). There are fewer of these television stations, and they are generally lower in power and operate on the outskirts of major metropolitan areas. Most UHF stations operate below TV channel 40 (626 MHz), but in a few geographic areas there are more stations operating above. There are very few TV stations operating above channel 63 (770 MHz), hence the popularity of UHF systems that operate above that frequency. This, of course, means more systems are now being sold that operate up here. The last UHF TV assignment, channel 69, ends at 806 MHz, and the newest wireless systems are above 900 MHz.



Lightspeed RFX-1600

Fixed-frequency wireless systems rely on a crystal-based design to generate their carrier frequencies. Manufacturers are now offering frequency-agile systems, using synthesized, phase-locked-loop (PLL) designs. These "synthesized" systems use a single reference crystal to create a choice of evenly spaced carrier frequencies within a range, allowing the user to change the specific carrier frequency easily. The actual range of this agility is narrow because adjacent frequencies still need to be filtered out, and the unit must operate within the window of the receiver's filter frequencies. Frequency selection for multiple units needs to be coordinated. Though many dozens of frequencies may be available on particular wireless products, simultaneous use of several of these systems will be limited to fewer than a dozen within a frequency group.

In the past, a touring musical act used fewer than a half-dozen wireless microphones or guitars. Increasing use of this technology (along with the introduction and growing popularity of multi-channel, wireless, in-ear monitoring systems) means that use of a dozen or more wireless channels is more common. The coordination of different frequencies being used becomes logarithmically more complex with each additional frequency because of the way they can affect each other. When the need for touring coordination against regional TV stations and other broadcasters is added to this level of complexity, wireless manufacturers become a resource for more than just well-crafted hardware. Most companies provide frequency-coordination services that can be invaluable when using these products with a touring act.

Nady 950GS

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lar products suit their needs. Whenever possible, the best decisions can be made by comparing and listening to the entire system in the environment in which it will be used.

Sennheiser's new EM 2004 UHF receiver ($4,750) is 9.5 inches wide, and two of these can be mounted in a two-space, rackmount frame. It operates on one of 16 user-selectable frequencies within a fixed group of carrier frequencies 24 MHz wide, which covers a range corresponding to four UHF TV stations. The popular SKM 5000 UHF handheld transmitter ($3,135) is supplied with a super-cardioid condenser. Other field-replaceable, screw-on capsules include three condensers ranging from cardioid to omni and a dynamic super-cardioid. Hard-wired versions of these capsules are expected later this year. The SKM 5000 has a removable battery compartment that holds two AA batteries for up to five hours of operation and has LEDs to indicate remaining battery time. An optional rechargeable battery also can be used, which lasts three-and-a-half hours. A five-position pad is located under the capsule, adjusting for SPL in 10dB increments from 100 to 150 dB. There is also a switch for a 6dB-per-octave roll-off below 500 Hz that is not recommended for musical applications. This mic has been seen on numerous television shows, and a system was recently purchased by Stevie Wonder.

Another high-end system is the Sony UHF Synthesized, previously available with the WRT-830 handheld transmitter ($1,275), which has an electret condenser capsule. Many users customized it, retrofitting it with their own choice of dynamic capsule. In response to demand for a Sony handheld transmitter with a dynamic capsule for performing musical artists, they introduced the new WRT-867A

UHF hand-held transmitter ($1,710). It has a smaller body than the WRT-830 and a much shorter antenna. The channel-select switches and LCD channel indicator are now mounted inside the housing to clean up its look. It uses a single AA battery instead of two, providing up to four hours of continuous use. Ninety-four frequencies are selectable across the group corresponding to TV channels 68 and 69 (794 to 806 MHz), allowing up to 11 of these transmitters to be used simultaneously. It is compatible with previous Sony WRR-820A single channel ($1,520) or WRR-840A dual tuners ($2,270). The dynamic capsule is the same element found in the new Sony F-780 hard-wired mic. It has a rising response starting at 1 kHz and a presence peak around 7 kHz. These were used by the backup singers on the Rolling Stones tour. Bon Jovi's monitor engineer Rocky Holman recently acquired several and refitted them with Audix OM-7 capsules.

AKG has released the single-channel SR 800 UHF receiver ($2,959) for use with all of its WMS 900 transmitters. It is switchable to any one of 12 sub-channels of one fixed TV channel, providing up to six channels for simultaneous use (470 to 890 MHz and 944 to 952 MHz). The TM-900 handheld transmitter with a C-535 capsule is $1,649, and transmitters with C-5900 or C-1000 capsules are also available.

Lightspeed, a company of ex-Tektronix people in the Portland, Ore., area is relatively unknown to the touring sound market. This company has been focused on the contractor market, making wireless systems for industrial clients. They recently introduced the RFX frequency-agile, synthesized UHF system, listing from $1,540 to $1,815, depending on choice of mic element. The one-space, rackmount RFX-1600 receiver is available with 16 user-selectable frequencies in either the 800 to 806MHz or the 944 to 952MHz range. Up to five units can be operated simultaneously in each group, for a total of ten systems. The HM-900 handheld transmitter is available with a choice of Shure, EV or Audix mic elements. It runs on two AA batteries for up to 20 hours, with a low-battery-indicator LED on the bottom and an internal antenna. This system uses side tone squelch to stabilize it from outside RF interference, which also allows the transmitter to be quietly turned on and off without popping, saving the batteries.

Beyer's brand-new, frequency-agile U600 synthesized UHF receiver comes in a half-rack format. It can operate on 64 different frequencies, in four groups of 16. Its LCD can show all parameters, including channel, frequency, RF and audio, mute and battery level. Beyer's "Grip" tone-encoding locks the receiver exclusively to its associated transmitter, excluding any other signal or interference that does not have that channel's identification tone. A unique multi-user mode (MUM) allows the system to be configured for toggling between two different pre-allocated channels. Like the Beyer 700 Series UHF system, the S 600 handheld transmitter will be available with a variety of field-replaceable Beyer mic elements, including the TG-X 40, 60 and 80 neodymium dynamics, the M500 ribbon, and the MCE 81 condenser. System price is $4,995.

Nady, the industry's wireless pioneer, has introduced the 950GS UHF system ($3,018), which has 160 user-switchable channels in 16 groups of ten channels operating from 477 to 951 MHz. The HT-60 handheld transmitter is available from the factory with either the Shure SM58 or the EV NDYM 857 mic element installed, but it features a modular design that allows it to plug in to the inner top part of the microphone barrel. Nady can mount virtually any optional mic element, allowing the user to quickly change capsules in the field without soldering. All controls are recessed in the bottom of the handheld's barrel to prevent accidental switching during

operation. Nady also offers the ENG-12 transmitter module ($934), which simply has a female XLR plug that connects to any dynamic microphone. In other Nady news, the company is now offering two wireless in-ear monitoring systems with 2-channel rackmount receivers for $3,995, operating in either the VHF or UHF bands.

Electro-Voice's MS2500 VHF system features a true-diversity receiver and Vega's DNX™ companding circuitry, providing a signal-to-noise ratio said to be greater than 105 dB. The MS2500H system with rackmount receiver and handheld transmitter (using EV's N/DYM D757B mic element) is $750. The MS2500B-LM bodypack version is $715 with an EV LM20EX lavalier mic; other bodypack models are also available.

In addition to VHF, Samson provides a choice of fixed or frequency-agile UHF systems. The fixed-frequency UR-4 receiver ($1,400) operates on one of six channels in the 946 to 952 MHz bandwidth. The UHF Synth Series UR-5 single ($1,750) or UR-5D double receivers ($2,600) have 74 switchable frequencies operating from 794 to 806 MHz, with up to 11 available for simultaneous use. Together these two systems allow operation of up to 17 units simultaneously. A selection of capsules are available on the handheld transmitters: The UH-4 fixed-frequency handhelds range from $640 to $1,600; UH-5 handhelds start at $1,100.

Shure has upgraded its L Series VHF wireless with the LX Series. The LX4 receiver ($418) operates on one of 28 frequencies between 169 and 210 MHz. It comes in a half-rack format, allowing either one or two units to mount in a single rackspace. The LX2 handheld transmitter has a choice of an SM58 ($434) or an SM87 ($506) capsule, as well as Beta versions of both. They run up to 20 hours on a 9-volt alkaline battery or can use an 8.4-volt rechargeable NiCad battery; a 3-segment LED indicator displays battery status. In related news, Shure will "discontinue OEM sales of all dynamic and condenser elements for use in [other companies'] handheld wireless transmitters" at year-end, due to "growing confusion in the marketplace regarding use of the Shure name on competitive products."

The FMR-150 from Telex Communications is a frequency-agile system. Using three crystal-controlled RF oscillators with frequencies selected for maximum compatibility, the system reduces intermodulation distortion while allowing the user to select frequencies from anywhere in the operating range of the receiver, enabling maximum compatibility in multisystem installations. A handheld system is $950; lavalier systems are $915.

The SU-620BPM Series wireless UHF system from Vega comprises the R-622 diversity receiver, T-625 bodypack transmitter and an EV LM20EX lavalier mic. Retailing at $2,287, the system provides access to thousands of frequencies within the 524 to 806 MHz UHF band. A microphone-level LED allows convenient preamplifier gain adjust. The transmitter's miniature XLR connector accommodates a variety of lavalier condenser microphones.

The wireless microphone market is constantly changing. Do you remember when one company's wireless system included an FM tuner made for home stereo? Wireless technology, like many developments in pro audio, rides the coattails of developments in related fields, such as cellular phones. And as with personal computers, the best wireless system you can buy today will be a curiosity in ten years. So why buy now? The same reason you purchase any professional equipment. You need the best tools at a good price because your customers expect you to provide them. Then, you'll still be in business when the next round of technology arrives in a few years.■

Mark Frink is Mix's sound reinforcement editor.

New Sound Reinforcement Products

SHURE LX WIRELESS MICROPHONE SYSTEM

The new LX wireless VHF microphone system from Shure Brothers Inc. (Evanston, IL) improves upon its popular L Series. The half-rackspace LX4 system features MARCAD® (MAximum Ratio Combining Audio Diversity) circuitry, which maintains a constant vigil over received signals and combines them in optimal proportions. The newly redesigned bodypack and handheld transmitters feature a 3-segment battery gauge and an 18- to 20-hour battery life. Retail for the LX wireless systems begins at less than $700.

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RANE AC22B BALANCED CROSSOVER

Rane (Mukilteo, WA) is now shipping the AC22B, a fully active balanced version of its AC22 crossover. The AC22B features active balanced XLR inputs and outputs, while the AC22 will still be available with floating balanced ¼-inch TRS connectors. Both units feature Linkwitz-Riley 24dB/octave filters, adjustable alignment delays and band muting, in a single rackspace. Retail is $419.

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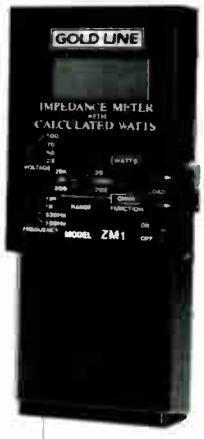

GOLDLINE ZM-1 IMPEDANCE METER

Goldline (West Redding, CT) introduces a portable, battery-operated impedance meter. The ZM-1 makes measurements on 25, 50, 70 or 100-volt line systems. Sine waves are generated at 100, 330, 1k or 10kHz to read impedance or calculated watts of the device or system being measured. Retail is $360.

Circle 215 on Reader Service Card

FURMAN PRO SERIES SIGNAL PROCESSORS

Furman Sound (Greenbrae, CA) unveils three new models of its PRO Series 20-amp/2400-watt power conditioners, providing comprehensive protection from damage from power-line-related problems. The PL-PRO power conditioner/light module ($399) has a microprocessor-controlled, self-checking AC voltmeter that reports voltage and flashes alerts for marginal conditions. The PM-PRO power conditioner/monitor ($359) is for applications where pull-out rack lights are needed. The PS-PRO power conditioner/sequencer ($469) can power up a rack of equipment in a three-step delayed sequence. A fourth model, the PowerPort ($329), is an AC power controller/conditioner with remote-activated, delayed switching and monitoring.

Circle 214 on Reader Service Card

SENNHEISER MICROPORT ON WINDOWS

Sennheiser (Old Lyme, CT) pioneered the computer-based monitoring of wireless microphones in 1986 using a Commodore Amiga. In its latest technological advancement, Sennheiser has rewritten the software to work under the Windows operating system. Via this software program, frequency, squelch level and channel module setup can be modified with a few keystrokes.

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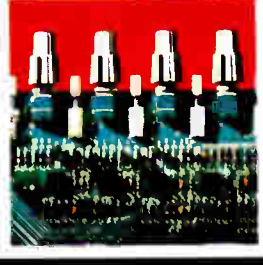

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COAST TO

L.A. GRAPEVINE

by Maureen Droney

Larrabee Studios is probably the only studio in Los Angeles whose real estate is so divided—there's Larrabee West, the original West Hollywood facility, and Larrabee North, approximately 10 miles away in Universal City. How to manage a two-for-one facility like this? Well, a chat with owner Kevin Mills gives us some insights.

The all-SSL Larrabee now has two rooms in each location. Mills, who started out as

—*CONTINUED ON PAGE 199*

PHOTO: CHRIS RADOK

Southern Culture on the Skids recorded their Geffen debut,* Dirt Track Date, *at Reflection Sound Studios in Charlotte, N.C. At the Neve V3 in Studio A were, from left, bassist Mary Huff, Geffen promotion director Ray Ferrell, drummer Dave Hartman, producer Mark Williams (seated), guitarist Rick Miller and Geffen A&R director Todd Sullivan.

Engineer Jay Lean and studio manager Paul Brooks in Skip Saylor Recording's Studio A

PHOTO: MAUREEN DRONEY

SESSIONS & STUDIO NEWS

by Adam Beyda

SOUTHEAST

Producers **Gerald Hall** and **Sideeq** recorded new artist **Nandi** for LaFace Records at Atlanta's **Doppler Studios** with engineer **Josh Butler**. MCA recording artist **Peebles** was also in at Doppler tracking vocals with producers **Tony Rich** and **Alex Richbourg** and engineer **Blake Eiseman**. **Alex Lowe** and **Mike Wilson** assisted on both sessions. Wilson also engineered on a **Tre Black** remix produced by **Mr. Mix** (a.k.a. David Hobbs) for the *Dangerous Minds* soundtrack, with **Al Layne** assisting...In Studio A at

—*CONTINUED ON PAGE 201*

COAST

SESSION SPOTLIGHT

by Jeff Forlenza

THE RADIATORS' "NEW DARK AGES"

New Orleans is a musical melting pot, and The Radiators' sound is an amalgam of all the styles that pass through the Crescent City—jazz, soul, R&B, gospel, funk, country—blended into their unique rock 'n' roll stage show. Over 15 years of touring, the band has gained legions of fans (known as "Fish Heads").

After three albums on Epic and four albums on their own independent label, Croaker Records, The Rads decided to go with Boulder, Colorado's What Are Records?, a three-year-old label started by Rob Gordon. Gordon, like many other Fish Heads, went to Tulane University in New Orleans, discovered The Rads and was hooked. After graduating, he worked at EMI for a while before starting his own label, W.A.R.?'s first act was The Samples. Five albums later, The Samples had generated a half-million dollars in sales from their W.A.R.? releases. Other W.A.R.? acts include rockers The Ugly Americans and Irish band Lir.

For their first studio album in four years, The Radiators chose to track and mix with engineer David Farrell at Ultrasonic Studios in New Orleans. Farrell sat behind Ultrasonic's Sony 652 console (with assistant engineer Steve Reynolds), and the band self-produced the project. When it came time to mix, Memphis maverick producer Jim Dickinson came in to put his golden touch on the songs.

—CONTINUED ON PAGE 202

PHOTO: REGGIE SCANLAN

The Radiators mixed their latest W.A.R.? Records release, New Dark Ages, at Ultrasonic Studios in New Orleans. From left, engineer David Farrell with Ed Volker and Dave Malone of The Radiators.

NY METRO REPORT

by Dan Daley

The Hudson River valley turned into a microcosmic studio ecosystem during the 1980s. While the region lost a few studios during that time (such as Minot in Westchester), it gained more than it lost. The studios in the counties surrounding New York function as both a studio suburbia to Manhattan as well as a closed system unto themselves. Studio owners and operators in the area cannot quite pinpoint the relationship

—CONTINUED ON PAGE 202

PHOTO: JOHN JACKSON

Studio and Control A at Sweetfish Recording in Argyle, N.Y., were recently redesigned by the Walters-Storyk Design Group. The control room was refitted with a Neve 8068 with GML automation, two Otari MTR-90 24-tracks, a Studer A80 2-track and three ADATs.

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HHB

—FROM PAGE 196, L.A. GRAPEVINE

a stock and commodities broker for Dean Witter, became involved in the original facility in 1985, when the owners, his parents, wanted to retire and sell the business. He opted to take over the studio, and by 1987, when this columnist first worked there as an engineer, Larrabee West had become a mecca for all sorts of projects, with mixer Taavi Mote ensconced in Studio B and other top engineers, like Tom Lord-Alge and Keith Cohen, regulars in A. There was that buzz of success about the place—so many Platinum albums were mixed there that it was impossible not to feel the vibe ingrained in the walls.

Larrabee North, the Valley annex on Lankershim in Universal City, opened in 1991 in the space that had previously been Oasis, Georgio Moroder's personal project studio. Mills spent six months rebuilding it and installing new consoles. Then, when North had been open only about four months, Michael Jackson's *Dangerous* album was booked—taking up the entire facility for almost a year. A studio owner's dream, right? Yes, but, Mills says, "We got a lot of press when we first opened, but then we kind of disappeared off the map because we were just Michael Jackson's studio!"

Meanwhile, more construction was under way. Just about the time the *Dangerous* album was finished at North in 1992, the West facility (a historic building that didn't meet the new earthquake regulations set by the city) had to be rebuilt. Mills was forced to completely redo it. So it was gutted and reconstructed from the inside out. He says, "Since I had to make structural changes, it only made sense to upgrade. I filled in the hollow floors with sand, built new speaker soffits, redid all the electrical. Previously, every time we upgraded, we had piggybacked onto what was already in place. This time we put in all new electrical to make it much cleaner. The power company put a new transformer on the pole outside, and we put in new air conditioning and pretty much all new audio wiring. We strengthened the division between Studios A and B, reinforcing the walls to eliminate leakage between the rooms. And we expanded the upstairs. We now have 3,000 square feet of lounges, carved out of space that was echo chambers and storage, covered with drywall from the 1930s. I looked up at it when it was gutted, and I thought, 'Look how beautiful this is!' So now we have open-beamed ceilings and skylights, with windows all around. Then we took the 56 E Series SSL and expanded it to 68 E. Now it may be my most popular room, because there is that whole group of people who just love the old E Series, and our board is one of the larger ones in existence.

"We're lucky with West because our location is great," he continues. Close to the Beverly Center, three blocks from Beverly Hills and near all the hotels—the Mondrian, the Sunset Marquis—it's all walking distance. Record companies don't have to rent cars! To a lot of people, it's attractive to be in a neighborhood like this."

Interestingly, Mills maintains no office at either location. "Basically," he says, "I drive back and forth between the two with cables and outboard gear and stuff. Seriously, though, I do like to walk through the rooms in the morning—I like to look and see what outboard people are using because it influences what I buy. Recently, it seems all my purchases have been tube compressors. For example, I noticed that Ken [Kessie] always rented a Neve 33609, and when I see people always renting something, I think, 'I should own that!' So I bought the 33609. Also a Tube Tech EQ, and I just bought two Manley compressors. I try to buy a variety, a couple of things a month. I keep track of what people are fighting over between the four rooms, and what they're renting, and I try to expand. I also have equalizers manufactured by Motown in Detroit and then brought out to the Hitsville Studios here. They are a parametric version of the Langevin EQ—the original Langevins from the '60s with the sliders. When Hitsville was sold, they had a sale, and I purchased all of them for 50 bucks each! I'm the only one who has them, and they're very popular.

"So," Mills continues, "I guess since the construction, we've been settling in and trying to streamline the business. We have new maintenance people, and we've got a great group of assistants now. It's like a lot of things these days—you look at your business with an open mind

—CONTINUED ON PAGE 200

NASHVILLE SKYLINE

by Dan Daley

In what might be the first instance of a major-label country record cut completely on hard disk in Nashville, Mike Clute, owner of **Midtown Tone & Volume**, co-produced with Tim DuBois the new Diamond Rio record for Arista. The record is being tracked, overdubbed and mixed at Midtown on a new Fairlight MFX-3 24-track system owned by programmer/composer Carl Marsh and ZZ Top guitarist Billy Gibbons.

Nashville's early entry into digital back in the early 1980s has kept the city open to new ideas technologically, says Clute. "And both [ZZ Top] and Tim have been very open to new ideas in terms of recording approaches." Clute, who has used a Fairlight for overdubs before, said that tracking on a hard disk system gave him tremendous new possibilities in terms of keeping takes and then editing several together, a far more difficult proposition on tape. He also said the sound was superior to many of the existing digital multitracks in light of new DSP and converters in the latest Fairlight.

"We would have gone to digital tape had we not done it this way, so what we're really doing is getting all the sound quality but with the advantages of hard disk editing," explains Clute, who also has production credits with Blackhawk, Brett James and the Delavantes. "The only time we expect this record to go to tape is for archiving for the record company." Nashville, which increasingly uses hard disk systems in an offline mode for overdubs, pitch repairs and premastering, can likely expect more such all-hard disk sessions as more of the systems move into local music studios.

Eric Haymes, owner of the single-room SSL studio **Salt Mine** in Brentwood, took over the downtown space vacated by Steve Durr and reopened the studio there in July with an SSL bought from Sixteenth Avenue Studios. Haymes, who also runs Cherokee Film Works (a video company that produces clips for rock, alternative and Christian acts), has kept Durr's octagonal tracking room design intact and hopes to be able to keep the

name, as well. What's changing is the technology: Sixteenth's SSL 4056 E/G board, Studer A827 and Mitsubishi multitrack decks. Haymes expects the room to go for around $1,400 per day for tracking, overdubs and mixing. "There's a niche in the market for an upscale room that doesn't necessarily compete with Emerald or Masterfonics but keeps you a level above the other smaller studios," he says. Haymes adds that he is also trying to launch a new record label this year. The Salt Mine will continue its operation with a 48-input SSL E/G. For its part, Sixteenth Avenue took delivery of a new 64-input SSL G Plus 4064 with Ultimation, the first G Plus in Nashville.

The growth in Franklin continues apace. Gabriel Katona, former keyboardist with Rick Springfield and Starship, has put a multilevel room into his home there. The control room at **The Rock Quarry** is outfitted with a 36-input Allen & Heath Sabre console, an Otari MX-80 24-track and a Tascam DA-88, as well as full video lockup capability. The downstairs recording room has a full-sized grand piano and two-way video link with the control room. Considering the sophistication of some of these new home studios, Row studios have taken notice. But Katona feels there's plenty of work to go around. "I'm not here to compete with the Row," he says. "But I'm not going to be a demo room, either. There's a lot of new talent coming here that's not country, and I want to be a part of that."

Have Nashville items? Call Daley at (615) 646-1100 or fax (615) 646-0102. ■

—FROM PAGE 199, L.A. GRAPEVINE

and say, 'What can we do to improve? How can we make it so that the potential clients out there make Larrabee their first choice?' And that's what [studio manager] Jamie Romero and myself have been working on."

Upcoming for Larrabee? Well, they just purchased a Sony 3348 and have committed to an SSL 9000J that will be installed after the AES show. As a matter of fact, it will *be* the one at the New York AES show. You'll probably find Kevin Mills there at the SSL booth, making sure no one puts their soda or coffee on his console! It's scheduled to be installed into North's Studio 2. Says Mills about the board, "The electronics and the internal design is improved, and the automation is a completely different architecture. It seems SSL has a lock on our industry, and the 9000 is the next generation of SSL consoles."

The biggest project for Larrabee this year was Michael Jackson's *HIStory* album, recorded by Bruce Swedien, Jimmy Jam, Terry Lewis and engineer Steve Hodge, who booked North for six months. (On the album's title track, both rooms were going simultaneously—they locked together four 3348s and both SSL consoles!) Also at North, smash R&Bsters All 4 One were in with producer Tim O'Brien and engineer Ken Kessie. Sessions at West have included The Jayhawks, with producer George Drakoulias and engineer Dave Bianco; TLC, produced by Babyface and engineered by Dave Way; producer Terry Date and engineer Ulrich Wild working on White Zombie; and Cypress Hill with producer Muggs and engineer Jason Roberts.

Skip Saylor Recording, over in that Tony Larchmont/Hancock Park stretch of the 213 area code, has been growing like gangbusters—a spring facelift of the complex has resulted in two new lounges and a host of new gear.

Studio A, the mixing room, now houses 96 inputs; the 80-in SSL console has been coupled with a 16-channel Neve 8014 sidecar. That unit encompasses 12 1073 EQs and four 31102s that have been modified to add line inputs along with the existing mic-ins so that they operate like 1073s. According to Skip Saylor, this is the first time this mod has been done, and he credits his chief engineer Jerry Perlman with the achievement. On the main desk itself, Ultimation installed at the first of the year is proving highly successful. Says Saylor, "Clients love it—they can really hear the difference. It's actually rather astounding—eliminating VCAs from the console makes a gigantic sonic difference." Comfortwise, the original large lounge space that was shared by both Saylor rooms has now become a private space for Studio A. On the day I stopped in, engineer Jay Lean was mixing a duet between hot R&B acts Brandy and Boyz II Men, produced by Soulshock & Karlin. That same busy team had just finished up tunes for soulster Mary J. Blige. Other recent projects in Studio A run the gamut from the mix for Elton John's new single "Made In England," through mixes for Brian Austin Green of *Beverly Hills 90210* (for an album on Babyface's YabYum label), to bassist/producer Marcus Miller working on his own new album. Another Studio A regular is actor/producer/rapper Ice Cube, whose project *Mack 10* was certified gold in three weeks.

Saylor's back room, Studio B, was actually the original Skip Saylor Recording. And although it has kept busy as an economical recording room, those who have worked there know that Studio B always felt like "the back room." Now, a TV-equipped lounge offers privacy to its denizens, and Uptown moving fader automation has been added to the vintage 56-in API/Neve board. New outboard gear includes Summit stereo compressors, Eventide H3000s and Groove Tubes preamps. Says Saylor about his direction for Studio B, "We're after the three-dimensional sound of the '60s and '70s that made those records so rich—that Class-A discrete circuitry sound. But we want to marry it with modern conveniences like automation and the cooler reverbs."

Other creature comforts added to Studio B include an outdoor patio complete with barbecue. And for those of you who worked there and remember, you no longer enter the control room through the studio—the CR has its own door now, just off that enclosed patio. In the last few months, producer/artist DJ Quick has kept the room busy. His *Safe and Sound* album, engineered by Chris Puram, went to Number One on the Billboard R&B album chart in its first week out—going on to accrue double Platinum status. Also in have been various projects for Dave Moss' Big Beat/Atlantic label.

And finally, Skip Saylor Recording has a new studio manager, Paul Brooks, who has relocated from Right Track Recording in New York. That means Skip isn't doing the day-to-day operation anymore. So what's he doing with all that free time? Well, unconfirmed rumors have him working on a deal to develop a room that will offer large-scale tracking—we'll keep you updated on this!

Fax your L.A. news to Maureen Droney at (818) 346-3062. ■

—FROM PAGE 196, SESSIONS & STUDIO NEWS

Miami's **Criteria Recording Studios**, Island Records act **Arlan** was cutting tracks under the guidance of producer **Tom Dowd** with engineer **Cesar Sogbe** and assistant **Mark Dobson**. In Studio E, **For Squirrels** finished tracking their upcoming **Epic Records** release with producer/engineer **Nick Launay** and assistant **Mark Gruber**. Seventies-era booty shakers **KC & the Sunshine Band** worked with engineer **John Thomas** on a new project...Mercury Records artists **Animal Bag** were in at **Reflection Sound Studios** in Charlotte, NC, recording tracks for an upcoming release with executive producer **Terry Date** and producer/engineer **Ulrich Wild**. **Tracey Schroeder** assisted...**Nils Lofgren** recorded his latest project at **Omega Studios** in Rockville, MD, with producer/bassist **Roger Greenawalt** and engineers **Dave Goodermuth** and **Scott Hollingsworth**...

SOUTHERN CALIFORNIA

At **Scream Studios** in Studio City, **Don Gehman** was in mixing **Tracy Chapman**'s forthcoming Elektra LP, while Interscope artists **Possum Dixon** recently completed their second album with mix engineer **Phil Kaffel**. Both sessions were assisted by **Douglas Trantow**...**Chris Lord-Alge** was in Studio A at **NRG Recording** in North Hollywood recording Japanese hard rockers **Loudness**...Producer **Jorge "G Man" Corante** was at **The Enterprise Studios** in Burbank with mixer **Rob Chiarelli** and assistant **Fred Kelly** working on Malieck's Elektra debut... Motown Records has kept all three rooms busy at Hollywood's **Studio 56**. Engineer **Booker T. Jones III** has been working with producer **Keith Crouch** in Studios A and B with artists **Brandy**, **TLC** and **Jason Weaver**. Producer **Derrick Edmondson** has been in A and C with **Jody Watley** (her new release, *Affection*), **Toni Braxton** and **Tevin Campbell**...Producer **Don Was**, engineer **Jess Sutcliffe** and assistant **Chad Fridirici** were mixing the upcoming **Rolling Stones** live album at **Westlake Audio** in Hollywood. Country star **Clint Black** was also in cutting a Christmas album with **Kevin Beamish** and **Brooks Larson**...

NORTHEAST

Recent sessions at New York's **Shelter Island Sound** included producer **Steve Addabbo** overdubbing and mixing for EMI act **Once Blue** (with **Joe Ferla** engineering) and producer/engineer **Kevin Killen** recording and mixing **Donna Lewis** for her Atlantic debut. **Pete Keppler** assisted on both projects...**Lora Lee Amram** was in at **PM Productions** in Crompond, NY, completing work on her latest release, *The Other Side*, for Red Tail Records, with her co-producer **E.D. Menasché** and engineer/mixer **Bill Philbrick**... **Andre Previn**, **Ray Brown**, **Grady Tate** and **Mundell Lowe** were at Ambient Recording Co. in Stamford, CT, cutting jazz tracks for Deutsche Grammophon (reportedly the first jazz recording in the classical label's 97-year history). **Liz Ostrow** produced and **Tom Lazarus** engineered...**Pee Shy** recorded a song at **BearTracks Recording** in Suffern, NY, for the Blue Gorilla/Polygram label. The song was produced by **Rick Chertoff** and engineered by **William Wittman**, with **Steve Regina** assisting...Producer/engineer **Peter Denenberg** and assistant **Thom Leinbach** recorded the **Hatters**' sophomore effort for Atlantic Records at **Acme Recording** in Mamaroneck, NY...Metal avatar **Ozzy Osbourne** was in mixing his next raging slab for Epic at **Room With a View** in NYC. **Michael Beinhorn** produced with **David Bianco** at the board and **Alvaro Alencar** assisting...At New York's **Sear Sound**, producers **Bill Levenson** and **Jerry Rappaport** worked with engineer **Jay Mark** on an **Eric Clapton** compilation album for Polygram...At Boston's **Sound Techniques**, **Tribal Remedy** were working on new tracks with producers **Dean Harada**, engineer **Dave Kirkpatrick** and assistant **Tom Richards**...Punk progenitor **Iggy Pop** produced a song for Japanese singer **Masatoshi Nagasi** at New York's **Baby Monster Studios**. **Chris Fosdick** engineered with the help of **Ian Bryan**...

NORTHWEST

British band **A.K.A.** were in recording for RCA at Studio D in Sausalito, CA, with producer **Preston Glass**, co-producer/engineer **Joel Jaffe** and assistant **Mike Cresswell**. Also, **Lythia Stitch** tracked and mixed a debut album for Cambridge Park Records with Jaffe and Cresswell...London/Island recording artists **Consolidated** recently recorded tracks for their sixth release at **Q Studios** in Aloha, OR. Staffer **Eric Danskine** engineered with bassist **Mark Pistel**...Bay Area punks **the Wynona Riders** tracked their new Lookout Records album at Hayward, CA, facility **The Art of Ears** with producer **Andy Ernst**...

NORTH CENTRAL

Producers **Jason Miles** and **Gary Hines** were in Studio A at Minnesota facility **Flyte Tyme Productions** recording vocals with the **Sounds of Blackness** for an upcoming Disney television/video album project entitled *People*. **Jeff "Madjef" Taylor** engineered...At **Red House Recording** in Lawrence, KS, producer/engineer **Ed Rose** and assistant **Chris Wagner** were tracking and mixing **Paw** for A&M...

SOUTHWEST

Reelsound Recording's mobile truck (based in Manchaca, TX) was at the **House of Blues** in New Orleans for broadcast dates with **George Thorogood**, **John Hammond** and others. **Malcolm H. Harper Jr.**, **Greg Klinginsmith**, **Gerard Bustos** and **Chuck Sugar** handled the audio...

STUDIO NEWS

Upstate New York's **Bearsville Studios**, now celebrating its 25th anniversary, is installing a 32-input API Legacy console (see NY Metro Report). The first session on the new board will be for the Dave Matthews Band's second RCA release, with Steve Lillywhite producing...**Clinton Recording Studios** (NYC) recently installed a Studer D827-MCH 48-track digital recorder and upgraded to a Studer Editech Dyaxis III digital editing system...L.A. studios **Record Plant** and **Conway** both installed AT&T DISQ Digital Mixer Cores equipped with NVision codecs and reference generators...**Studio C Productions** in Nashville installed a Yamaha DMC1000 digital mixer...**Bob Gillespie** recently purchased the former **OMI Studios** in Atlanta and renamed the audio post facility **Oasis Recoring**...**Ironwood Studios** in Seattle installed a modified Neve 8232 console in its 1,400-square-foot Studio B...**Immortal Productions** in Canton, OH, recently opened for business. Focusing primarily on post-production and mastering, the studio features Digidesign Session 8 hard disk recording...**Rumbo Recorders** in Canoga Park, CA, redesigned Studio A, making the room more live and adding iso booths and a private lounge...Music school **Los Angeles Recording Workshop** recently opened new facilities in North Hollywood. For its studio bauhton-designed Studio A, the school purchased an SSL 4048 G Plus console with Ultimation and Total Recall. ■

—FROM PAGE 197, THE RADIATORS

"We cut everybody live," Farrell explains. "That's how they wanted to do it, like how they'd been rehearsing and doing it onstage. All the instruments were tracked live except Reggie Scanlan's bass, which went direct. Reggie switches between his electric upright and his acoustic upright bass. I close-miked Frank Bua's drums. I've got several iso rooms, so I was able to iso the guitarists [Camile Baudoin and Dave Malone]. The guitarists also had the option to go back and redo their parts if they wanted. Some they did, some they didn't. They all played with headphones on. Even though the guitar, bass and drums were in one room, [keyboardist/vocalist] Ed Volker was in a separate room with a piano, 'cause he was playing and singing simultaneously. Most of Ed's stuff was acoustic piano or Hammond B3. There were one or two tunes that were synth-oriented. Some of the vocals were live. Then Ed would choose to keep it or overdub it later. I blanketed the piano, at least the area between the voice and the hammers. I was able to get away with cutting them both together because he's not a real loud singer."

Farrell recorded to Ultrasonic's Studer A827 2-inch tape machine—15 ips with Dolby SR—without any processing or outboard gear. "Everything came from the board until we mixed," Farrell says. "Then I used some Pultec EQs when we mixed on the same board. We use those to bring the guitar sound out, which I wasn't able to do with this console."

Farrell used the Sony's DiskMix automation when mixing, which was primarily done with Malone, Volker, Dickinson and Farrell at the console. "It was group decisions, but I think they left the final calls to Jim," Farrell explains. "When there were things in doubt, they'd look at Jim." Monitoring was done on Yamaha NS-10s, Tannoys and a Sony boombox, for that over-the-radio effect. ("Jim likes the NS-10s," Farrell says. "I mixed on our Tannoys, which are a little bit larger monitors. But for the final mix, Jim liked to get it down on the NS-10s.")

The completed release, *New Dark Ages*, includes crowd favorites like "Papaya" and "River Run," as well as newly penned tunes like "Ghosts Along the Mississippi." Its mix of soulful rock and rollicking blues ought to keep those Fish Heads flopping. ■

—FROM PAGE 197, NY METRO

between upstate N.Y. and the city, except that they acknowledge the community of facilities in the region probably wouldn't be there if somebody hadn't made a $24 deal a few hundred years ago on Manhattan.

Bearsville Studios, the largest and oldest (at 25 years) of the area's facilities, is the facility most associated with the myth of Woodstock, which started with Dylan, The Band and the muddy 1969 concert. The three-room residential facility has been a satellite for New York City artists and producers for some time, but as more of them moved upstate, the region began to sustain itself, observes studio manager Mark McKenna. "It's always been an alternative to the city, up here," he says. "Artists and producers are on a two-hour tether from New York. But more of the people responsible for making the music on major labels live here, like Tony Levin, Jules Shear and members of The Band. And as record companies are putting out more new acts than ever before, the need for good facilities, especially acoustically good facilities, increases." The studio recently upgraded its Barn room with a 32-input API Legacy console. Bearsville's rates are $2,250, $1,950 and $1,600, including accommodations for up to eight people, for the three rooms. "To give you an idea of how it's growing around the area," McKenna adds, "one of the big things up here now is lobbying NYNEX for ISDN lines."

Nearby, **BearTracks Studios** manager Chris Bubacz said his single-room, Focusrite-equipped facility also benefits from the choice of a lot of artists, producers and engineers to live in the upscale parts of upstate. "I think that's partly why nearly all of our work is from major labels," he says. "We're getting a lot of the freshmen and sophomore records from Sony and labels like that." BearTracks rents for between $1,500 and $1,800 per day and also recently added a Digidesign Pro Tools III system for mastering.

On the other side of the river, in Germantown, **Clubhouse Recording**'s owner Paul Antonell says his one-room, Neve 8058 MkII/MCI JH-24 studio offers a large tracking room, as do most of the other studios in the area. "That's really the attraction, I think, the fact that you're not confined vertically as you are in Manhattan," he says. Of the studio, which opened in 1987 and charges $950 per day, and the region as a whole, Antonell observes that it may once have tended to rise and fall with the city's fortunes, but that connection is dissipating as the region becomes more self-sustaining.

As a mature recording center, the Hudson Valley is also becoming dotted with home studios—some in the homes of the better-heeled artists and producers, others coming up as demo studios and alternatives for those with smaller budgets. Have the major studios of the area felt their effects yet? Antonell thinks they give him more business. "I don't see them impacting negatively at this point," he says. McKenna has seen the trend proliferate, but with a change: "They always had a presence here, but not a commercial presence, and that's what's beginning to happen now. There are more for-hire project studios than there have been before. Without them, we might be getting a bit more work, but not enough to put a crimp in our economics." Bubacz says the projects of the region tend to cater to the regional acts and demos. "And I'm of two minds on that," he says. "There are times I wish we had some demo work, and then there are times I'm glad that we don't."

At **Dreamland Studios**, owner Joel Bluestein says the region's competitiveness and recent spate of upgrades reflects its robustness. Dreamland installed a rare API Discrete console (only four were ever made) last year. But the business climate, as good as it is, is changing in nature, says Bluestein. "We still had a busy winter, but I noticed the Canadian work we've always had dried up as the Canadian dollar lost value," he says. "What's really happened to the region is that we're not just competing amongst ourselves or New York studios anymore, but with studios in general, from Boston to Minneapolis. And that puts us in a similar situation to many of them: The work is there, but the rate structure for projects has gone down, and that can have a destabilizing effect. So I guess if we're having the same issues to deal with as the big cities, then we can take some comfort in the idea that we've arrived."

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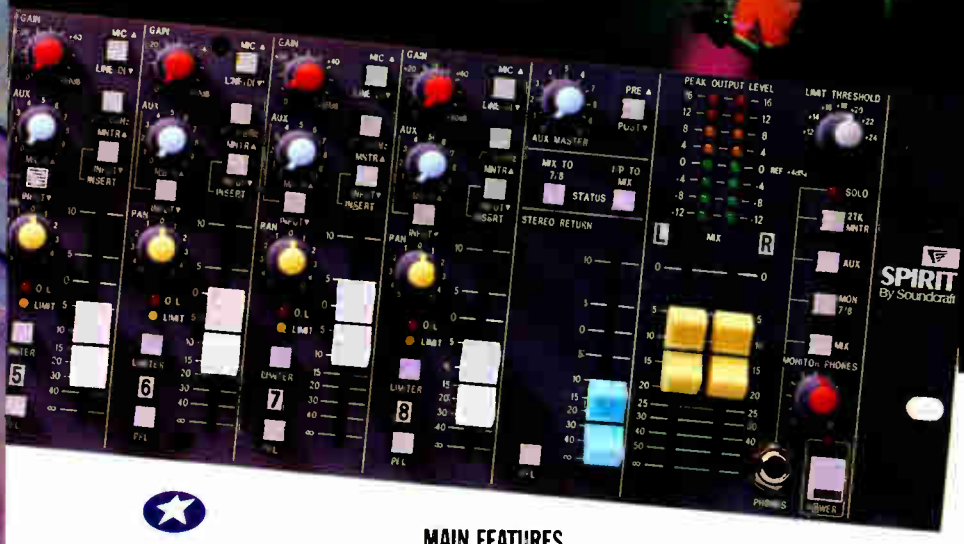
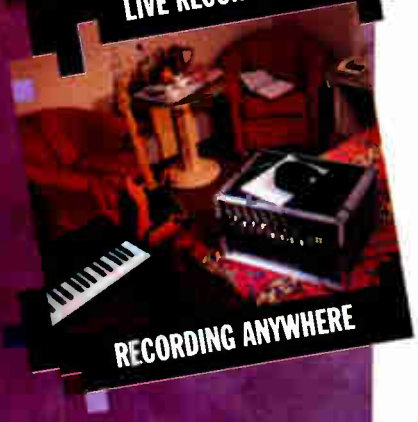
The ClubHouse recently installed a Neve 8058 MkII mixing desk. Vintage Neumann tube microphones and Telefunken preamplifiers have been added to the collection. Our large studio is 50'x25'x20', and the smaller room is a more intimate 19'x16'x8'. Located on the scenic Hudson River only two hours north of New York City, The ClubHouse provides a large selection of fine equipment in a relaxed country setting.

MIX TO DIGITAL MULTITRACK ANYWHERE



It's so easy to take a digital multitrack recorder out on the road. But teaming it up with a compact, affordable mixer that's up to the job of making studio quality live digital recordings direct to tape is not so easy.

So Spirit have created ProTracker.



We've packed a high quality 8 channel in-line mixer into a 3U case. ProTracker has an ultra clean signal path, and everything you need to make professional digital quality recordings – yet ProTracker will also excel when you want to overdub: it'll even mix, your front-of-house sound while you're recording. ProTracker's key to digital quality recording lies in its unique integration of superior components into the straightest possible signal path between its input and its balanced tape output, effectively giving you a pure direct-to-tape mix. To keep a tight rein on levels going to tape – and to prevent accidental digital overload distortion when a band member decides to crank up the volume – there's a fast limiter with switchable threshold: you just set and forget it. Take a good look at the impressive feature list...

MAIN FEATURES

- In-line monitoring signal format – 2 discrete inputs per channel
- 8 channels with 60mm linear faders (>90dB cut off)
- Expansion sockets for daisy-chaining ProTrackers
- New high quality, high gain mic pre-amp (-129dBu EIN) with switchable +48V phantom power on every input
- Balanced Line inputs with built-in DI capability for instruments
- Switchable High Pass Filter on every channel
- Built-in Limiter (300µSec attack time, 3 Sec release), selectable on every channel
- Insert and Aux switchable between channel and monitor paths
- Aux globally switchable pre/post fader
- PFL on each channel
- Overload and Limiter indicators on each channel
- Monitor fader and Pan control
- Balanced Tape Send/Return, switchable between +4dBu and -10dBV
- Separate pre-fade Insert and Return sockets, eliminating Y-cables
- Stereo Effects Return with fader and PFL
- Inputs switchable to Mix to allow simultaneous front-of-house mixing and recording
- Mix routable to Tape Sends 7/8 for simultaneous 2-track recording, without affecting multitrack feeds from channels 1 to 6
- Headphone monitoring of 2-track return, Aux 7/8 or Mix
- Solo indicator
- Monitor Outputs follow headphone output
- Mix Output and 2-Track Return accept +4dBu XLRs or -10dBV RCA phonos
- 100 – 240 VAC operation with internal universal switching power supply
- Road quality construction

Superb Live Recordings

ProTracker is the perfect live recording partner for affordable digital multitracks such as ADAT* and DA-88**; and, like digital multitracks, you can link several ProTrackers together for additional tracks. Each channel is equipped with our best-ever mic preamp and a balanced line input with direct instrument capability, so you don't have to use any noisy DI boxes. A High Pass Filter on each input cuts mic popping and stage rumble. With ProTracker, you can not only record to multitrack but you can also make and monitor a 2-track DAT master at the same time.

Overdub or Record Anytime, Anywhere

ProTracker is designed for the road. That's why we have incorporated a power supply that works all around the world, so you can make the best location recordings wherever you go. And with its compact rack design, ProTracker will fit into any outside broadcast or location recording system.

8760 South Sandy Parkway,
Sandy, Utah 84070.
Tel: 801-566 9135
Fax: 801-566 2086

* ADAT is a registered trademark of Alesis Corporation
** DA-88 is a registered trademark of Tascam

pro TRACKER

SPIRIT By Soundcraft

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—FROM PAGE 26, FEAR OF FRYING

next-generation computer. This will cost you only slightly more than what you just paid for the extra memory.

When the new board arrives, it has one less peripheral card slot than your old board, and suddenly you have to choose between running that nice, large video monitor or using your digital audio system. But the choice has actually been made *for* you, because your old audio hardware, for which you just upgraded the software, doesn't work on the new computer—in between models, the computer manufacturer subtly altered the clock rate of the peripheral bus just enough to make the audio card nonfunctional. For a reasonable fee (equivalent to the sum total of what you've paid so far), you can upgrade your audio hardware. Now, of course, you'll need new software...

Believe it or not, with very little exaggeration, this is what I went through this year with my home studio. I now seem to have it all stabilized, but just barely. I can't use the latest digital audio hardware; I have to turn off all of my customizations if I want to run digital audio with my sequencer, and my computer is a bizarre hybrid that no service center will touch. I am now three versions behind the latest operating system, but whenever a fleeting thought of upgrading enters my mind, I pour a large drink and head straight for bed.

As for the second principle, a trial that my students underwent provides a fine example: In class one day, a student attempted to play his current project, which used MIDI and hard disk audio synched to SMPTE-striped video. Whenever he started the tape anywhere besides the very beginning, the MIDI data wouldn't play smoothly but instead erupted in dense spurts, about a second apart. We eliminated sequencer tracks one by one and eventually got the sequence to behave itself. We then rebuilt the sequence, using the parts we had cut, and everything seemed to be okay.

The next day, a different student called. He was having the same problem. Over the weekend, two more called, and by the next week's meeting, projects by the entire class had come to a standstill. We optimized the hard disk containing the audio files. We searched for viruses. We replaced the hard disk. We re-installed the sequencer. We re-installed the system. And we took everything out of the operating system that we could. We called the sequencer manufacturer: *Obviously*, it was the fault of the accelerator card we had installed, which had been running fine for four years. We disconnected the accelerator; no change. We tried other SMPTE sources. We called the maker of the SMPTE-to-MIDI converter: *Obviously*, it was a problem with the sequencer software. And round and round and round. For two more weeks, the students got no work done.

Finally, I removed the SMPTE-to-MIDI converter (a model with "2" in its name) from the studio and replaced it with an earlier model from the same maker. The problem disappeared, and it has not come back. As I gaze out the window of my office at the river slowly running past, I feel a warm glow knowing that the converter with "2" in its name is now in a watery resting place.

The third principle can also be described as "creeping featuritis." In any rapidly developing technology where several developers compete, this is a problem, but it's become ridiculous. I'll illustrate with one case I am particularly close to: Macintosh sequencer manufacturers are falling all over themselves to make their products all things to all people, especially in regard to generating music notation and manipulating digital audio. The problem is that a lot of these features don't work very well, if at all. But following the dubious lead of Microsoft (whose innovative approach to marketing has brought plenty of attention from the Justice Department), manufacturers now announce new products and features "defensively": they don't actually exist, but since the competition is already touting that *they* have them, everyone feels they have to play catch-up or risk losing customers. Unfortunately, this "strategic vaporware" strategy often causes a company to fall on its face: The announced feature turns out to be impossible to implement, or it's implemented so badly as to be unusable, or it requires so much jerry-rigging of the software code that the program never works properly again.

And, of course, the more junk you add to a program, the more chances for something to break. So you end up with a program that doesn't quite work, and when whatever doesn't work is fixed, something else won't quite work. The White Queen in *Through the Looking Glass* knew this routine: "The rule is, jam yesterday, jam tomorrow, but never jam today!"

Even if the onslaught of new features manages to avoid technical catastrophe, software designers, in their mad dash to incorporate everything including the kitchen sink, lose sight of their original vision for the program. So instead of being an integrated set of tools for making music, the programs degenerate into a designed-by-committee catalog of unrelated functions, leaving the hapless user to ponder whether any of these wonderful features can actually help finish a project.

Although manufacturers will always claim that they are issuing new versions of their products in response to users' needs, in reality, upgrades are many times just bug fixes, or consist of features that were promised for previous versions, but there wasn't time to finish them before the last release date. Sometimes there will be new features no one really asked for—they are thrown in to make it *seem* as if this is an important new version, and to justify asking users to pay for it. Rarely, however, are any of these truly helpful. More often, it's all you can do to keep the new version from pushing you *backward*: It takes awhile to feel as adept with the new software as with the last version, but you have to get back to work so you can pay for all of this. So except for those features you must know *right away*, you never have the chance to learn any of the cool new features.

Can we do anything about this? Can we slow down "progress" enough to make sense of it? Or have we reached that asymptotic point in our industry's development curve where it has become a vertical wall, where technological development has utterly overwhelmed our ability to deal with it? In the "real" worlds of finance, education, law and communications, this has become one of the most pressing questions of the decade, so why should our little corner of the world be immune to it? We are fortunate, however, that our industry is still relatively small and interconnected. Perhaps by recognizing the problem now, and working together to solve it, we can avoid the kind of crises so many others are facing.

One negative factor that we may not be able to do anything about is that we live in a world where our fate is largely dictated by the two com-

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SFP = Sound For Picture Supplement
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puter giants: Microsoft and Apple. A decade ago, when models and operating systems evolved relatively slowly, it wasn't all that hard for developers to keep pace with change. Recently, however, the rate of change has taken off exponentially, and no sooner is the development community comfortable with one platform than it's superseded by the next version. Apple, in particular, has been guilty of this: Its obsolescence timeline was once three years, but it has now shrunk to six months, with each new model not only requiring a new operating system but even new hardware specifications. As one disgusted Apple engineer puts it, "They keep breaking the serial ports."

With their software dependent on their hardware, and their hardware dependent on the whims of the computer companies' marketing departments (none of whom could give a fig about the music market), developers are not in a happy situation. But there are ways we can help make this work. The first is for users and manufacturers to adopt an attitude that we really are all in this together. Recognizing standards, and sticking to them, is important. When the compact disc was introduced, many people knew that there were good reasons to use higher sampling rates and longer words than the format provided, but they were impractical at the time, and it was more important to get the medium established than to wring every last possible ounce of performance from it. If they had waited for the next generation of technology, the medium probably would not have caught on anywhere near as well as it did. MIDI, too, was slow and finicky and had its detractors, but it has enhanced our ability to make quality recordings far more than even its strongest proponents imagined. The lesson here is that cooperation is crucial—without it, hundreds of companies may develop killer technologies, but they'll be stranded on hundreds of desert islands screaming their lungs out about it, with no one to hear them. Standards like VITC, AES/EBU, OMF, MMC, and Control-L not only allow but *demand* that our tools all work together. Competition is fine—it spurs excellence and innovation—but meaningless one-upsmanship and deliberate incompatibilities do no one any good.

Second, manufacturers need to take the task of supporting users a hell of a lot more seriously. Customer support is still the bastard stepchild at many companies: It's treated as a necessary but distasteful task you have to do after the real fun of selling the product is over. Even companies that have real support departments often have the wrong attitude. One executive (hired from outside the audio industry) actually confided in me that he was looking for ways to make customer support a profit center. He's going to have a long search. Support is an inevitable, necessary expense, and the earlier that's written into the business plan, the better off the company will be. It's been said that we no longer buy computer tools, we subscribe to them. Well, subscribers need to be serviced regularly and well.

Online services are still woefully underused in terms of customer service. Competition has brought the price of communications hardware and Internet access down to the point where many manufacturers can afford to include, right in their products, a modem, access software, and either a free trial subscription to an online service or an account on a private BBS. Designing a first class-style host or World Wide Web page with menu- or icon-driven access to frequently asked questions, implementation ideas, diagnostic programs and other information is now ridiculously easy. For solving really thorny problems, the information contained in an online discussion thread can be even more valuable than a live support person: Someone, somewhere has experienced your same dilemma and has solved it. But this information isn't going to magically appear online by itself. Someone has to compile it, put a really good search engine on it and put it on a server with enough room to keep a couple of years' worth of discussions.

Finally, manufacturers need to let products mature. A functional, solid, bug-free program is worth far more than something that contains every bell and whistle in the universe but that falls over if you turn your head the wrong way. These are creative tools; every time a manufacturer does a major rewrite, it is forcing the creative types using the tool to stop whatever it is they're doing and learn the tool all over again. Imagine how guitar players would react if every time Fender came out with a new model, it had a different number of strings in a different order, and the frets were arranged in a new way.

Yes, manufacturers, please fix bugs. Yes, make things slicker and more efficient. But no, you don't have to throw in every feature that anyone has ever asked for. No one feature is going to make or break a product. Besides, a lot of the time, users are just wishing out loud, suggesting something for its "cool" factor, not because they would ever use it. Don't fall for the "flavor of the month" mentality, and don't worry so much about customers jumping ship if you're missing this feature or that. Users in this industry are loyal, if for no other reason than they can't afford the effort and down time required to learn whole new programs. And while you're at it, please stop lying to your customers. Touting features that you know don't work, boasting about compatibilities that are still on the drawing board, and listing misleading or downright hallucinatory specifications won't win you any friends or prevent customers from going to the competition. They will, however, tie up your support lines, where you're not making any money.

I don't want another year like the last one. I want to make music, and I want to teach my students how to make music and use all these wonderful tools we've developed. I love my studios, and they can do, right now, just about everything I want them to. If I have to stop upgrading my studios completely so that they continue to do so, I can live with that. Perhaps the dread will recede eventually. Somehow, though, I doubt this will happen—keeping up with the latest technology as it speeds by is too damn much fun. But in music technology these days, as has long been true in life, it's important to remember that speed kills. ■

Paul D. Lehrman teaches in the Sound Recording Technology program at the University of Massachussetts Lowell. He is also the co-author of MIDI for the Professional *(available from Mix Bookshelf), consults for a number of hardware and software companies, and composes and produces music, chiefly for visual media. He used to play the bassoon, a fine example of a not-entirely-successful, 19th-century, high-tech kluge.*

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National Music Foundation
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Mix Marketplace page 210.

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- Walter Becker
Mix interview, April 1995

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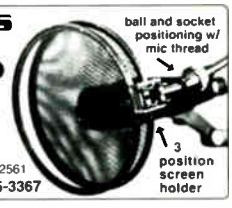

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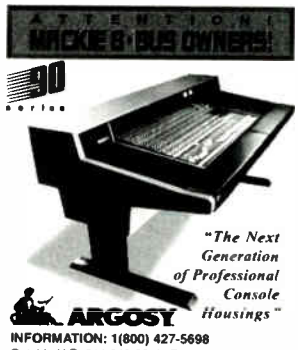

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Send payment to: Mix Magazine Classifieds:
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For more information about products and services advertised in this issue, fill out and return *Mix*'s postage-paid reader service card! You'll receive information directly from the advertisers whose products interest you.

FEEDBACK

JOIN THE CLUB

In *Mix*'s article on Steve Ford Music (April 1995), I may have lost sight that I—a small worm of a gearhead in this vast V12 of a music machine—may not have met all of my U.S. colleagues, so yes, it is true that other engineers and producers with astute ears are also using B&W 805 monitors. As Mr. Brotman suggests in his letter, he is one. I have met Harry Brotman and admire his groundbreaking choice years before my own. I apologize for my mistake (and any track sheet errors I've ever made).

What I meant to demonstrate is that relatively few American studios use B&W monitors compared to their European, specifically English, equivalents. More studios should. The B&W 805s are worthy adversaries to the KRKs/Genelecs/Meyers/Tannoys and unabashedly trounce NS-10Ms.

Sam Fishkin
Samsonics
Evanston, Ill.

THE LATEST IN RADAR

I want to clarify some statements that were not presented clearly in Dan Daley's article "What's It Gonna Be? Linear or Random?" in your June issue. Magnetic hard drives are too expensive to use for backup, and even the fastest tape backup (8mm Exabyte, which RADAR uses) takes more time than many commercial studios want. But the advantages of nonlinear editing are enormous, otherwise hard disk systems would not be proliferating at the rate they are. RADAR now has software that allows for individual project backup and restore, dramatically decreasing the time involved.

There was also some confusion between the use of much lower-priced magneto-optical removable media and "regular" magnetic hard drives in the article. While we can get six tracks simultaneously off a magneto-optical disk today, we want to get eight tracks, uncompressed, which will be possible if and when MO transfer rates get fast enough. This will then match the eight tracks we get now off a regular hard disk. (We use three 1-gigabyte drives in a 24-track RADAR, but larger-capacity drives can also be used for more recording time).

In the meantime, there are lots of enthusiastic RADAR users (as well as other DAW owners) who are enjoying the benefits of random-access audio today, and who have realized those benefits on their bottom lines.

James Goodman
Otari Corporation
Foster City, Calif.

BEE GEES FEVER!

I was thrilled to find Mr. Bonzai's interview with Albhy Galuten (*Mix*, July 1995), who has produced some of my favorite music—that of the Bee Gees. Out of all of the wonderful articles, reviews and information of the past year, this interview was to me the most appreciated and welcome surprise, and it introduced me to a very remarkable musician, producer and person I had known previously only as a credit in liner notes. As a 24-year-old who enjoys *Saturday Night Fever*-era music, and especially in the music climate of today, I rarely expect to find much inside information on the people and methods involved in the production of the music that I enjoy so much. But your magazine provided that once again, and I just wanted to take this opportunity to thank you for a world-class production of your own.

Robert J. Spinoza
Tarzana, Calif.

THE FEW,
THE PROUD...THE LEFT-OUT

I was surprised to see the photos of the magnificent Paragon and read the accompanying article on the new sound system at the Grand Ole Opry in the July issue. However, at the urging of all employees here at ATI, I find I must supply correct information for your readers. The Paragon that resides in the Opry House is, in fact, a 64-channel mainframe with 60 input channels currently loaded, not a 56-channel console as stated in the article. This is the second-largest Paragon we have built and the only one that was assembled on-site due to the extra-long frame. (The largest Paragon lives at the Hollywood Bowl, but it was built in two mainframes.)

While the difference is, arguably, only over four channel modules, we at ATI care about every single channel module and like to give each and every one its due recognition whenever possible. You know how it is with contracts and player strikes these days, and we wouldn't want those left-out four channels to become free agents just yet and stir up some controversy with the other 56!

Larry Droppa, President
Audio Toys Inc.
Columbia, Md.

"LAST" IS THE BEST

I'm writing in response to your piece in July's *Mix* about Little Feat. I know it was only in passing that you referred to their discography, but how could you omit their greatest work, *The Last Record Album*? It could only be because you are not familiar with it...boy, are you in for a treat! I will grant that it may not be as immediately accessible as, say, *Dixie Chicken* or *Time Loves a Hero*, but there's not a throwaway track on the disc! Each cut is so flawlessly written, arranged and performed (and sonically excellent, especially for its time) that I'm hard-pressed to name a favorite...Oh, all right, how 'bout "Mercenary Territory" or "Somebody's Leaving" or "One Love Stand" or "Day or Night" or "Long Distance Love"?

Kenny Epstein
Texas Department of Health

Send Feedback to Mix, 6400 Hollis St., #12, Emeryville, CA 94608; fax (510) 653-5142; or 74673,3672@compuserve.com.

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3-WAY CONVERTIBLE DESIGN DOESN'T LEAVE OUT ANY APPLICATION. The Mackie CR-1604's rotating input/output pod lets you change from a 7-rack space mixer with jacks to back to a tabletop design with jacks to top in minutes. Add our optional RotoPod bracket and rotate inputs and outputs to the same plane as the mixer's controls (a favorite for small recording set-ups).

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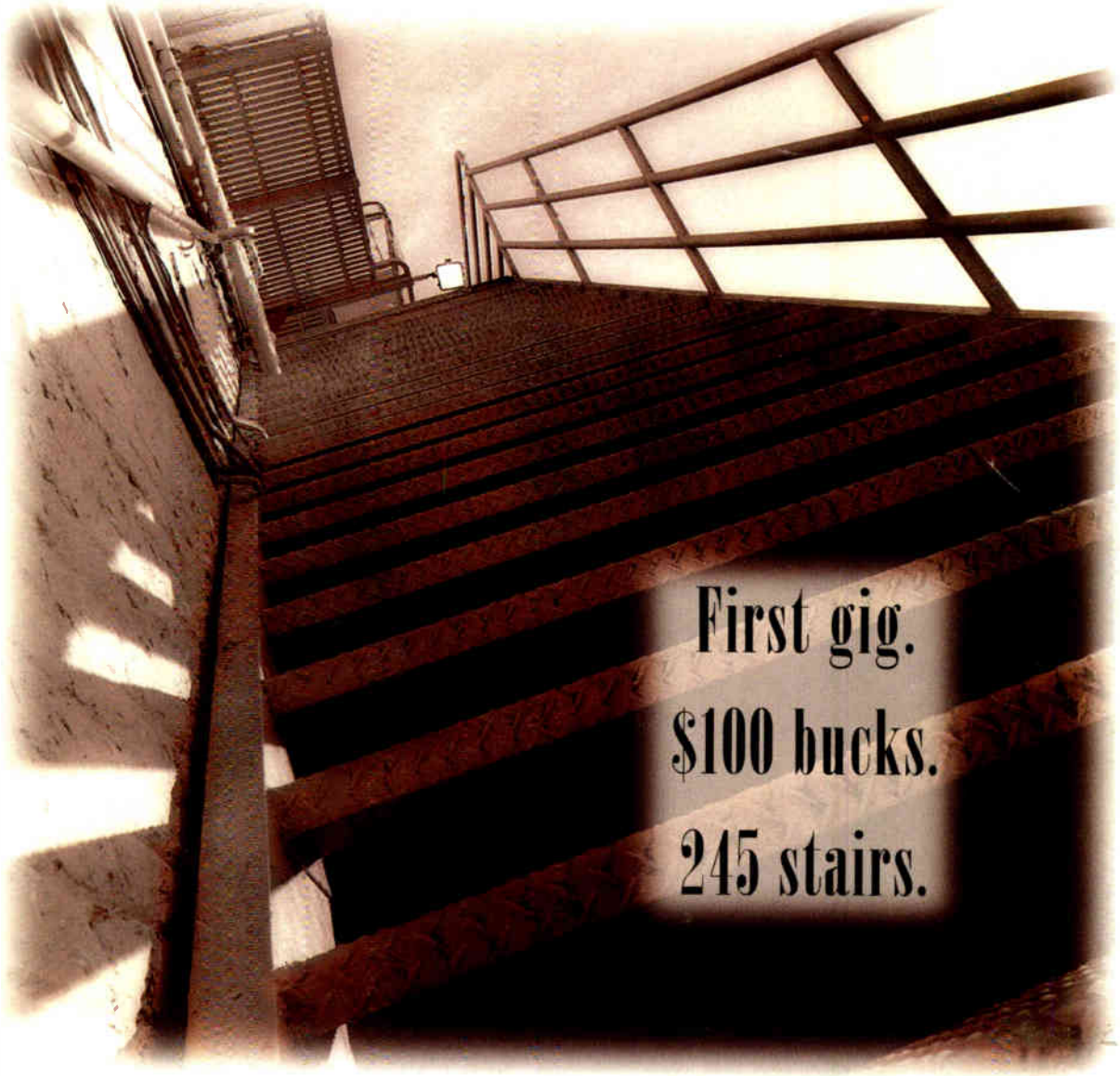

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