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PROFESSIONAL RECORDING · SOUND AND MUSIC PRODUCTION



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GOES MULTIMEDIA?

FACILITY DESIGN & ACOUSTICS

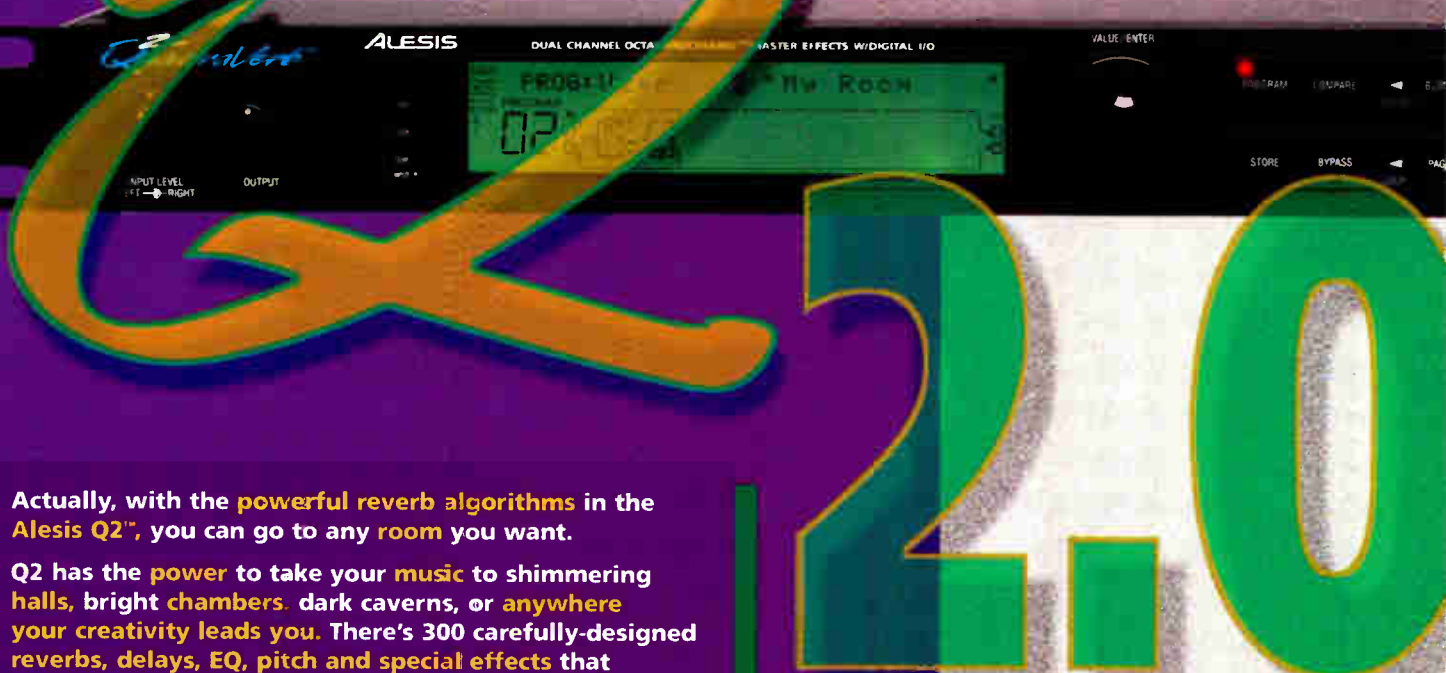
- *The Class of '95: A Look at 19 New Rooms*
- *Advice on Tuning Control Rooms*
- *Project Studio Design*

FIRST LOOK Yamaha's 8-Bus Digital Console

Behind the
Scenes at
MTV UNPLUGGED



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PBM II

For more than three-quarters of a century, Tannoy has been designing and producing loudspeaker systems and components to meet the demands of the world's most demanding user. A philosophy of constant research and investment in state of the art materials, technology and processes enables Tannoy to ensure that every monitoring system we produce will re-produce absolute fidelity to the source, true dynamic capability, and most importantly, real world accuracy. This is why Tannoy systems are used in more of the world's professional facilities than any other brand.

In the North American marketplace, Tannoy has been the number one monitor of choice for several years according to the Billboard's international recording and equipment statistics. This clearly illustrates why Tannoy enjoys its reputation as the world's leading manufacturer of reference loudspeakers. In fact, **leading the market is what Tannoy is all about.** While other multi-faceted manufacturers, not dedicated solely to the

art of reference monitor loudspeakers, scurry to produce products to compete with Tannoy's original highly acclaimed and award-winning PBM series, **Tannoy moves on.**

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 minimalist 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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Editech's new POST:TRIO digital audio workstation delivers everything you need to build a world-class post production studio in your facility...

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MIX[®]

PROFESSIONAL RECORDING • SOUND AND MUSIC PRODUCTION

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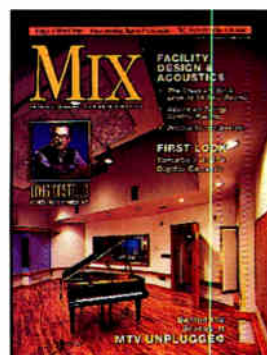
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Cover: Cotton Hill Studios (Albany, N.Y.), which opened in March of this year, was designed by the Walters-Storyk Design Group of Highland, N.Y. Studio construction was done by Baron Construction of Albany; equipment installation and wiring were by Len Fassett of Len'Ko. Equipment at this full-service facility includes a DDA AMR-24 console with custom mods by Tony Marra, 24 tracks of ADAT, an Otari MX-70 analog multitrack, and Tannoy FSM, LGM and PBM monitors. **Photo:** Robert Wolsch Designs Inc. **Inset Photo:** Tim Kent.



IT'S UNLEASHED MORE CREATIVITY THAN

The Mackie CR-1604 16x2 mic/line mixer is getting dangerously close to becoming a pro audio classic.

Not because it has the most mic inputs, knobs, buses or switches — others have long since topped us for sheer numbers of doo-dads and thingamabobs.

No, the CR-1604 has ended up in so many studios and on so many stages because it sounds good. And because it's downright easy to use.

More than any other component, your mixer is the focal point of all your creative efforts. If it's complicated to operate, you've just erected a frustrating barrier between you and your music. If it's noisy, everything that's recorded will be noisy, too.

When you're looking for an affordable, compact mixer that's good enough to regularly record complete albums and primetime TV soundtracks, call us toll-free (M-F 8:00 AM to 5PM PT).

You'll talk to a real person who'll send you our 40-page color tabloid complete with a 16-page hook-up and applications guide.

Then start exercising your musical creativity with the mixer that's becoming a classic for all the right reasons.

EXTREMELY RUDE, BLINKING SOLO LIGHT. Sounds like a minor detail until some night at 2AM when you can't figure out why there's no sound coming out of your monitors.

BEEFY HEADPHONE AMP WITH SEPARATE VOLUME FADER. Instead of the usual wimpy amp, the CR-1604 has a separate, high-gain headphone amplifier section with enough gain to drive any brand of headphone to shock volume levels that will satisfy even a drummer. Also has more than enough gain to drive any monitor amplifier.

INSIDE: QUALITY COMPONENTS like double-sided, through-hole plated fiberglass circuit boards with solid brass stand-offs, gold-plated interconnects and sealed rotary potentiometers that resist dust & liquid contamination.

BEST RFI PROTECTION OF ANY COMPACT MIXER. No matter how quiet a mixer's internal circuitry is, it can be sabotaged by external radio frequency interference. RFI is created by broadcast stations, cell phones, computers and even that expensive radio-controlled car your kid got for Christmas. RFI gets into a mixer via the input jacks where it uses the internal circuit traces as miniature antennas to produce noise ranging from a low-level hiss to actual, audible voices and music.

The CR-1604's 1/4" jacks use a shunting capacitor to stop RFI before the main circuit traces. Instead, RFI is re-routed back through the metal jack body and washer, then dissipated via the mixer's outer chassis.

XLR inputs are likewise protected from RFI via ferrite beads.

Next time you see a mixer with plastic 1/4" jacks, remember what you just learned.

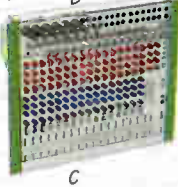
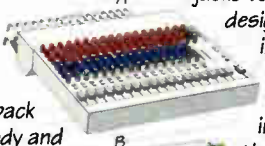
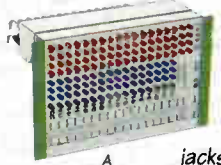
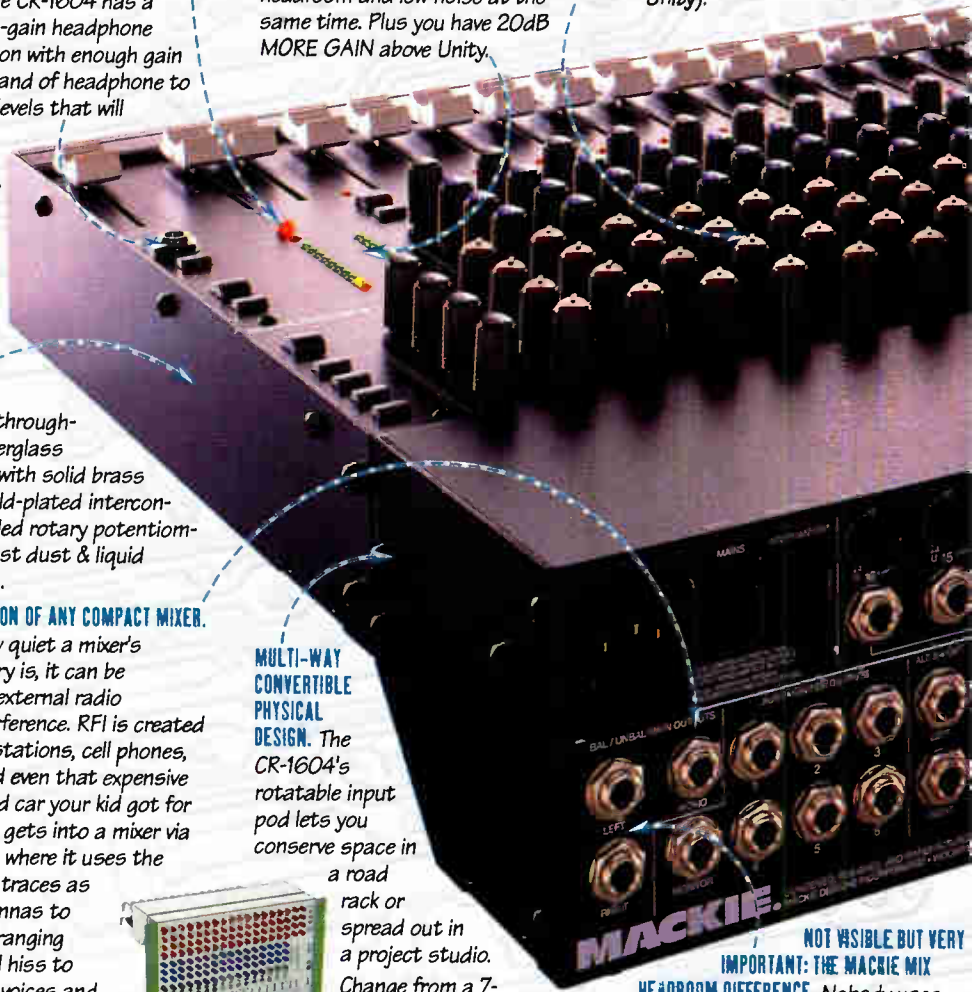
DUAL PURPOSE METERING SYSTEM. Besides showing main L/R output level, the LED ladders are used to establish input levels. Set a channel fader at Unity, press the channel's SOLO button and set input trim level. This approach achieves very high headroom and low noise at the same time. Plus you have 20dB MORE GAIN above Unity.

INSTANT HANDS-ON-ACCESS to constant power pan controls, musical 3-band equalization, ALT 3/4 extra stereo bus, stereo in-place solo, seven high gain Aux sends per channel (via four controls) and four high gain stereo Aux returns (20dB more gain above Unity).

MULTI-WAY CONVERTIBLE PHYSICAL DESIGN. The CR-1604's rotatable input pod lets you conserve space in a road rack or spread out in a project studio.

Change from a 7-rack-space mixer with jacks to back (A) to a tabletop design with jacks to top (B) in minutes. Add our optional RotoPod bracket (C) and rotate inputs and outputs to the same plane as the mixer's controls (a favorite for small SR set-ups). Any of these conversions takes just minutes with a Phillips-head screwdriver. And our XLR10 10-mic-preamp expander can be added in any of the configurations.

NOT VISIBLE BUT VERY IMPORTANT: THE MACKIE MIX HEADROOM DIFFERENCE. Nobody uses just one channel of a mixer (although most headroom specs are stated that way). In any mixer, the mix amp stage combines signals from ALL inputs at once. If it overloads, you can't back off the master fader because it comes AFTER the the mix amp. So audible distortion results when the mix amp gets bogged down with multiple hot inputs. Mackie's unique mix amp architecture provides as much as twice the mix headroom of conventional designs. No wonder it's a favorite of top electronic percussionists.



ANY OTHER COMPACT MIXER.

ULTRA-LOW NOISE. When you compare noise specs, look for the one that counts: all 16 channels up at Unity Gain — not one channel at Unity gain. No other compact mixer beats the CR-1604 when it comes to low noise floor.

MULTI-FUNCTION AUX SEND SYSTEM WITH LOADS OF GAIN. AUX 1 on each channel can be used either for effects (post-fader/pre-EQ) or switched to monitor sends for stage monitor or headphone cue signal (pre-fader/pre-EQ). AUXs 2 thru 6 are post-fader/post EQ. AUX 3 and 4 knobs can be shifted to AUX 5 and 6 at the touch of a button.

MUSICAL 3-BAND EQUALIZATION. The CR-1604 redefined equalization points for compact mixers: 12kHz Hi EQ (instead of 10kHz) for more sizzle and less aural fatigue, 2.5kHz Mid (vs. 1kHz) for better control of vocals and instrumental harmonics, and 80Hz Lo EQ (instead of 100Hz) for more depth and less "bonk." Others have copied these EQ points, but none have successfully emulated our quality equalization circuitry.

It costs us more, but the result is zero

phase distortion and a sweeter, more musical sound. It's another reason that the CR-1604 is a favorite of TV and film soundtrack scorers.

LEGENDARY MICROPHONE

PREAMPS. Instead of sixteen "acceptable" integrated circuit microphone preamps, the CR-1604 features six big-console-quality preamps...the same mic preamp design that's on our acclaimed 8•Bus consoles. You get tremendous headroom and bandwidth with less noise and distortion. If your particular application requires more mic inputs, simply add our XLR10 10-Mic-Preamp Expander. Both it and the CR-1604's internal mic preamps have real and verifiable specs of -129.5 dBm E.I.N., 300,000Hz bandwidth and 0.005% THD. No wonder several of the world's top microphone manufacturers use Mackie Designs CR-1604s to demo their finest condenser mics at trade shows.

INPUTS AND OUTPUTS AT PROFESSIONAL — NOT HOBBYIST — SIGNAL LEVELS. The CR-1604 operates internally at industry-standard +4dBu levels to help reduce noise. But it can also handle the weaker -10dBV levels found on some digital multitrack machines and other equipment.

THE PERFECT MATCH FOR ADATS, DA-88s AND HARD DISK RECORDING SYSTEMS. We'd dearly love for you to buy one of our 8•Bus in-line consoles, but the CR-1604 makes a very effective 8-track recording mixer. The CR-1604's first eight channels have post-fader channel inserts (channel access). This VERY important feature is found on few other compact mixers. It lets you create a "split console" so that you can simultaneously track on eight channels and monitor/mixdown on eight more.

EXPANDABILITY. If you add a second or third digital multitrack, you can use one or two additional CR-1604s with our MixerMixer active combiner. It lets you run 32 or 48 channels without having to "cascade" the mixers.

¹This is no idle boast. Consider these tours for starters: Madonna, Rolling Stones, Boyz II Men, Whitney Houston, INXS, Janet Jackson, Peter Gabriel, Bette Midler, Bruce Springsteen, Paula Abdul and Moody Blues. Mention in this list denotes useage by band members or tour techs and in no way constitutes an endorsement by the artists mentioned.

²More fine print: Mention in this ad denotes useage as reported to Mackie Designs and in no way denotes endorsement by the artist, program or production company listed.

Split monitor configurable for easy 8-track digital tracking & mixdown

Used on more superstar world tours in the last three years than all other compact mixer brands combined¹

Legendary studio-quality discrete microphone preamps

Used by members of the Tonight Show band, David Letterman band, Conan O'Brien band, Saturday Night Live Band¹

Expandable with XLR10 Mic Preamp Expander & Mixer active combiner

Used by Fox Television Sports for Monday Night Football on-field sound²

Built-like-a-tank physical construction (it's too darned homely to be fragile)

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Special mix amp architecture for twice the mixdown headroom of other designs

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World Radio History

FROM THE EDITOR

The Audio Elite

Every month, the covers of *Mix* are graced with spectacular images of recording facilities or major concert venues from around the globe. These are The Audio Elite: high-tech, high-end representations of the state of the art. It's a safe bet that you won't see any egg carton-walled basement studios or neighborhood karaoke bars on a *Mix* cover in the near future. I don't want to see them, and I imagine you don't either.

But looking beyond those slick covers are thousands of readers who represent the real world. I like to think of these splendid *Mix* covers in terms of the Ferraris and Maseratis that appear on the cover of *Road & Track*. Realistically, few readers plan to purchase a \$150,000, 180-plus-mph speedster, but they enjoy keeping informed about the automotive elite before plunking down a fraction of that amount for a Mazda or Saturn. And *Mix* readers are no different. Although they may be able to recite Neve Capricorn or SSL Axiom spec sheets from memory, their digital console budgets may be more in line with Yamaha's 02R, a low-cost, digital 8-bus mixer premiering on page 128.

This situation applies equally in terms of studio design. Typically, a great facility comes out of a studio construction project that has unlimited funding. However, money is no assurance of perfection. And for those operating on real-life budgets, a little ingenuity, advance planning and insight on the part of the owner/design team can lead to a successful facility.

But it's not easy. With the low noise floor of today's advanced analog and digital recording systems, flaws in the acoustical environment are readily apparent on a quality playback system. And the greatest obstacles in design stem not from lavish new construction in isolated areas, but in creating acoustical environments in existing spaces or problematic locations (within office complexes, highrises, etc.). In many cases, the problem is twofold: preventing studio sounds from leaking out, as well as protecting the recording environment from attack by sonically unsavory neighbors, such as airports, subways, freeways, steel mills, nuclear test zones and the like.

In this issue, *Mix* focuses on facility design and acoustics. Barbara Schultz chats with five TEC Award-nominated designers on overcoming challenges in studio design. Dan Daley examines three high-end project rooms. Rick Clark elicits tips from experts on room tuning. We also present the Class of '95, with photos of some of this year's hottest new (or remodeled) recording facilities. The section is especially popular as a resource for readers looking for ideas for their next rooms. If you're planning (or building) a new room now, give us a call next spring to be considered for next year's edition.



Appearing in subscriber issues this month is a voting guide and ballot for the Eleventh annual TEC Awards. Cast your votes for those people, products and companies whose efforts represent the best in our industry in terms of Technical Excellence & Creativity.

Your opinion counts.



George Petersen
Editor



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You're on the cutting edge. You record in the newest generation studio. You need tapes that are designed specifically for digital audio applications.

So we consulted with the most demanding artists and engineers in digital recording and spent months in development back at the lab. The results are Ampex 489 S-VHS, 488 Audio Hi8, and 467 R-DAT, designed specifically for digital mastering.

They are simply the finest mastering tapes you can buy. In fact, more artists, engineers and studios go gold on Ampex than on all other tapes combined.

Thanks to our unique dual coating technology, Ampex 489 and 488 feature low dropouts, high output, and the most consistent quality tape after tape. Plus, low abrasivity

to ensure long headlife. Which is why Alesis, the creator of the ADAT format, recommends Ampex 489 ADAT.

Ampex 489 is now available in our new 60 minute extended play configuration – for use on ADAT System 4 recorders or newer. Ampex 488 Audio Hi8, in 30, 60, and 113 minute configurations.

And for two track mastering tape, try Ampex 467 R-DAT. They're all easy to find, thanks to the industry's largest distribution network. And they're backed with the service and support that has long been the industry standard.

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A photograph of a man, Wayman Tisdale, sitting on a wooden chair and playing a red and white electric bass guitar. He is wearing a white long-sleeved shirt and dark pants. He has a joyful expression, with his head tilted back and eyes closed. The background is a plain, light-colored wall. The lighting is warm and focused on the musician.

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CURRENT

PRODUCT HITS FROM APRS by George Petersen

APRS, the Association of Professional Recording Services, is essentially the UK's counterpart to SPARS here in the States, and for the past 28 years, the organization has presented an annual equipment exhibition. Formerly known as the APRS Show, this year's expo was renamed Audio Technology 95, and from June 21-23, several thousand audio pros from Europe and the United Kingdom (along with a few Yanks from the colonies) converged in London's spacious National Hall.

Attendance was down from earlier years, perhaps due to the week's heat wave. But of greater concern to conference organizers was an overall decrease in exhibitors. On the floor, the major topic of conversation concerned how next year's European AES show in Copenhagen (scheduled for May 11-13, 1996) would affect APRS, and whether exhibitors or attendees would support two major conventions held just a few weeks apart. Time will tell.

Politics aside, the show provided ample product introductions; you'll see most of these at AES New York in October. Following are my picks for the APRS Top 10:

The most talked about item was the world premiere of the Yamaha 02R, a \$9,000 digital 8-bus console spotlighted in this issue on page 128. Don't run to your dealers yet—it doesn't ship until after AES.

The DMMI (Digital Mini Mixer) from Audio Design has two AES/EBU pair inputs (S/PDIF optional) that are treated as four individual channels in the mixer. This laptop-sized console offers sample-rate conversion, house sync lock, emphasis stripping, phase reversal, muting, pan pots, four post-fader aux sends (to two AES pairs), on-

board delay, selectable 24-bit (or noise-shaped 16/18/20-bit operation), reference tone generator, stereo output fader and a port for combining multiple DMMIs.

AMS/Neve launched **Encore**, a Pentium-based, SMPTE-driven automation system, available on new Neve V Series consoles and the AMS Logic Series of digital mixers. The system also can be retrofitted into any Flying Faders-equipped mixer. In addition to providing a logical, icon-based user interface, Encore provides a unified platform (similar to that of Capricorn automation) that can be used on a variety of consoles, which should simplify life for engineers who work in several studios or in multiformat facilities.

TEC AWARDS SPONSORS

The Mix Foundation for Excellence in Audio is proud to announce the sponsors for the Eleventh Annual Technical Excellence & Creativity Awards. Thirty professional audio manufacturers and facilities will lend their support to the TEC Awards 1995 at the Marriott Marquis in New York City.

This year's Platinum sponsors are JBL Professional (Northridge, Calif.) and Cardinal Business Media (Ft. Washington, Penn.). Gold sponsors are Alesis Corp. (Los Angeles), Ampex Media (Redwood City, Calif.), AMS Neve (Lancashire, UK), DOD Electronics Corp. (Sandy, Utah), Solid State Logic (Begbroke, Oxford, UK) and Tektronix Inc. (Beaverton, Ore.).

For a complete list of sponsors, please see page 93. If you would like more information about the TEC Awards, call (510) 939-6149.

Slightly more affordable is Uptown Automation's **System One**, a simple moving fader box (available in 8/16/24/32-channel packages). Similar to the SMPTE-based 990 System automation, System One is designed for situations where the user requires a couple of channels of moving faders on certain channels, groups or masters. System One connects to any console's insert points in a matter of minutes and is ideal for the traveling engineer/producer.

The Genex (Islington, London) **GX2000** is a magneto-optical 2-track recorder/editor in a three-rackspace chassis. The unit is based around Maxtor's Tahiti 1.3GB drive, and resolution is selectable from 8 to 24 bits. Featured are SMPTE chase, jog/shuttle controls and nondestructive editing. Its tape deck appearance simplifies operation, but for those who have forgotten how to use "stop" and "rewind" buttons, the GX2000 includes Windows-based control software.

Octavia, SADIe's modular workstation, has eight input and output channels and the ability to chain ten units for up to 80 tracks. Shuffle-Cache™ allows transparent manipulation of 16-, 20- and 24-bit files, while the SADIe3 editing software has instantaneous re-allotment of DSP, which can provide real-time processing (EQ, dynamics, sample conversion, etc.), backup or uploading while editing or playing tracks. SMPTE chase and an internal 2GB removable SCSI drive are standard. Optional are Sony 9-pin control, MO backup and hardware remotes with dedicated mix, edit and transport controls.

Focusrite announced its first digital product. The **Blue 245** 16/18/20-bit A/D converter ships next month, but analog processing seems as strong as ever. **Drawmer's 1962** is

—CONTINUED ON PAGE 16

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The screenshot displays a DAW interface with several tracks. At the top, a timeline shows time markers from 01:00:20:00 to 01:00:40:00. Below the timeline are several tracks, including a video track showing a person in a blue suit and a track labeled 'drums-03'. On the right side, there are control panels for 'VO Sub Mbc', 'compressor', and 'Dynamics 1164'. The compressor panel shows settings for threshold (-30.0 dB), ratio (2.90:1), attack (27 msec), and release (291 msec). The Dynamics 1164 panel shows volume settings for multiple channels.

The screenshot shows a multi-channel audio level meter with 8 channels. The channels are labeled '1', '2', '3', '4', '5', '6', '7', and '8'. Each channel has a vertical bar representing the signal level. The meter also displays 'SYNC MODE', 'SAMPLE RATE', and '1-2 FORMAT' settings.

The screenshot shows a multi-channel audio mixer interface. It features multiple 'INPUT' and 'OUTPUT' sections, each with 8 channels. The mixer includes various controls such as volume, pan, and solo/mute buttons. The 'digidesign' logo is visible in the bottom right corner of the mixer interface.

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INDUSTRY NOTES

Fostex Corp. of America reorganized its sales and marketing teams under the leadership of newly named senior vice president Dick Ravich, former president and CEO of AKG Acoustics. Sales managers (including Maggie Watson, Phil Celia, Doug Ordon and Martin Burns) will report to Ravich, as will Eric Richardson, who was promoted to marketing director...Ampex Media Corp. (Redwood City, CA) announced the retirement of vice president of Instrumentation Tape George F. Armes. Armes had been with Ampex since 1963...Former AMS Neve marketing manager Jim James recently set up a new marketing agency, East-West Communications, based in Singapore, to connect worldwide pro audio, video and multimedia manufacturers with customers in the Pacific Rim...New reps for beyerdynamic (Farmingdale, NY) include Michigan-based Great Lakes Audio; New Direction of Indianapolis; Innovative Marketing Midwest based in Elgin, IL; Audio Associates in Columbia, MD; and Greg Wilson & Associates of Eau Claire, WI. The company also appointed Richard Frankson as international sales manager...Gilbert Segel was appointed to the board of directors of Spatializer Audio Labs Inc. (Woodland Hills, CA). New Spatializer licensees include Iiyama Electric Co. and Anam Electronics Co...Meyer Sound Labs (Berkeley, CA) appointed Jim Cousins as its new European manager, based out of the company's office in Reading, Berkshire, UK...Lone Wolf Corp. (Seattle) will hold MediaLink Development Tools conferences in Seattle on August 24-26 and on November 30-December 2...Bruce Peterson was hired as director of marketing, Audio Division, at Crown International (Elkhart, IN). Crown also announced a \$1.1 million expansion and capital improvement plan, which includes construction of a 20,000-square-foot addition to the company's manufacturing facility.

slated for completion in September...Shure (Evanston, IL) named Jon Tatoes as product manager for all mixer products and Mark Brunner as manager of international marketing communications...Jon Sager was named director, Strategic Projects, for Mark IV Audio of Buchanan, MI...The Society of Professional Audio Recording Services appointed Michael Tarsia (president of Philadelphia's Sigma Sound studios and son of the first SPARS president, Joe Tarsia) to its board of directors. SPARS also opened a Miami chapter and welcomed Teri Sosa as its new Southeast coordinator, based out of Miami...Dallas-based live event production company BBI (formerly Bernhard Brown Inc.) named industry veteran Rick Stuart as general manager. Stuart brought in new department heads including Eddie Harbin in the audio department, Jeff Palmer in the lighting division and Mike Roth in rigging. Davis Chalmers is BBI's new production coordinator...Martin Fahey joined Twelve Tone Systems (Wartertown, MA) as vice president of sales and marketing...Systems Development Group (Frederick, MD) hired Rick Peterson as director of sales...Pinnacle Micro Inc. (Irvine, CA) appointed John Haynie, president and CEO of Newport Digital Corp., to its board of directors...New Hope, PA-based New Frontier Electronics appointed Mya L. Mitchell as director of administration. Latest reps for the company include Audio Associates in the mid-Atlantic region and Ron Tunks Sales Inc. in the Southeast and Puerto Rico...In a related item, Ron Tunks Sales recently opened a regional office in Atlanta, appointing Dave Schwartz as sales rep...Bad Animals/Seattle hired Natalie Wingert as vice president, production and marketing...Belden Wire & Cable Co. (Richmond, IN) appointed Stephen H. Lampen to the newly created position of technology development manager. ■

—FROM PAGE 12, CURRENT

a tube-based, 2-channel mic preamp-equalizer-peak limiter mixer-dynamic enhancer with analog and/or AES, S/PDIF and TDIF outputs. And for that true retro sound, Fletcher Electro-Acoustics (Torquay, South Devon) is now manufacturing classic gear designed by the late producer Joe Meek (of Telstar fame). The Joe Meek Stereo Compressor is an electro-optical design; the Joe Meek Voice Channel is a preamp/compressor/harmonic enhancer. Both units are finished in 1964-era hospital green lacquer that will enhance any rack. U.S. distribution is yet to be announced.

MARVIN CAMRAS, 1916-1995

Marvin Camras, often referred to as "the father of modern magnetic recording," died June 23 in Evanston, Ill., at the age of 79.

A professor of electrical engineering at the Illinois Institute of Technology, Mr. Camras held more than 500 patents, mostly in the field of electrical communication. He contributed to the development of multitrack tape recording and stereophonic sound reproduction, and he is credited with discovering high-frequency bias. In a 1946 talk at the Society of Motion Picture & Television Engineers conference, he introduced 35mm magnetic recording for motion pictures. SMPTE made him an honorary member, their highest honor. In 1990, then-President George Bush awarded him the National Medal of Technology.

CORRECTIONS

The June "Industry Notes" mistakenly reported that Music People! was the new distributor of beyerdynamic products. In fact, Music People! is a new beyerdynamic dealer—beyerdynamic handles its own distribution.

In the June "Soundcheck," Dave Dennison, FOH mixer for the Gyuto Monks, was incorrectly credited as the FOH mixer for the Jerry Garcia Band. John Cutler mixes for the Jerry Garcia Band, as well as for the Grateful Dead. ■

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USE READER World Radio History WORK INFO



by Chris Stone

TOM HIDLEY'S INFRASOUND™

DESIGNING FOR DIGITAL LOW END



Tom Hidley (L) with Shozo Kinoshita at BOP Studios, Bophuthatswana, in 1991, checking the monitoring environment.

ly accepted range of human hearing spans 20 to 20k Hz, with infrasonic sound pressure below 20 Hz, in that lower inaudible zone that is *felt* but not heard. Some think that animals are more aware of these sounds, and that's why it seems like they have advance knowledge of earthquakes. Infrasonics is a reality, a function of nature and physics. These sounds are present in the everyday world, especially in cities with lots of traffic on the roads and in the air, and they are definitely present in our recording environments.

Sounds in the 10Hz to 20Hz range—whether from

Infrasonics: *The branch of science that deals with infrasonic phenomena, i.e., sound waves with frequencies below the audible range.*

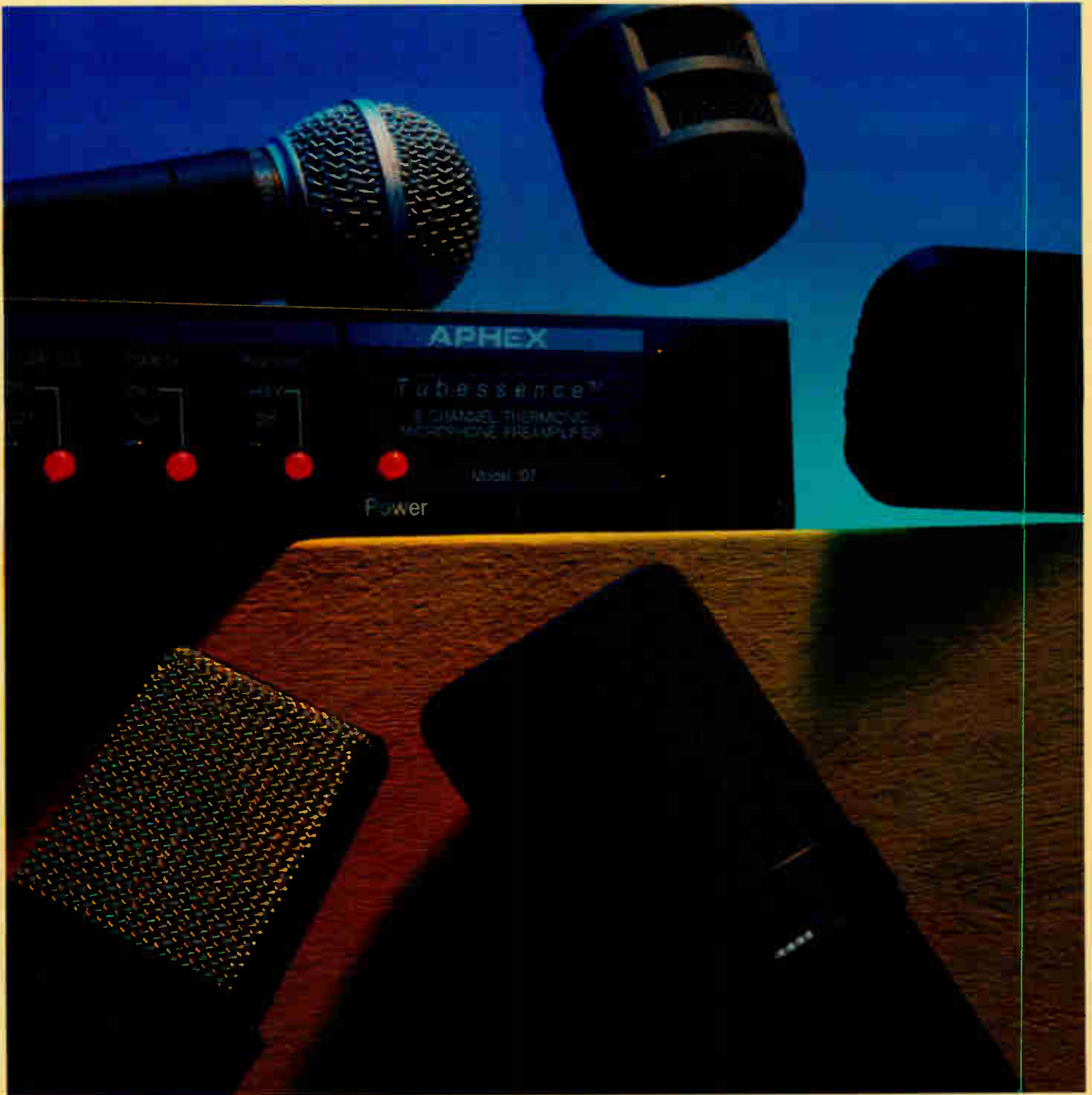
How would you feel if, after your big mastering session, you discovered a muddy bottom end throughout your new CD? On top of that, your monitors just haven't been putting out as much juice as when you first bought them. You check out your studio and discover that the air-conditioning unit has broken loose from its grommets and has been walking around on the roof—but you didn't hear anything unusual when you were recording.

We're talking about *infrasonics*, the understanding of sounds that humans cannot hear but that have a physical effect and, more importantly, a harmonic impact on the sounds of which we *are* aware. The general-

air-conditioning rumble or velocity noise from the ducts, or structure motion from the surrounding environment—may degrade the sound quality of a recording from 20 Hz upward. Infrasonic noise is injected into home systems and control rooms via the digital music source and can traumatize amplifiers and speakers. This causes a reduction in a system's headroom, as this noise is overworking components straining to reproduce this subaudible information.

Some of today's better microphones are sensitive and responsive down to 10 Hz. Others spec to 20 Hz but have charted tails extending downward into the infrasonic region. Digital tape machines will store sound and vibration to 5 Hz. CD players electronically pass signal down to 5 Hz. The latest consoles are operating in the infrasonic range and passing

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signals to the tape machine, power amplifier and speakers. It's all there, and for several years now, international control room designer Tom Hidley has been working on developing the "infrasonic studio."

EARLY STUDIO DESIGNS

Hidley began his career as a musician, playing saxophone, clarinet, flute and assorted reed instruments in the mid-'50s. He then began working for JBL, where he got an education in the design and manufacture of loudspeakers. His next gig was with Earl Muntz, working on the development of the 8-track cartridge for cars, running 6/12 volts rather than 110 volts. His first installations were for autos owned by Frank Sinatra and Nelson Riddle.

A two-year stint in New York with Val Valentin followed, wiring and installing/maintaining new studios for MGM/Verve, where he met members of the recording vanguard such as Creed Taylor, Quincy Jones and Phil Ramone. In 1964, Ramone was impressed with Hidley's work and dou-

bled his salary to come over to his A&R Studios as head of technical maintenance.

In 1965, Hidley teamed up with fellow A&R engineer Ami Hadani and moved back to California to build a progressive studio in the Radio Recorders "Annex" building on Sunset Boulevard. They adopted the name TTG and told people that it stood for "Two Terrible Guys." The studio did well, but by 1967, clients like Eric Burdon and Mike Nesmith were bringing much higher sound levels to the studios. Hidley began improvising with rolls of burlap to modify the acoustics. Tacking it up at one end of the room, arcing it down in a saddle shape and tacking it up at the other end, he solved the high-end room splash. To solve problems with the pervasive bass frequencies and floor movement, he built a 12-foot by 12-foot drum platform on industrial springs, which partially isolated the drums from the structure and tightened up the bottom end. Further treatment of the walls cut down horizontal splash going from side wall to side wall.

TTG was state-of-the-art, first with

4-track and then 8-track recorders. Then Hidley came up with the idea of doubling tape width to 2-inch, got 3M to custom-slit the tape, and in 1968, built the world's first 16-track, 2-inch tape recorder, delivering two to Wally Heider. In the coming years, he teamed up with Jeep Harnad at MCI and built the world's first 24-track machine. It was delivered to Record Plant for Stevie Wonder's *Innervisions*.

I first heard about Hidley because one of our clients at Record Plant in New York had been to L.A. and came back raving about this new studio. The client was Jimi Hendrix, and he convinced my partner, Gary Kellgren, that he had to hear how guitar sounded in Hidley-designed rooms. When we experienced first-hand what Hidley was up to, Kellgren said, "Stone, we gotta have this guy." Hidley came aboard as our chief of maintenance and did the acoustic design for our Third Street studios in L.A., which opened in 1969.

First came carpets, wood on the walls to get rid of that sterile look that was common to most studios at



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the time, then wrap-around monitors soffitt-mounted and with glass in three sections to flush them in. Hidley became a pioneer in monitor installation by doing away with free-standing or hanging speakers. Kellgren's next challenge for him was to devise a way to contain the drum kit, primarily isolating the kick but still allowing the drummer to be in the room with the other musicians.

"The thrust of the bass drum when a rock drummer hits it is intense," Hidley says. "A foot away, we have 124 SPL, centered at about 90 Hz with a fundamental at 45. There's enormous pressure, which will go anywhere like a rocket into everybody's microphones." We built perhaps the first open drum cage, reducing 90 Hz from the kit by 24 dB to the room, according to Hidley. Kellgren also wanted an isolation area for eight to ten musicians with full vision to the rest of the studio. Hidley introduced sliding glass doors into studio use, in what eventually became Record Plant Studio A.

At TTG, Hidley had developed a monitor system using JBL components that went down to 45 Hz,

which was pretty much the limit in 1966, but Kellgren preferred Tannoys. "Because of the absorption characteristics of Control Room A," Hidley recalls, "we were blowing Tannoys every day. We were replacing them so often that the cabinet wood was giving up, and we weren't able to mount the damn things any more." We built a free-air test platform on the roof of the studio and brought in some B&K test equipment to build a custom monitor. Hidley began building a cabinet for a double-woofer JBL system. Kellgren wanted to hear bass drum down to 40 Hz, something that had power and would hit you in the stomach. Eventually, we achieved our goal with the Record Plant monitor, which later became the Westlake monitor when Hidley formed that company in 1971.

THE 20HZ BREAKTHROUGH

By 1983, Hidley had built hundreds of studios all over the world and was contacted by Sedic Studios in Japan to design some new rooms. In Tokyo, he met Shozo Kinoshita, a loudspeaker design engineer in the TAD division of Pioneer. Kinoshita had

designed a new horn and cabinet (composed of very dense Apitong wood) that he thought might increase performance. In testing, he and Hidley combined components for a vertical monitor, with a woofer on top and bottom and the horn in the middle—resulting in the 30Hz vertical monitor prototype. To complete the picture, Hidley called for 4-inch-thick concrete boxes to surround the monitors in the structure. The results were spectacular, and within three months, Kinoshita had further refined the design so that they went down to 20 Hz.

Hidley's recent research into infrasonics has led to the development of what he calls "Infrasound." According to Hidley, Infrasound starts at facilities that are infrasonically clean, with a noise floor down to 10 Hz. If this is achieved, the studio will not contribute unwanted infrasonic pressure to the studio or digital recording. Considerations include the design of the studio slabs and the use of 3Hz spring suspension isolators within the structure. In addition to these specs, Hidley has developed

—CONTINUED ON PAGE 212



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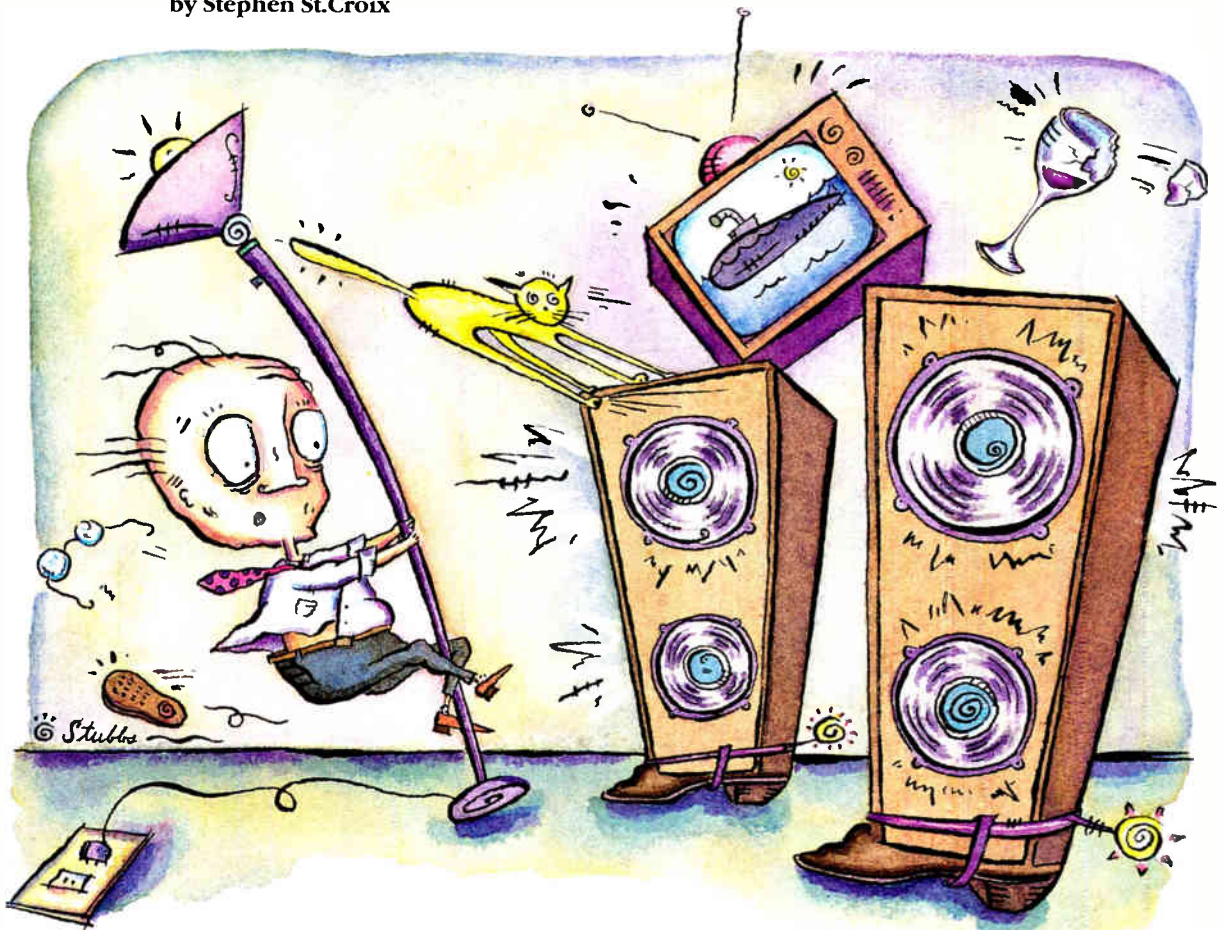
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USE READER SERVICE CARD FOR MORE INFO

by Stephen St. Croix



“DAS BOOT”

R UN SILENT, RUN DEEP

Yes, this column is about subs, but not meatball or Philly cheesesteak subs. And luckily for those of you who may not easily read German, this rewrite of “Das Boot” is in English. And this really *is* about Das Boot—Das Boot in the rear that a good sub will give you.

Although still available in a very limited choice of colors (first comes black, followed by black, with oak bringing up the rear), sub technology has come a long way since WWII. New technologies, combined with new answers for old problems such as shell rigidity, bracing and even internal power sources, have yielded a crop of subs that I find quite interesting. I thought you might, too.

R UN SIDWAYS, RUN DEVIATE

But first let me tell my traditional, seemingly irrelevant, tangential anecdote. Two years ago, I learned how

to use the Southern California surf to force-dive a Bombardier Sea-Doo. It cost me a broken ankle, but it was well worth it. Though submarining jet skis was considered equipment-abuse just a year before that, it is now expected that the less rational among us will try it at least once, and some of us will do it endlessly. Because of this, many manufacturers have redesigned their machines to incorporate a captive reserve within the air-intake systems to keep the engine running for a few seconds while underwater (adaptive design evolution due to repeated abusive demands on the system). Microsubs with massive power appear, Darwin would be proud; environmentalists appalled.

And as what evolves in the sea often moves onto land, microsubs with massive power are beginning to appear in our studios, living rooms and home theaters. The real story here is that several of these things re-

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ally can run silent and run deep, if you learn how to use them. Yes, this column is a primer on the real-world aspects of high-end, powered, consumer subwoofers. Next month, I will give you more specific information. Unless I don't.

WHY A DUCK?

Once again, I relearned a lesson that we all sort of always knew we knew: that there is no substitute for the real thing—no substitute for *power*. Whether it's Harleys or woofers, bigger pistons get you more bottom end—be it more low-rpm torque from a bike or more LF dB from a sub. Before I began to collect top-of-the-line, powered, consumer subwoofers for my tests, I tried smaller ones. Most of these little ones were silly toys, but a few actually worked. There was one that incorporated some very serious technology, and, in fact, worked quite well. More on that next month, too.

So, I set up a 5-channel theater system using two of these smaller subs—balanced, tuned and tweaked,

summed and phase-shifted until all was optimum—and sat down to listen...for two months. Very nice, but not entirely satisfying. They worked, but it wasn't quite what I had dreamed of. Something wasn't quite right. The setup seemed both slightly boomy and lacking, while the subs themselves checked out quite nicely. I had just decided that this might be the inevitable result of a summed bass system (a consumer trick wherein you add subwoofers to an existing full-range system but do *not* roll off the bottom to the main full-range speakers, so that all of the woofers in the house go as low as they can together*), when the first of the larger systems, the M&K, the only magnetically shielded one, showed up.

Surprise, surprise! There was nothing wrong with the little subwoofers at all. They were doing exactly what they were designed to do, exactly meeting spec. It was the *spec*, and what it meant subjectively, that was the problem. The little subs went down to around 32 Hz, and in pairs they did it at a reasonable level. The mini-monster subs go down to around 20, and do it at an *unreason-*

able level; and I guess that this was what I was really searching for.

The embarrassing truth is that, like a new kid still wet behind the XLR connectors, I had boosted the overall level of the little subs in a hopeless effort to generate a more powerful bottom end. Oops. But before you laugh, don't be too sure that you wouldn't do exactly the same thing. In search of rib-crushing *physical movement* from a monitor system, it is genetically impossible to resist turning up the subs, especially when they will deliver 35 to 40 Hz at room-vibrating levels, even though we all know what that will get us: room-vibrating 35 to 40 Hz, but still no room-*sbaking* 20 Hz. Okay, okay.

When I installed the new 20Hz subs, I discovered exactly the tight, extended, physically violent bottom end that I had imagined throughout my continuing childhood. And so what did I do? After a short three weeks of inviting all my friends over for acoustic re-arrangement of their internal organs, I finally *lowered* the sub-output level 15 dB, since by then I had figured out that I was no

—CONTINUED ON PAGE 213

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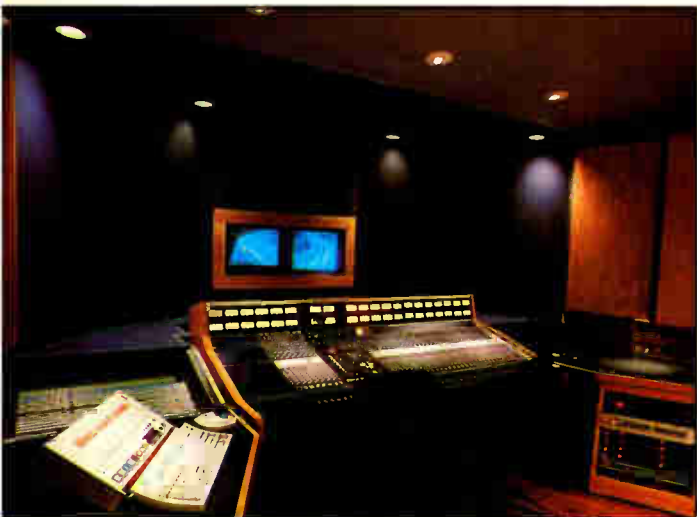


PHOTO: BOB ALACH

Squid Hell Recording Studios, Boston. This is the 24-track control room completely redesigned and constructed by Alacronics (of Wellesley, Mass.) in the fall of '94. The room includes an API Legacy with Uptown automation and Genelec monitors. The resolution of the control room/monitoring system is mastering-room quality.

The Valley Production Center, Lehigh, Pa. The audio suite in this tracking and mixing facility received a makeover in March of this year. Featured equipment includes a 44-channel Amek Big console with Supertrue automation and Recall, a 32-track Tascam DA-88 system, Pro Tools, ImMix lockup, and monitors from JBL and Yamaha. The facility was designed by staffers John, Scott and Chris Miller, Craig Shaffer, Jon "CJ" Ellsworth, Seneca D. Meyer and Mike O'Brien.



PHOTO: PETER TREBER

Machine Head, Venice, Calif. This facility, specializing in sound design and music for films and commercials, opened in July 1994. It includes a live studio and four MIDI/editing suites arranged around a central machine room. Each suite is equipped with a Fairlight CMA or MFX, Pro Tools, two Yamaha ProMix 01s and a wide selection of MIDI and outboard gear. BOTO Design of Los Angeles provided architectural and acoustical design.



PHOTO: BELLEMON

The Saul Zaentz Film Center, Fantasy Studios, Berkeley, Calif. Renovations to the Stage 3 dubbing theater at the Saul Zaentz Film Center were completed in March 1995. The redesign, by D.P. Stearns Co. of San Rafael, Calif., features a 96-input Otari Premier console with Diskmix automation and JBL monitoring configured to handle all digital formats, including the Sony SDDS 8-channel system.



PHOTO: DERRICK RATH

OF '95

A LOOK AT 19 OF THE YEAR'S NEW ROOMS

Bismieux Studio, Austin, Texas. Designed by studio manager Frank Campbell with owner Ray Benson (of *Asleep at the Wheel*), this facility opened in October 1994. Equipment includes a D&R Triton console with Audiomatic moving faders, Genelec 1031A and 1038A monitors, six Alexis ADATs, a Tascam ATR-80 24-track, and outboard gear from Neve, Summit, Sontec, Trident and API.



PHOTO: SCOTT BEVANS

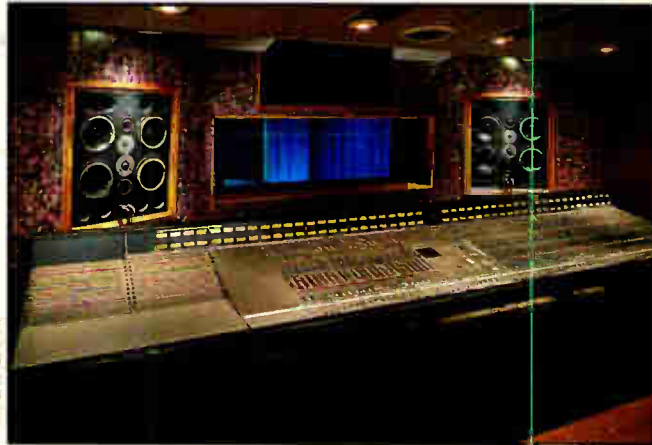
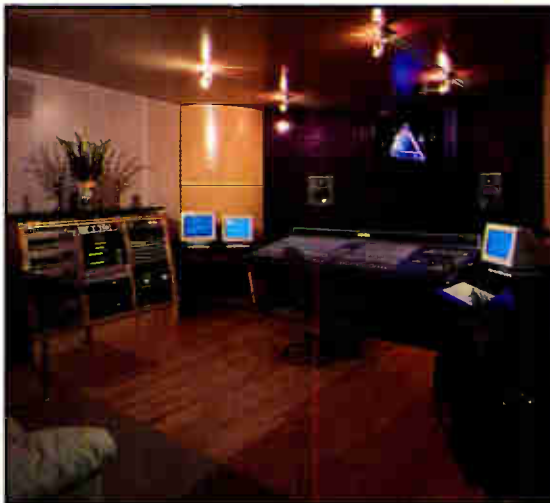


PHOTO: JOHN CONNELL

PHOTO: JOHN CONNELL

Allgood Productions, Atlanta, Ga. Allgood moved to its new location in October '94, tripling the size of the facility. This is A Studio (a 63x57-foot space with 16.5-foot-high ceilings and three iso booths), designed by William Allgood. The A Control Room is set up for surround sound and audio-for-video lockup from the facility's Betacam SP video edit suite and features an Otari Concept 1 console, 24 tracks of Tascam DA-88, 8-channels Pro Tools system and UREI monitors.



Mystic Recording Studios, Staten Island, M.Y. One hundred yards from the Staten Island ferry and featuring a Manhattan-skyline view, Mystic opened in January of this year. At the heart of the facility is an SSL 4080 G with Total Recall and Ultimatum. The studio is also equipped with a Studer A800 MkII, a Dynaudio M4M main monitor system and an array of new and vintage outboard gear. Design is by Richard Oliver of New York and UK-based designer and consultant Andy Munro.

Rocky Mountain Recorders, Denver. Denver-based consultant Jim Grimshaw and John Storyk (of Walters-Storyk Design Group, Highland, N.Y.) collaborated with studio owners Paul Vastola and Gannon Kashiwa on a redesign of this Colorado facility, completed this spring. The studio is equipped with two fully automated Amek Mozart consoles, Otari 24- and 32-tracks, and JBL, Genelec and Tannoy monitoring. RMR is the first studio in the region to fully implement 32-voice Pro Tools III/TDM platforms.

Wild Woods Post Production, Los Angeles. Designed by owner Derek Luff and Michael Cyzc of Architropolis (Portland, Ore.), Wild Woods' new 5,000-square-foot, four-suite facility opened on April 1, 1995. Shown is Digital Audio 2, equipped with a Tascam M-5000 console, five DA-88s and a 16-track Avid Audio Vision workstation. Monitoring is KRK 9000 mains, KRK 4000 surrounds and Auratone near-fields.



PHOTO: BRUCE MARDEN & ASSOC.

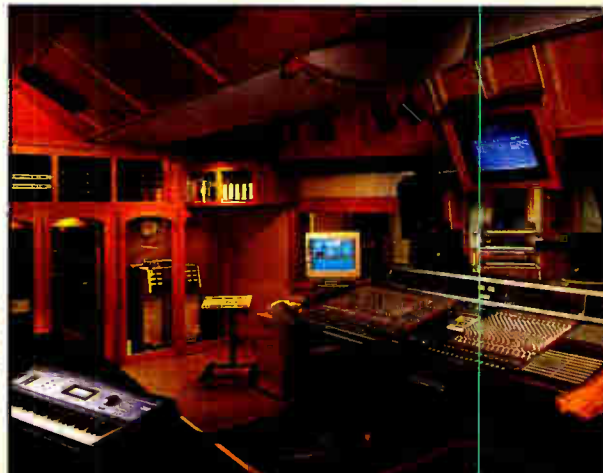


PHOTO: GUY AROON



PHOTO JIMMY LENNER, JR.

Sony Music Studios, New York City. This is the control room of the newly constructed Studio D at Sony, which opened in November '94. Designed by Los Angeles firm Waterland, the room is equipped with a Neve 8078 console with Flying Faders, Studer A800 and Sony 3348 multitracks and Boxer 5 main monitors.

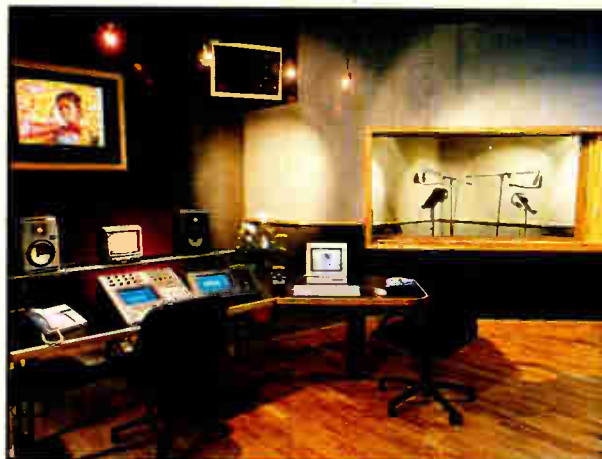


PHOTO JOFRE ALVAREZ

Ochoa Studios, Puerto Rico. Leading Caribbean audio facility Ochoa offers music and audio post-production services to Puerto Rico's ad agencies and radio and television stations. Pictured is one of three AMS Neve Logic 3 rooms that came online in March of this year. Designed by the studio staff, this room includes Panasonic DATs, an Otari 2-track, 8-output AudioFile Spectra DAW, and KRK and JBL monitors.



PHOTO BILL MILNE

Warner Bros. Studios, Los Angeles. San Francisco-based acoustical design firm Charles Salter and Associates collaborated with Ellerbe Becket

Architects on a major remodel of sound department facilities on the Warners Bros. lot. Shown is one of two identical film-dubbing rooms equipped with a G+ Series Solid State Logic SL8000 console with Ultimation, Albrecht MB51-35 recorders, and an array of monitors including Turbosound TSW124s, Community M4s and JBL 2445s and 4892s.



Snowbound Sound, a private facility in upstate New York, features acoustical design by George Augspurger. The monitors are also Augspurger custom-designed, with Manley tube amps. Steve Butterworth refurbished the vintage Neve 8078 console, adding 32-track, switched-matrix monitoring and GML automation to complement the Studer D827 digital 48-track and twin Studer A800 MkIII analog 24-tracks.

Sega Music Group, San Francisco. Sega of America's music and audio production center features large skylights and a picture-window view of downtown S.F. This room, which was designed by L.A.'s studio bau:ton, opened in May and includes a Euphonix CS2000 digitally controlled analog console with DSC, Dynamics and Snapshot Recall, 48 tracks of Alesis ADAT with BRC remote, Dynaudio and Genelec monitors and a range of MIDI gear.



PHOTO BILL HOLSHENKOFF



PHOTO JULIAN JAMES

Room With a View, New York City. In June '94, Room With a View reopened with an acoustical retrofit by original designer Michael Blackmer of Boston's MFB Acoustics and a new SSL 4064 G Plus console with Ultimatum and Total Recall. Recorders include a Mitsubishi X-880, Sony 24-track digital and Roland DM-80 hard disk recorder. Monitoring is Westlake BBSM-12s. In addition to music recording, the studio specializes in audio-for-video work.



PHOTO ALLEN LARSEN

Cascade Recording, Cle Elum, Wash. Cascade Recording opened in November 1994. It was designed by Michael Blackmer of Boston's MFB Acoustics and constructed by owner Allen Larsen. The room offers a Peavey AMR 1600 Series console; recorders from Panasonic, Tascam and Marantz; and Auratone and Tannoy monitoring.

Ultrasonic Digital, New Orleans. Part of audio/video post-production complex New Orleans Digital, Ultrasonic is an audio-for-video/film suite built in an existing historic structure. The suite was designed by Seattle-based Studio Pacifica Ltd. and opened in March of this year. It contains a control room, voice-over booth, green room and offices. Equipment includes Pro Tools III with TDM, Genelec 1031A monitors and full video machine room interface.



PHOTO GEORGE HALLOWELL

Orange Whip Recording, Santa Barbara, Calif. This facility features a free-standing, modular, control-room design by Chris Pelonis with acoustical treatments manufactured by Pelonis Sound and Acoustics of Downey, Calif. Open in May, 1995, Orange Whip features an automated Oram Sonics B-EQ console, Tannoy main and close-field monitors, and Mogami and Canare cabling.

The Journey Room, Calabasas, Calif. This facility reopened in July of '94 after undergoing extensive remodeling and a name change. The studio, owned and designed by producer/engineer David Tickle, features a Southwestern decor and includes a custom Euphonix CS2000 56-fader console, Augspurger TAD monitors, vintage Pultec, API and Neve EQs, and Tascam DA-88s.



PHOTO CHIP CAVERDISH



PHOTO ED COVER

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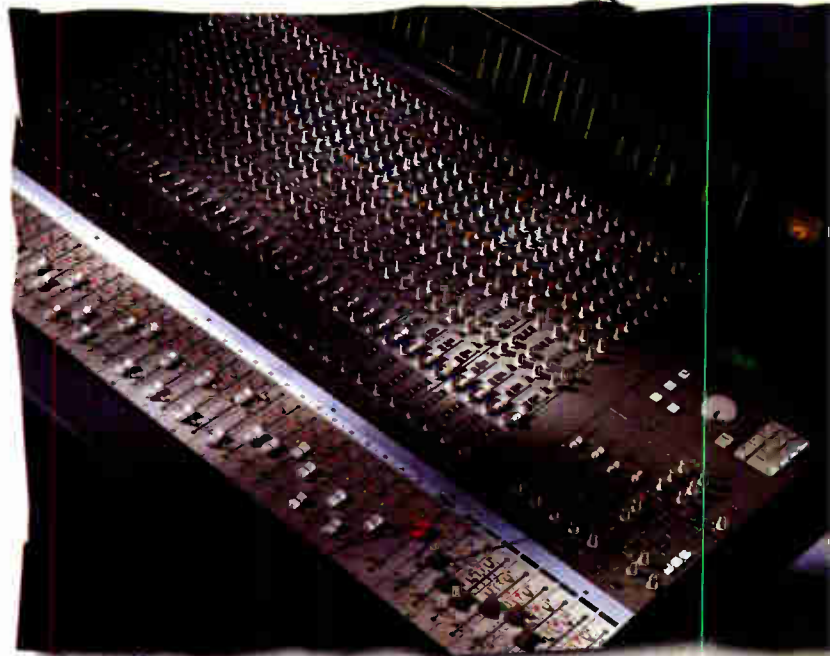
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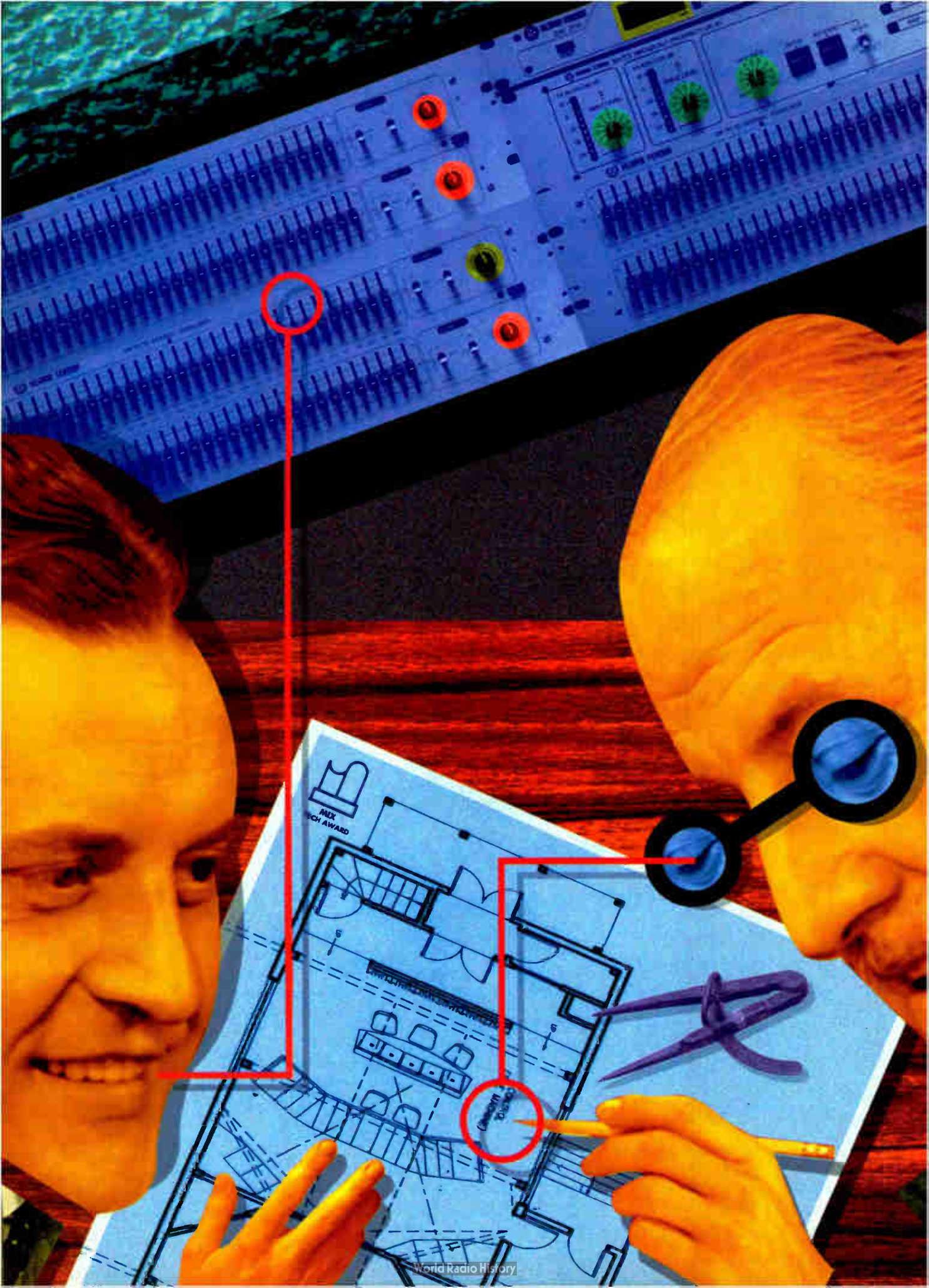
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THE **S** STUDIO DESIGNER'S **C** CHALLENGE

How to Stay Calm in Traffic, And Other Acoustical Problems

BY BARBARA SCHULTZ

Welcome to the world of the studio designer—the person who turns dreams into reality by taking a client's ideas and transforming them into musical spaces; and the person who turns dreamers into realists by pointing out shocking facts like room dimensions, building codes and, of course, construction costs. To shed some light on the practical aspects of the profession, *Mix* asked five of the U.S.'s leading designers and acousticians (and this year's nominees for a TEC Award) to discuss some recent project-related challenges and solutions. Here's what these designers have to say about their craft, in general, and the ways they solved some recent project puzzles.

ILLUSTRATION BY GORDON STUDER

**PETER MAURER
AND PETER GRUENEISEN**
studio bau:ton
Los Angeles

[The following is a combination of the remarks made by both partners in the firm—Ed.]

When a client starts out with a project, they know exactly how much equipment will cost because they

**The budget
is really what drives
it and sets the limits
on the project.**

—Peter Maurer

already have an equipment list and a kind of "wish list." Most of the time, they go into an existing building because building from the ground up is almost always more expensive and takes longer, because you have to go through the whole planning process and building-permit process. So, the client has a budget for equipment and a number in mind for what he can spend for construction. Then he approaches an architect, who lays it



out, tells him about his actual space requirements, and the owner sometimes hasn't thought about some of it: hallways and space that is taken up by the thick double-wall systems and acoustic treatments.

Today, a big deal is the handicapped requirements, the ADA [Americans with Disabilities Act] codes, and then they have the requirements for sound isolation and client separation, and once we have taken all this information, then we have to come up with actual square footage. And once we get to the point where we get back to the client with all the requirements and solutions necessary to actually get a building permit and fulfill all his dreams, we may be way over budget. Then we have to start cutting back, and we have to discuss compromises because, after all, the budget is really what drives it and sets the limits on the project.

For example, we can talk about a project that was recently completed. When that project started out, we were approached by the engineers who would be running the studio, which would be owned by a large corporation. They had found the building, but that building didn't comply on many ends with new building codes.

We had conversations with the producer, the engineers, the operators—the users of the facility. We then had to deal with a local architecture firm that was brought in by the corporate side. But this company did not understand the issues for a recording studio with sound-isolation and acoustic-performance requirements, so when they came in, all they wanted to do was cut the budget. “Why do you have to do double-wall systems? Why do you have to do such expensive door details, and why does the air conditioning have to be so quiet?” And we went through a very lengthy education process with them. But we had to specify what the users needed so that the studio can be used as a studio, and we had to

fight every day, every hour against cutting out really essential things.

We felt that the budget, after many discussions, was getting onto the right track. But then, 90% through the working drawings, the budget got cut *in half*. Then we had to make a lot of compromises in order to get this studio built. We had to redesign the whole thing. But we came up with a really inexpensive solution, and, fi-

**I remember
Bob Clearmountain
once stating that he
has never been in a
studio where the air
conditioning worked.
— Vincent Van Haaff**

nally, it had a happy ending.

The program was that they had a large control room, Control Room A, and there is a studio attached, which is naturally a very beautiful space because it has a lot of natural light. We tried to save the integrity of the space and do as little work as possible in the studio room, but isolate the control room to a minimum requirement, not as we usually do, and the iso booth was designed to be fully isolated so that they can do sensitive miking sessions in there.

Attached to the same studio, the big room, is Control Room B. The first compromise there is that we didn't do anything whatsoever in the studio. We just left the space the way it was—no additional isolation, no acoustic treatment, but just gave it a face lift to make it cosmetically nice. That was the first big compromise. Second big compromise was that Control Room B was basically X'd as well, so we just built the walls, the shell, but no isolated ceiling and no floating floor. But Studio A is fully isolated, all the way around with a floating floor and ceiling.

The strategic idea was that Studio B can be built out later on, so all the infrastructure—electrical conduits, PVC pipes and audio wiring—will be there, and stub-outs, so that in a later phase, without interrupting the production in Studio A, they can go into B and finish. So one of the solutions we arrived at was not to necessarily skip part of the work but to divide it into phases and just do what we can now.

And, of course, they also made equipment compromises, but what is really important is that through all these incredible challenges—which were not just professional challenges but emotional, as well—the end was happy. The client, at the end, is the one who determines whether the project is a success, and so far we have heard only very good responses.

**VINCENT VAN HAAFF
WATERLAND DESIGN**

Los Angeles

Design challenges fall into three categories: software (the design), hardware (the actual, physical construction) and a third one, which I call sportswear: It's the challenge that I always have—to stay original and give the client something that is different from a previous project, something that is exciting. Also, something that is perhaps an exercise for me, that stretches the brain and keeps me on my toes.

Under the heading of sportswear, you also find client relationships. Not the clients themselves, because they usually are under the spell of some kind of hopeful dream that they have; they're already on the road to the result. But then you have the people who stick their noses in and start giving them “better” advice, which confuses the issue. It's not the client who is the greatest challenge but their “friends.” To stay calm while someone is telling a client an out-and-out lie, or when this person is his wife's best friend and a lawyer that happened to work for General Motors once, and the uncle is a real bigwig in the Pentagon, and that uncle knows everything about blah, blah, blah. So you get these completely convoluted situations where people who don't know what they're talking about suddenly become the experts.

In the hardware situation, a recent example is a studio we designed that is attached to another building that is quite a large complex of recording studios, editing suites, video, just about everything. Next door to it was this little garage-like space—25 feet wide, two stories high—and we had to turn that into a professional recording studio with an office upstairs. Well, that challenge then lies in trying to outdo what was already built.

Specifically, the idea was to make a space outside of the corporate feel so that clients could somewhat privately enter a separate space without

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**Alan Parsons and
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going through a big reception area and a whole gaggle of onlookers. So this space has a separate entrance, but still it is connected to the existing complex. That's an interesting bit of a puzzle where you need to join two separate spaces in such a way that there is privacy and, at the same time, a common thread. We very deliberately made it more like a living room space and less of a technical space. It has a very lovely, warm feel about it. And, luckily, it turned out that it sounds wonderful, too.

That brings me to the software challenges, like air conditioning. I remember Bob Clearmountain once stating that he has never been in a studio where the air conditioning worked. You do all that stuff, and it generally is a disaster. It turns out that

they overcool it, or it will cool at a rate of five degrees a second, and you'll sit there freezing, and then suddenly everything shuts off and it's boiling again. In terms of priorities, I always look for HVAC kind of people, and then the electrician, and then the electronics installer, and then finally the construction people, because that's a very large pool of people that will always be quite excited to do something new as well.

[For the add-on studio], imagine that somebody already went about trying to build a little studio in there some time in the early '80s. But previous to that, apparently, it was a car-battery storage/replenishing shed. So we immediately began covering everything over with plastic and sealing everything and sort of cocooning it from the inside, and then we built, literally, another floor to bring the present slab floor up to the level of the existing complex. We had to raise everything by 19 inches, which gave us fine cable-trough space and infrastructure.

And then there is the challenge to rise above a cookie-cutter approach and give the client something excep-

tional. Oddly enough, I hit upon a thing recently where I started under-designing. It's almost like in the music-engineering field: When you do less, when you subtract all the nonsense, you end up with the essence of what the music wanted to tell, and here, it meant that I minimized the amount of tuning of the room. Oddly enough, this room is by all standards, perhaps, the least of a recording studio-type space that I had ever seen before. It has wood paneling on the walls, and all the things that you generally find in a recording studio, except the control room is a rectangle, and the studio is a rectangle, and by all standards in acoustics, it shouldn't be working, but it works wonderfully. I don't know if it's a fluke or a whole bunch of luck or just proof of the fact that all the to-do about standing waves and this and that and the shape of the room and the first reflection and the shortest path to your ear and blah, blah, blah... Maybe in detail it works out to be important, but when you actually have a good room, it has a good feel and it will just sound good.

The challenges almost don't lie as

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Dave Lockwood - Editor, Audio Media

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much in the design projects themselves as much as in the mortar that keeps them together, and in the frustrations that you encounter. Keeping calm when you're stuck in traffic on your way to JFK airport. That's the greatest challenge.

RUSS BERGER

**THE RUSS BERGER DESIGN GROUP
Dallas**

Every project brings with it a new set of goals, expectations, preconceived notions (both good and bad), personalities, budgets, site constraints and time limits. A designer needs the talent of a Flying Karamazov to be able to juggle all of these parameters so that the client is happy and the goals of the project are satisfied.

A designer should never forget that the studio, the business, all of it belongs to the client. There is a danger of getting so emotionally wrapped up in a project that you lose sight of the client's goals, desires and program. But you always have to keep the big picture in focus to keep things on track.

In the minds of many of our clients, their project starts with an un-

Everyone has heard the saying: "Time, quality, money—pick any two." Anyone who has built a studio knows how true it is.

—Russ Berger

compromising attitude toward quality, a more-than-reasonable budget and plenty of time to create the best studio that has ever been built. This is the "blue sky phase." If our client has a good grasp of the design and construction process, schedules, etc., then all proceeds as expected. If not, somewhere in the initial programming, planning and budgeting, reality will set in, and compromises have to be made in the program, budget and schedule. Everyone has heard the saying: "Time, quality, money—pick any two." Anyone who has built a studio knows how true it is. The challenging part is to know where and when to compromise, but there is no less expensive time to figure this out than when ideas are still on

paper and things are easily changed. Problems that are not dealt with early on will come back to haunt the project later.

Probably the most common design problem we have to overcome is an unfriendly site. Let me tell you about the "site from hell." When we were first approached with this project, the location was set, selected and paid for. No way, no how would it be moved. [Talking in a Rod Serling voice] Picture, if you will, an ordinary site on what started out as an ordinary day for an ordinary client. Let's call them Com/Post Video. A site located adjacent to an active railroad spur, beneath an active AM radio tower and right next to an elevated freeway on-ramp and climbing lane. Across the street, a fire station and a police station, and just down the road, a hospital with its own emergency heliport. The local water-treatment plant is close enough to produce audible noise and significant ground vibration. Less than a mile away is a general aviation airport. To the north, a commercial airport's traffic pattern puts the site underneath final approach or take-off, depending

Round up those mixing runaways!

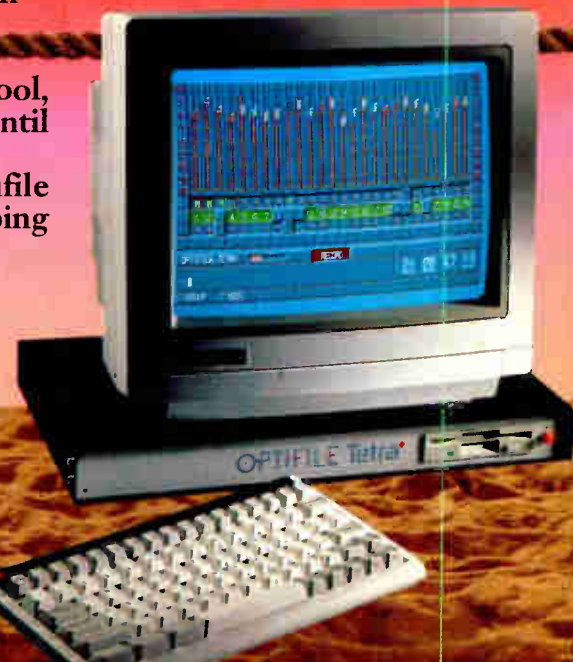
Are you a soft target for those "mixing rustlers"? Clients who love the sound quality of your all-time classic console and recording room for tracking and over-dubbing, suddenly head for some grey and soulless, automated console, when it's time to mix.

Optifile Tetra can halt this mixing stampede! In less than three days, virtually any make or model of console can be transformed into an

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on the weather. To the west, a naval air station launches and lands noisy jets at all hours of the day and night.

The diversity of noise and vibration sources—some intermittent, some constant—covered the entire acoustical spectrum. Although the project had an unreasonably tight

budget, the existing building shell was passable with adequate ceiling height and a well-built base slab to contain the floating construction. A location at the center of the building was selected to house the sound-critical spaces so that the common areas and offices would help buffer outside noise. To isolate the structure-borne vibration, concrete floating floors were specified. We were able to specify an isolation pad system with a deflection and mounted spacing that eliminated the majority of vibration while avoiding mechanical slab resonance problems often caused by wide pad spacing and larger, deflec-

tion-spring isolation systems. Walls were constructed on top of the floating slabs, and the ceiling was supported off the walls so that there were no rigid mechanical connections between the interior construction and exterior building shell.

With careful engineering and creative acoustical techniques, we were able to create a usable facility that pleased the owner. In this case, it's nearly a miracle that it works, but that's what our clients expect: unique designs, cost-effective solutions and predictable results.

The cost of a project can literally double if substantial areas require ADA-compliance.

—Dave Schwind

**DAVE SCHWIND
CHARLES SALTER AND ASSOCIATES
San Francisco**

We're working on an out-of-state project, a new film-making school, with an ambitious program of building two soundstages, an ADR/Foley stage, a 300-seat theater and a music-scoring stage. The school envisioned creating a mini film studio as a way of keeping the students on campus.

We've had a few bureaucratic hurdles to jump through, as sometimes occurs with state-funded projects, including, of course, the approval of an appropriate budget. We came up with some clever ways of combining like acoustical functions in order to cut costs and still provide a quality environment. Originally, the school wanted three soundstages, but we discovered that two soundstages and a shooting stage were adequate. A shooting stage need only keep out the weather, while soundstages require a sound rating of NC [Noise Criteria] 20 and cannot have high reverberation levels or echoes. We saved a significant amount of money, as the ventilation and wall design cost more for the soundstages. The ADR/Foley stage used to record sound effects and dialog was already a combined stage, but to reduce costs further, it became part of one of the soundstages. In addition, a small control room next to the soundstage functions as a sound-edit room, adjacent to an announce booth. It's quite an

Digital recording media have created the need for new forms

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Red 3 from Focusrite meets all these needs and more, with a uniquely intelligent approach to the design which minimises undesirable artifacts whilst providing compression and limiting in two channels, which may be linked for true stereo operation.

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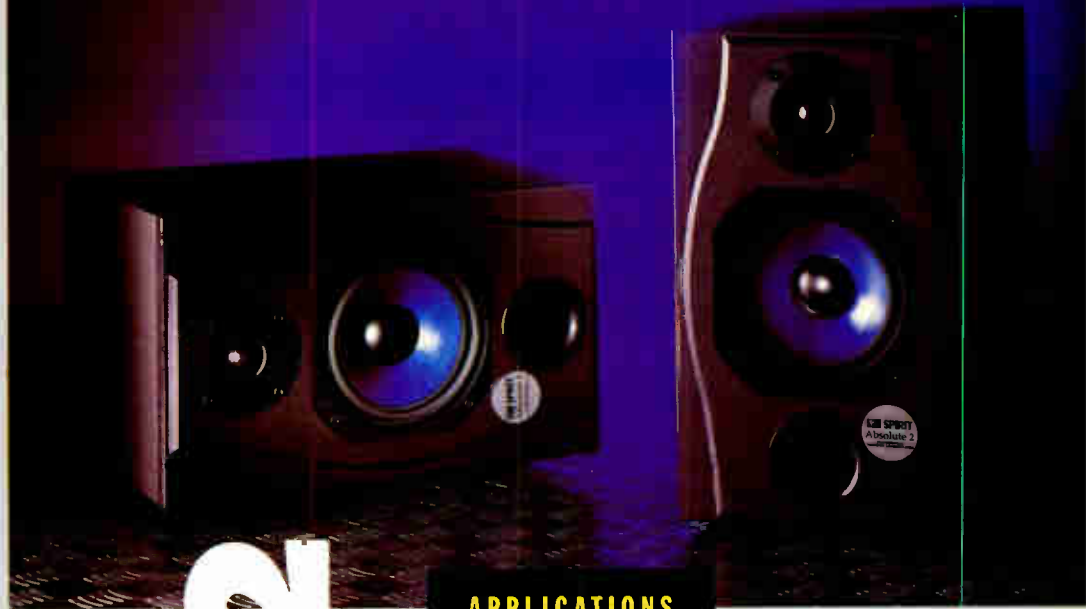
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Like all Spirit products, Absolute 2 is designed and built in the UK. We set an exacting brief for our team of British monitor specialists to create an affordable loudspeaker, capable of delivering the clear, honest sound of Spirit mixers. But before the result could bear the Spirit name, it had to pass the guru test. Would it measure up to Graham Blyth's standards of excellence? As the designer of many classic mixers over the last 25 years, he knows a thing about accurate monitoring, and he's a hard man to please. Fortunately the design team excelled themselves, turning in a speaker with professional performance at an unbelievable price: a speaker that Graham, and all the Spirit team, can welcome into the Spirit range.



2

★ *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.

Absolute 2 offers all this, at a price that no other professional monitoring system can touch - because we know from our experience with mixers that good design and high quality construction doesn't have to cost more.

APPLICATIONS

Studio nearfield monitoring

Video edit and post-production suites

Multimedia

The advanced vented cabinet design complements the 6.5" 165mm low-frequency driver to give smooth, extended bass response. The soft-dome tweeter and high quality crossover keep the frequency response smooth right up to a crisp high end that's free of unnatural colouration - unlike the harsh sound of some low-cost monitors.

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.
- Rather than compromise with off-the-shelf components, we use **custom hardware** built to our specifications - both drivers are exclusive to Absolute 2.
- 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!
- The LF driver features a **solid cast chassis and 30mm edge-wound voice coil**, for optimum efficiency and cooling. That means you can push Absolute 2 to the limits and still hear music, not distortion.
- The vented cabinet employs a **special port design** that does more than simply deliver extended bass response. With its carefully chosen dimensions, air turbulence is reduced, contributing to Absolute 2's smooth, uncoloured low frequency characteristics.

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efficient package. The architects are designing the building facades to look like a back lot. It's a very cool concept.

On another recent project, our client's cost-estimators neglected several budgeting items, including ADA requirements. The cost of a project can literally double if substantial areas require ADA-compliance, like restrooms and entry to the building. Budget augmentations were permitted, but to offset part of the cost increase, we had to compromise on the quality of the air handling units for the fans and compressors. We used systems appropriate for a speculative office building—not exactly the highest-quality equipment. In the end it worked out fine. The Foley stage ended up at NC5, which is extremely quiet and somewhat remarkable in a

remodel, especially with a garden-variety sort of air-handling unit.

To achieve NC5 in the Foley stage, remodeled from a very narrow screening room, we used 2-inch-thick lining on all of the duct work. We added sound-attenuation plenums—basically a box located downstream of the fan to provide a large expansion in the duct work, which works like a car muffler. Tom Schindler and Eric Broadhurst were key team members from this office. Tom worked out the design of the ventilation system, and Eric measured the sound levels in the existing facilities and contributed to the air-handling system.

The elusive nature of acoustical sound terminology makes discussing projects with clients a challenge. When you talk about acoustics or audio, the words can be imprecise. That leads to a lot of arm-waving and vaguery. We've helped solve this problem by creating a studio in our office to provide our clients with acoustical simulations.

Our presentation studio, a computer-driven multimedia platform, enables us to create simulations of environments based on design, allowing

our clients to hear what a project will sound like before it is built. Let's say you're a developer building a hotel next to a freeway, and maybe by an airport. Cost is your main concern, and you're focused on the cost of the windows, because the acoustical consultant has recommended an STC42 [Sound Transmission Class] window so that the guests can sleep at night, which is the idea of a hotel. But you know an STC36 window will meet the minimum code requirements and cost you \$150,000 less. We can create a simulation to show you what the extra money buys. We produce a calibrated tape recording at the site of the actual noise environment. We also make a videotape from the hotel site, to kind of create a virtual reality experience. In our presentation studio, which is like a small audio sweetening room, we simulate sound transfer through two proposed windows, and the different qualities become apparent, so the developer can make a decision. He can say, "For my \$150,000, I understand what I'm buying. I'm buying the ability of my guests to not hear diesels and jet take-offs in an objectionable way."

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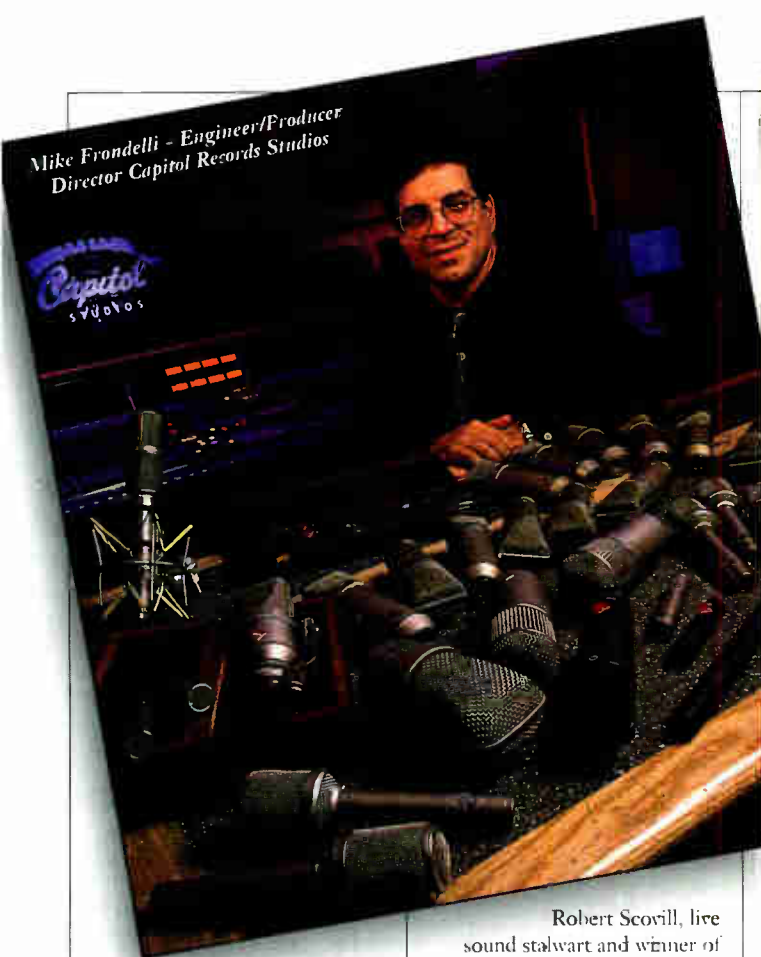
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Mike Frondelli - Engineer/Producer
Director Capitol Records Studios



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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.

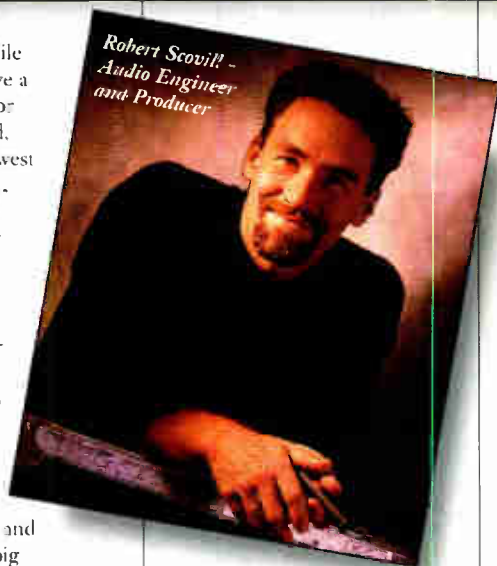
"I am using the new KM 184 both out on tour and at MusiCanvas." (Robert's studio in Scottsdale.)

"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 hyper-critical 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.



Robert Scovill -
Audio Engineer
and Producer



KM 184



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JOHN STORYK
WALTERS-STORYK DESIGN GROUP
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On an intellectual level, my biggest problem is digesting and sorting out what people really want and need, as opposed to what they think they want and need. In other words, generating program. More times than not, when a project is finally built, it is not even close to what somebody started out thinking their dream should be. And it's not only budget. Budget's an obvious one to point at; people usually want more than they can afford. But even in places where money is not an issue (and we have some projects where money is not an operating domain—rock stars, rich people, etc.), there are still problems

because they don't have program sorted out in terms of business needs or in terms of recording needs, square footage, volume, acoustic requirements...

For instance, someone will say, "I want to build a control room and a studio, and I want an SSL and 24 tracks of digital recording," and I'll ask, "How many people do you want to put in the room?" and there's this silence on the phone. They've got a make and model on an SSL, and the cost, of course, but they haven't thought about how many people to put in the room. But that's our job. It's not bad news, it's just a challenge we always come up against.

The emergence and really firm establishment of "the project studio"—using any definition you want, including all 25 of them—allow younger, sometimes more passionate people to get involved in studios, but they also bring their own challenges. Budget is one challenge. And many of the people involved with project studios are owner/user/musicians, so they have a slightly different agenda; they may have less experience with

The emergence and really firm establishment of "the project studio" allow younger, sometimes more passionate people to get involved in studios, but they also bring their own challenges.

—John Storyk

construction, so you've got to work a little harder to make the equation between music and technology.

[Basketball player] Shaq O'Neal's project studio, which we just finished brought some very wild requirements. Obviously, we're working with the tallest man in audio, since he's seven-foot-two, so everything has to be up, because even seated he's as tall as most people standing. He specializes in rap music, so you need lots of level. And he's in a very high-end residential

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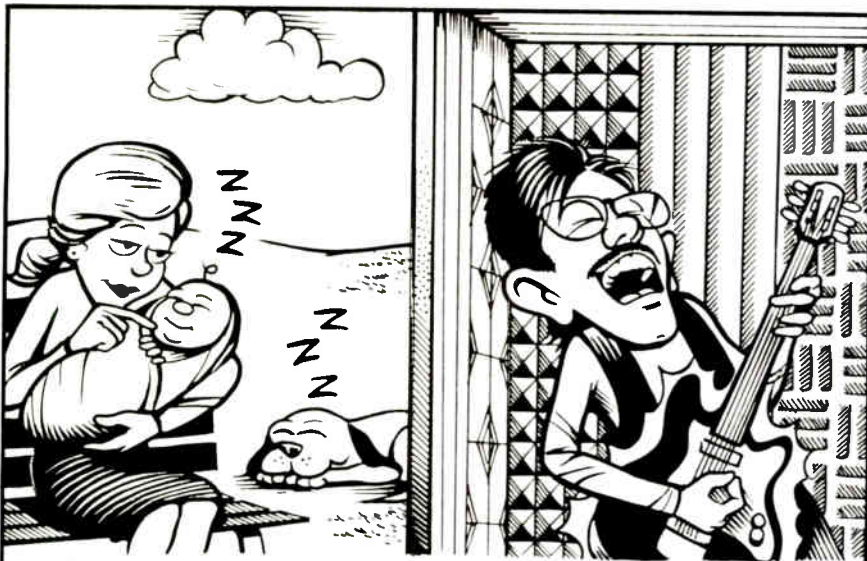
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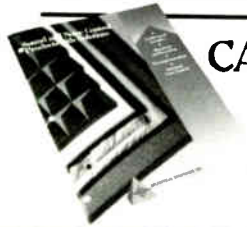
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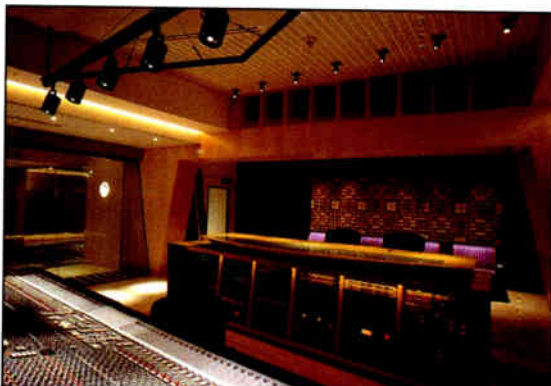
estate with rules and regs, so it had to be quiet. Also, tons and tons of out-board MIDI-type sampling gear had to fit into a room with fairly standard recording environment.

He had a big window—a sliding glass door—in the back of his room that had to stay for a number of reasons. For one thing, it looked out onto a beautiful lake. These are the kinds of things that come up in project studios, and the people don't want to hear no for an answer when this is going into their house. We also had to keep the window operable, because it's the only way you could get big things in and out of the room. So we changed the opening so we got good seals, and then we made removable (albeit not easily, but nevertheless removable), giant, six-foot-high, clear-plastic diffusers, so the whole back wall is diffusive, which is acoustically correct. We designed the diffusers, and RPG built them for us.

We also had to take everything and raise it eight inches, and that had certain implications on ceiling design. We had to design a special fan for the Soundcraft 2000 console. We actually chose drafting stools for him to sit in. He just doesn't work in regular chairs. The other headache was just sheer isolation. He listens at very, very loud levels, and keeping that room from exploding every note but still making it work in a residential setting was an interesting challenge.

The project studio people, since their agenda is very often not really commercial, bring other things to the table, and they're the ones who are pushing us. Almost like rock 'n' roll pushed the commercial studios in the late '60s and '70s. The most interesting, far-out stuff was done there. I find the smaller project studios get you to push further and harder, and develop wall sections that do the same thing for less money because [the clients] just have less money. They give you more gray hairs, but when the clay is done, that's how you learn. ■

Barbara Schultz is Mix's copy editor.



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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.

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by Dan Daley



PROJECT DESIGN: THREE STUDIOS

Project studio designs are moving upscale. In many instances, it's for the same reasons people move into larger houses: Careers grow, families get larger, and people simply want something a little bit nicer than they had before. Also, project studios are changing in nature, expanding their applications, and in the process, redefining themselves: There are mobile project studios now, and it's becoming increasingly difficult to exclude project studios that have become part-time-for-hire facilities.

In any event, the designs have had to keep pace. And considering the fact that the original project studio concept started without a real nod toward design ("ad hoc" is the term I've used frequently in this space), they've come a long way. This month, we'll look at three of the more upscale ones, two of which had a budget in excess of a million dollars.

C&C'S HOUSE OF SOUND

Fran Manzella's FMRTS in Westchester, N.Y., did the design on House of Sound in Manhattan for Robert Clivilles and David Cole, the team that made up C&C Music Factory and has produced and remixed multi-Platinum recordings for the likes of Aretha Franklin, Mariah Carey and others. (Cole died from complications of spinal meningitis earlier this year; the studio is now owned solely by Clivilles.) The task in this instance was to combine high-SPL functionality, aesthetics and efficient operations into a single, somewhat oddly shaped space.

The Basics: 7,000 usable square feet on two floors; SSL 4072G Plus, SSL 4064G, both with Ultimotion; CAD Maxcon II console; (2) Studer A827 multitracks; Sony APR-24 multitrack; Dynaudio, Tannoy/Hot House, Westlake, Yamaha and Auratone moni-

Above:
House of Sound,
Westchester, N.Y.

Once again, Allen & Heath has succeeded in bringing you our legendary British EQ. A brilliant 4 band, full sweep, equalizer that's absolutely precise, giving a sweet breathy top end and a solid controllable low end.

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The EQ circuit features an FLT switch which is silent thereby virtually eliminating any possibility of DC clicks to the system and has an LED to notify you of the EQ status.

Sweepable Lo-Cut Filter

Reduces low frequency source noise such as pops when close miking stage noise or amplifier rumble. The sweep control allows you to precisely set the filter cut off point to a maximum of 400Hz. Oil-rubbed filter bandwidth of better than 20Hz to 30kHz -1dB.

+48V Phantom Power

Individual selectable +48V DC line MIC XLR to 92dBu (0dBu = 0.775V) 50mA supply current available on the 15x channels by external jumper pins.

MUTE

The mute switch toggles the channel on or off (muting) using a silent FLT circuit and has a red LED to show the mute state. These buttons are programmable to any one of eight separate Group Mutes. **Check out the section "Programmable Mute Groups"**

Pre Fade Listen

This switch automatically overrides the selected monitor source (in the headphone jack or the external monitor output) with the pre-fader channel signal to check signal quality and gain settings.

Fader

100mm long throw smooth travel fader offers +10dB boost above the normal 0 operating level. A raised write on strip below the faders is used to number and identify the channels.

MIC/LINE

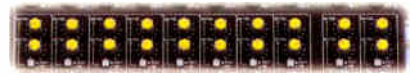
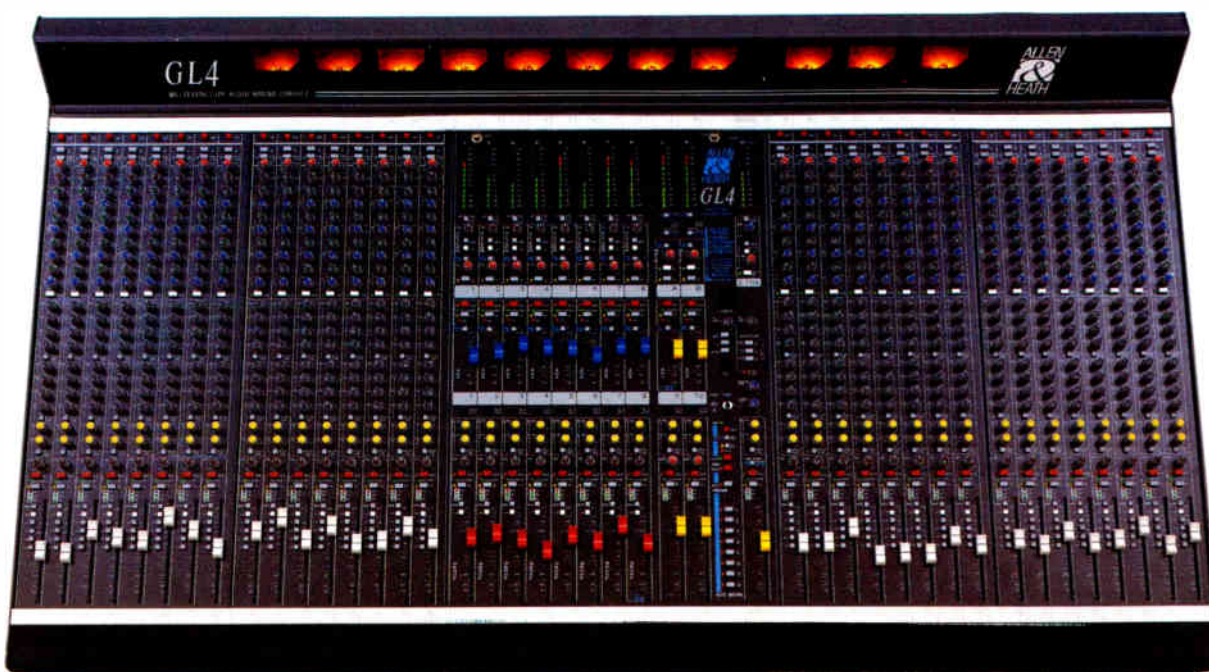
Selects either the MIC or LINE input source. Our MIC/LINE switch works as a 20db pad. Our MIC/LINE switch works as a 20db pad on the XLR connector which allows you to plug line level inputs into the XLR connector. No more getting out adapters to get your XLR line level sources into the console.

Input Meter

For complete control of the channel signal level a 3 stage LED meter shows pre fader signal presence (dynamic indication starting from -20dBu) 0dB normal level and signal peak (5dB below clipping).

Group Module

This is where it all happens. The Allen & Heath GL4 is designed for maximum flexibility with absolutely no compromise in the operation you configure it for. That's the philosophy behind the layout of the group master section. Full flexibility in programming involves the application of the moment the ideal control layout can be arranged. The topology that we have chosen to achieve this has never been used before on a console in this price range.



AUX Reverse Section

This is where the whole Front of House/Monitor Console switching thing takes place. When these switches are depressed it routes what was the auxiliary Master level to the corresponding group (Left/Right fader below). You'd use all the channel aces in the Post fader/Post eq position. Remember they're mutes now! In order to get the wedge mix the source select switch for the mono master fader is what you need. This button switches the source for the mono fader from the mono buss to the AFL/PFL circuit. You'll notice that each of what USED TO BE the aux master sends has an AFL switch on them. Now those buttons turn the mixes on and off in your wedge mix. Cool huh!

Matrix

Of course no sound reinforcement console worth its salt is complete without a matrix section. The Allen & Heath GL4 has an 11x2 matrix that has the unique ability to be into corresponding auxiliary sends. This is very cool for doing on the fly cue mixes and mix-minus stuff.

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GAIN

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Phase Reverse

Reverses the phase of the input source to correct the phase differences often encountered in microphone placement, cables wired in reverse and reverse wired microphones. Correcting the phase of a signal can also be used to minimize acoustic feedback in microphones in live sound mixing.

AUX Sends

10 aux sends with individual level controls and pre-post fader switching allow uncompromised routing to combinations of external effects devices, cue systems, stage monitors and the like. These are arranged in two groups of four and one group of two for logical grouping of effects and monitor sends. Internal jumper options allow permanent configuration for pre or post fader rather than switched if required. Further jumper options select the pre-fader sends to be pre or post EQ and pre or post multi-pro EQ (post multi-band setting). In stage monitor mode the 10 aux sends become the 10 mixer per input all post fader and EQ to allow total functionality as a dedicated stage monitor mixer.

Routing

This bank of switches routes the pre-fader signal to the L and R and Groups (in pairs) and the pre-pair signal to the MONO mix. In STAGE MONITOR applications the MONO buss is used for AFL monitoring to the stage engineers wedge speaker.

Programmable Mute Groups

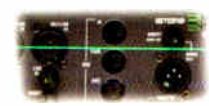
This system is a total no-brainer to operate. Hit the **Mute Group Master** button and the mutes come on with their corresponding red LEDs lit. Hit **Mute Preview**, select another master and the green LEDs tell you which mutes are going to come on when you go to that group. Hit the **Group Edit** button, mute master button and change the status of each mute (green LEDs tell you whether they're assigned to that group) hit group edit again and 'Voila!' those changes are stored. Heck, if you really want to get fancy, check out the MIDI capabilities we've got up our sleeve.

PAN

The new pan circuit gives even power separation on all busses. The pan control positions the signal between L (odd) and R (even) of the routed outputs. At Allen & Heath we use a differential constant power pan for a multi application environment. This introduces a 2.5dB dip in the center position. This has no effect on the completely separate mono buss.

MIDI Capabilities

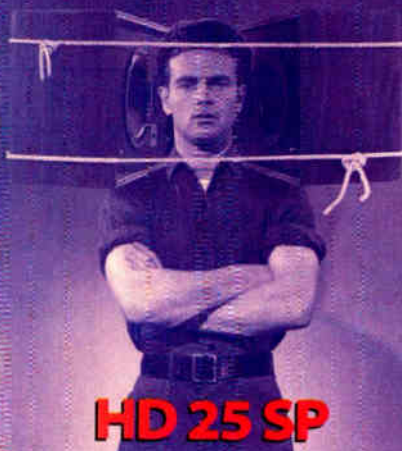
MIDI in/out and through allow you to run the programmable mute system via any MIDI external control. In addition the system can be set up to send program changes to external devices so that as you change form scene to scene your effects or any other MIDI controlled parameters are automatically set. These and many more implementation schemes are available on the GL4.



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tors; extensive outboard including Lexicon, Focusrite, AMS and Klark Teknik.

Design Theory: The three-room complex is located on the first floor and basement of a Greenwich Village building, which required significant renovations to the plumbing, electrical and structural systems. Manzella handled the acoustical and technical designs, working with architectural redesigns by L.A.'s studio bau:ton.

According to Manzella, the design called for two major control rooms, each with a large-format console. One room was to be attached to a traditional recording space with a pair of iso booths to offer a variety of acoustical environments. The second main control room is more MIDI-oriented, with a smaller, acoustically neutral recording space. A third room, originally planned as an editing suite, evolved into a dual-purpose space for that purpose and for 24-track MIDI pre-production work.

Monitoring was an issue. The custom Tannoys were intended as the main monitors for the facility, but a last-minute suggestion by engineer Bob Rosa introduced the Dynaudio speakers to one room. "You design based on the customer's equipment list," Manzella says. "So the change in monitors required a variation on the geometry of the speaker placement." What had been an equilateral triangle now became more obtuse to address the fact that the speaker itself and its placement had changed." Manzella also incorporated additional diffusion from the ceiling and the back wall to induce a more diffuse return to compensate for the wider triangle. And in doing so, he and the clients found they liked it so much that they did the same thing to the other room with the original Tannoy monitoring. "I'll be the first to acknowledge that no one gets it absolutely right the first time, every time," Manzella says. "It always requires some experimentation, and it's important to make the final fine adjustments to the acoustical treatments once the monitors are actually in place."

Manzella also agrees that upper-echelon project studios have increasingly more in common with commercial facilities. One major distinction, though, is that project rooms even at this level don't have the

same client amenity requirements of a typical for-hire facility. For instance, in a commercial facility of this scale, separate client lounges would be considered de rigueur; in this case, because C&C was essentially the client, a single lounge was all that was necessary. However, the project studio application did not preclude the inclusion of Americans With Disabilities Act accommodations; the building is mixed-use, and Manzella, who sees more and more of his design work going into producer-owned studios, stresses the fact that ADA requirements need to be planned for ahead of time.



Studio 32, Orlando, Fla.

SHAQ MAGIC: STUDIO 32

With multiple careers being common these days, it's not surprising to see basketball superstar Shaquille O'Neal delving into music and a home studio at his Orlando, Fla., estate. (Movie star Eddie Murphy did the same thing with a rather elaborate home studio in New Jersey about five years ago.) O'Neal also has been quite successful at it, with a Platinum rap record under his belt and another that just passed Gold.

The Basics: a 450-square-foot control room with a small (okay, but it's tall) iso booth attached; 32-input Soundcraft 2000 console; (3) Tascam DA-88s; Meyer 833 monitoring; Roland DM-80 workstation.

Design Theory: Studio 32 was designed by the Walters/Storyk Design Group, aided by Gary Platt of Platinum Post in Orlando. The most interesting thing about the design is how it is referenced to scale. O'Neal is 7 feet tall, so his height dictated that all furniture in the studio, as well



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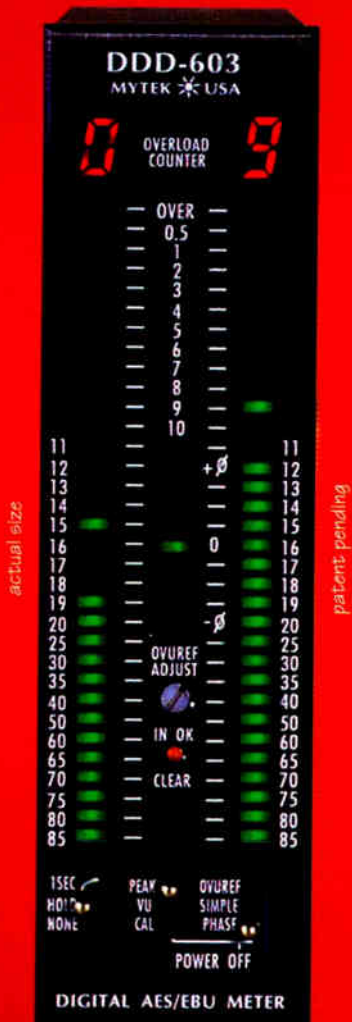
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as the Soundcraft console, had to be elevated 10 inches above "normal." Adjustable-height drafting chairs are used to accommodate the merely mortal proportions of other engineers who work in the studio. "Mixing from a slightly higher position than normal also helps mitigate the too-frequently encountered early-reflection-off-the-console syndrome," acoustical designer John Storyk points out. The studio monitoring is also adjustable, with a motorized lift that holds an assortment of close-field monitors, as well as a 35-inch Mitsubishi video monitor.

"There are several interesting notes about the studio acoustically," Storyk says. "Shaq plays music very loud. Isolating the studio portion of his home required full studio floating-floor specifications." To keep monitoring clear at high SPLs, Storyk placed a customized clear RPG 734 diffusor near the rear control room wall on weighted stands. Additional diffusion and room treatment was accomplished using SDG Type C-2D diffusors. MDI acoustical panels and custom bass wedges. The frequency response of the room is ± 2 dB (full frequency range) without the use of the system-recommended CP10 parametric equalizers. "The basketball net on the front wall has minimal impact on the room's acoustical response," Storyk laughs.

SONY/TREE

Russ Berger Design Group designed Sony/Tree's new demo production studio last year as part of a completely new building to house the publishing company's offices near the top of Music Row in Nashville. The studio is booked mainly by in-house writers and producers, thus putting it essentially in the project domain, despite its technological depth and considerable size. It also is used for artist development projects, as well as song demos, according to general manager Pat McMakin. That was the case with the previous studio, which generated parts of Brooks & Dunn and Vern Gosdin records. "By having ongoing artist de-

velopment projects at the studio, it helps keep revenues up," McMakin explains. "So we knew we needed a full-blown studio based on that history." He also had a million-dollar budget, nearly a third of which went into design and construction.

The Basics: 2,000 square feet with separate control and recording rooms, designed for tracking, overdubbing and mixing. Side-loaded Sony 56-input 3056 console with ten API 550S modules onboard and Uptown moving fader automation; monitoring is Genelec 1035B, Alesis Monitor 1, Perreux amplification; Sony 3324 digital and Otari MTR-90 analog recorders; onboard: the usual suspects but includes a Manley stereo compressor.

Design Theory: "Look, at this level, the only real difference between a project studio and a regular one is in the application," says Berger. "Otherwise, there's no real distinction." What did change, though, is that the control room was designed to accommodate a larger number of people, because even demo sessions in Nashville generally involve full bands. And the sweet spot had to be widened for that purpose. Berger used his own geometric computer-modeling programs in conjunction with a CAD program to achieve a slightly modified equilateral triangle approach, in which a 5-foot-wide area (approximately the width of the console) at the producer's desk, 7.5 feet back from the board, is the prime listening area. To achieve this, the Genelecs are mounted 8.5 feet apart, cone to cone. "You can do this with a ruler, a protractor and experimentation," Berger says. "The point really is to get a wider sweet spot by having the reflection path avoid the listening area. Of course, the wider the spot, that harder and more com-



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plex it gets to accomplish."

PERSPECTIVE

It might be useful at this point to stop and consider the evolutionary path being taken by project studios. As recently as five years ago, the idea that such a facility would be costing in the seven-figure range seemed remote, if not implausible, for all except the loftiest and most successful of top-act producers (all right, and sports/entertainment stars). The fact that I made three phone calls and immediately found three indicates that it's become a lot more common. What happens when an industry market begins to stratify within itself?

For starters, the products available to that market niche also begin to stratify, usually along price and functionality lines but also according to more esoteric areas like interfaces and usability. Manufacturers are going to have to further segment product lines and go fishing for prospects in waters they may not be familiar with. And this can have an effect on product development costs and pricing. (Ever notice that when oil is plentiful, car makers spend less time on smaller, more efficient cars?)

Also, the benchmarks of audio quality have begun to establish more varied references. This has been a project studio hallmark for years in genres like hip hop. Distortion has become a sought-after effect rather than an anomaly. Records are made today not only because someone is capable of it, but simply because they can. The only true reference at this stage is whether someone wants to buy the product. In a society that's both multicultural and market-based, what more could one ask for? Yet, the size and variety of the project studio niche could also be pointing it toward some kind of a shake-out. We've already seen a sort of backlash against the personally intensive approach to recording, with more and more artists going the band-plays-all-at-once route. All of this will have an effect on the fortunes of for-hire studios, who've watched project studios eclipse them in numbers and, in some cases, revenues, for the past decade. Whatever the future holds, it will be interesting. Stay tuned. ■

Dan Daley is Mix's East Coast editor. Love, and eight tracks, is all you need.

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DIGITAL AUDIO PRODUCTIONS

A DESIGN FOR THE '90s— SANS CONSOLE

D

igital Audio Productions has been up and running a little more than a year now. Partners Russell Bond and Alice Hamamoto are the driving force behind this unique audio facility, which was designed from the start with a computer as its centerpiece, rather than the more traditional approach of a multi-input audio console.

Bond began his audio career as an engineer in 1972 at Accurate Sound in Redwood City, Calif. In the summer of '73, he and partner Harn Soper built Soper Sound Studios in Palo Alto, where he served as engineer. The nature of the work was what he describes as media production: voice-overs with needle-drop music for corporate clients and ad agencies, along with the occasional album project. Around that

time, he met Will Ackerman, which led to his engineering some of the early Windham Hill records. Bond recalls, "Looking back on it, my life could be very different had I not gotten involved with Will and Windham Hill. It's had a long-term effect on the projects that I've done." Bond teamed up with Dave Porter and Soper in '76 and built the Music Annex in Menlo Park, where he worked initially as a staff engineer and later on a freelance basis.

He formed Corner Market Productions with Alice Hamamoto in '89, working out of the Music Annex, doing a 50-50 mix of media projects and albums. Hamamoto came from the marketing/communications department of Hewlett Packard, where she was producing audio and video-

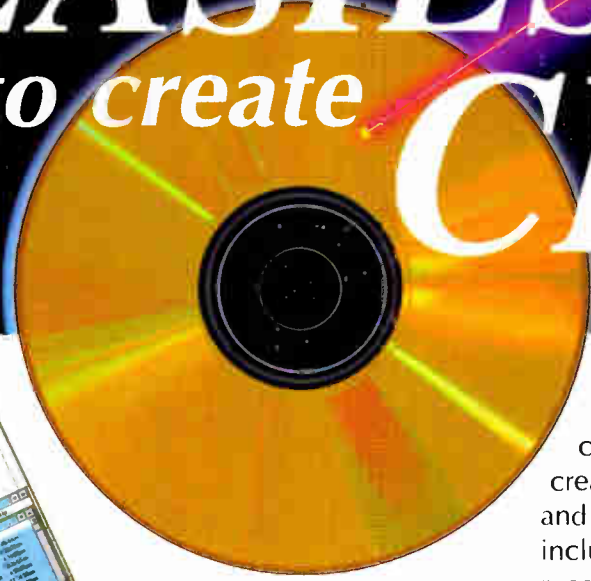
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tapes for HP's sales force. "Alice is the executive presence," says Bond. "I'm the creative presence." In January 1994, Bond and Hamamoto decided to make the big move to a facility of their own.

Why did you want to have your own studio?

We built the studio because we were getting increasingly involved in digital audio, and at the time, the Music Annex wasn't set up to have a dedicated system in a room. It was kind of inconvenient for us to be constantly moving the equipment in and out of a room, although it was somewhat portable in that I had built a roll-around cabinet with all this rack-mounted digital equipment. We knew what the expansion plans were for Pro Tools—in particular the software-based console...

So you were using your roll-around

rack to hook up to a conventional console at the Annex.

That's exactly right. The early Pro Tools did have a mixing window, but it did not replace a console by any means.

At any rate, we felt confident enough that we could go out on our own, keeping our established clients: Hewlett Packard, Apple, Sugo Music and several ad agencies. We wanted to build a room around this future technology, where we could do both media and music production comfortably in the digital domain. We knew that until the TDM technology was shipping, we'd have to set up our studio in a more traditional fashion, with a conventional console; we had a Mackie 32-track board in here for a while. We laid out all our wiring such that the transition to a software-based mixing system would be easy. We did a lot of thinking in terms of how a patching and routing system would work for this new environment.

We found a space in an area in Silicon Valley that was centrally located to most of our clients. We wanted to keep doing what we had been doing, but this location is more convenient to them, and we can also market ourselves more easily to multimedia people.

Although the space is not huge, it is a good size. One of our priorities was to have a room that was big enough to put a decent-size piano in, since on the music side we do a lot of solo acoustic instrument recording. In fact, we're getting a 9½-foot Bosendorfer Imperial piano in here on Thursday for a week. That will be interesting.

We designed a 17x24 recording space. The control room is 17x22. And since we are often working on more than one project at a time, we wanted to be able to have two rooms working simultaneously, so we designed it so we could also have a small edit suite that looks into the studio.

Wiring for Digital Audio Productions

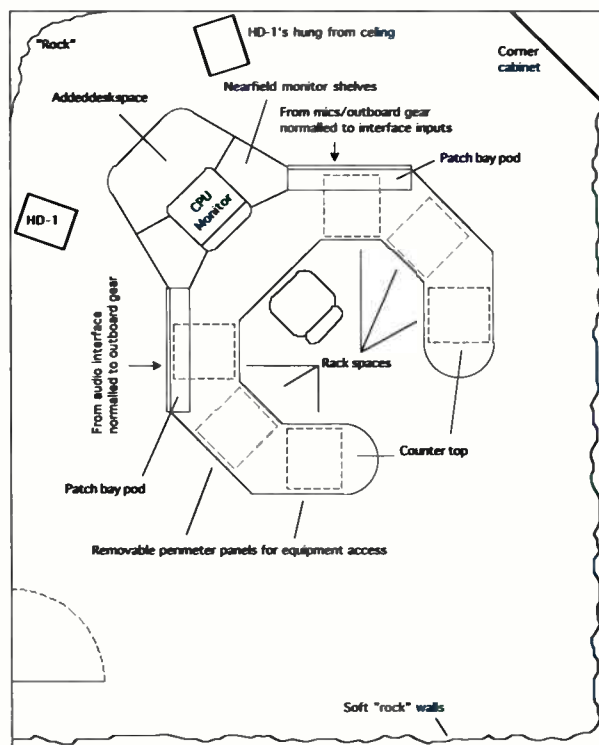
In planning a wiring scheme for our Pro Tools TDM system, we had to consider two things. First, unlike a standard mixing console, the current hardware has only one analog I/O connection per "channel." This connection can be used for one of a number of functions—input from a mic preamp, line input from outboard gear, insert points for routing "in-line" processing, as well as a mix output, cue send or bus output. We are using four 888 interfaces, and thankfully, they each have eight analog I/O and four AES/EBU I/O pairs, which we utilize as much as possible.

The second point we considered was that even though we wanted to have all the gear show up at a patch point, we wanted to be able to run a "typical" session without using any patch cords. That means a lot of patch-

bay normaling. It also means dedicating certain interface I/O to particular functions. The audio-flow diagram shows the basic routing of the audio, both analog and digital, in our studio. Patchbays 2, 3 and 5 are on the left, or "output" side of

the control room Crab, and bay 4 is on the right, or "input" side. Patchbay bank 1, in the "machine room," is essentially tielines from the control room normaled to the inputs of the interface boxes, and the interface outputs normaled to tielines back to the control room. It also has the balanced ins and outs for the ADATs. Bay 2 is the outputs of the interfaces normaled to the various "dedicated" functions: monitoring, cues, inputs of outboard gear, etc. All of our DAT, cassette, CD and video deck ins and outs show up on bay 3, and for monitoring purposes, are multed to inputs on a Mackie 1604, rackmounted in one of the Crab bays. Patchbay 4 is a little trickier because the middle bay is normaled from the mic preamps to interface inputs 1-8, and from the outboard gear to interface inputs 9-24. Patchbay 5 is a 110-ohm bay for AES/EBU ins and outs of the DAT machines and outboard gear, where appropriate.

—Russell Bond



The "Crab"—main control room layout diagram

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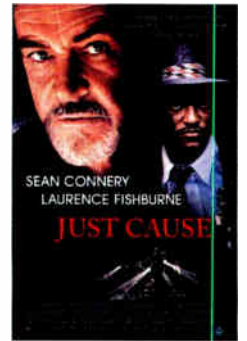
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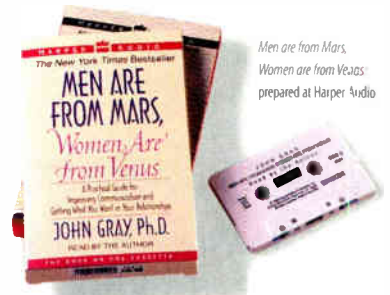
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effects for multimedia

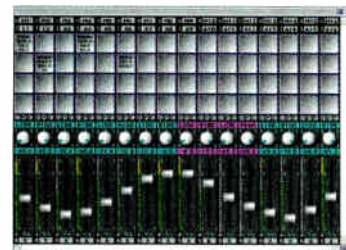
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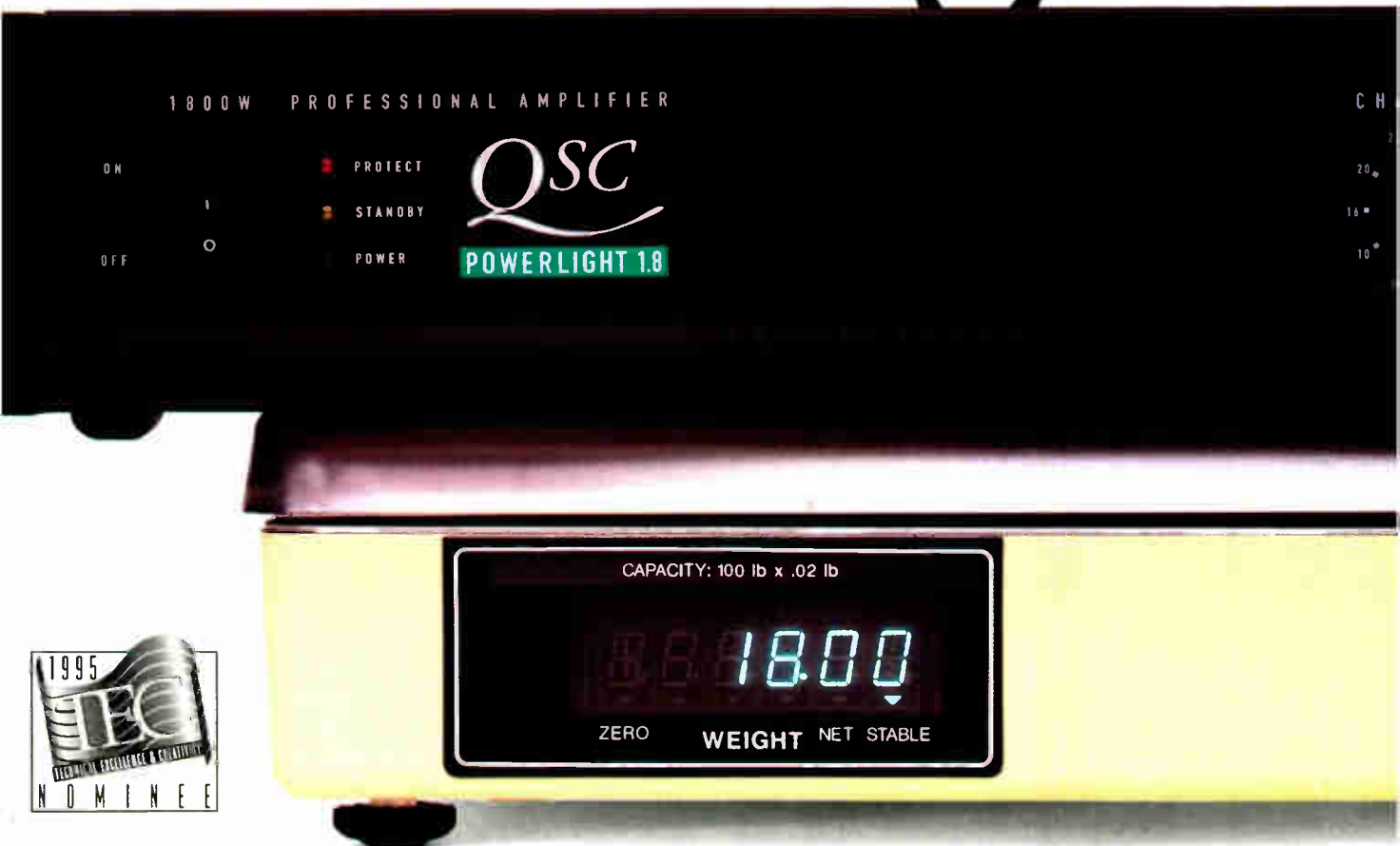
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What recording and editing tools do you use?

We recently expanded to 48 tracks and four 888 interfaces in the main room. The edit room has 32 tracks of Pro Tools III with three DSP Farms.

We also have 18 gigabytes of disk storage over 12 drives. We can put them all in the system at one time with two Disk I/Os. Very scary. And that's going to grow. Drives are getting faster, and we will be moving out our slower drives and bringing in the fast 4GB and 9GB drives. We're looking at the Quantum and Micropolis AV-style drives.

Our plans for the edit room are to eventually incorporate some desktop video editing. We've designed the wiring schemes to accommodate that as well. So that will be a multimedia room where we'll be able to do digital audio and conversion to any audio format, and also do desktop video editing, probably with an Avid system. **What audio formats are you equipped to deal with?**

Originally, we wanted to offer every possible digital format, but there's an

economic issue here. After reviewing our client base, we made a decision to support those formats that made the most sense for us. In multimedia, there are a number of audio formats that need to be dealt with. Right now, we can spit out every thing from standard AIFF files to the Sun u-law files. We've been doing quite a bit of that. We don't have DA-88 yet, but we do have CD-R, ADAT, normal DAT and timecode DAT. We don't have any open reel digital stuff; it's too close to analog. We don't have any razor blades here.

So you don't have a console now.

No. The studio has been designed from the beginning to function with out a console.

So was the business plan simply to continue to serve your clients, or did you want to expand, and if so, in what direction?

The plan was definitely to expand more into the multimedia market. There are still quite a few companies

A lot of the multimedia-oriented projects are for people who only have a vague idea of how to do it.

down here that are in need of a facility like this to do professional audio. We're finding them all the time. In terms of an actual marketing strategy, we're concentrating on the aspects that are important to multimedia clients, as opposed to music clients. We have enough music clients to keep us going.

Tell me about the acoustic design.

Did you do it yourself?

Alice and I designed and built the

—CONTINUED ON PAGE 214

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Tuning Control Rooms And Recording SPACES

Great recordings have been made in situations where mics were thrown up with little consideration other than capturing the magic of the performance moment.

Great mixes have happened in environments that were

BY RICK CLARK

designed for anything but mixing. However, these are exceptions to the rule. Anyone who is serious about creating a recording facility with a rep for putting out consistently good sounds needs to have the tracking spaces and control room set up to give the engineer and mixer the most control over the sound. Rooms must make clients sure that what they are hearing is an accurate reflection of the actual sonic character of the mix.

Mix enlisted four well-known leaders in the areas of room tuning and studio design to provide some thoughts on and methods

for making the difference between a facility that develops a waiting list of loyal clients jazzed on the great sound and a place that

finds itself struggling to keep the doors open because word has gotten out that

there are too many anomalies in the room's sonic profile.

GEORGE AUGSPURGER

George Augspurger is one of the giants of studio room and speaker design. Recent projects have included new mastering rooms for Sony Records in Mexico City, The Enterprise in Burbank, Criteria in Miami, and a "rap/hip hop" mastering room for Sony Studios in New York.

Augspurger points out that there are essentially two schools of thought concerning

"Those of us who still do very often use electronic equalization will still say that the best EQ is the least EQ."

—George Augspurger

"I have to make sure that the basics are taken care of first of all, and that includes the bass building up in the back of the room."

—Chris Huston

"Nobody has got a flat room, or nobody really likes 'flat,' in my experience. Flat is not necessarily conducive to making records."

—Bob Hodas

"If you can get away with it, if the low end can get out of the room, it is much better than trying to control it."

—Bret Thoeny

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"The perfect mic for recording any acoustic string instrument." —

John Beland, Flying Burrito Brothers

"The RE2000 has the warmth of a tube mic—extremely quiet and sensitive, allowing me to pickup low-level material without adding noise." —

Scott Weber, Buena Vista Sound, Walt Disney Studios

"The RE2000 has a crisp, clean and quiet response. I used less EQ to achieve what I look for. What goes in...comes out! It's also extremely versatile...from vocals to acoustic guitars to trumpets and violins." —

Tom Cusic, TM Century, Dallas, TX

"I think it's one of the most versatile I've ever used." — Roy Thomas Baker, Producer

In fact, all of these professionals asked one remarkably familiar question:

"When can I get one of my own?"

It's available now! And once you've heard it, we expect you'll be inspired to send us an accolade or two as well.



the art of tuning a room: one that believes the proper alignment of a room's sonic characteristic should be addressed purely from an acoustical design perspective, and one that is comfortable addressing the situation with electronic equalizers.

"You will obviously get two camps of philosophy," Augspurger says. "There are some people that say, 'No, you should never apply electric equalization to the speakers. Any problem should be taken care of with room acoustics.' On the other hand, you will also find today that those of us who still do very often use electronic equalization will still say that the best EQ is the least EQ. I would certainly say there are twice as many bad-sounding rooms that have been ruined by too much EQ as the other way around.

"The first thing I do, if it is a new room that I am setting up, is listen to the selected speakers on music. In setting up the speakers, I play with their location and probably with room surfaces, with no thought of electrical EQ as any part of that first go-around at all," Augspurger explains. "The first thing you have to do is find out what it takes to make a given set of speakers sound right in a given room. Once you get them to sound pretty good, then you can come back and use EQ as frosting on the cake.

"I happen to come out of loud-speaker design; I worked for JBL for 20 years. The reason people want custom monitors maybe is because of space limitations—you can't really fit in a stock speaker that is the size you like. It may be because there was something that they heard at another studio. These days, it certainly may be that they are going to cater to rap and hip hop and they have got to have something that will take four times as much power as any commercial monitor."

While Augspurger has designed many excellent large soffit-mounted control room speakers, he sees the proliferation of quality near-fields as a good development.

"We now have near-field speakers of reasonable size that you can set on a console that really have a pretty wide-range response," he remarks. "The NS-10 is probably the closest thing that comes to standard in the industry today. Some engineers absolutely hate it. The only really negative public comment that I

would make about the NS-10 is that I get the strong impression that Yamaha keeps tinkering with it and not telling anybody. It is hard to get two pairs of NS-10s that sound the same. They aren't far off—you can tell they're NS-10s—but still they aren't nearly identical, pair after pair after pair. I think the NS-10M is a definite improvement over the earlier ones.

"One of the secrets of the NS-10 is that there is a very slight rise right through the 1kHz region," Augspurger continues. "There is a very broad bump that is maybe a dB-and-a-half high. That does things for the vocals that you really can relate to what it is going to sound like on a TV set or an ordinary quality car radio. Whereas, to go to the opposite extreme, a classical music monitor like a B&W is, if anything, slightly depressed through that region and is much more difficult to relate to on pop music.

"The small Genelecs are pretty incredible," Augspurger adds. "If you take the time to twiddle around long enough with all the switches on the back, you can make them sound like almost anything you want. They have done some incredible things with those speakers."

CHRIS HUSTON

Over the past 30 years, Chris Huston has seen popular music, studios and the industry around them change dramatically. Huston (an art school classmate in Liverpool of John Lennon) came to the U.S. during the mid-'60s, and became an in-demand engineer and mixer. His credits include classic records by The Rascals, Led Zeppelin, War (see "Classic Tracks" in this issue), The Who, James Brown, Mitch Ryder, Van Morrison and The Nazz.

As a studio designer, Huston's credits include George Benson's Lahaina Sound (Maui), Baby'o Recorders (Hollywood), Mike Post Productions (Burbank), The Enterprise (Burbank), and most recently, the Sound Kitchen in Franklin, Tenn.

"In designing control rooms," Huston says, "the most important thing to remember is that this will be an environment for evaluating sound. When I design a room, I have to make sure that the basics are taken care of first of all, and that includes the bass building up in the back of the room. You have to con-

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front that. If you put a jam box on a chair in an empty apartment and slowly turn it up, it will be fine, until the low end of the blaster 'finds' the wall. Then, very quickly, the sound is going to change in proportion of bass to highs. It is loading. At that point, what will happen is the low end will tend to be out of proportion to the mids and highs, because the physical boundaries have been met, and the bass just jumps back. The bass has to find its physical boundaries, because that is the nature of the physics.

"We have two ways we can deal with it," Huston continues. "If we had the physical space, I would sometimes try to cheat and make the bass think it is traveling farther than it really is to reach its physical potential. Instead of traveling 18 feet, you slow it down through the use of bass traps, so by the time it hits the mass of the back wall, it has theoretically traveled three more feet. When it comes back again, it is vastly weakened, if you can get it to be out-of-phase with itself, or in a waveform that isn't contradictory or building to each of the fundamen-

tals. This way you have gone a long way toward smoothing the room out. I have done it this way in several rooms, but often you don't have that luxury.

"What we are usually stuck with is a given space and maximizing it. Given that you cannot use the optimum situation, where you are actually slowing it down and reaching that physical boundary, I will then tend to use the ceiling areas for trapping bass.

"I really don't like using an electronic Band-aid for an acoustic problem. I would rather confront the problem in design, rather than in corrective measures later," Huston remarks. "Electronic EQ sometimes takes away more than it adds. It really takes the balls out of the performance, even with good White equalizers. Sure the sound is flat, but you have taken out so much of the excitement in order to achieve that."

Huston also feels that placement of soffit-mounted speakers is crucial. "You also have to work with the speakers you have decided on, or the ones your client has picked out, as far as making sure that the sound

doesn't change too much, whether they are standing up or sitting down at the console. That is always a problem," says Huston. "You really want to try to make sure that the throw of the horns is not firing directly down into your face and right into your ears, because then you are evaluating the harshness of it and nobody else is. The people who are standing up to begin with will be questioning what you are going to be hearing sitting down.

"Basically, I try to place the horn about a foot or 18 inches maximum above the head of somebody sitting down, so they are on-axis to the dispersion of the speaker, whether they are standing up or sitting down. You try to avoid being totally on-axis with the high-end or the midrange dispersion, depending on the kind of speaker. You then get the harshness, and that coloration exists in a certain form in one position only. With certain kinds of speakers, that is very important.

"Control rooms are getting decidedly bigger," Huston points out, "while the equipment is getting smaller. More is being done in the

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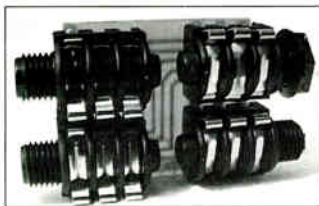
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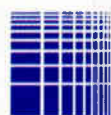
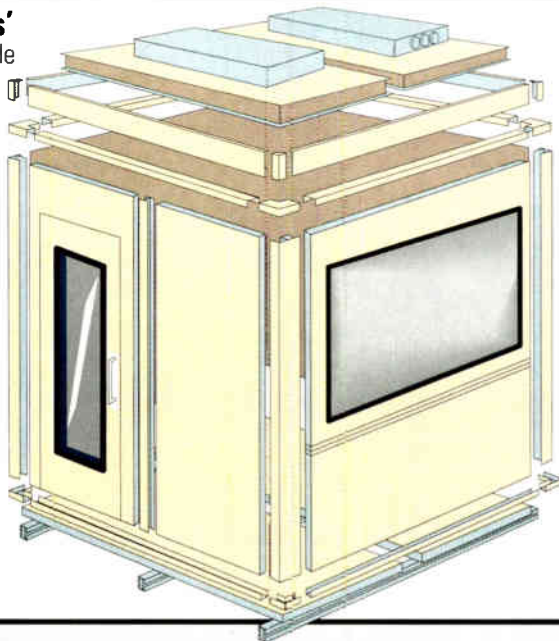
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control room, and it has become more than just a place to evaluate sound; it has become a place to create music. The equipment we have today is so far superior, both in producing sound, evaluating it, and transferring it through all of its different phases to completion."

Nevertheless, Huston is cautionary about losing sight of the roles of recording music and making music in environments fine-tuned for such activity. "Twenty-five years ago, we were documenting a performance. Today, we are creating a performance. I think that is important to be aware of, both in studio design and control room design. Nowadays, it is sometimes like fighting to create a performance. That emotion to chase is so elusive. I think that is a fault with many of the records that come out. They mistake technical superiority for the magic of performance."

BOB HODAS

Like many of the best room designers and tuners in the recording industry, Bob Hodas began as an engineer. It is said that necessity is the mother of invention. Upon realizing that many of his mixes sounded vastly different from room to room, Hodas began devising ways to compensate for control room anomalies.

Over the years, Hodas has tuned all the studios for studio baw-ton, as well as rooms for John Storyk, Ted Rothstein, Studio 440 and FMRTS in New York. Facilities he's worked on include Bad Animals (Seattle), Conway (Hollywood), Coast Recorders (San Francisco), DARP (Atlanta), Wonderland Studios (Los Angeles), Bosstown (Atlanta), Fantasy (Berkeley, Calif.), Skip Saylor (Los Angeles), Platinum Island (New York), House Of Sound (New York) and numerous private studios, such as that of producer Walter AfanasiEFF.

"The first thing that I do when I go into a room is think, how can we fix things acoustically?" Hodas says. "What can we do as far as baffling and trapping and diffusion or absorption? Each situation is different. It depends on what is going on in the room. I really look at the acoustic problems first. As far as I'm concerned, getting the room as close acoustically as possible is number one."

In the realm of sound absorption material, Hodas feels that crushed fiberglass or "spin glass" works just as well as many more pricey materi-



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als. "It may not look as cool, but if you want to compare absorption ratings, it is a heck of a lot cheaper for the same amount of absorption. That will get some manufacturers mad at me, but that is not unusual," Hodas laughs. "I would encourage people to compare absorption coefficient and absorption ratings before they go blow a lot of dough on something that is pretty expensive.

"The budget is a big consideration," Hodas adds. "I may go into a room, and someone will have a weird low-end problem, and the only way to solve it may be to rebuild the back wall. They may not have the budget for that. At that point, once we have worked within the budget to fix everything that we possibly can, then we'll say, 'Now what can we do electro-acoustically through equalization to finish solving the problem, or to create a curve that is conducive to making records?'"

"A minimum-phase parametric is really my equalizer of choice. That is a parametric that can address minimum phase problems, which, for example, are problems of corner loading. Any kind of boundary-loading problems are minimum phase problems within rooms. By using a parametric, as opposed to a graphic equalizer, I can shape the equalization to perfectly fit the problem, as opposed to tuning around the problem because I'm restricted with fixed frequency centers and fixed cue," says Hodas, who uses the Meyer CP-10S. "Room problems are not all third-octave, and they are not all at these fixed frequency centers the third-octave provides you with.

"Nobody has a flat room, or nobody really likes 'flat,' in my experience. Flat is not necessarily conducive to making records," Hodas points out. "Of all the rooms I've done, which are a good couple of hundred rooms, I have found that people tend not to like flat. If I was going to make a generalization to apply to the majority of the rooms, I would say flat from 80 cycles to 5 kHz is generally the area people like to have flat; then with some kind of roll-off, from 5 kHz on out, with a slight low-end boost somewhere around 50 Hz, just as a fun factor. It varies from room to room, system to system."

Hodas feels that the general sonic profile he just laid out is more applicable for analog rooms than digital. "With analog tape, the particles

realign themselves, so you start to lose high end on the tape. Also contributing to that is, as you do overdubs, and the tape passes over the head for the overdubs, a little bit of the high gets lost through that process as well. The whole idea of [creating this "analog" room tuning process] was developed to help compensate for some of that loss," he explains. "It doesn't make any difference in digital, but it makes a big difference in analog. I usually encourage people to keep things a little flatter in digital studios, because they don't need that compensation. The only thing they are fighting

against are the long hours and the high volumes.

"Some speaker systems are not linear, in respect to amplitude. In other words, as you turn them up or down, the frequency response changes. So when I am tuning a room like that, I have to be careful to make sure that I tune it within the general volume that it is typically being used. Most of the tuning that I'm doing is for fixed, soffit-mounted speakers.

"For my own personal preference, I lean toward direct-radiator speakers. At this very point in time, I have to say that the DynAudio

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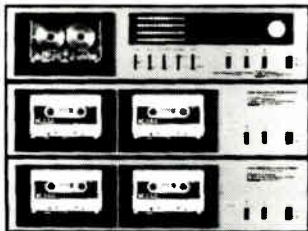
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speakers have given me the best impression for a direct-radiator speaker in several different rooms. They sound pretty darn good."

Hodas mentions that his near-fields of choice are a pair of Meyer HD-1s. "I have really gotten some great results from those," he says. "In fact, the first record I ever used them on, I took the tape down to Bernie Grundman for mastering, and he didn't do anything to it. That was when I had a speaker that I knew I could work with that was basically going to save my butt.

"Recording studios spend more on coffee than on control room monitor maintenance. It's true, and that is the sad part of it," Hodas states. "People have sort of let their monitor systems in their rooms fall by the wayside, which is a real scary thought to me, because that is what the recording studio is supposed to be all about. It isn't about the latest digital delay or effects box. It is about good sound. We, as an industry, have sort of ignored the sounds of our rooms and gone after the toys to make those sounds, and that's the part that bothers me the most."

BRET THOENY

For the past 15 years, Bret Thoeny (and his company, Boto Designs) has designed and tuned some of the finest facilities in the recording world. Among his accomplishments are Electric Lady Studios (New York), Paisley Park Studios (Minneapolis), Britannia Row Studios (London), Westlake Audio (Los Angeles), The Complex—George Massenburg (Los Angeles), Pacific Ocean Post Sound (Santa Monica), CBS Todd-AO/Glen Glenn (Studio City), and private recording and mixing studios for Don Was, Bob Clearmountain, David Tickle, Jackson Browne, John Tesh, Giorgio Moroder and many others.

Regarding people's efforts to find the ideal mixing environment, Thoeny says with a laugh, "People have even tried setting speakers up in meadows and mixing, and it doesn't work. You have got to relate to how the music is going to sound being played back in your car or home, or wherever. That is why some people run out to their cars to hear something. That's why some studios have the portions of the back seats of cars with cassette players, so they can listen. You have got to look at it all in

the same environment.

"The [control] room size is determined by the function of the room and then by the criteria of the monitors that the client chooses," Thoeny continues, "whether they are medium, high or super-high power. You can't put a small near-field speaker in a huge control room. It is not going to load the room. You are not going to get the sound pressure.

"Even speaker manufacturers, when they design a control room monitor, will say that this monitor works within 6,000 or 7,000 cubic feet to 10,000 cubic feet. They give you a parameter. All they are saying is that the type of drivers—the components—and the speaker in that room, can excite that volume of air, to get a 90/95 in optimum range of that speaker, so you're not overloading it. You're not pushing the speaker too far, so that it starts to go into distortion. That's what happens. You can put little speakers in a big room and crank it up, the speaker will be working beyond its optimum range, and it starts going into clipping and distortion, which is bad. That is what they're telling the consumer, and that is what the designer should take into account when they design a room.

"I just ask, right off the bat, 'What kind of speaker and what range are you going to be using in this room?' Even if they don't know the model, even if it is going to be double-15s. Is it going to be a near-field? What's going on? How do you like to work? A lot of composers like to work in a very small space with near-field speakers. They don't need soffit-mounted speakers."

Of the soffit-mounted speakers, Thoeny likes Quested, ATC and Westlake Audio. For near-fields, Thoeny likes KRKs and Genelec Golds. "The Genelecs are self-powering, and that is a real good trend," he says. "You don't need to over-amp it or under-amp it when you buy a package that is designed to be totally competent. It's great. JBL has done that for their industrial speakers.

"We did a room for Bob Clearmountain, and I consider Bob probably the premier mixer in the world," Thoeny says. "He uses no soffit-mounted speakers. He goes back and forth between NS-10s and the smaller KRK, I think it is the 7000, which he puts up on the console."

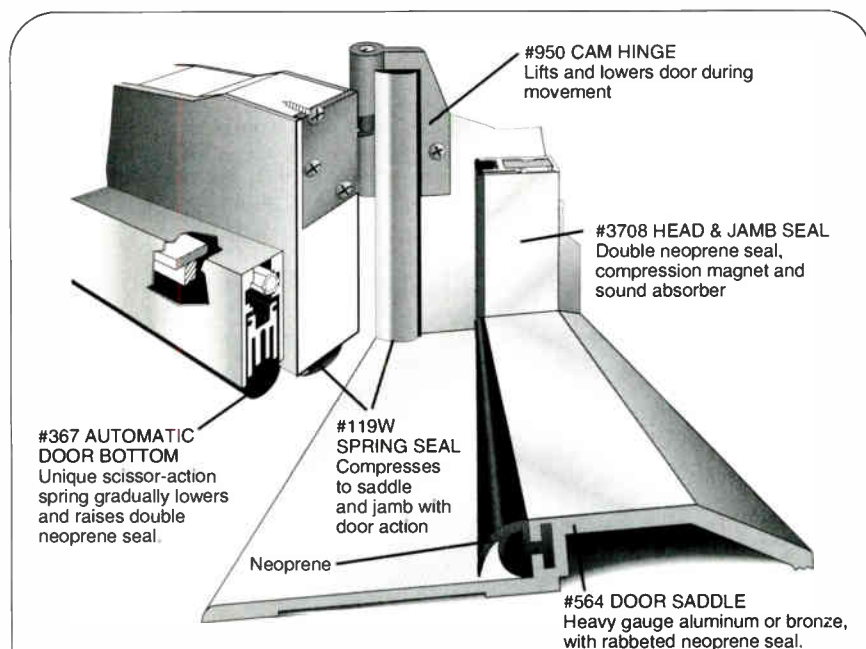
While many people are primarily using near-fields, Thoeny definitely

feels that good soffit-mounted speakers are ideal for really hearing what is going down during tracking. "The reason for a soffit-mounted speaker is usually for a tracking situation. When you're putting up the drums, you can hear the kick and get that energy punching right at you, as if you were sitting right in front of the drum kick. That is the reason for it."

During our discussion, we talked about how some of the old, totally funky studios sounded so great. Thoeny noted that many of those old rooms allowed the bass to escape. "If you can get away with it, if

the low end can get out of the room, it is much better than trying to control it," Thoeny says. "Some of the rooms that sound good are sometimes rooms that are built very minimally, meaning that sound can actually go through the walls. That is a much better circumstance than containing it. The low end goes right through the wall, so it doesn't load in the room.

"If you build a block house like a vault, everything is going to stay in there. You have to dissipate it with elaborate traps and diffusers and all the elements, just to get the room back to sounding natural," Thoeny



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continues. "Typical rooms that we are used to are usually ones where the low-end sound can go right through the walls. You can't always do that, however. In multistudio complexes, you've got to use good detailing, good acoustical analysis and walls and floors that work—and that is kind of what separates the boys from the men. You don't have a choice. In a nice free-standing building, you still want to control the environment."

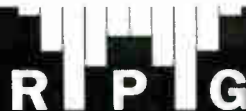
In tracking areas, Thoeny says, "Live sound is pretty much what people have been wanting. Ten years ago, things were so dead, because there was so much isolation and everything was individually miked. Now the engineers are back with much better tools and much more sophisticated knowledge of how to work a live room. Electronics have improved, too, so they can work a live room and get a much more natural sound."

Thoeny believes that wood is the best material for a recording space. "Wood has the most warmth to it. You can make it bright, but it doesn't get edgy or unnatural. Some studios will put in concrete block, and the sound is much too harsh with the way they sound and the psychological aspects. If you make a room too high-tech, it kind of goes against the grain of musicians and what they like to be surrounded with," Thoeny explains, adding that hardwoods have a better sound.

"Anything in large-scale acoustics, you need a lot of one element to make a difference. You need a lot of wood to really let the wood respond to the room. Throwing up some diagonal slats of redwood that you get at the lumber yard doesn't quite do it. If you dabble it here and there, and drywall everywhere else, the room is going to sound like the drywall and not like the sound of the wood.

"It is really the percentage of the area that you cover with a particular material that gives it its character," Thoeny adds. "If you have a hardwood floor and you have large splays and diffusers out of wood, you are going to be getting into that area. People say they have wood rooms but they have really put down carpet and a lot of drywall, and it is not going to sound the same." ■

Rick Clark is a Memphis-based freelance writer.



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by Barbara Schultz

ELVIS IS EVERYWHERE

THE WORLDWIDE "KOJAK VARIETY" BROADCAST

A woman in my college French literature class completely cracked us up one day by beginning an observation with, "The whole thing about Proust is..." Okay, maybe you had to be there, but the very idea of summing up such a complex author and his work in one "thing..." Well, at the risk of sounding like my unsuspecting classmate, the whole thing about Elvis Costello is not only is he a brilliant songwriter and a soulful singer, but he also brings to his work a great passion for music of all genres. The careful listener can detect, in a selection of his songs—or sometimes in the same song—pop influences from Cole Porter to George Jones, from Howlin' Wolf to Nat King Cole. That's why his work defies category, and why it sings volumes. And that's why Elvis Costello went to Blue Wave Studios in Barbados for 15 days in 1990 with some of his favorite musicians to record covers of some of his favorite songs.

The record is called *Kojak Variety* and features compositions by Bob Dylan, Willie

Dixon, Ray Noble and Screamin' Jay Hawkins, to name a few. The liner notes Costello penned reveal how he discovered each of the songs—for example, how a Peggy Lee album in his parents' record collection led him to the late, great Little Willie John singing "Leave My Kitten Alone."

The musicians on *Kojak* also appeared on Costello's *Mighty Like a Rose*: Jerry Scheff on bass; Pete Thomas and Jim Keltner share drum duties; Larry Knechtel on piano, organ and keyboards; and Marc Ribot and James Burton contribute electric and



PHOTO: TIM KENT



PHOTO: NANCY STEIN

Backstage at the Empire Theatre, Costello chats with fans via the Internet.



PHOTO: GRAHAM KENNEDY

FACILITY SPOTLIGHT

Lydian Sound, Toronto

Lydian Sound (Toronto, Ontario), a 3,000-square-foot facility owned by Alison and Stuart Steinhart—who also serve as studio manager and staff engineer, respectively—opened in January of this year. The other staff engineer is John Daly.

The acoustical design by Martin Pilchner Associates features a “studio proper” with a motorized acoustical control system, and a custom headphone mixing system designed by Stuart Taylor. “There are four iso booths in the studio,” Daly explains, “and two stations in the studio proper, and all six stations are on an 8-stereo-input mixer, so everyone can set up their

own headphone mixes. It also has a 24-input matrix console in the control room, where you set up the individual matrixes, and that feeds everybody.”

The control room is centered around a 56-input DDA Profile console with Optifile automation. Other equipment includes Dynaudio M5 monitors with Klark Teknik DN301 31-band notch filter graphic EQs, a 16-channel Neve Side Car, tape machines from Studer, Tascam and Alesis, a SADiE 8-track hard disk digital editing/mastering system, a wide range of MIDI gear and mics from UREI, Neumann, AKG and Electro-Voice.

Projects have included music for the Alliance TV film *Dark Eyes* and the program *Imprint*, and music recording for a number of Canadian jazz musicians. ■



PHOTO: GRAHAM KENNEDY

acoustic guitars. Co-production (with Costello) and engineering credits belong to Kevin Killen, who also worked on *Spike* and *Mighty Like a Rose*.

Usually, when Costello releases a new album, he promotes it by touring. But this time, because he has a collection of original songs that he's itching to record with The Attractions this summer, he and his label, Warner Bros., took a different route: one show on May 17 at London's Empire Theatre, broadcast via satellite to radio listeners all around the world. Europeans got the show live. Americans heard a tape-delayed broadcast.

To add a bit of “intimacy” for those

who would be listening at home, Warner asked Costello to chat with fans via the Internet for an hour before the U.S. broadcast, as part of the label's interactive talk show, *Cyber Talk*, which is carried on America Online and Compuserve. Subscribers were also given the opportunity to download sound bytes and artwork from *Kojak Variety*. And so a Warner Bros. “Multimedia Event” was born. We had the opportunity to talk with Costello a few weeks before the show.

Warner Bros. says you want to talk about multimedia.

What's *that*!?

Good question. Well, they're promoting this as a multimedia event, in a literal sense.

Yeah. I suppose that's true. We're doing this link-up from England, where we're not exactly re-creating the record because it's different musicians that are playing it, but [with] some of the same musicians: myself, Pete Thomas and the other two Attractions are also involved in the show, but then so that we keep the flavor of this record, we invited Marc Ribot and James Burton to join us in London. They're coming all the way over the Atlantic only so that we can fire the signal off something in space

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and you can hear it in America. We're playing like 200 shows in one night. *So this is taking the place of a tour?* Not really. Well, the truth is I'm right in the middle of a lot of things. I made this record five years ago, and it's a lot of my favorite songs, but I don't know what more there is to be gained by playing the songs endlessly to people. It's more about this little memory of these songs and the way I feel about them. To do one show is really exciting, but I'm not sure how many of these songs will remain in my repertoire in the long term—unlike songs I've written myself, where I always find there's more ways of playing them over the years, different ways to

turn them around and find new things in them.

The record is a very simple mood. A couple of times we could play it, and we might get that feeling again, but if we played it every night, for 200 shows, say, it might not stand up to that kind of investigation. We thought this was a good way of getting it over to a lot of people quickly, and then we can get on and record a new record, and then we'll probably tour with that one.

So this is an individual case to you. You don't see this type of event taking the place of tours in the future.

I don't think so, no. They can do a lot of things with technology now, but they haven't found a way to broadcast *animal magnetism* yet,

which is a big part of our show. In fact, it's probably the main part. That's really what people come for, the animal magnetism part.

And to make this a more immediate experience, they're putting you online with fans before the show.

Yeah. You see, this Internet business is, um... We've only just caught on with the spinning jenny over here, you know. It's a bit new. The television is still sort of a new thing here. This Internet business, I don't know anything about it. I thought it was something you went out and caught animals in when they first mentioned it.

I know a little bit about computers. I use them just for the very basics of word processing, and I never connect it up to the wall or get on the phone

The Broadcast From London, and Burbank

The *Kojak Variety* concert was broadcast via satellite from Fleetwood Mobile Recording's truck outside the Empire Theatre on Shepherd's Bush Green. Engineer and Fleetwood co-owner Tim Summerhayes did the mixing. "The Empire Theatre used to be owned by the BBC," says Summerhayes. "They used to do their chat shows there. It's recently been refurbished, and it's a fantastic place for live recording."

To prepare for the show, Summerhayes worked closely with Costello's FOH engineer, David Zammit, who provided him with a detailed stage plot and microphone list, and he attended some of the band's rehearsals. "I devise a cue sheet for my own purposes and go through it with the artists and crew so that I know as much as I possibly can what is going to be coming in a bit hot or quiet," Summerhayes says.

The Fleetwood truck, which is equipped with a Raindirk Quantum console, received direct splits from each of the stage mics. BSS mic splitters were used, which Summerhayes says "are very good. If we crosspatch or do anything like that, it will not upset the P.A. system at all." The mic list, chosen by Zammit, was as follows: kick drum, a Beyer



Inside the Fleetwood Mobile Truck, (from left) Hilton Sound's ISDN engineer Simon Bohannon, Fleetwood's technical assistant Michelle Reynolds and Fleetwood's engineer and co-owner Tim Summerhayes.

M88; on the snare, Shure Beta-57s and an SM57; on toms, Sennheiser MD421s; the hi-hat, a Sennheiser MKH40; the ride cymbal, a Shure Beta-57; and the overheads were AKG C422s. For Steve Nieve's piano, two C460x's and two Crown PZMs were used; his Vox Continental organ is a DI, and his Hammond organ is fed to a Leslie, which is miked with C460x's on high left and right, with an MD409 on low. On the electric guitars, played by Costello, Marc Ribot and James Burton, Zammit used SM57s and MD421s. The acoustic guitars were DIs, as was Bruce Thomas' bass. And last but not least, Shure SM58s were used on Costello's vocals, which were mighty raw for this par-

ticular gig, but as his fans will attest, that only adds.

From the splitters, the feed went into the Raindirk, and then to an ISDN encoder supplied by Hilton Sound. "For broadcast, we're sort of limited to headroom," says Summerhayes. "The bandwidth on the ISDN system is standard 15 kHz, which isn't quite up to the standard of CD, but for most broadcast purposes, it's totally ade-

quate and far better than the standard land-line method of transmission. From the output of our desk, I use the Aphex Compellor, which even when it's being hit hard still maintains the musical integrity of the output." The mix was sent live via satellite to European radio stations, and via ISDN lines to the Warner Bros. Burbank, Calif., offices, to be used five hours later in a tape-delayed satellite broadcast. Summerhayes uses an Apogee AD500 analog-to-digital converter for the ISDN transmission, "and from there, it's down the wire to America. It's quite remarkable."

On the receiving end in Burbank was Tucker Williamson, Warner

—CONTINUED ON PAGE 80

on it. I'm always afraid people are going to sneak in and poison you. The few times I get a chance to watch television, I see these horrifying things about computer fraud, so I tend to stay well away from that, but it sounds like an interesting thing—like visiting an amusement arcade for an evening. And maybe I'll get the bug. I don't know.

Really, my attitude toward all technology has always been [one of] not allowing it to dictate the pace, but at the same time, not allowing yourself to tie your hands through fear of something new that may be a new way of reaching people.

When CD first came out, they sent the tea boy to master most of my records at Columbia, or at least that's what they sounded like to me. It's terrible. It sounded worse than the vinyl. Now, everybody goes back with great care and can make old records sound really good. We have the history of recorded sound on a medium which is easily accessed. Within five years, we'll no doubt have something else that's smaller and more durable and gives you more possibilities, and [the

Internet] is just another sort of thing like that, as far as I can see.

I'm just old enough to remember when we first linked up the world with television, and that was very exciting. If you think, it's only just around the corner in the past—this idea that we can see pictures from the other side of the world. We take it for granted now. But really, there's no reason we can't do the same thing with information. And music, to some extent, is information. I don't like it reduced to that, but I'm quite happy to have a little forum about it. You know, this is a nice marriage of the old and new. I mean, this is a new medium, I'm kind of an old guy, and the music we're doing ranges from 1930 to 1970.

The songs we've chosen are songs which some people won't know. I deliberately didn't choose songs that were very familiar to people. I wanted ones that I had a chance of doing my version. And we didn't do them in a terribly sophisticated way. We used a basic studio, we used analog recording, we used things that belong to the era that most of this music came from, but here we are presenting it through a number of multimedia things, whatever that is...multimedii [laughs]...that

are right bang up-to-date.

The liner notes you wrote for Kojak Variety tell in wonderful detail where you found the songs. One might say that this would lend itself really well to a multimedia project like a CD-ROM, where somebody could, for instance, double-click on a pickle and hear every previous version of "Strange."

Yeah, but the thing is, the preparation of these things, if you're going to do them well, is quite expensive. And really, the danger is that we just start to generate these things because they're fun to play with. It's so multidimensional, like these new laserdiscs. I don't have one myself, but I've read about them. There's a commentary from the actor or the director, which allows you another insight into the making of something. I'm not so sure that many records have that many nuances to them that they need to be picked apart in quite that way. On a CD-ROM, you can click things and open up a secondary level of information that fills in more background, but I don't want people to get confused that this is somehow a lecture about music. It's a rock 'n' roll record.

And it's a tight rope between enjoying the prospect of people discovering some artist that I love through my versions and the straight impulse on my part for them to enjoy my versions. "Yes, and well, thank you very much for that clue to this great music, and now we'll throw your record in the bin and go out and buy the originals." [Laughs] That's not my intent.

I want people to understand that this is done out of love for this music, and I want people to enjoy our versions. And if they're curious to go beyond that, then they can get the information. And as we have this forum or whatever you call it on the Internet on the day of the show, I imagine [the background of the songs] will be some of the sort of questions. And inevitably, there will also be the other kind of questions: "What does this have to do with the rest of your career, and where are you going next?" Things like that.

But anyone who's been to your shows knows that this has everything to do with your career.

But I don't mean in the sense that they think this is a misstep. I just mean they all want to know how it fits in and what importance to place on it. And things like why the record wasn't released immediately that we

—FROM PAGE 79, 'KOJAK' BROADCAST

Bros.' artist relations manager. "They send it right to me live," he explains. "We record it on two Sony D2s going at the same time, and if there's a glitch when we send it back out, we can just continue with the other one. At 6:30 p.m. West Coast time, I start testing for the satellite times and give the radio stations test tones for half an hour at five minute intervals. At 6:50, it's 'The next tone you hear will be exactly five minutes to show.'"

The hour-long broadcast consisted mainly of the songs on *Kojak Variety*, with a few delightful surprises in the encores: a rocking version of Hank Williams' "Why Don't You Love Me Like You Used to Do?" plus one of Costello's trademark segues—"Alison" turns into "Tracks of My Tears" turns into "Tears of a Clown" turns into "Clowntime is Over"—and last, the crowd-pleasing "Pump It Up!"

Those of us who turned on our radios (and our tape players)

were at once glad and jealous of the howling crowd at the Empire. And, despite his pleasure at bringing his client's music to such a huge audience, Warner Bros.'



FOH engineer David Zammit

Williamson is quick to allow that what goes on inside the theater is the true core of the event—of the industry as a whole, really. "That visual contact and the smell and the sweat, and everything else that goes along with it—the stinky backstage and the moldy theater—it's the reason we do what we do," says Williamson. "The romance and the adventure of being out there...If this replaces touring, I'll quit." ■

recorded it. The simple answer to that, really, is that it was always overtaken by new things that I regarded as more urgent.

You know what I wanted to happen? And it's very odd, and Warner Brothers have been very cooperative in this. I wanted the record to come out and just arrive in the shops.

And not promote it?

Absolutely no announcement of it. They could promote it after it was in the shops.

Why?

I wanted it to just sort of arrive and people say, "Hey, this is a mistake. This has been accidentally released." And to some extent, there's a spirit of that in the way it's been presented. You know, that you accidentally happen to be able to hear this concert in London when you really shouldn't be able to. So, we're trying to keep the spirit of *accident*.

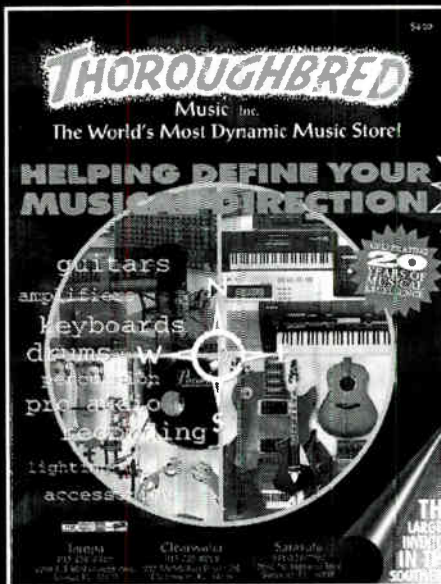
When these songs were recorded, I remember hearing that these were part of the sessions for Mighty Like a Rose, but it sounds like this was a completely separate project.

This is completely separate, yeah, [though] they were recorded in the same year. I was sort of saying goodbye to this band at the time [after making *Mighty Like a Rose*]. I had been working with these guys like Jerry Scheff and James Burton and Mark Ribot, some of them as long as four years since I'd recorded *King of America*, and we'd worked on *Spike* together, and different members of this pool of players had been on the road with me in a couple of different bands—one called The Confederates and one called the Rude Five. And when I thought we wouldn't see another for a couple of years while I was working back with The Attractions, I started to think it was a shame that I didn't have a record in which the spotlight fell more heavily on the individual personalities of the players. I thought there was no better way of capturing it than on neutral ground, on some songs that we could all start at the same point at. These are songs I had particular affection for, and they were all a kind of music [anyone] could understand.

Were the songs for Kojak Variety recorded live for the most part?

Yeah, mostly. I fixed a couple of flat notes here and there, and added vocal groupings, and I multitracked myself, and we might add a second guitar part or a second keyboard, but most of

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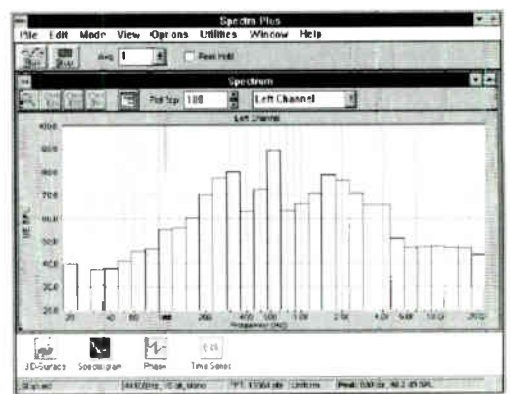
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what you hear was cut pretty much together in a very small room and in a very sort of hot, sweaty atmosphere, because it was in Barbados. The air conditioning only worked about half the time, so it gave it sort of a jungle-like atmosphere.

Why did you choose Blue Wave, other than the fabulous location?

It was sort of equidistant from all of the players, and it just happened to be a beautiful island as well. We went surfing in the morning. It's really a surf record.

I don't believe you.

We went surfing in the morning and recorded in the afternoon and evening and then drank some beer and did it again the next day. It was probably one of the most relaxed sessions, because there weren't so many mysteries to the songs, as with new songs when you don't know whether you're going to have to march them up to the top of the hill and march them down again, or whether they're going to come very easily. These songs mostly came extremely easily. It isn't to say we played them in a sloppy, careless way. We just played them the way we heard them.

Were the musicians familiar with all the songs?

No. Not all of them. A couple of them we had played live. I played "Leave My Kitten Alone" with The Attractions. Pete Thomas knew that one. I'd

played "Pouring Water on a Drowning Man" with the Confederate lineup, so Jerry and James knew that one, and Keltner knew that one. And "Running Out of Fools" I think we played also. So the others we were learning in the studio. We learned them, and the minute we'd learned them, we recorded them.

Did they learn them by listening to you, or did they hear the original versions?

We played the original versions, and we just said, "Well, what's really good that we can sort of keep?" See, sometimes, if you're not careful, if you abandon all thoughts of the original version, you actually forget about the composition. Even a song that sounds like a very spontaneous event, like Howlin' Wolf and the Willie Dixon song "Hidden Charms," when you actually get down to playing it on the guitar, it's got structure. It's as structured as a Cole Porter song. It uses simple changes, but there's nothing accidental about the way everything occurs, and if you're careless of that structure, the song will lose its charm completely. It will become thoroughly hidden.

So to speak.

You've got to be respectful of that, but not so respectful of the original version that you can't have a bit of fun playing it. It's quite hard to sing "Strange," because it's a very silly song, but it's wonderful, and that's why I left in the false start. I just cracked up, and I thought, well, that's at least a clue to the way we're thinking of this record. Rather than edit out all the rough bits, we left a few of them in this time.

Were there any covers you recorded that didn't get included?

Well, we were only there 15 days. I think we ran down a couple of other titles, but there were no actual out-takes. Everything that we finished—that we actually bothered to get to the next stage of finishing and mixing—went on the record because it all seemed to be of one thing. The others were very rough run-throughs. We did "First I Look at the Purse" by The Contours, and Percy Sledge's song "It Tears Me Up," which I'd played live, but neither of them seemed to just gel in the studio. I had a tape with about 30 different titles on it, the original versions, and these are the ones I really like, and they were the ones that happened to come together quickly, so it was a happy coincidence.

Elvis Online

There was much more wit than wisdom to be gleaned from Elvis Costello's appearance on Warner Bros.' *Cyber Talk* show on the Internet. Here are a few highlights extracted from the hundreds of participants who logged on.

What do you and Dave Letterman talk about during commercial breaks?

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World Radio History
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When I saw you at Davies Symphony Hall with the Brodsky Quartet, you made a pointed reference to the fact that that record—The Juliet Letters—was analog rather than digital. Would you share your views on that?

I just prefer analog. I can see some virtues to digital editing for clean edits, particularly of music that has continuous sounds in it like choral music. But personally, I think that in classical music, digital recording sometimes creates a sort of Rolls Royce effect. Maybe I've just sort of grown up with tape hiss and I like it. It's like having a nightlight on when you're a child, or it's total darkness.

I think that after Nirvana, a lot of people in rock 'n' roll started to realize that there was an enormous possibility of a huge dynamic shift in music from almost inaudible to deafening in a couple of bars, but it's a one-trick thing. Nirvana did it. Everybody else doing it over and over again just made music kind of boring. It's very effective when they did it on their records, but every group that's started copying this thing of singing

rrrrrrrrr AAAAAH!—it's not really that imaginative an idea after the first time it's been done. And Nirvana wouldn't have carried on doing that on every record. They didn't have a chance to do anything else.

What can you tell me about the new record you guys are going to make?

Eehhh...Not much really, we haven't started it yet. It's got songs on it. I always like to keep it a bit of a surprise. Recently, I was sort of surprise guest on five Bob Dylan shows, and I did mostly songs that people didn't know, and they were the songs.

It's a collection of songs that I've written for other people. Sometimes they know about it, sometimes they don't. I mean, it's more of a songwriter's collection than it is another installment of songs from me. There is a bit of a theme, but I want to develop it a little bit more before I really expand on it. I'm still deciding which way to go with a few of the songs, and I've got something like 40 songs to choose from.

You've been busy.

Some of them I wrote last week, literally, and some of them I wrote some time ago. It's songs that are re-

lated, albeit distantly to my work as a songwriter for other people, but these will be my versions. To say they're definitive—it's not to say that I think they'll be better than anything that's already been cut by somebody else, because they've been good enough to cut my songs. I'm not trying to say that they didn't do them right. But there's always some little element of the composition which they change, which I hear differently. As I'm proving with *Kojak Variety*, there are songs in the world that can stand to be sung more than once.

When I started out listening to music, songs were still measured by the amount of times they were cut or played by different artists, not by just how many copies they sold by one artist, and there's a big difference. It's to the detriment of music overall that songs are never allowed to develop. It's one idea, and then it's gone forever. Too greedy an appetite for the new over the excellent. ■

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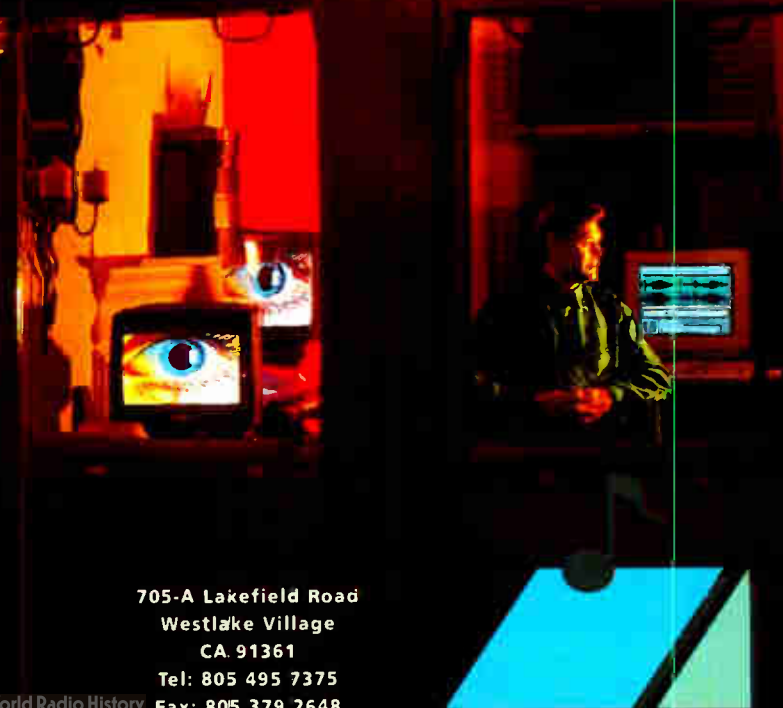
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World Radio History

by Adam Beyda

PAUL LEARY

SURFER GOES STUDIO MAESTRO

For more than ten years, the Meat Puppets had been making great music for a small following. Then last year, they scored a surprise hit with their song "Backwater" and their rollicking, melodic album *Too High to Die*. The LP ended up going Gold, making the Arizona band one of the most unanticipated beneficiaries to date of the mainstream's ongoing punk/alternative binge.

The album's success has also had major repercussions for producer Paul Leary. It got his phone ringing in big way, and he's been busy ever since, racking up credits producing acts such as Wiskey Biscuit for Geffen, Daniel Johnston (his wonderful Atlantic debut, *Fun*) and punkers the Supersuckers (their new Sub Pop release, *Sacrilegious*). The day after completing the Supersuckers in Austin

this past spring, Leary headed to Phoenix where he recently finished work on the next Meat Puppets LP.

As projects continue to roll in, the genial Austin resident is having to juggle his new career as an in-demand producer with his longtime gig as guitarist for Texas shock-rockers the Butthole Surfers. (At present, Leary is in the studio with the Butthole Surfers recording a Steve Thompson-produced album for Capitol, due out at the end of the year.) But though he has to split his time, his two roles have been highly complementary—it's through his work with the Buttholes that Leary has developed the skills and inclinations that make him a good producer.

Leary's studio experience dates back to 1982, when the Buttholes recorded their first album at a 16-track studio in San Antonio. He says that he and singer Gibby Hanes lived in a tool shed behind the place and worked with the staff during the day. "When everybody would leave," Leary says, "we'd go into the studio and try recording stuff ourselves. That kind of got us going in that direction. We never really were able to afford much studio time or anything, so we were always trying to figure out ways to do it ourselves."

Eventually, the band got their hands on an old tube Ampex 8-track that ran 15 ips and had mic preamps on the back. With that and two mics, they recorded several albums, including 1987's notorious *Locust Abortion Technician*. (When he tired of lugging the big old Ampex around, Leary simply left it in a house that the band had to vacate—the highway department bulldozed the place.)

Leary was the bandmember who always took the most interest in the process of recording, and he says that recording is the most fun part of being a musician. It's no surprise that he feels this way, given his raucous

Paul Leary (left)
with engineer
Stuart Sullivan
at Austin's Arlyn
Studio



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beginnings as a recordist. Because the Buttholes were making bizarre music on a nonexistent budget, Leary gained his chops through a lot of unusual trial and error—the learning curve sometimes looked like the learning rhomboid. “Back when we only had one microphone,” he says, “we would record a drum kit one drum at a time and then try to cram it all together somehow. We’d go down the street and record a bunch of cows mooing and use that. The fun thing about recording the Butthole Surfers is it doesn’t matter what you’re recording—just record something, then it will work out.”

Through ceaseless touring, the Buttholes gained increasing notoriety, and in 1991, they moved into the world of larger recording budgets when they signed with Capitol. They cut their Capitol debut, *Independent Worm Saloon*, with producer John Paul Jones (of Led Zeppelin fame), which was Leary’s first-ever experience working with a producer.

At that point, the only things Leary himself had produced other

than the Butthole Surfers were a Buttholes side project called the Jack Officers and an album for Austin quasi-bluegrass band the Bad Livers. But then the Meat Puppets heard and liked the Bad Livers LP and ended up asking Leary to work with them.

“The Meat Puppets are probably my all-time favorite band,” Leary says. “I was so excited to be able to work with those guys, because I’ve known them for years, and we’re good friends. It was a lot of fun, but if we’d known that the record was going to go Gold, we’d have maybe been a little more serious. But we were just about goofy to the point of being obnoxious.”

On Leary’s second collaboration with the Meat Puppets this summer, the fun continued, but the terms were considerably different. A substantially larger budget allowed them to work at a better equipped studio (Phase Four in Tempe, Ariz.) and meant that Leary didn’t have to handle details such as stringing and tuning guitars, giving him the space to concentrate mostly on the music. He says that the better gear and superior recording environment “made for



The Butthole Surfers, left to right: Jeff Pinkus, King Coffey, Paul Leary, Gibby Haynes

a better sound, and if the music sounds as good as it can, that’s when it’s easy to get swept up in it, and everything else kind of loses focus but the music.”

Even though he’s been producing nonstop for a while now, Leary admits to still feeling pretty inexperienced. “I’ve hardly worked with a producer, so I don’t know what a producer does. I’ve only done a

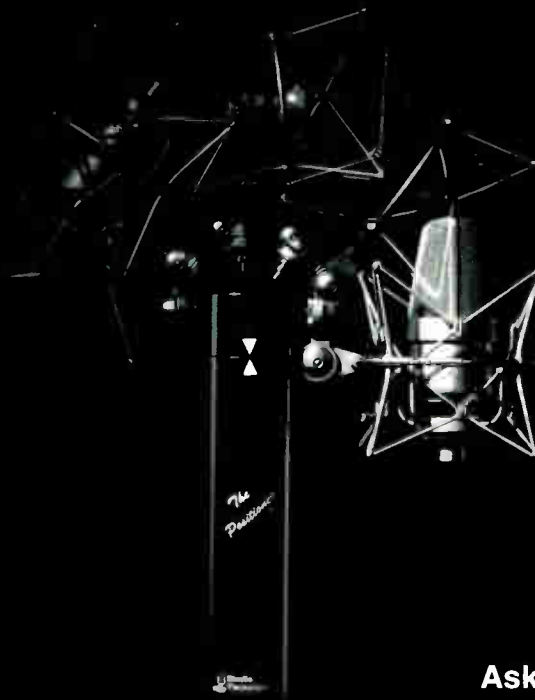
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handful of jobs so far, and every one has seemed so startlingly different." But what he phrases as a limitation is actually one of Leary's strengths. Because, as a producer, he's a relative neophyte, he relies less on established norms and more on his sense of what a project needs and on his own idiosyncratic experience. Practicing a gonzo style of recording with the Buttholes, Leary gained a keen appreciation for and understanding of the value of spontaneity and creativity. So when it comes to producing others, rather than just applying rote methods, Leary is open to a variety of approaches. ("Someone at Geffen referred to me as a 'creative'

ries Neves. Arlyn around an old API refurbished with Uptown automation), and both are owned by Willie Nelson. "There are some mics at Pedernales that I really like. One is a Telefunken 47 that Willie sings through all the time—maybe I just like it 'cause I can smell his breath on there." Leary laughs.

Leary often works with Austin freelance engineer Stuart Sullivan, whom he describes as a "really good, tireless workhorse. He's a real easy guy to hang with, and that's pretty important." When asked how he and Sullivan prepare for a collaboration,

Leary explains, "Before we go into a project, we'll listen to demo tapes that the band has made and talk about what kind of sound we might want—whether we want it more modern or airier or more vintage, those kinds of things. That's almost philosophical. Then once we get an understanding about where we're going, then we just start going there and kind of take it by the seat of the pants. We can change our mind halfway into something and do it a different way."

So much of producing is about working with people, and even though

The tricky part is trying to understand what the band really wants out of their music and out of their sound.

kind of producer. I don't know if that was good or bad," he laughs.)

He might record any number of ways, but of course Leary has his preferences: "I don't like digital," he says, "unless you're using it as a tool for something that analog doesn't do. If you're working with samplers or something like that, digital's great, but I really like the old analog machines myself."

Despite this partiality, Leary recorded much of the Daniel Johnston album on an ADAT. "Well, I wasn't sure what the record was going to be like," Leary explains. "At the time, Daniel wasn't real comfortable about going into the studio. So I started taking an ADAT and a 414 to his garage to get an idea of his songs, and the more we worked on them, the more we decided it was a comfortable situation. So we filled up a box full of ADAT tapes, then transferred it down to 24-track Dolby SR and just mixed it from there."

Leary and company mixed Johnston's album at Pedernales Studio, outside of Austin, where Leary works frequently. He also does a lot of his projects at Pedernales' sister studio, Arlyn. Both studios are well-stocked with the vintage gear Leary favors (Pedernales is based around 80 Se-

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he's a grizzled music industry veteran, Leary hasn't (yet) become cynical or embittered. "In years of touring, I've met a lot of musicians," he says, "and I like musicians. If you find an asshole musician, I bet he's not a very good musician. But there's an awful lot of cool guys out there, and it's always fun to work with people who you respect musically. And more often than not, they turn out to be people who are really easy to get along with. The people end of it is really fun. You've got all these people who are doing their thing, and if you just let 'em alone and let 'em do their thing, it always works out really good."

Leary's warmth and irreverence are attributes particularly conducive to creativity, as is his sense of humor. The Butthole Surfers have long sported a fondness for things scatological and bodily (the sound of vomiting, for instance), predilections Leary also demonstrates as a producer. (When Daniel Johnston loudly belched during the recording of the song "Catie," Leary couldn't pass up the opportunity to turn it way up in the mix.) Leary says that, in general, a lot of great stuff comes from just screwing around in the studio and that it's important not to get too serious. "You start spending lots of time in recording studios," he says, "spending a bunch of money, and it's not always easy to maintain a casual, lighthearted attitude. You've got to divorce yourself from the money that's being spent and just look at it as you're in this place at this certain time, and what do you really want to do?"

When asked if he thinks some of his success in working with performers is due to his good attitude rubbing off on them, Leary replies, "It's best probably to have as little attitude as possible and to remember that you're trying to make their record and not your own. The tricky part is trying to understand what it is that they really want out of their music and out of their sound. That's not always easy. Sometimes you think you can understand, and when you get toward the end, you might realize you maybe have missed the mark or something. You've got to keep your ears open and listen to the band." ■

Adam Beyda is a Mix assistant editor.

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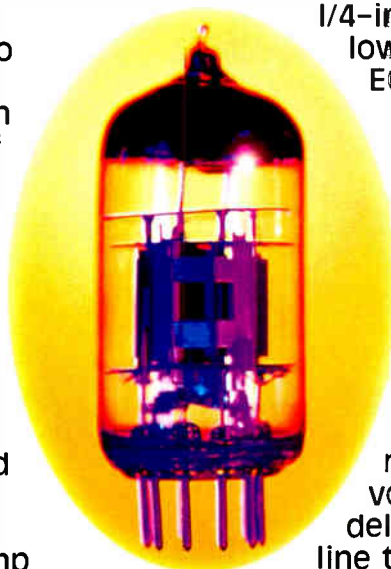
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The Technical Excellence & Creativity Awards was created in 1985 by the publishers of *Mix* magazine to recognize and promote outstanding achievement in recording and sound production and technology. Proceeds of the TEC Awards benefit organizations dedicated to the cure and prevention of deafness and hearing impairment, students of audio, and nonprofit organizations serving the professional audio industry.

In its eleven-year history, the TEC Awards has raised nearly \$260,000 for these worthy causes while offering attendees the opportunity to mingle with audio and music industry luminaries at what has become one of the most important annual events for audio professionals.

The TEC Awards are divided into three major categories—Technical, Creative and Institutional Achievement—and 25 sub-categories. Voting for the TEC Awards winners is a two-step process. A Nominating Panel, comprising approximately 200 prominent members of the professional audio industry, makes initial selections in March. Their nominations appear on the Voting Ballot in this issue of *Mix*. The winners of the Eleventh Annual TEC Awards will be announced at a ceremony on Friday, October 6, at the Marriott Marquis in New York City.

Half of this year's TEC Awards proceeds will once again be donated to the Hearing Is Priceless (HIP) campaign, co-founded by *Mix* magazine and the House Ear Institute of Los Angeles. The HIP campaign seeks to educate the music listener, especially young people, about the dangers of noise-induced hearing loss.

Forty percent of the TEC Awards proceeds will be distributed to past winners and nominees of the TEC Award for Recording School Program, that have previously established scholarship or grant programs with TEC Awards funds, and to scholarships and other audio educational programs of the Audio Engineering Society Educational Foundation and the Society of Professional Audio Recording Services (SPARS).

Five percent of the proceeds, beginning this year, will be used to establish the TEC Awards Scholarship Fund, and the remainder of the proceeds will be contributed to Hearing Education Awareness for Rockers (H.E.A.R.) of San Francisco.



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TER'S GUIDE

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JBL Professional • As a member of the Harman International group of Pro Audio companies, JBL has developed an industry-wide reputation for manufacturing the finest in loudspeaker transducers and systems. JBL is on the cutting edge of emerging digital technology and systems innovation, holding numerous loudspeaker design patents and registered trademarks. JBL Professional manufactures JBL loudspeakers and systems.

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AMS Neve • AMS Neve Plc is one of the world's leading manufacturers of professional audio equipment. Based in the UK, the company supplies facilities worldwide with mixing and editing systems for film, video post-production, broadcast, music recording and live/theater applications. Distributed in North America by Siemens Audio Inc., AMS Neve's product range includes the Capricorn digital mixing console; the Logic Series of digital mixing consoles; the AudioFile hard disk recorder/editor; the VR Legend analog console; and the 55 Series analog broadcast console.

DOD Electronics Corporation • Founded 21 years ago by its president John Johnson, DOD bears little resemblance to its origins as a basement manufacturing setup. DOD has evolved into a state-of-the-art factory utilizing the latest computer-aided manufacturing and testing equipment. DOD Electronics Corporation is an integrated leading manufacturer of signal processing equipment, digital effects processors, equalizers, limiters, crossovers, mixers, pedals and other audio electronic components. DOD, DigiTech, dbx, Allen & Heath and Spirit are widely known trademarks under which the company's products appear. Each division is a member of the Harman International family.

Solid State Logic • Solid State Logic changed the world of recording and mixing forever when it introduced a fully functioned, in-line console, with direct control of external tape machines and a built-in automation system. Since then, the company has continued to improve and refine the art and science of audio production in the areas of music, broadcast, film and television post-production. SSL's innovative use of digital technology has set new standards in post-production by designing the first audio products to enable multi-user networking and to integrate digital video. SSL's clients range from artists such as Sting, Prince and Bryan Adams to NBC, CBS and most major film studios.

Tektronix, Inc. • Since the 1940s, the Tektronix name has been synonymous with signal measurement. Generations of technicians and engineers made their first acquaintance with Tektronix through the green-screened scopes on their lab benches. Today, they know Tektronix best for leading the way in digital signal processing. By bringing familiar analog interfaces to advanced digital instrumentation, Tektronix makes breakthrough technology accessible in products ranging from handheld troubleshooting devices to disk recorders. Its audio instruments are at work in recording and broadcast studios, factories and post facilities around the world.



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Beginning on page 94 are seven pages of nominee descriptions and biographies. Please take the time to read the nominee information before voting. (Ballots in subscribers' issues only.) Ballots must be postmarked by Thursday, August 31, 1995.

TEC AWARDS HALL OF FAME

The TEC Awards Hall of Fame was created in 1988 to recognize the contributions of those special individuals who, during their lifetimes, have best exemplified the spirit of creative and technical excellence in professional audio. This year the TEC Awards will be honoring legendary producer **Phil Spector**, the architect of the Wall of Sound.

THE LES PAUL AWARD

The Les Paul Award was created in 1991 to honor individuals or institutions that have set the highest standards in the creative application of technology. This year's Les Paul Award is being presented to Grammy Award-winning engineer, producer and musician **Alan Parsons**.

THE 1995 TEC AWARDS NOMINEES

OUTSTANDING INSTITUTIONAL ACHIEVEMENT

Awarded to those companies, facilities or institutions that have contributed most significantly to excellence and innovation in audio during the eligibility year.

A. ACOUSTICS/FACILITY DESIGN COMPANY

Russ Berger Design Group, Inc., Dallas, TX: A partial list of more than 60 projects this year includes USA Radio Network; Vermont Public Radio; ABC Radio Network; West End Post; The Lyons Group/Barney; TM Century, Inc./Video Productions; personal studio for Whitney Houston; Sterling Sound; Palestrini Post; TNN; Sony/Tree; Music Mill Recording Studios; Spots BME; KMXT; BET; NPR; and Georgia Public Radio & TV. Projects range from \$1,000 remodels to multimillion-dollar facilities.

Charles M. Salter Associates, Inc., San Francisco, CA: Recent film studio projects include the Disney Feature Animation Building Screening Room, Music and Dialog Recording Rooms, and the Warner Bros. Sound Department remodel that includes ADR and Foley stages. Recent music projects include the Randall Junior Museum's Musical Theater, the Paramount Studio M Scoring Stage expansion and the Mendocino Community College Theater. Broadcast studios include KPBS Radio and TV, and KPIX Radio.

studio bau:ton, Los Angeles, CA: During the eligibility period, studio bau:ton completed the Alias Records/Royaltone facility in North Hollywood; C+C Music Enterprises in New York; ORF Studio in Vienna; American Gramophone Studio in Omaha; Estudios Churubusco in Mexico City; Syntrax Studio in Pittsburgh; SEGA Studio in San Francisco; Patrick Williams' studio in Los Angeles; Leeway Studio in Santa Monica; Swell Pictures in Chicago; and started construction on Peter Wolf's Studio in Austria; EFX Systems in Burbank; and Mega Studios in Paris.

Walters-Storyk Design Group, Highland, NY: During the eligibility period, Walters-Storyk worked on broadcast facilities for Interlochen Public Radio; recording facilities for Cotton Hill Studios, Parallax, NYC; Beteleguese, NYC; AR Studios in Rio; Video Arts, ND; Hard Rock, NYC; Credence Sound and Radan Tapes and Tubes, Bombay, India; Mitch Leigh's Music Makers; and Synchrosound's 25,000-square-foot, state-of-the-art audio production center, Kuala Lumpur, Malaysia.

Waterland Design Group, Hollywood, CA: During the eligibility period, Waterland added a mix studio to Sony Music Studios in New York. Squeezed in a 25-foot-wide former automotive bay adjacent to the existing studio, this project required all possible kinds of innovation, diplomacy and aesthetic ADA and acoustic design. The group also designed a studio for a private residence. The 2,500-square-foot studio was outfitted with a 96-frame SSL console, Augspurger LCR monitors and single-handler capability.

B. SOUND REINFORCEMENT COMPANY

A-I Audio, Inc., Hollywood, CA: Tours: Anita Baker, Barry Manilow, Cinderella, Chicago, Engelbert, Foreigner/Doobie Brothers, Go Go's,

Johnny Mathis, Motley Crue, Paul Anka, Paul Weller, Shirley Maclaine, Sandra Bernhard, Van Halen, and *Joseph and the Amazing Technicolor Dreamcoat*. Installations: Grease on Broadway, Cerritos PAC, Boomtown, House of Blues, Prince's Glam Slam, The Palace, Lawrence Welk, MGM Grand, Fonda Theater and the Yellow Ribbon Theatre. Events: APLA, FanFest/Academy of Country Music, McDonald's GospelFest, New Year's In Las Vegas, Disney's Showfest, Junefest Classic Rock & Roll, and Watts Festival.

Britannia Row Productions, London, England, New York: Britannia Row's Flashlight system was chosen by Pink Floyd for their America and Europe tours. An international nine-person crew operated the system in conjunction with Andy Jackson and Seth Goldman, Pink Floyd's FOH and monitor engineers. Other projects for the company included world tours with Peter Gabriel, Depeche Mode and Bryan Ferry, as well as several major European festivals.

Clair Brothers Audio, Inc., Lititz, PA: Worldwide projects included the Eagles, the Disney Animation Festival, R.E.M., Barbra Streisand, Elton John/Billy Joel, Elton John/Ray Cooper, Billy Joel, Aerosmith, Yes, Bette Midler, Steely Dan, John Mellencamp, Steve Miller Band, Indigo Girls, Seal, Steve Perry, Southern Spirit, Michael W. Smith, Roger Daltrey, DC Talk, Peter Frampton, Little Texas/Tim McGraw, Spin Doctors, Scorpions, Joe Cocker, Tanya Tucker, Bob Dylan, MTV Video Music Awards, Amy Grant, Pacific Rim, Lynyrd Skynyrd and Roxette.

Showco, Inc., Dallas, TX: During the eligibility period, Showco and its Prism® sound system have been the choice of the Rolling Stones, Eric Clapton, Janet Jackson, Phil Collins, Reba McEntire, Vince Gill, Alan Jackson, Clint Black, The Road, Soundgarden, Stone Temple Pilots, Cocteau Twins, Gin Blossoms, Siouxsie and the Banshees, INXS, Extreme, ZZ Top, Harry Connick Jr., Moody Blues, Steven Curtis Chapman, James Taylor, Megadeth, Santana, Beach Boys, Traffic, Willie Nelson, Linda Ronstadt and the Highwaymen.

Sound Image, Inc., San Marcos, CA/Nashville, TN: Touring clients for Sound Image included: Jackson Browne, John Hiatt, Mary Chapin Carpenter, Brooks & Dunn, Barbara Mandrell, All 4 One, Dan Fogelberg, Jimmy Buffett, Melissa Etheridge, CS&N and Harry Belafonte. Seasonal S/R installations included Pacific Symphony, San Diego Symphony, Los Angeles Philharmonic and Humphreys by the Bay. Corporate service work included BMG Records, USO, Live Audio Workshop, and AMS. Contracting included the Hollywood Bowl, B.B. King Blues Club, Qualcomm Inc., Advanced Cardiovascular Systems, county agencies and several churches.

C. MASTERING FACILITY

Bernie Grundman Mastering, Hollywood, CA: During the eligibility year, Bernie Grundman mastered projects for Sheryl Crow, Stevie Wonder, Elton John, Prince, Michael Jackson, Isaac Hayes, Joni Mitchell, Kenny G, Janet Jackson, Warren G, Montell Jordan, and international stars Veronique, Ana Gabriel, Luis Miguel and Yumi Matsutoya.

Bob Ludwig's Gateway Mastering Studios, Portland, ME: Eligibility year projects included Pearl Jam *Vitalogy*, Bruce Springsteen *Greatest Hits*, Stone Temple Pilots *Purple*, Hole *Live Through This*, Melissa Etheridge *I'm the Only One*, Sting *Fields of Gold*, John Mellencamp *Dance Naked*, Gloria Estefan *Hold Me, Thrill Me, Kiss Me*, Mariah Carey, *Merry Christmas*, the Rolling Stones 20-bit re-issues, Megadeth *Youthanasia*, Jon Secada *Heart, Soul & A Voice*, Indigo Girls *Swamp Ophelia*, Wet, Wet, Wet *End of Part One*, Luther Vandross *Songs*, Little Texas *Kick A Little*, and The Black Crowes *America*.

Georgetown Masters, Nashville, TN: Projects during the eligibility year included work with Bela Fleck, Trisha Yearwood, Garth Brooks, Alison Krauss, Nanci Griffith, Mary Chapin Carpenter, Janis Ian, Chet Atkins, Dolly Parton, Kirk Whalum, Donna Summer, The Tractors, Cry of Love, Mark O'Connor, Emmylou Harris, Iris Dement, Kathy Mattea, Alabama, Wynonna Judd and Steve Goodman Anthology. Georgetown earned 47 Gold and Platinum albums during the eligibility period, with approximately 50% of its work on the Billboard Country charts.

Precision Mastering, Hollywood, CA: During the eligibility period, Precision Mastering worked on albums by R.E.M., Nirvana, the Rolling Stones, Tom Petty, Collective Soul, Counting Crows, Toad the Wet Sprocket, Queensryche, Danzig, Wool, Dionne Farris, Amy Grant, Neil Diamond, Taftkap, Tom Jones, Shawn Colvin, The Jayhawks, Victoria Williams, Beck, Suddenly Tammy, Johnny Cash and the Highwaymen.

The Mastering Lab, Los Angeles, CA: No credits were available.

D. AUDIO POST-PRODUCTION FACILITY

Three-time consecutive winner *Skywalker Sound North* is not eligible this year.

Buena Vista Sound, Burbank, CA: During the eligibility period, a patent was awarded to one of the Disney engineers for the new digital noise-reduction filter used in the restorations of *Snow White* and *Sleeping Beauty*. Final mix services were provided on *The Lion King*, *Pulp Fiction*, *When a Man Loves a Woman*, as well as sound design and final mix services for *Mighty Ducks II*. ADR work included *The Lion King*, *True Lies*, *Outbreak*, *While You Were Sleeping* and *A Goufy Movie*.

EFX Systems, Burbank, CA: During the eligibility period the EFX creative team performed all sound design, editorial and dubbing for three Number One box office hits, *The Mask*, *Dumb & Dumber* and *Disclosure*. In television, EFX posts five hours of weekly episodic television, including the sci-fi hit *Babylon 5*. Acquired in 1994 by Record Plant's Rick Stevens and partners Tom Kirch and Richard D'Abo, EFX underwent a major equipment, technical infrastructure and facilities upgrade to its Burbank base.

Howard Schwartz Recording Inc., New York, NY: Eligibility year credits include audio post-production and/or mixing for *The Simpsons*, *Pocahontas*—Disney, Columbia Radio Hour—Sony Music, Rolling Stones souvenir video, *Denise Calls Up*—independent film, Tim Burton's *James and the Giant Peach*, *First Knight*—Columbia

Pictures, *I Love Trouble*—Touchstone Pictures, Robert Altman's *Pret-a-Porter*, *Miami*—Disney, CBS and ABC News, CBS and ABC Sports, ESPN, MTV, Showtime, Arts & Entertainment, TNT, Sony and hundreds of commercials.

Pacific Ocean Post, Santa Monica, CA: Among POP's commercial credits are Nike Rugby "Snow" (Wieden & Kennedy), Budweiser "Frogs 2," "Ants" and "Flare" (BBDO), L.A. Gear "Bug Zapper" (Chiat/Day) and the new Porsche campaign from Goodby, Silverstein & Partners. Other projects include digital sound mixing and editing for the award-winning music special *Jackson Browne: Going Home* and ADR for feature films *Picture Bride* and *The Visitors*. ADR/Foley services were also provided for TV series *NYPD Blue*, *Chicago Hope* and *Northern Exposure*.

Sync Sound, New York, NY: Sync Sound was one of the first facilities to specialize in audio post for television and film. Eligibility-period credits include Barry Levinson's *Homicide*, *Rebo McEntire* "Live" (NBC); *Beavis and Butthead*, *The Head*, *Eagles: When Hell Freezes Over* (MTV); *Alexander Nevsky* (BMG soundtrack/laserdisc); *FDR*, *The Puzzle Place* (PBS series); *Turning Point*, *Barbara Walters*' specials (ABC); "Rolling Stones Voodoo Lounge Tour" video (VH-1); and *NBA Home Videos*.

E. REMOTE RECORDING FACILITY

Effanel Music Inc., New York, NY: Manhattan-based Effanel Music captures live performances worldwide with four systems: their acclaimed SSL/Neve mobile unit, a Massenburg/Hardy flight-pack system, and two studio installations—MTV's New York studios and *The Jon Stewart Show*. Eligibility year credits include Pearl Jam Live, "Marsalis on Music," *MTV's Music Video Awards*, *Barbra Streisand The Concert*, *Woodstock '94 Because A Buck Is A Buck*, the 1995 Grammy Awards, five *MTV Unplugged* segments and *Whitney Houston—HBO's Concert From South Africa*.

Le Mobile, Los Angeles, CA: During the eligibility period, Le Mobile recorded the Eagles' latest release, *Hell Freezes Over*, and the MTV video live broadcast, *John Tesh Live at Red Rocks*, Eric Clapton, *From the Cradle* video, Janet Jackson, Dwight Yoakam, Tesla, Great White, Bonnie Raitt, The Smithereens, Cheap Trick, Queen Latifah, Dead Can Dance, Lisa Gerrard's solo project, and numerous live broadcasts for the Album Network. Le Mobile also spent many months recording Rod Stewart's latest release, *A Spanner in the Works*.

Record Plant Remote, Inc., West Milford, NJ: During the eligibility period Record Plant Remote worked with +Live+, *Woodstock II*, Trisha Yearwood, James Taylor, Wynton Marsalis, George Thorogood, BeBe and CeCe Winans, Clint Black, Paul Winter, *The Road* television series, Aaron Neville, Aretha Franklin, Vince Gill, Emmylou Harris, Mary Chapin Carpenter, Bela Fleck, Shawn Colvin, Alison Krauss, Steve Wariner, *The Mavericks*, Hal Ketchum, *Jazz Central* television series (BET), Nancy Wilson, Travis Tritt, Kathy Mattea, The Band and Nanci Griffith.

Remote Recording Services, Lahaska, PA: Eligibility-year credits include Allman Brothers Band "Where It All Begins" tracks for CD; Mariah Carey *Christmas*, network special; Pink Floyd, a live single from the Mission Bell tour; 1995 Grammy Awards, live worldwide broadcast; Buddy Guy, live CD; "Live From the Met," series of PBS broadcasts; Reba McEntire, network TV

special; Nine Inch Nails, live concert film; the Rolling Stones, a live PPV and home video; Barbra Streisand, live CD; and *Woodstock '94*, live TV, PPV and CDs.

Westwood One Mobile Recording, Culver City, CA: During the eligibility period Westwood One recorded and mixed concerts for their internationally syndicated *Superstars Concert Series* and *In Concert* programs. Artists during the eligibility period included the Rolling Stones live from New Orleans, Moody Blues, Hole, Simple Minds, Live, Seal, Bad Religion, Joe Cocker, Stevie Nicks, Sheryl Crow and Collective Soul. Other special projects included MTV's *NBA All-Star Jam*, *MTV Movie Awards*, *VH1 Honors* featuring Stevie Wonder, Melissa Etheridge, Garth Brooks, Bonnie Raitt and Prince, and the Playboy Jazz Festival.

F. RECORDING STUDIO

Emerald Sound Studios, Nashville, TN: During the eligibility year, Emerald Sound Studios worked with Foreigner, Bon Jovi, Mark Knopfler, Melissa Etheridge, Wilco, The De Vinylns, Reba McEntire, George Strait, Wynonna, Kathy Mattea, Vince Gill, Travis Tritt, John Berry and Alabama. Emerald Sound is home to the Hidley-designed Studio A. It features 48-, 32- and 24-track tape machines. However, the focus of Emerald is the Kerry Kopp custom-modified SSL console with Ultimatum and Total Recall.

Masterfonics, Nashville, TN: During the eligibility period, Masterfonics worked with Frank Sinatra (*Duets II*), Reba McEntire, Aaron Neville, Vince Gill, Lyle Lovett, Dolly Parton, Bela Fleck, Sandi Patti, Wynonna, Take 6, Willie Nelson, the Boston Pops Orchestra, George Strait, Tanya Tucker, Marty Stuart, Chet Atkins and Suzy Bogguss, Steven Curtis Chapman, Little Texas, Iguanas, George Jones, the Freddie Jones Band, Diamond Rio, Charlie Daniels and Confederate Railroad.

Ocean Way Recording, Los Angeles, CA: During the eligibility year, Ocean Way worked on albums for AC/DC, Belly, Bon Jovi, The Chieftains, Leonard Cohen, Counting Crows, Fleetwood Mac, Highwaymen, Michael Jackson, Elton John, Little Feat, Manhattan Transfer, Bobby McFerrin, Aaron Neville, Tom Petty, Martin Page, Bonnie Raitt, Red Hot Chili Peppers, R.E.M., Brian Setzer, Soul Asylum, Richard Thompson, Barry White and Stevie Wonder. Soundtracks included *Boys on the Side*, *Don Juan DeMarco*, *Higher Learning*, *Reality Bites* and *Speed*.

Record Plant, Hollywood, CA: Record Plant continued to enhance its reputation as a leader by acquiring the West Coast's first SSL 9000 J series console and hard-disk recorder. During the eligibility period, Record Plant had 15 clients nominated for Grammys, with seven winners including Bonnie Raitt, engineer Ed Cherney and producer-of-the-year Don Was. Other artists recording were Duran Duran, Barbra Streisand, Prince, Paula Abdul, Chicago, Van Halen and Neil Diamond. Movies included *Beverly Hills Cop III*, *Boys on the Side* and *Bad Boys*.

Sony Music Studios, New York, NY: During the eligibility period, Sony worked with Baby Face, Billy Joel, Bob Dylan, Bruce Springsteen, Celine Dion, Dionne Farris, Eric Clapton, Gloria Estefan, Harry Connick Jr., James Taylor, Jeff Buckley, Luther Vandross, M People, Marcus Roberts, Mariah Carey, Michael Bolton, Michael Jackson, Ozzy Osbourne, Pink Floyd, Rolling Stones, Sade, Shawn Colvin, Soul Asylum, Toad the Wet Sprocket, *Tony Bennett—MTV Unplugged* (Grammy Album of the Year) and Wynton Marsalis.

OUTSTANDING CREATIVE ACHIEVEMENT

Awarded to those individuals or teams who have achieved the highest levels of excellence in professional audio during the eligibility year.

A. AUDIO POST-PRODUCTION ENGINEER

John Alberts: During the eligibility year, Alberts worked on *MTV Unplugged*, *TV Nation*, "Marsalis on Music," *Saturday Night Live*, *What Can We Do About Violence* (Bill Moyers), *Hard Core TV*, *Def Comedy Jam*), *Eric Clapton Tour Rehearsal—From The Cradle*, *An Evening of Songs* (Luther Vandross), *Roger Daltrey Sings Pete Townshend at Carnegie Hall*, *A Very Special Christmas* (Natalie Cole), *Red Hot & Cool*, *Red Hot & Country*, *The Woodstock Diaries* and the *Aspen Comedy Festival*.

Lee Dichter: As a re-recording engineer, Dichter was involved with *Bullets Over Broadway*, directed by Woody Allen, starring Dianne Wiest; *Pret-A-Porter*, directed by Robert Altman, starring Tim Robbins; *Nobody's Fool*, directed by Robert Benton, starring Paul Newman; *Mixed Nuts*, directed by Nora Ephron, starring Steve Martin; *It Could Happen to You*, directed by Andrew Bergman, starring Nicholas Cage; *Just Cause*, directed by Arne Glimcher, starring Sean Connery; and *Baseball*, directed by Ken Burns.

Ken Hahn: Hahn mixes a variety of programs at Sync Sound, the New York audio post-production facility that he co-owns. Credits include *Reba McEntire* "Live" (NBC); *Alexander Nevsky* (BMG laserdisc and soundtrack); *Eagles: When Hell Freezes Over* (MTV); *FDR* and *The Puzzle Place* (PBS series); *Some Enchanted Evening—Oscar Hammerstein*, *The World of Jim Henson*, *Live From The Metropolitan Opera* and *Opening Night at Carnegie Hall* (PBS); and *Real Sex* (HBO).

Steve Maslow/Gregg Landaker/Bob Beemer: During the eligibility year, the team of Maslow, Landaker and Beemer worked on *Speed*.

George Meyer: During the eligibility period, Meyer did audio post-production engineering and mixing for the Bosnia Special with Peter Jennings (ABC), *Shells Wonderful World of Golf* (ABC), *Wide World of Sports for Kids* "A Day at the Races" (ABC), *Charles Kuralt-30 Years on the Road* (CBS), CBS Sports Professional Skating Championships, *Daytime Emmys* (ABC), *Sports Illustrated 40th Anniversary Special* (NBC), *Halloween* (CBS), *Ironman Triathlon* (NBC), *Voices of the Game* and *ESPN Awards* (ESPN), *Symphony on Ice* (A&E) and *CBS Sports Olympic Diary*.

B. REMOTE/BROADCAST RECORDING ENGINEER

Three-time consecutive winner David Hewitt is not eligible this year.

Biff Dawes: During the eligibility period, Dawes recorded and mixed numerous shows for Westwood One's many concert series, including such artists as Hootie & the Blowfish, Live, Allman Brothers, Bryan Ferry, Hole, Green Day and Dave Edmunds. Other projects include the Rolling Stones *Souvenir Home Video*, *VH1 Honors* show, *MTV Spring Break*, *Kenny Rogers Special* for Disney and the *Playboy Jazz Festival* for NPR.

Continued on next page

Randy Ezratty: Ezratty is the owner and systems designer of Effanel Music. During the eligibility period, his recording and mixing credits included Bob Dylan—*MTV Unplugged*; *The MTV Music Video Awards*; the 1995 Grammy telecast: *The Jon Stewart Show* and MTV's *120 Minutes*.

Ed Greene: Projects included the 1994 Grammy Awards (production mixer), AFI Salute to Jack Nicholson (post-production mixer); the 1994 Easter Seals Telethon, the 1994 National Memorial Day Concert, the 1994 Tony Awards, MDA Telethon, the 1994 Emmy Awards, A Capitol 4th (production mixer, music mixer); The Three Tenors at Dodger Stadium (production mixer); *Barbra Streisand—The Concert* (production, post-production mixer, music mixer); The Kennedy Center Honors (production mixer, music mixer, post); and Christmas in Washington (production, post-production and music mixer).

John Harris: John Harris is Effanel Music's lead mixer. Credits include Pearl Jam—*Live*; Tony Bennett—*MTV Unplugged* (Grammy Album of the Year); "Woodstock '94"; *MTV Music Video Awards*; Columbia Records' Radio Hour; *The Jon Stewart Show*; Whitney Houston—*HBO's Concert from South Africa*; the 1995 Grammy telecast; Eric Clapton—"VH1 From The Cradle"; *The Rock 'n' Roll Hall of Fame*; and *MTV Unplugged* segments featuring Sheryl Crow, Hole, The Cranberries, Melissa Etheridge, Live and Lenny Kravitz.

Kooster McAllister: During the eligibility period McAllister engineered projects with +Live+, Trisha Yearwood, James Taylor, Wynton Marsalis, Bebe and CeCe Winans, Clint Black, *The Road* television series, Aaron Neville, Vince Gill, Emmy Lou Harris, Nancy Wilson, Mary Chapin Carpenter, Bela Fleck, Shawn Colvin, Alison Krauss, Steve Wariner, The Mavericks, Hal Ketchum, *Jazz Central* television series (BET), Travis Tritt, Kathy Mattea, The Band, Nanci Griffith, Pam Tillis, Lee Roy Parnell, Marty Stuart, Rodney Crowell and Delbert McClinton.

C. SOUND REINFORCEMENT ENGINEER

Three-time consecutive winner Robert Scovill is not eligible this year.

Robert "Cubby" Colby: During the eligibility period, Colby was the sound reinforcement, front-of-house engineer for Phil Collins' "Both Sides and Far Sides of the World Tour." A total of 160 shows were performed worldwide. Colby also co-produced and mixed *Phil Collins Live From the Beard EP* for promotional tactics for the tour.

Dave Kob: During the eligibility period, Kob worked as house engineer with the Eagles in rehearsals for their tour, and toured with Billy Joel and Elton John in the States, Elton John in Europe, and Robert Plant and Jimmy Page in the States.

Andy Jackson: During the eligibility period, Jackson toured with Pink Floyd.

Bruce Jackson: Jackson, founder and president of Apogee Electronics Corp., engineered Barbra Streisand's return to the stage after 27 years. Jackson guided Streisand to rave reviews. In a number of firsts, Jackson replaced traditional horn monitors with soft domes, designed an 8-foot see-through TelePrompTer, and had all the arenas carpeted to control the acoustics for the 65-piece orchestra.

Benji Lefevre: During the eligibility period, Lefevre worked with INXS and the Rolling Stones "Voodoo Lounge" tour. In addition to Lefevre's expertise in live sound mixing, he has also consulted with these groups in designing audio systems to best suit each group's needs.

D. MASTERING ENGINEER

Greg Calbi: During the eligibility year, Calbi mastered projects such as Blues Traveler (*Four*), Nanci Griffith (*Flyer*), Joshua Redman (*Moonswing*), Tragically Hip (*Day For Night*), Travis Tritt (*10 Ft. Tall and Bulletproof*), Roberta Flack, Sarah McLachlan (*The Freedom Sessions*), Edie Brickell (*Picture Perfect Morning*), Joe Lovano (*Rush Hour*), Gilby Clarke (*Pawnshop Guitars*), John Scofield (*Hand Jive*), Blue Rodeo, Velvet Crush (*Teenage Symphony to God*), Al DiMeola (*Orange & Blue*), and the Philosopher Kings (winner of a Canadian Juno Award for Best Engineered Album).

Bernie Grundman: During the eligibility period, Grundman mastered projects for Sheryl Crow, Kenny G, Joni Mitchell, Michael Jackson, Selena, Willie Nelson, Stevie Wonder, Boz Scaggs, Warren G, Xscape and George Winston.

Bob Ludwig: Eligibility-year projects included Pearl Jam *Vitalogy*, Bruce Springsteen *Greatest Hits*, Stone Temple Pilots *Purple*, Hole *Live Through This*, Melissa Etheridge *I'm the Only One*, Sting *Fields of Gold*, John Mellencamp *Dance Naked*, Gloria Estefan *Hold Me, Thrill Me, Kiss Me*, Mariah Carey *Merry Christmas*, the Rolling Stones 20-bit re-issues, Megadeth *Youthanasia*, Jon Secada *Heart, Soul & A Voice*, Indigo Girls *Swamp Ophelia*, Wet, Wet, Wet *End of Part One*, Luther Vandross *Songs*, Little Texas *Kick A Little*, The Black Crowes *America*.

Stephen Marcussen: During the eligibility period, Marcussen worked on albums by R.E.M., Nirvana, the Rolling Stones, Tom Petty, Collective Soul, Counting Crows, Toad the Wet Sprocket, Queensryche, Danzig, Wool, Dionne Farris, Amy Grant, Neil Diamond, Taftkap, Tom Jones, Shawn Colvin, The Jayhawks, Victoria Williams, Beck, Suddenly Tammy, Johnny Cash and the Highwaymen.

Doug Sax: No credits were available.

E. RECORD PRODUCER

Three-time consecutive winner Don Was is not eligible this year.

Tony Brown: During the eligibility year, Brown produced albums for David Lee Murphy, Todd Snider, Mac McAnally, George Strait, Vince Gill, Rodney Crowell, Reba McEntire, and cuts on various tribute records, such as Steve Earle and Alabama for *Skynyrd Frynds*. He was also the executive producer for the Grammy Award-winning *Rhythm/Country & Blues*.

Garth Fundis: During the eligibility year, Fundis worked on Trisha Yearwood's *Thinkin' About You*, Yearwood's fourth collaboration with Fundis, which yielded two Number One singles and is approaching Platinum status, and Lari White's *Wishes*, which had three consecutive Top 10 singles.

Jerry Harrison: During the eligibility year, Harrison produced General Public's *Rub It Better*, Black 47's *Home of the Brave*, Fatima Mansions' *Lost in the Former West*, Live's *Throwing Cooper* and Crash Test Dummies' *God Shuffled His Feet*.

Scott Litt: During the eligibility period, Litt produced R.E.M.'s latest, *Monster*, his fifth with the group, as well as Nirvana's *Unplugged in New York*. As a mix producer, he worked on Counting Crows' "Mr. Jones," "Round Here," "Murder of One" and "Rain King," and Hole's "Violet," "Miss World" and "Asking for It."

Brendan O'Brien: During the eligibility period, O'Brien produced and mixed Matthew Sweet's *100% Fun*, Pete Drogé's *Necktie Second*, and Pearl Jam's *Vitalogy*.

F. RECORDING ENGINEER

Ed Cherney: During the eligibility period, Cherney recorded and mixed Bonnie Raitt's *Longing in Their Hearts*, mixed selected cuts from Bob Seger's *Greatest Hits*, produced and engineered Jann Arden's *Living Under June* and recorded Steven Curtis Chapman's *Heaven in the Real World*.

Joe Ferla: During the eligibility period, Ferla engineered Laurie Anderson's *Bright Red*, James Carter's *The Real Quietstorm*, Dave Douglas' *In Our Lifetime*, Paul Motian and the Electric Be-bop Band's *Re-Incarnation of a Love Bird*, Eddie Palmieri's *Palmas*, Leon Parker's *Above and Below*, David Sanborn's *Hearsay*, and James Blood Ulmer's *Music Revelation Ensemble/In the Name Of...*

Pat McCarthy: During the eligibility period McCarthy engineered R.E.M.'s *Monster*, Counting Crows' *August & Everything After*, and Robbie Robertson and the Red Road Ensemble's *Music for the Native Americans*.

Hugh Padgham: During the eligibility period, Padgham worked on Melissa Etheridge's record-breaking singles "If I Wanted To" and "I Am the Only One"; Vinnie Colaiuta's *Vinnie Colaiuta*; and Sting's *Fields of Gold*.

Elliot Scheiner: During the eligibility period, Scheiner worked on The Eagles' *When Hell Freezes Over* (co-producer/engineer), Glenn Frey Compilation Album (co-producer/engineer); Woodstock Concert (live broadcast engineer); and the Repercussions' *The Repercussions* (engineer).

OUTSTANDING TECHNICAL ACHIEVEMENT

Awarded to those products or innovations that have made the most significant contributions to the advancement of audio technology during the eligibility year. Note: The following product descriptions were supplied by the companies nominated.

A. ANCILLARY EQUIPMENT

Aphex Model Tubessence 107 Mic Preamp: The 107 employs a high-performance, low noise, matched transistor front end coupled to the Aphex exclusive Tubessence™ tube circuit (patent pending). This technique results in audibly better transient response and sonic detailing. The 107 has esoteric audiophile performance at a fraction of the cost. Features include two channels, 64dB gain, pad, low cut, polarity, phantom, remote mute, and +4 or -10 outputs.

Dolby Labs Dolby Fax™: The Dolby Fax system combines the quality of Dolby digital audio coding with the power of ISDN to allow studios worldwide to share audio material efficiently, economically and in real time. Artists, engineers

and producers use the Dolby Fax to link with other facilities for ADR sessions, mix approvals, overdubs or any time-sensitive project. Dolby digital audio coding ensures high-quality results, and the convenience of ISDN transmission eliminates travel and shipping expenses.

JL Cooper CuePoint Universal Autolocator: The CuePoint Autolocator is the first compact remote that supports MIDI Machine Control (MMC). It offers transport controls, shuttle wheel, track enable and track grouping functions. It is compatible with the Alesis ADAT, Fostex RD-8, Tascam DA-88, DA-60, Akai DR-4d, DR-8, Sony PCM-800 and other recorders. It also emulates the CS-10 Control Station and functions with systems from Digidesign, SADiE, Soundscape, Sonic Solutions, Spectral and others.

Lightwave Fibox: Fibox digital fiber optic transmission modules send audio or video signals over fiber lines, eliminating unwanted ground loops and hums, while maintaining perfect signal clarity over distance. The Fibox Totally Transparent mic preamp, 20-bit linear A/D and D/A plus fiber optics is an unbeatable combination. Fibox IMS is a new high-speed master module, allowing the transmission of SMPTE 259M digital video as well as a combination of 20-bit analog and AES digital audio, plus data.

Peavey VMP-2 Tube Mic Preamp: This two-rack-space device combines a modern microphone preamplifier design based on 12AX7 vacuum tubes with 2-band shelving equalization and switchable, two-position highpass filters. Other features include -20dB input pad switching, +48VDC phantom power, EQ bypass switches and front panel line inputs.

Tektronix AM700 Audio Measurement Set: An integrated test instrument whose onboard digital capability, processing power, programmability and rapid-access interface make it the most versatile product in its class. Including analog and digital signal analyzers, analog and digital generators, internal CPUs, monochrome VGA display, diskette drive and memory, the AM700 functions as a self-contained system without the expense or bother of attaching additional devices. This high-performance audio analyzer also features Two Channel FFT, Graphic Plotting, Multitone Measurements and Distortion Analysis.

B. AMPLIFIER TECHNOLOGY

Apogee Sound DA-800: The first pro amplifier purpose-built for network control use, the DA-800 produces 940W/ch into 4Ω. An onboard microprocessor continually monitors and controls all critical parameters. Large LCDs display attenuation, temperature, AC voltage, load impedance, output voltage and output wattage for each channel. An IBM or Macintosh computer may be interfaced via MediaLink®, for remotely controlling and monitoring large amplifier banks. Distortion and noise are substantially lower than industry averages.

Bryston 8B ST Pro: A versatile, quiet and flexible amp, the 8B ST boasts distortion figures <0.007% (20Hz to 20kHz), with noise floor <106 dB below full output. It can be instantly set to various configurations—2 channels (400 watts output), 3 channels (two at 120 watts plus one at 400 watts) or 4 channels at 120 watts each—and four independent power supplies prevent signal interaction between channels. Applications include bi-amping, surround mixing or running multiple sets of near-fields.

CyberLogic NC-812: This modular, Class-H unit offers eight independent 1,200W amp channels in six rackspaces with a massive 13 kVA linear power supply. A vertical MOSFET power design offers excellent performance with a very high damping factor and slew rate. Features include customizable I/O panel, programmable voltage swing and gain, and a slot for processor accessories, such as crossovers. Lower-powered modules may be mixed in a frame for self-contained bi-amp systems.

Hafner Trans•Nova P-3000: The P-3000 makes Hafner's patented Trans•Nova technology available in an affordable studio package priced at \$799 and featuring soft start, thermal sensing, LED monitoring and other specialized protection circuits. The P-3000 yields 150 watts per channel. Lateral MOSFET output devices are used in the Trans•Nova amplifier topology; it comes in a two-rackspace case.

Manley Reference 440: An all-tube audio power amplifier producing a comfortable 600 watts output, the 440 utilizes a revolutionary output transformer designed by David Manley, manufactured in-house. Features include: variable feedback and slope selection; triode/tetrode switching; soft-start power-up; and unbalanced and transformer-balanced inputs. The combination of its accurate musical reproduction, power and reliability has earned the Manley 440 a unique niche with both professional and cost-no-object audiophiles alike.

QSC PowerLight 1.8: Part of a new amp series from QSC, the PowerLight® 1.8 provides up to 900 watts per channel at 2 ohms, yet the fan-cooled, two-rackspace package weighs less than 17.5 pounds. The amp is rugged, reliable, efficient, quiet and, above all, great sounding—ideal for touring and other mobile/portable applications. Employing a new approach to switching technology, its "smart" PowerWave® supply noticeably enhances audio performance instead of compromising it.

C. COMPUTER SOFTWARE & PERIPHERALS

Jupiter Systems MDT-Multiband Dynamics Tool™: A plug-in for Sound Designer II™ and TDM, MDT offers real-time dynamics processing with mono or stereo files. Thirty thresholds and ratios create any possible combination of compressors, expanders, limiters and reverse gain effects. Dynamics processing occurs independently in one, three or five spectral bands, reducing pumping and breathing, while allowing the creation of dynamic EQs, de-essers and spectral enhancers. Up to 1,028-sample "look-ahead" tracks difficult material, giving total control over the final result.

Opcode Studio Vision Pro: Studio Vision Pro is the world's leading integrated MIDI sequencing and digital audio recording software for the Macintosh. The program's features include Track Overview, Notation, Groove Quantize and a full-color user interface. Compatibility includes Digidesign's Pro Tools III™, TDM, Session 8, Audiomedia II and Apple's Sound Manager. Digital audio can be nondestructively edited alone or with the MIDI information.

Sonic Foundry Sound Forge 3.0: Sound Forge 3.0 offers the most comprehensive set of sound editing functions available on the Windows platform. It allows the user to open more than 50 audio windows at once, drag and drop audio sections for fast mixing or creating loops and regions, and snap to zero crossings for perfect cuts. Sound Forge provides just about every

imaginable sound processing tool, including dynamic compression, noise gating, pitch change, envelope editing, EQ, reverb, time change and variable rate resample.

Steinberg ReCycle: A Mac or Windows tool, ReCycle turns sampled drum loops and grooves into individual slices and transmits these to the sampler, automatically mapped. Users can change groove tempo without altering pitch and vice versa; replace sounds in loops without altering feel; quantize loops to other loops; or send individual sounds from within the loop to separate outputs. ReCycle supports the Akai S1000/S3000, Digidesign SampleCell I/II, Ensoniq ASR-10, EPS and EPS 16+, Kurzweil 2000/2500, Roland S-760 and E-mu ESI-32.

Twelve Tone Systems Cakewalk Pro 3.0: Version 3.0 of Twelve Tone's popular Windows-compatible Cakewalk Professional sequencing software features 256-track recording, support for MIDI Machine Control devices (such as the Alesis, Fostex and Tascam modular digital multi-track recorders), 96 assignable onscreen MIDI faders, groove quantizing and printed notation with lyrics.

Waves L1-Ultramaximizer: The L-1 combines a look-ahead peak limiter, a bit-depth requantizer, dither generator and noise-shaping filters. This allows maximum level and highest resolution for all audio applications, from CD mastering to multimedia. The L1 peak limiter with Increased Digital Resolution (IDR) provides 19-bit performance in a 16-bit path. Mastering options include two dither types, allowing minimal nonlinear distortion or minimal noise level, and three noise-shaping curves.

D. MICROPHONE TECHNOLOGY

AKG C12VR (Vintage Reissue): This multipurpose tube condenser mic is designed to recapture the sonic characteristics of the original C12 built in the 1950s and early 1960s. Utilizing modern methods and componentry, AKG produces remarkable consistency from unit to unit while maintaining the sonic impact that made the C12 a top choice for producers and engineers worldwide. The mic features a 10 or 20dB pad, and via the remote box, a nine-step polar response characteristic and a two-step bass roll-off filter.

Audio-Technica AT4050/CM5: Supremely transparent and accurate without sacrificing warmth and ambience, the AT4050/CM5 features a large-diaphragm design with two capacitor elements to provide consistent, superior performance in cardioid, omnidirectional and figure-8 polar patterns. Specially contoured large diaphragms are vapor-deposited with gold, then aged through five different steps to ensure optimum characteristics over years of use. Transformerless circuitry results in exceptional transient response and clean output even under extremely high SPL conditions. The AT8441 shock mount is included.

Audix OM5: This handheld dynamic vocal microphone is renowned for high levels of gain, detailed resolution, good feedback rejection and a warm, uncolored studio sound. The versatile OM5 excels in recording sessions and is ideal for live performances, with its tight pickup pattern and durable "e-coat" finish. The OM5 utilizes Audix's exclusive VLM diaphragm—extremely light, thin and responsive. It offers a lifetime warranty on microphone parts, accurate sound quality.

Continued on next page

Bruel & Kjaer 4040 Tube Mic: B&K's first tube microphone, the model 4040 is a large-diaphragm (1-inch) condenser designed for a variety of studio recording applications. It features two pre-amplifiers, with tube- and FET-based electronics. Both operate simultaneously and can be connected to different channels of the console, allowing users to make easy A/B comparisons to choose the electronics that best complement the source material.

Electro-Voice RE2000: The RE2000 is a true condenser design with very low self-noise and high-sensitivity. It employs the Constant Environment System™, which combats temperature and humidity variations. The RE2000 incorporates a computer-grade power supply to guarantee clean power and uses a true balanced transformer output. It has a switchable 10dB pre-attenuation pad and a 12dB/octave low-frequency roll-off at 130 Hz. A highly effective shock-mount and removable pop filter are also provided.

Neumann KM184: The KM184 is a small-diaphragm, cardioid condenser microphone designed for recording and sound reinforcement applications. The KM184 combines the capsule of the KM84 with the transformerless electronics of the TLM 170.

E. SOUND REINFORCEMENT LOUDSPEAKER TECHNOLOGY

Bag End ELF-M2 Controller: Sound reinforcement experts who have tested Bag End Loudspeakers Systems' ELF (Extended Low Frequency) subwoofer agree it is revolutionary subwoofer technology. The heart of the technology is the ELF integrator. The newest, most versatile ELF system module, the Bag End ELF-M2 dual integrator, operates subwoofer loudspeakers below resonance in compact, sealed cabinets, eliminating the need for a lowpass filter. The result is perfectly flat frequency response down to 18 Hz with no delay or phase shift.

Community Professional VHF100 Driver: The VHF100™, a 1-inch throat compression driver designed specifically for maximum performance in the very high-frequency range, is the first high-frequency driver from Community Professional Loudspeakers. The heart of the VHF100 is a uniquely shaped non-metallic diaphragm driven by a large-diameter, ferrofluid-cooled voice coil in a high-density magnetic gap. Very low distortion and excellent high-frequency response characterize the VHF100's performance.

Eastern Acoustic Works KF853 High-Q Stadium Array: The KF853 High-Q Stadium Array System is a breakthrough in long-throw technology. Kenton Forsythe and the EAVV engineering team have applied Virtual Array® Technology to produce a system with consistent 30°x40° directivity from 700 to 18k Hz. The KF853 has been used in stadiums nationwide by the Promise Keepers convocations, for the world premiere of *Pocahontas* in Central Park, and on tours by Travis Tritt and "The Music of Andrew Lloyd Weber."

JBL 4890/4891 Monitors: The horizontally oriented 4890 and the vertically oriented 4891 stage monitors have 14-inch neodymium woofers with JBL's Vented Gap Cooling for accuracy in LF reproduction. Four-inch neodymium compression drivers cleanly reproduce HF content, with 1.5-inch exits coupled to 60° x 40° optimized aperture horns for smooth, tightly

controlled dispersion. The 4891's horizontal orientation provides a smaller stage footprint. For extra placement flexibility, the 4890's horn rotates for either horizontal or vertical high-frequency dispersion.

Turbosound TCS-612 Speakers: Intended for applications requiring accurate, high-quality sound from a compact enclosure, the TCS-612 has a 12-inch LF driver, 6.5-inch cone mid and a concentrically mounted HF device. The LMS-660/612 dedicated management system provides 24dB/octave crossover filters, time/phase alignment and output limiting. Its three-way design gives a seamless "paper cone to paper cone" transition at the crossover point, resulting in exceptional transient detail throughout the vocal ranges with very low distortion.

Woodworx MAX 1.5M: The 1.5M High Output Stage Monitor reflects years of professional touring loudspeaker manufacturing experience. The compact C&C-milled, contoured enclosure, constructed of 13-ply, 18mm Baltic birch, features integral L-track hardware, a 600W, 12-inch, high-excursion low-frequency device and 1,540W large-format compression driver. The proprietary controlled-directivity conical pattern waveguide ensures uniform 60-degree propagation with amazingly flat response, 50Hz to 16kHz (-3dB), and full bandwidth output of more than 127dB.

F. STUDIO MONITOR TECHNOLOGY

Genelec 1030A: The 1030A is a fully powered, compact monitor designed for nearfield monitoring in studio applications. The 1030A utilizes a 6.5-inch LF driver and a 3/4-inch HF device mounted on Genelec's exclusive Directivity Control Waveguide, which controls the speaker's dispersion characteristics. The drivers are powered by independent, dedicated amplifiers providing 80W and 50W respectively, allowing for short-term SPLs in excess of 115 dB. A sophisticated equalization system employed at line level allows for optimum room matching.

Hot House SD312 High Output Monitor: The High Output Series is the latest evolution of the point-source dual-concentric technology, with lightning-fast, bulletproof 12-inch low-frequency drivers and up to 20,000 watts of Hot House audiophile amplification. It has yielded the most phase-coherent, lowest distortion and surely the highest SPL large-format system ever offered the high-end studio community, providing subtle detail and "gunshot" dynamics.

KRK K•RoK: Developed to address the personal monitor market, the KRK K•RoK features a proprietary 7-inch, latex-coated, long-stroke woofer and 1-inch, silk-dome tweeter. Capable of handling 100 watts of input power, the K•RoK has a metric sensitivity of 92 dB. Its unique box shape, which minimizes parallel walls, was designed to optimize linearity and maximize low-end punch. Crossed over at 2.5 kHz, the K•RoK features a custom KRK network with hand-wound inductors and polypropylene capacitors.

Meyer Sound Labs HD-2: The Meyer Sound HD-2 high-definition mid-field monitor has a 10-inch low-frequency driver and a 1-inch high-frequency driver coupled to either a modified radial horn (90°x40° coverage) or a unique aspherical waveguide (60° coverage in both axes). Frequency response is 32 to 22k Hz (-3dB points). An active crossover, optimized pole-zero response correction filters, loudspeaker element protection circuitry and dual power amplifiers are built directly into the enclosure.

JBL DMS-1: The DMS-1 utilizes dual 14-inch neodymium woofers with Vented Gap Cooling™. JBL's latest-generation compression driver (Neodymium magnet, titanium diaphragm and Coherent Wave™ phasing plug) offers flat response beyond 20 kHz. A low-distortion, constant-directivity horn provides detailed imaging and uniform dispersion. A comprehensive digital controller optimizes overall performance. By combining the functions of a two-way crossover, alignment delay and multiband EQ in one processor, it matches transducer characteristics with precision unattainable with conventional outboard devices.

Tannoy Limpet: Limpet is a bolt-on power amplifier attached to the back of a Tannoy PBM 6.5 II LM monitor, providing 135 watts of peak power with 112dB SPLs. The amplifiers are a wide bandwidth design, combining a high current, toroidal power supply and fully discrete amplifier stages.

G. MUSICAL INSTRUMENT TECHNOLOGY

E-mu ESI-32 Sampler: The ESI-32 is a 32-voice stereo sampler featuring seamless compatibility with Emulator IIIx, Emax II and Akai S1000/S1100 sound libraries. The ESI-32 can be expanded with up to 32 MB of RAM (SIMMs) and has two channels of 128x oversampling ADCs, discrete 18-bit DACs per channel, four polyphonic outputs, 32 4-pole digital resonant filters, time compression/expansion and internal floppy drive.

Kurzweil PC-88 Keyboard: The PC-88 combines a high-quality MIDI controller (88-note weighted keyboard with a wide range of MIDI features) and performance instrument with 64 internal sounds and 32 factory-created MIDI setups. An optional expansion card increases the number of sounds to 269. MIDI control possibilities include four continuous-control pedal inputs, pitch and mod wheel, mono pressure, four front panel sliders and three assignable buttons. All controllers can be programmed for each of four MIDI keyboard zones.

Korg WaveDrum: The Korg WaveDrum combines the best aspects of traditional acoustic instruments with new breakthroughs in synthesis technology, including analog, FM, additive, nonlinear and physical modeling. This state-of-the-art percussion synthesizer uses a standard 10-inch drum head and a special aluminum rim with built-in sensor for rim shots. The WaveDrum also houses built-in mics under the drum head and rim, for ultra-sensitivity and expressive control.

Oberheim OB•Mx Synth: The OB•Mx® brings the power and glory of the analog synthesizer to new levels of reliability and sound performance by using modern components and technology. Featuring a continuously live front panel, 256 programmable presets, multitimbral MIDI operation, and Oberheim's famous Matrix Modulation™, the OB•Mx can be configured up to a 12-voice system. The OB•Mx uses both the famous Oberheim SEM multimode filter and the Mini-Moog ladder filter to deliver virtually any sound from the analog palette.

Roland JV-1080 Synth: Immense waveforms, a wide array of sound structures and extremely versatile onboard effects make the Roland JV-1080 the reference standard in high-powered synth modules. This two-space unit offers 16-part multitimbral capabilities and incredible 64-voice polyphony. A 32-bit RISC chip CPU provides unparalleled speed, accuracy and natural performance response. The built-in 8 MB of ROM is expandable, for up to a staggering 42 MB of wave memory.

Yamaha VLI-m Synth: This is the rackmount version of the VLI, the world's first physical modeling tone generator. The VLI-m uses a computer-based physical model of a (virtual) musical instrument, resulting in a truly lifelike sound with the behavior and playing characteristics of an acoustic instrument. It uses proprietary 32-bit technology, is fully compatible with any MIDI keyboard and features 128 voice-memory locations and an onboard disk drive.

H. SIGNAL PROCESSING TECHNOLOGY

Alesis QuadraVerb 2 Multieffects: The flagship of Alesis' signal processing line, Q2 offers stunning audio quality with large, natural sounding stereo reverb, thick doubling and pitch effects, digital EQ and delay. The user can concentrate its power into a single effect or divide it into as many as eight separate effects. It also features balanced stereo analog I/O, ADAT optical digital I/O, 100 user presets and 100 factory programs.

BSS Audio Omnidrive: A radical step forward in digital signal processing for loudspeaker management, Omnidrive combines two channels of four-way crossover, parametric EQ, phase correction, delay and limiters, with 60 user-programmable memories for storage of system setups. Omnidrive online has a swap facility for direct A/B comparisons. Automatic adjustment of delay times as ambient temperature changes and correction of HF response with humidity variation is available.

Drawmer 1961 Tube Equalizer: The 1961 Vacuum Tube Equalizer is a 2-channel unit with four main equalizer sections, each having six switchable, overlapping frequencies, variable bandwidth and ± 18 dB of boost and cut; separate active tube stages for each of the four main equalizer sections; two additional active tube stages for each output; variable highpass and lowpass filter sections; and variable input level control to optimize signal level and drive the tubes "soft" or "hot."

Focusrite Red3 Compressor: The Red3 is an unusual compressor and limiter that offers both dual independent mono and true stereo operation from a single set of controls. Another unusual feature is that the proprietary Focusrite Discrete VCA circuit is externally controlled by offline VCAs, providing true compression followed by limiting of the compressed signal with only the one Focusrite VCA in the signal path, thus maintaining the usual outstanding Focusrite audio quality.

Lexicon PCM80 Digital Effects Processor: With a true stereo signal path, balanced analog I/O and standard digital interfaces, and the ability to mix analog and digital inputs, the PCM80 also features a 24-bit digital bus and multiple DSP architecture. Dynamic Patching Matrix allows signals from internal and external sources to control any aspect of an effect, and effects can be driven

by tempo information via MIDI, tap control or footswitch. Tempo can be subdivided and used to fire time switches to actuate effects.

Night Technologies Inc. EQ³ Equalizer: The EQ³ is a two-rackspace stereo equalization system designed to virtually eliminate audible phase-shift distortion problems in audio applications. The system features six algorithmic overlapping dual-function frequency controls that range from 10 Hz to 40 kHz. Other specifications include a THD+noise specification of 0.005% and an "air" band that extends to 330 kHz, allowing for significantly more accurate, realistic recordings in both analog and digital domains in music and film/video post-production.

I. RECORDING DEVICES/STORAGE TECHNOLOGY

Fostex D-25 DAT: A rackmount studio DAT recorder featuring SMPTE timecode reader/generator/chase lock functions along with an RS-422 port for VTR emulation. Also standard are a 16MB RAM buffer for instant start and editing, 4-head/4-motor design, punch-in/out operation, variable speed jog/shuttle/search in forward or reverse, and pull up/pull down compensation for film transfers.

HH8 Portadat: The Portadat PDR 1000 and PDR 1000TC (timecode) are fully featured, rugged professional portable DAT recorders designed for the demands of location sound recording. The Portadat's extensive range of features and accessories include a four-head transport, 48kHz, 44.1kHz and 32kHz LP recording, balanced XLR mic/line inputs, AES/EBU and S/PDIF digital I/Os and 48V phantom powering. Perhaps more significant is the unique Nickel Metal Hydride rechargeable battery technology, powering Portadat for more than two hours.

Kodak 600DT CD Recorder/Transporter System: The 600DT CD-R is a turnkey system that allows users to create, assemble and duplicate CDs on a custom basis. By combining Kodak software with a 6x real-time CD writer and the Kodak CD transporter, the system has the capability to write 75 CDs overnight, automatically, without attending or monitoring the operation.

Panasonic SV-4100 DAT: Based on the successful SV-3700, the SV-4100 DAT recorder offers a 3-second RAM buffer for instant start capability, external sync inputs (video, word clock), sync output, A-time cue search, five cue memory locations, AES/EBU and consumer (coaxial and optical) digital I/O, programmable output level control, shuttle search wheel, balanced XLR analog I/O, and switchable 44.1/48kHz recording.

Studer D827-MCH 24-bit Recording Option: Available with a vast array of options, the 24/28-track DASH-compatible Studer D827-MCH digital recorder can be configured for virtually any multitrack recording environment. A unique feature of the 48-track configuration of the machine is its ability to record 24-bit digital signals. The 24-track, 24-bit configuration remains compatible with standard DASH 24-track tapes, as additional tracks are used to store the additional 8 bits.

Tascam DA-30 MKII DAT: The DA-30 MKII DAT recorder is the successor to the DA-30, providing all the features of the original while adding a data/shuttle wheel, a CAL/UNCAL select switch for the analog inputs, selectable Copy ID provisions, standard and long record modes, S/PDIF and AES/EBU digital I/O and next generation A/D-D/A converters.

J. WORKSTATION TECHNOLOGY

Avid Technology AudioVision 3.01: Avid AudioVision is the first digital audio workstation where users record, edit, process and play back up to 16 tracks of digital audio with integrated, sync-locked digital picture. Renowned for its extensive editing features, ADR/Loop Record Tools and multimachine autoconform, AudioVision brings unprecedented speed and creative flexibility to post-production. AudioVision systems are now in use at top audio facilities worldwide for audio post-production on commercials, television shows, feature films, videos and interactive media projects.

Fairlight MFX3: The MFX3 is the latest in Fairlight's range of digital audio workstations. Applications include audio editing and post-production for television, film and broadcast. Functionally, the MFX3 emulates a familiar multi-track recorder. It graphically displays 24 tracks of audio with up to 4,096 virtual tracks. The MFX3 is the first hard disk editing system to demonstrate simultaneous playback, record and cross-fade of 24 tracks from a single hard drive. The MFX3 can be configured with up to 24 digital and analog inputs/outputs.

Otari RADAR: RADAR (Random Access Digital Audio Recorder) is a hard disk workstation configurable as an 8-, 16- or 24-track recorder/editor. RADAR is self-contained (no computer peripherals needed). Its optional remote session controller features a jog/scrub wheel, track solo and arming buttons and dedicated keys for cut, copy, paste, loop, slip, vari-speed and more. Software includes RADAR VIEW interactive graphics. The ADATLINK option allows real time digital transfers across all 24 tracks. RADAR syncs to all SMPTE rates.

Roland DM-800: The DM-800 combines eight tracks of digital recording and an integrated 12-channel digital mixer with a collection of incredibly useful features, including 100 layers per track, time compression and completely nondestructive editing. It's even ADAT/DA-88 compatible. The DM-800 is a 100% self-contained unit that performs all digital audio operations from recording and editing to track bouncing and final mixdown. No external software or hardware is required.

Spectral AudioPrisma/Prismatica: The AudioPrisma™ workstation offers unprecedented power at its price point because of Spectral's highly integrated hardware and mature audio operating system running under Windows. A single SCSI controller/DSP board with Prismatica™ software provides 96 virtual tracks, 12 simultaneous audio tracks, punch-in/out, real-time mixing with in-line EQ and patching, and AutoTrace™ automation. SMPTE and MTC lock with timebase resolving built-in. This fast and flexible interface is hot-key assignable and supports on-the-fly editing.

Studer Editech PostTrio: PostTrio offers 8 to 24 simultaneous record/play channels, up to 72 I/O channels and up to 48 mixer strips. The expandable system has removable disk drives, Lexicon NuVerb reverb and a MultiDesk controller with moving fader automation, routable summing buses and extensive studio communication/monitoring functions.

Continued on next page

K. SOUND REINFORCEMENT CONSOLE TECHNOLOGY

Allen & Heath GL4: The GL4 is an 8-subgroup, front-of-house desk that also operates as a full-function monitor desk with 10 mixes plus wedge/cue mix. Available in 24-, 32- and 40-channel standard models, it has eight programmable mute groups, all with external MIDI control. All inputs feature a tunable, continuously variable highpass filter, four bands of full-sweep EQ, as well as 10 aux sends per channel.

Cadac Concert: The Cadac Concert board is purpose-designed for live sound reinforcement applications. Key features include instant reset of all switch facilities; complete manual status recall of knob settings; and a sophisticated computer system with extensive control of MIDI. Cadac's own motor faders are supplied as standard. Each input channel has direct outputs and switchable pre/post fader, as well as two inputs (A and B), both of which can be on at the same time.

Crest Century GTx: The meter bridge version of its successful GT console, Crest's GTx features a VU meter bridge, eight group bus assignments, two matrix outputs, true LCR panning, eight aux sends per channel and 4-band sweep EQs with switchable Q on the two mid frequencies and switchable peak/shelf on the high and low bands.

Midas XL4: The XL4 design concept was to create a state-of-the-art analog live mixing and recording console with unparalleled performance and features for FOH and stage monitoring. This was achieved by controlling the analog sound path in the digital domain via a high degree of signal routing and integral moving fader automation. By creating a mixing environment where repetitive functions are automated, there is greater mix consistency between each performance, and the engineer is free to concentrate on creativity.

Soundcraft SM24: A top-end, pro touring monitor console, the SM24 features 24 mono mixes or a combination of up to 8 mono and 8 stereo mixes simultaneously. A stereo sidefill lets the SM24 do double duty as a full-featured FOH console. Stereo mixes can be configured with pushbutton ease for use with in-ear monitoring applications. With three frame sizes (32, 40 and 48 inputs), the unit also features eight VCA groups, eight mute groups and long-throw faders throughout.

Yamaha PM3500: This compact mixing console is available in 24, 32, 40 and 48 inputs with four additional stereo modules. Featured are 128 MIDI mute scenes, eight group outputs and an individual L/R stereo output, 8 auxiliary sends on faders and 8 matrices, four of which are stereo. Input modules feature 4-band full parametric EQ with high/low shelving, switchable inserts, direct outputs, 8 VCA control assigns and 8 aux sends.

L. SMALL FORMAT CONSOLE TECHNOLOGY

Mackie Designs LM3204 Line Mixer: Forty inputs in five rackspace? Mackie's LM3204 line mixer boasts 16 stereo (16x2) inputs plus four balanced stereo (4x2) returns. Each channel has two stereo and two mono sends, solo, mute and signal present and overload LEDs. Also featured: control room monitor section, stereo aux returns, stereo inserts (chs. 1-4), main inserts, 3-band EQ, and two quiet, high-headroom mic preamps.

Soundtracs Automated Topaz: Topaz Project 8 Auto is a compact, comprehensive, cost-effective recording console with impeccable audio performance. Providing up to 64 inputs in mix, this console has Windows-based fader and mute automation. Project 8 Auto users have the ability to record, replay and edit VCA fader movement to frame accuracy and mute information to quarter-frame accuracy both on- and offline. Detailed graphic display of automation activity in addition to external MIDI machine control are standard.

Studiomaster Classic 8: Designed in a "classic" split format (in 16-, 24- and 32-channel versions), the Mixdown Classic 8 bus offers simplicity in operation, yet provides powerful world-class features and superb audio specifications at a budget price. Features include: MIDI muting, balanced mic/line outputs on each channel, 48V phantom power, channel direct outs, 3-band EQ with mid and bass sweep, EQ defeat, 6 aux sends, 100mm faders, 16 additional line inputs (eight with EQ), and an optional meter bridge.

Tascam M2600: The M2600 is a modern analog mixer designed specifically for the needs of modular digital multitrack production. Available in 16-, 24- or 32-channel versions (up to 64 inputs in remix), the M2600 features low-noise mic preamps on all channels, two stereo and four mono aux sends, six stereo effects returns, 4-band EQ with sweepable mids, solo, mute and fader flip, for reversing the tape return and channel faders.

TL Audio 8/2 Valve Mixer: A compact, lightweight, modular rackmount 8-channel tube mixer. Various input module options include a transformer-coupled, Class A discrete microphone/line input stage and Class A discrete driver to the insert point. The standard input module has the same mic preamp and EQ circuitry as TL Audio's Valve EQ. The mixer employs four tube stages per channel (the first acts as a voltage amplifier; the remaining three form the basis of the EQ).

Yamaha ProMix 01: A fully programmable digital mixer offering power features and superb sonic quality, the ProMix 01 has 20-bit A/D converters with more than 100 dB of dynamic range, parametric EQ, motorized faders, three stereo compressor/gates, 18 mic and line inputs, phantom power, four aux sends and two onboard digital effects processors. Mixer settings can be stored and instantly recalled via snapshots. Moving fader automation and real-time control of every mix setting is accomplished via MIDI.

M. LARGE FORMAT CONSOLE TECHNOLOGY

Amek 9098 by Rupert Neve: The 9098 audio production console was designed by Rupert Neve in the tradition for which he is revered. Performance of the 9098 is to the highest standards, and sonic quality exceeds that provided by his consoles of the 1970s. The 9098 reconfirms Mr. Neve's status as the world's premier console designer. Manufactured by Amek for Mr. Neve, the console is provided with extensive automation centered around Amek's Supermove moving fader system.

Harrison Series Twelve: Featuring unlimited static reset of all console functions, including EQ and mic preamps, the Series Twelve also provides true dynamic (real time) automation of all functions—not merely a series of "recalls" set to timecode. The system is expandable to 244 channels. Control surfaces are customized to user requirements, utilizing a central section to control all console functions. When digital signal processing is added, the console may be operated analog, digital or hybrid—with no change to the control surface.

Soundcraft DC2000: The DC2000 is a music recording/post-production console that functions as a complete studio workstation with moving-fader automation. The console offers 4-band EQ, stereo foldback returns and a touch-sensitive screen to control project management functions. Version 6.2 software extends the number of tape machines the DC2000 can control via tape transport controls in the console's master section.

Solid State Logic SL 9000 J: The SL 9000 J is a significant advance in both audio quality and in the automation/manipulation capabilities that are integrated with the system. The SL 9000 provides an exceptionally low noise floor and greater bandwidth than any recording medium, analog or digital. The J Series computer offers extensive automation, including automated small fader, panning and I/O module switches. SSL's DiskTrack may optionally be added to provide up to 128 tracks of integrated hard disk recording and editing.

Tactile Technology M4000: A fully automated mixer using digitally controlled analog processing. The control section is separate from the audio processing electronics, mounted in standard 19-inch rack frames. The system offers more combinations of I/O configurations than conventional mixers. Up to 240 inputs, 30 aux sends and 40 bus outputs are available. Up to five different mixers are controllable via the one control surface for multiple discrete mixes, which may be necessary for live sound applications. All control parameters are automated.

Trident Ventura 85: Superseding the Series 80, the Ventura 85 continues with the tradition of a "split" design, with 24 multitrack buses, 8 auxes and an additional line input on both monitor and input paths. A "bounce" function sends monitor mixes directly to multitrack routing, avoiding the need to transfer monitor information to the inputs when track bouncing. Offering transformer-balanced or transformerless mic inputs, 4-band EQ and independent HP/LP filters, the Ventura 85 is a cost-effective solution for today's recording requirements.

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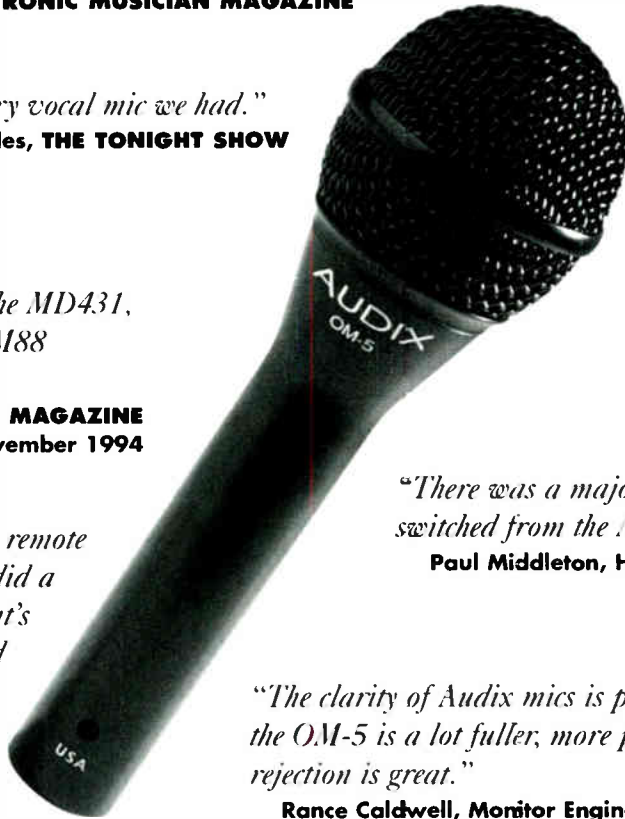
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by Mr. Bonzai

ANDY PALEY

ONE-MAN BAND FOR HIRE



Andy Paley is quite a character. Songwriter, session cat, singer, producer, and formerly a one-man band on the streets of Manhattan, Paley had his first song recorded when he was just 8 years old. Since then, he's done sessions for John Hammond Sr., recorded with Phil Spector, done the soundtrack for *Dick Tracy*, and produced a very diverse selection of artists ranging from Jonathan Richman & the Modern Lovers to the Greenberry Woods. He's currently in the midst of leisurely recording 30 new songs co-written with Brian Wilson, who refers to Paley as a "musi-

cal genius."

A staff producer with Warner Bros. Records for the past four years, Paley recently moved over to Elektra/Sire following his boss, Seymour Stein. The label has just released Paley's production of the new Jerry Lee Lewis album, *Young Blood*. Jerry Lee is still scorching, mesmerizing at the piano and having a helluva time. In the liner notes for his first release in 12 years, The Killer thanks Paley and says, "Andy's natural musical gifts and genius helped make this my greatest album ever!!!"

If Brian Wilson and Jerry Lee Lewis call him a genius, I'm ready for lunch.

Bonzai: You're starting a new project today?

Paley: Yeah, Jim Ed Norman, president of the country division at Warner Bros. Records, asked me to co-produce this record with him for a group that he signed called The Foremen. They're four guys who do a lot of harmonies, kind of like the Brothers Four, and they also do a little political satire.

Bonzai: Now you're a staff producer at Elektra?

Paley: Yes, I just moved to Elektra from Warner Bros., where I had the same job there for four years. I actually got the job because of the Brian Wilson solo album, which was the first thing I worked on for the label. Lenny Waronker and Seymour Stein gave me a regular job after that project.

Bonzai: What brought you together with Brian Wilson?

Paley: I was just a huge fan of the Beach Boys' records and Brian's writing and producing. My brother, Jonathan—who's a really fine singer and musician—and I used to go to see the band all the time. We met Carl Wilson and their drummer at the time, Ricky Fataar, who introduced us to

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LUNCHING WITH BONZAI

Brian in the '70s when we were working out here in California. We made a little record at the Beach Boys' Brother Studios in Santa Monica as the Paley Brothers. I was just a big fan of Brian's, and Seymour Stein and Lenny knew that and felt that they should hire me to work on his solo record. They wanted to make sure that all the songs they were getting were not just retreads of other things.

Bonzai: Would you consider yourself a collaborator with Brian?



MR. BONZAI

Paley: I am now, and at that time we collaborated a little bit, but it was very difficult because of his situation.

Bonzai: What's the reason for the trust between you and Brian?

Paley: I think it's musical respect that helps us write songs, and it's just taken time. We used to write a little bit, but we were actually kept apart by his guardian at that time. When that situation fell apart, the State of California appointed a conservator for Brian, and the other guy had to go away. Brian actually called me the same day and said, "C'mon over. Let's start writing." Since that time, we've been writing a lot, and recording.

Bonzai: Where do you do your recording?

Paley: We've been recording at a lot of different studios, but most of it has been at Your Place or Mine in Glendale, which is owned by an engineer named Mark Linett. It's a home studio, my favorite place actually, with a lot of vintage gear combined with new equipment. There's something about the room that has given us a really great sound. Brian is paying for the project, which is nice because no one is telling us what to do.

Bonzai: What's the chemistry like

working with Brian? Who's writing the words and who's composing the music?

Paley: It's an interesting situation with the two of us. It goes back and forth, 50/50 for the music and lyrics. He told me that almost everyone else that he's worked with has worked on lyrics, but I really like his lyrics. Everybody loves his music, but I don't think people realize what a good lyricist he is. He comes up with great hooks and good words all the time.

Bonzai: When do you think this material might be released?

Paley: I don't know, because he hasn't made up his mind if it's going to be a Brian Wilson solo record or a Beach Boys record. We've been recording masters. Whether it's Brian's voice that ends up on the records [with] other people singing backgrounds, or the Beach Boys singing—any combination could happen.

Bonzai: What instruments are you playing on these tracks?

Paley: I played a lot of different ones on this stuff: piano, organ, harpsichord, drums, bass, percussion, vibes, harmonica, and I've sung some

of the parts.

Bonzai: How did you become such a diversified player?

Paley: I don't know. I just always found it really easy to play a lot of instruments, except for horns.

Bonzai: Can you take us back to your work with John Hammond Sr.?

Paley: When I was a teenager, my very first recording sessions were playing for him. I did three sessions in New York for some blues artists he was working with. It was very experimental, and I really don't know if any of it was ever released.

Bonzai: How did you meet Hammond?

Paley: Well, I used to play on the street, and he introduced himself to me. I played guitar on those sessions, but when I was on the street I had a bass drum, hi-hat, harmonica on a rack, doing a one-man band thing for a couple of summers in Manhattan. It was just something to do. It was the '60s, you know?

Bonzai: Can you tell me about your work with Phil Spector?

Paley: That's skipping ahead. My brother and I put together a band, and we sent tapes all over the place. We made a record with Jimmy Iovine

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in New Jersey, and then we made another in California at Brother Studios with Earl Mankie. And we followed that with another record with Tony Bongiovi.

Phil Spector called me up while we were living in Boston. It was around 3 o'clock in the morning, and the phone rang. I thought it was a

I've been on both
sides of a session,
and I know what it's
like when the producer
is telling you one thing
and the band is
feeling something else.

friend playing around, but it *really* was Phil Spector. I jumped up, turned on the lights and got very respectful: "Yes, sir, what can I do for you, sir?" He told me he had heard the record and that he liked the way we sang and wanted to do something with us.

So we came out to California, and we went to his house every day for what seemed like a real long time, about a month and a half. He had four songs he wanted us to cut, and he kept rehearsing us, singing at the piano with him. He'd play, I'd play, he'd direct us, switch our parts around. He really worked us.

Bonzai: Did you learn anything?

Paley: Absolutely. He's incredible and really knows how to get good stuff out of people. Sometimes it was hard to tell what he was after, but then a few days later you'd go, "Oh, I get it now."

Bonzai: Did you record?

Paley: Yes, around 1976 we went to Goldstar, which is no longer there, and we did a session with Hal Blaine, Ray Pohlman—you wouldn't believe it. I was playing upright tack piano. Barry Goldberg was playing a grand piano, and we had a third piano going. There was Ray Pohlman on electric bass, Jim Keltner and Hal Blaine—two sets of drums. We

had a standup bass. Steve Douglas on horns. It was the guys, the Wrecking Crew, and I believe it was their last date together. The song had the same beat as "Da Doo Ron Ron," a rockin' song called "Baby Let's Stick Together." I think Dion did a slow version, but ours was really kickin'. It never came out, but who knows, maybe it will some day.

Bonzai: What's the story with Jerry Lee Lewis?

Paley: I produced his new album, the first in 12 years.

Bonzai: How come he laid back for so long?

Paley: I don't know. He told me he knew it had been a long time, but didn't realize it had been that long.

Bonzai: How did you two hook up together?

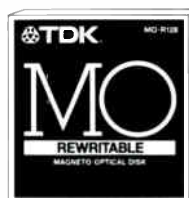
Paley: Well, I'd wanted to work with him for years, and it finally happened because I was doing a movie soundtrack for *Dick Tracy*. Warren Beatty told me he wanted something that sounded like a Bob Wills record. I had a song that I wrote in the '70s with Jerry Lee Lewis in mind, which I could never get to him. I really tried hard for a couple of months, thinking if I could get it to him it would be great. I tried everything. It was a rock 'n' roll tune, but I realized I could change it around to a country song. It's called "It Was the Whisky Talkin' (Not Me)," and Warren Beatty loved it and put it in the movie. It's playing on a radio in the film when Dick Tracy is getting hit with some poison gas. I got together with Jerry because of this film, and we cut it at the old Sun Studios in Memphis. We had a great time, got along really well and just hit it off. It's just taken this long to get the album done.

Bonzai: What's the key to your ability to work with so many different kinds of artists?

Paley: I think it's because I've played in bands, and worked with so many different people in recording studios. I've been on both sides—produced by others—and I know what it's like playing drums on a recording session when the producer is telling you one thing and the band is feeling something else. I've sung lead on sessions, played piano and toured a lot.

I just produced this group the Greenberry Woods from Baltimore, and I felt like I was one of the guys in the band, basically. I'd show the guys some ideas on the guitar, and they'd say, "Why don't you just play

GET SERIOUS

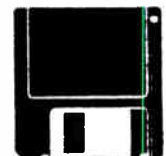
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it." I guess I'm an easy person to work with.

Bonzai: There seems to be a trend of getting back to live tracking with the whole band working together. Has your style of producing changed over the years?

Paley: I never liked machines and stuff like that. I've always been into real live recording. I'm happy that we're returning to that style, because I used to fight with people all the time, trying to use real musicians and play live. It's always been my prefer-

ence. I haven't changed very much.

Bonzai: Is it true that you wrote your first song when you were 8 years old and it was actually recorded?

Paley: Yes, by a guy named Tom Glaser, who had a hit with "On Top of Spaghetti." Remember [Andy starts singing]. "On top of spaghetti, all covered with cheese. I lost my poor meatball when somebody sneezed." I did a little song called "The Little Porcupine" and asked my parents to send it in to him.

Bonzai: Was it a recording?

Paley: No, I wrote down the chords and the lyrics, and he cut it. It was

really funny, because the liner notes said it was sung by Tom Glaser and the Porcupine, which was actually his voice speeded up. He's a folksinger and used to be in a band with Pete Seeger called the Almanac Singers.

Bonzai: Were you getting royalty checks as an 8-year-old?

Paley: No, this was a pretty small-time thing. It wasn't a hit.

Bonzai: How did you learn to compose and write at such an early age?

Paley: Well, we had a piano in the house, and we're not talking about writing a symphony here [laughs].

Bonzai: So what's happening now? Is your career really taking off?

Paley: Well, I'm pretty busy. Maybe it's because of the return to working with real musicians.

Bonzai: If you could pick anyone, who would you like to work with?

Paley: Tom Jones. He's still great, and he's singing great. I'd also like to do a record with Gene Pitney, and it might happen. He's such a genius, wrote amazing songs and sang so well. I saw him recently, and he's still singing great. I'd love to do another Jerry Lee record, and I'm still trying to get this Brian Wilson thing together. I don't know what it's going to be, but it's looking good so far.

Bonzai: Do you have any advice for musicians?

Paley: Yeah, don't be afraid to knock on doors. And go where the action is. Don't stay in the middle of nowhere and expect to be discovered, because it's not going to happen. Anybody can sit around and be a tortured artist in a garret someplace but that's not going to get you anywhere. You should go out and knock on doors, show people what you can do and go where the business is—New York, Nashville, London, L.A. I've met quite a few people who said, "I'm great, and the world doesn't know it." Well, so what? Where's that gonna get you?

Bonzai: What's the biggest mistake of your life?

Paley: Sittin' around like one of those guys, thinking that I was great and that nobody cared about me, feeling sorry for myself. I used to do that—but I got over the hump and got to work. ■

It was roving editor Mr. Bonzai's brief foray into the dental profession that earned him the nickname "The Driller."

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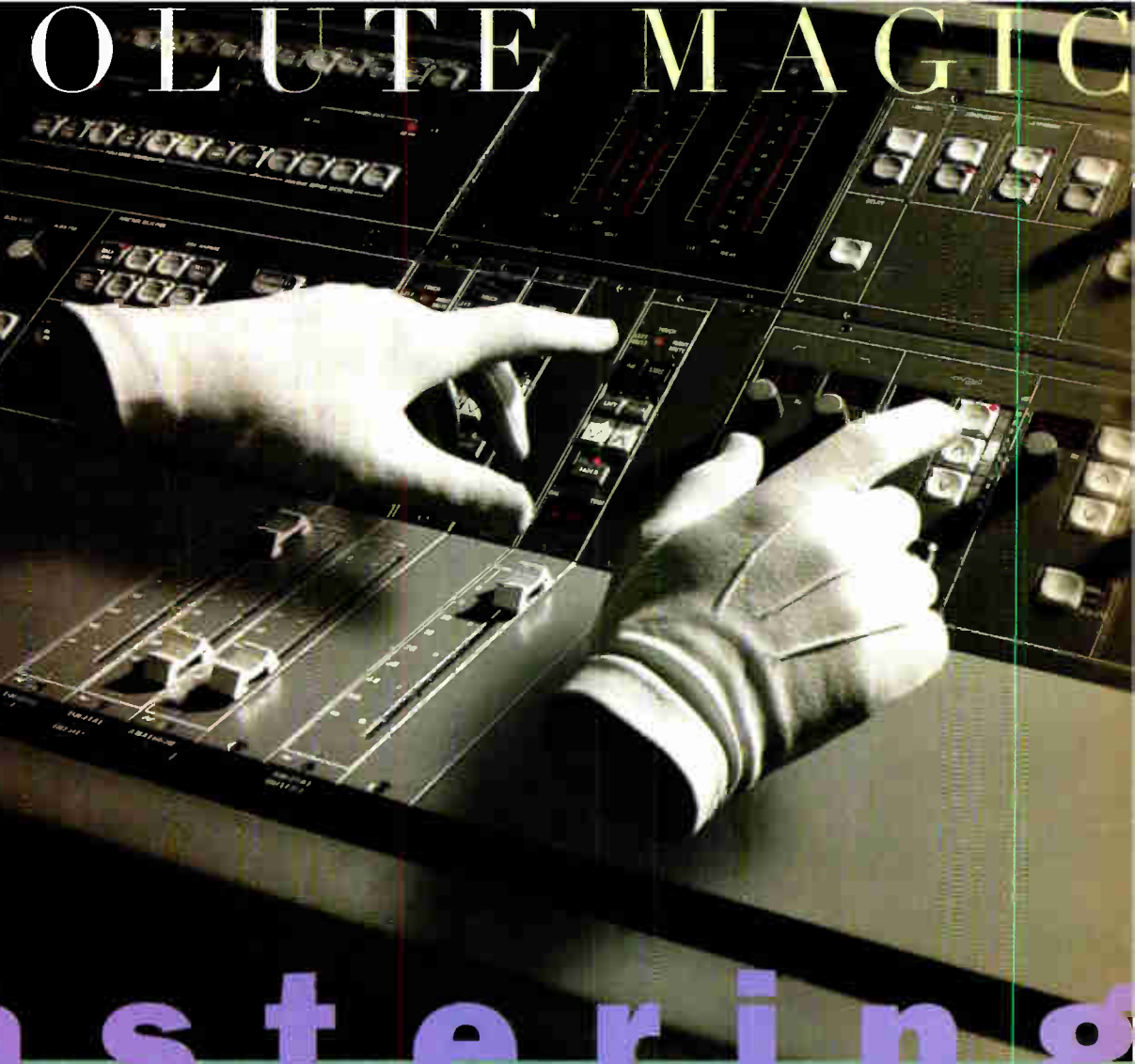
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World Radio History

SOUND FOR FILM

Go Back and Listen

CLASSIC FILM
SOUNDTRACKS

by Larry Blake

When I was first starting to learn about filmmaking in the mid-'70s, I read everything that I could about the process. There was loads of information on major topics such as cinematography and directing in books and in back issues of *American Cine-*

watching and studying classic films into every home, and not just private screening rooms and repertory cinemas. Although one of the down sides of the popularity of videotapes is that repertory houses have been all but killed off—thus ensuring that your first viewing of *Citizen Kane* will be on NTSC video—the flip side is that you can see classic films as often as you want. Add a good home theater system, and you have the

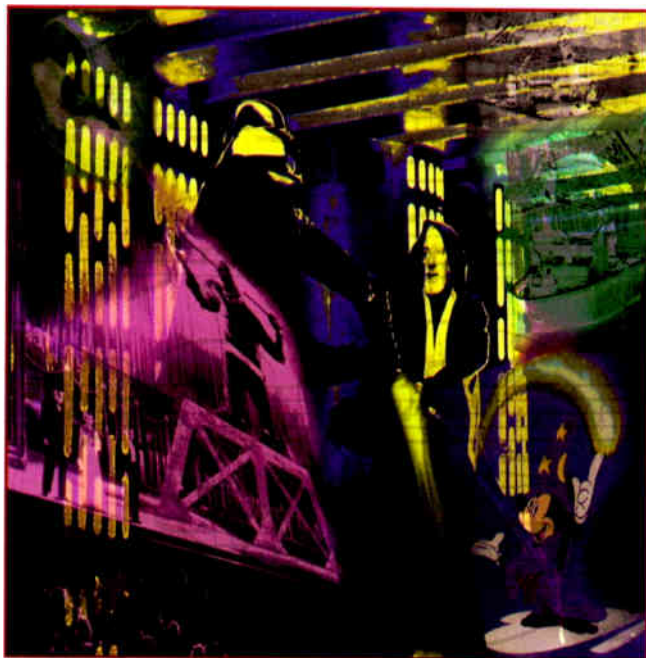
bold as the work was, I don't believe that in the long run it was influential, just as films today that brag about being the "first all-digital film to employ left-handed sound editors exclusively" don't necessarily contain tracks worth listening to. Digital workstations don't make the track any more than clothes make the man.

Sixty-two years later, we can only imagine the impact that *Kong* had on audiences, with Murray Spivack's sound effects creating the necessary other half to Willis O'Brien's visual effects. Of special note is how Spivack and composer Max Steiner were able to weave in and out of the track seamlessly.

Kane, on the other hand, stands out not so much for the sound effects, but for its use of sound *space*. A top cinematographer once told me that you can't understand Welles' use of cinema without first appreciating his radio work, and indeed what makes the track great is its storytelling style. I think this should be the first film anyone thinking of getting into filmmaking should study.

After a quarter-century almost exclusively made up of mono optical soundtracks, stereo sound arrived in Hollywood in 1953. Looking back, the area that saw the most creative improvement was music recording. With all due respect to the great work being done today, I think some of the recordings produced in this period at the Twentieth Century-Fox, MGM and Samuel Goldwyn Studios scoring

—CONTINUED ON PAGE 113



matographer, but precious little on post-Dolby Stereo film sound techniques. The situation has changed drastically, what with magazines such as *Mix* devoting whole sections to post-production because the technology required to do sound for film and video has been made available to *everyone*, not just film studios in Hollywood.

At the same time, the home video revolution has brought the simple act of

ability to study the art and craft of film sound to whatever level your obsession takes you.

I'm willing to be corrected on this statement, but I think that the first 25 years of Hollywood produced only two undeniably great sound jobs: *King Kong* and *Citizen Kane*. *Fantasia* is certainly notable, although its primary claim to fame is in the Championship Calendar category as the first stereo feature film. As

Setting Up Your Home Theater System

INTRODUCTION TO ROOM ACOUSTIC PRINCIPLES AND LOUDSPEAKER PLACEMENT

by Marjori Schmulger

[Home theater is driving the consumer electronics explosion of the '90s. Chain stores tout complete five-speaker/Pro Logic/audio-video systems. Laserdisc and video sales/rentals set new records each year. Broadcast programming is now starting to be sent out in stereo surround. And by Christmas, you can expect a flood of 5.1-channel discrete systems for the home.

The following article was written with the audio professional in mind. Just as record producers and engineers check out mixes in the "real world" of the living room or car stereo, many audio post professionals judge their mixes—tempo or finals—in situa-

tions other than a state-of-the-art dubbing stage or out of the near-fields in an editing room. Although it was written with living rooms in mind, it is equally applicable to the editorial-house lounge, where clients can listen to the Reel 7 video workprint while Reel 8 is being finished. —Eds.]

Most home theater systems consist of a television screen, amplification, surround sound processor, two main (left and right) speakers, one center-channel speaker, two surround speakers and a subwoofer. The center channel handles most of the dialog as well as other action sounds. The main speakers reproduce

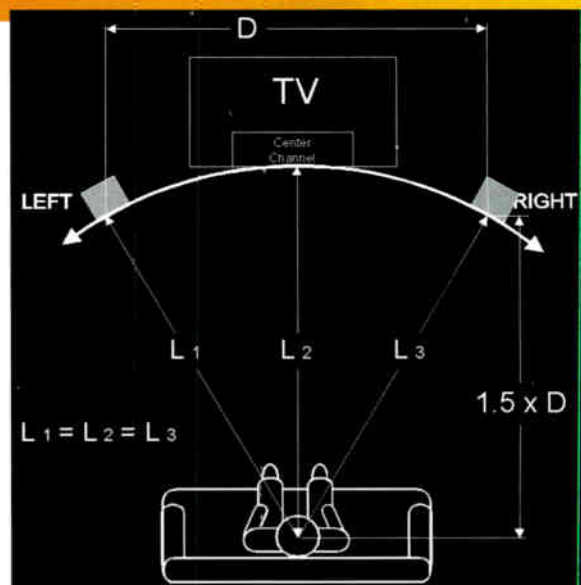


Figure 1: Speaker toe-in example: This method places speakers at 21 degrees with listener for maximum spaciousness. A good starting place to begin fine-tuning.

music, special effects and sounds associated with images to the left and right of the screen. The surrounds, which typically only receive band- and amplitude-limited program material, add ambience that creates the three-dimensional environment. The subwoofer reproduces the low-frequency program material that is so important in today's movie soundtracks.

A good system produces

a three-dimensional environment with clear imaging to the screen and broad dynamics. Speakers for home theater have similar requirements as for music reproduction: extended frequency response, good spectral balance, close speaker matching, adequate loudness capacity and low distortion. At minimum, the left, right and center speakers should be matched to

—CONTINUED ON PAGE 113

Marc Bonilla

SCORING WITH A SIX-STRING

by David John Farinella

Marc Bonilla doesn't have much time to chat. He's in the middle of working on two new solo albums. Then he's got scoring and guitar work to do on NBC's *ER* and Fox's *Beverly Hills 90210*. Then he has to write some songs for *General Hospital*'s Ricky Martin with songwriter Mary Beth Derry. That's enough to make him crazy, but he's not rushing off to work, he's rushing off to band rehearsal. Their first gig, a wedding, is taking



place this weekend, and they have to polish up versions of "Tequila" and "I Feel Good."

You might be scratching your head wondering why

Bonilla, one of the hottest guitar hands in Hollywood, is playing in a wedding band again. Truth of the matter is that the wedding is appearing in the season

finale of *ER*. The producers decided that they wanted to hire an authentic wedding band and discovered that a wedding band is still a wedding band for a reason. Bonilla and crew had to go back and redub the tracks for broadcast.

Although he's released two solo albums (*EE Ticket* and *American Matador*), it's been some time since Bonilla's had to play in a wedding band. Since moving to Los Angeles four years ago, he's been working with some of the biggest names in the world of film and television scoring, including James New-

—CONTINUED ON PAGE 120

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Alan Parsons & Stephen Court

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World Radio History

—FROM PAGE 110, SOUND FOR FILM

stages has yet to be topped. To see what I mean, you would have to switch between a 70mm print of the main title of *The Sound of Music* and a 6-track digital main title of any Class A film released this year.

Although my opinion is that the 1953-1971 era of stereo mixes was pretty uneventful for sound effects, there is one serious exception: I can think of no more out-of-control, one-of-a-kind brilliant sound job than *Forbidden Planet*, which to this day represents perhaps the best example of music carrying sound effects, and vice versa. As created by the team of Louis and Bebe Barron, the track completely blurs all distinctions between music and sound effects like no other studio film before or since.

And then in 1977, there was *Star Wars*, which remains, without question, the single most influential work in this history of film sound. Forget about influencing other film sound professionals, Ben Burt's sound effects turned *Star Wars* into a virtual recruiting film for the next generation of sound editors. The film kicked off that fertile period, roughly from 1977 to 1982, when there were more outstanding sound jobs than at any other time in cinema history. In many ways, those five years were like 1967 to 1972 were for rock 'n' roll and the late '30s/early '40s were for the Golden Age of Hollywood: Their respective processes had matured enough technically to not get in anyone's way, while still providing a fresh challenge.

I find it interesting that the most innovative films of this period also had knock-your-socks-off visuals: *Close Encounters of the Third Kind*, *Days of Heaven*, *Raging Bull*, *Altered States*, *Blade Runner*, *Poltergeist* and *Tron*, among many others. The soundtracks of these films were every bit the equal of their powerful images, and every bit as important to the overall experience.

I don't know what more I can say about *Apocalypse Now* other than repeat for the umpteenth time that it is a textbook example of how to use film sound expressively: big battle scenes, superb use of surrounds and subwoofers, seamless blending of sound effects and music, sound effects as music and vice versa, etc. Some of the key members of this crew went on to do some equally

stunning work in the '80s on *Dragon-slayer*, *Rumblefish* and *The Right Stuff*. At the same time in the Bay Area, the late Alan Splet was rewriting the book on tasty soundtracks with his work for *The Black Stallion*, *Never Cry Wolf* and *The Elephant Man*.

My favorite body of work to come out of Hollywood recently has been what Wylie Stateman and Mike Minkler have done for Oliver Stone's films in the past six years. *Born on the Fourth of July*, *The Doors*, *JFK*, *Heaven and Earth* and *Natural Born Killers*—among other achievements, these soundtracks all solved challenging scene transition problems with incredible panache.

In the days of yore (mid-'50s to mid-'70s), big stereo films got dialog and music right, but rarely were the effects anything to write home about. Today, in the '90s, we have the opposite situation, with many films kicking ass on the effects to the detriment of the drama of dialog and music. A notable exception was Walter Hill's film *Geronimo*. Though there's nothing in it that I can say changed the way I look at sound, it simply got all three food groups right: the dialog (production mixer Lee Orloff and re-recording mixer Chris Carpenter), music (recorded by Allen Sides, re-recording mixer Bill Benton), and sound effects (uncredited supervising sound editor Jay Wilkinson and re-recording mixer Doug Hemphill) were all rich and full—the way I like it.

Although *Geronimo* was my choice for the best sound job of 1993 (a good year for film sound), a close second was *Searching for Bobby Fischer*. I was quite envious of the track because it was straightforward, well-thought-out and got everything right. In addition, it was a wonderful movie and it showed that a track doesn't need explosions to merit our attention.

I can't end a column such as this without an obligatory mention of the work of The Beatles and George Martin. Yes, I know this is not "film sound," but you can't find more creative work than the effects on *Yellow Submarine* or the backward cymbals on "Strawberry Fields Forever," or even the chicken cluck/guitar transition after "Good Morning Good Morning." The work they produced in their last three years will remain one of my chief sonic inspirations.

Give a good listen to these films (and albums) and you will know

what film sound is like when it's firing on all cylinders. Also, don't forget to steal as many good ideas as you can. Send along your comments about creative sound jobs I have overlooked to: P.O. Box 24609, New Orleans, LA 70184; fax (504) 488-5139, or via the Internet: swell-tone@aol.com. ■

Larry Blake is a sound editor/re-recording mixer who lives in New Orleans for reasons too numerous to mention, although watching the skies open up as 18 inches of rain fall in six hours would be a good start.

—FROM PAGE 111, HOME THEATER

avoid distracting changes in tonal quality. The surrounds can be direct-radiation or dipole design, which radiates most of the sound to the front and rear.

Due to the small screen size in most homes, the main speakers will probably be located well away from the TV. Under this condition, precise imaging speakers can draw the listener's attention outside of the visual space resulting in cognitive dissonance from the conflict between visual and aural images. Speakers with a wider dispersion pattern and reduced image focus may improve the visual cue process. Also, remember that speakers located adjacent to televisions must be magnetically shielded.

As might be expected, there are a variety of opinions as to the desired performance and optimum location of speakers. Room acoustics, speaker location and, in some cases, speaker type will greatly influence the sound-field characteristics. The blend of direct and reflected sounds created in the home theater environment is a highly personal choice. Although suggestions are provided for both speaker location and room treatment, listen as you go and experiment, experiment, experiment!

SPEAKER LOCATION

The ideal setup for a home theater system is to have the main, center and surround speakers equally distant from the central listening area, with the LCR speakers at the height of the screen. For a discrete digital surround system, it is desirable to have all speakers at the same height. Of course, reality makes it highly unlikely that you will meet these objec-

tives, so use your ears and experiment. For starters, here are a few suggestions.

First, set up the left and right speakers for optimum audio listening as shown in Fig. 1. Begin by placing the speakers to minimize standing waves and reflections as shown in Fig. 2. For example, using the "rule of thirds," place the speakers against the front wall, move them in from the side walls to one-third the width and raise the speaker's woofers one-third the height of the ceiling from the floor. Then move the listening position in one-third the room length from the back wall. Adjust as necessary. This can be reversed such that the listening position is against the rear wall and the speakers are located one-third the room length from the front wall. In any case, experiment.

Toe-in the main speakers toward the listening area to minimize first reflections and maximize time-intensity trading effect, which actually broadens the stereo image over a wider area. Try to get all three front speakers at the same height and the same distance from the listener forming a smooth arc (see Fig. 1). This will improve the soundstage coherence and provide a seamless soundfield that seems to blend better with the on-screen action.

Experiment with vertical placement of bookshelf speakers or adjust tilt of tower speakers if possible, to get the smoothest frequency response on the listening axis. Don't be afraid to turn a bookshelf speaker upside down, as it may measurably and subjectively improve the frequency balance. Some care must be exercised when placing speakers on shelves, in bookcases and on televisions. The edges of these items will diffract the mid to higher frequencies and smear or distort the soundstage, changing the phase and tonal response. Place the speakers flush with the front edge of the resting surface to minimize diffraction problems. If necessary, acoustic material can be used on the diffracting surface. Usually, the center channel must be located above or below the center of the screen. Adjust the speakers' horizontal angle toward the listener.

The surround speakers provide a soundfield around the listener. Creative experimentation may be required to achieve the correct blend of diffuse and direct sound. For typical, direct-radiation speakers, good results

can usually be obtained by locating them on the rear or side walls, two to three feet above the listener's head. Aim the speakers into the listening area. If dipole speakers are used, they should be located on the side wall in line with the listening position. For discrete-channel systems, the speakers, located slightly behind

the listener and toed in toward the listener, should give good results.

Use of a subwoofer is one of the best ways to smooth out the low-frequency response at the listening position. Though it is best to locate the subwoofer in front of the listening area, experiment with the subwoofer placement to tame excessive standing

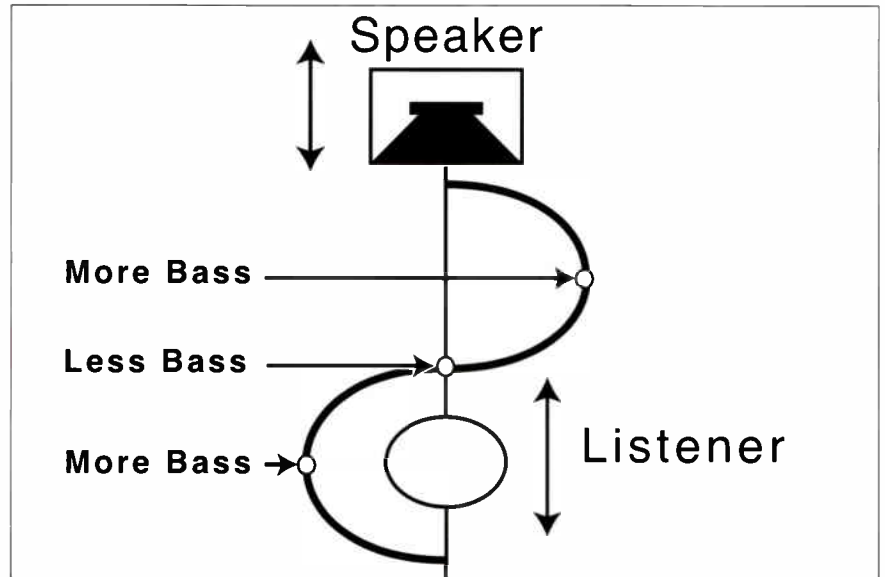
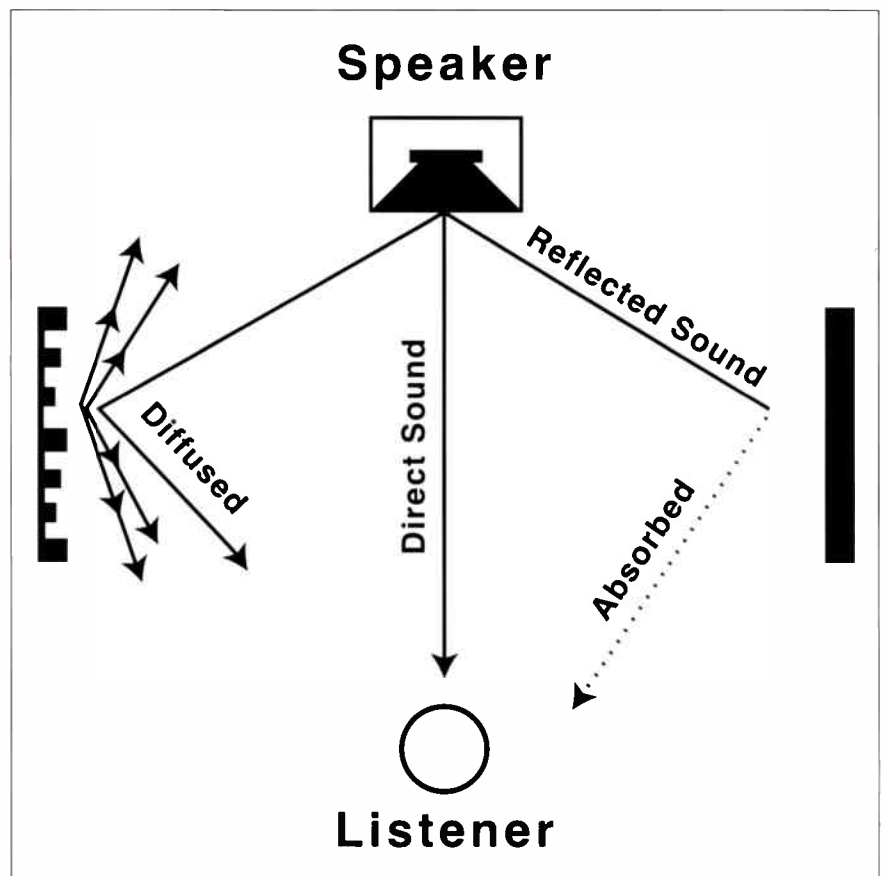


Figure 2: Move listening position or speakers to minimize standing wave problems.

Figure 3: Absorb or diffuse first reflections.



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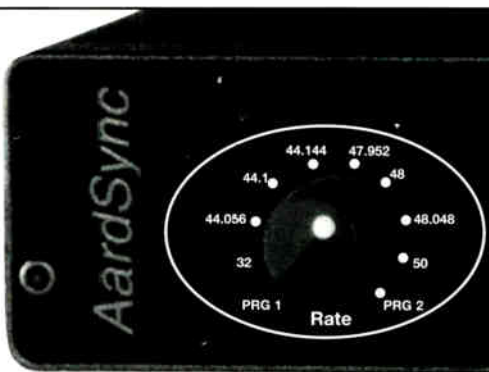
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waves. Adjust the phase, crossover frequency and volume to obtain system integration and smooth bass response. The use of two strategically placed subwoofers should improve the situation even more.

Stable, good-quality, nonresonant stands that firmly hold the loudspeaker and electronics can make a huge difference. Sand-fill metal stands, screw and glue wood stands, and use a level to make sure they are perfectly leveled. Make use of spikes and cones to ensure that neither the speaker nor the stand moves or slides around. The proper use of stands, cones and spikes can improve midrange clarity, imaging, bass definition and stabilize the image float.

Finally, don't let the room or its furnishings make noise. Rattles and buzzes are easily identified using a sound source with low to mid-frequencies. After you've found the right place for the listener and speakers, put sound into the room and walk around. You'll find different things rattling and buzzing at different frequencies. Screw, glue, caulk and pad furnishings, windows and doors as you go, eliminating the offending noises one at a time. You'll be surprised at how much clearer and cleaner the system sounds in a quiet room. You might also consider reducing the background noise level. Try sealing all doors with weather stripping, quiet ventilation systems with additional bends in the line to the room, and isolate motors on rubber mounts or other suspensions.

When the setup is complete, sit down and listen to a mix.

ROOM ACOUSTICS

There is no way to ensure great sound in every room, but there are elements that can make a significant difference. In general, changing cables, amplifiers, preamplifiers and most source components make differences in the range of .1 to 1 decibel, at most. Changing speakers can make differences in the range of 1 dB to 5 dB. But changing your environment and speaker/listener position can make differences of as much as 15 dB. The idea is to modify the acoustical performance to achieve a more neutral listening environment.

The low-frequency characteristics of a room are mostly determined by standing waves (normal modes of resonance). These modes are a function of the volume, aspect ratio and

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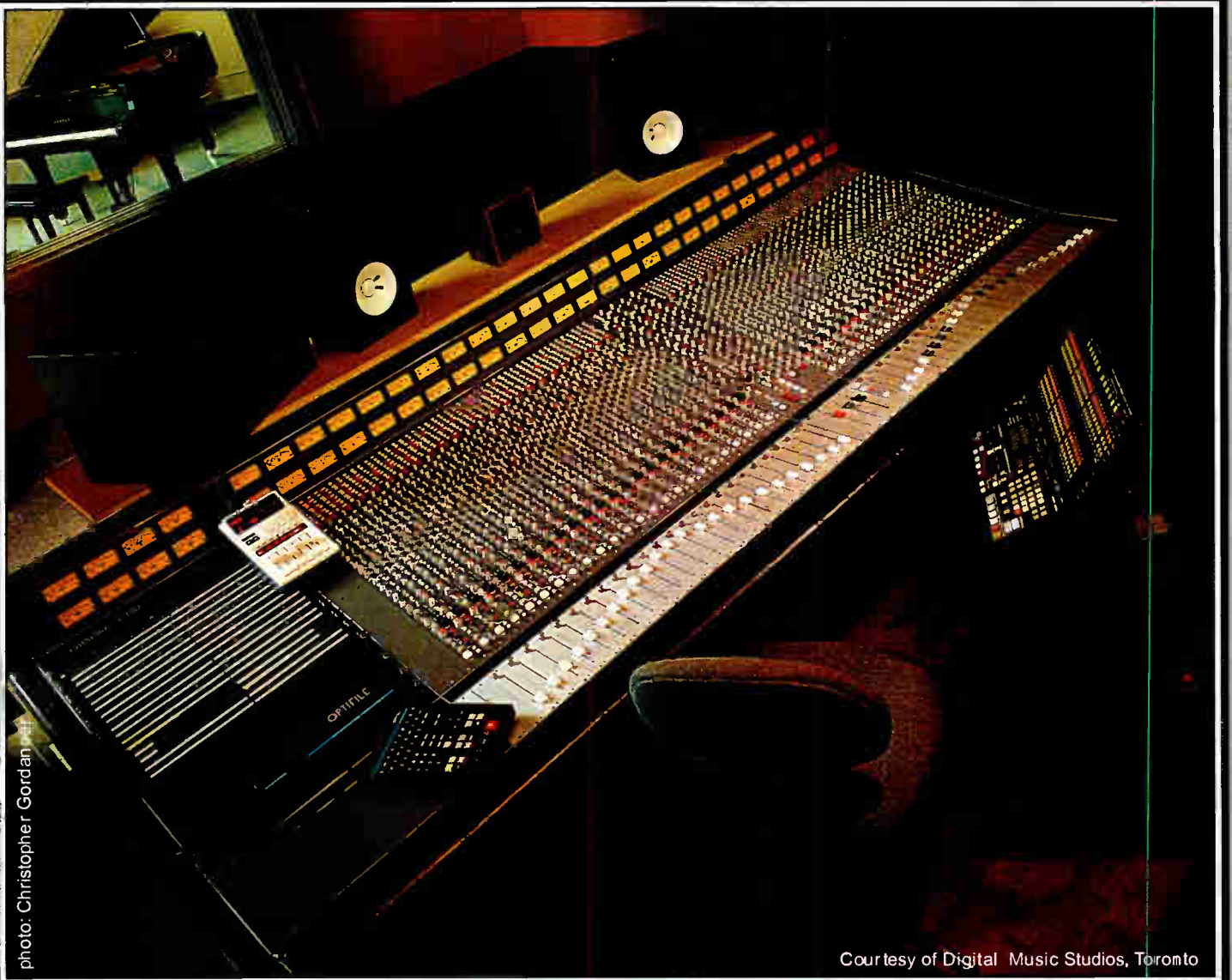


photo: Christopher Gordan

Courtesy of Digital Music Studios, Toronto

For over two decades, while other console designers were selling their companies to large conglomerates, Cyril Jones of Raindirk Audio was quietly developing the *Symphony*, a powerful mixing tool with a classic vintage sound.

At Raindirk, the emphasis is on sonic quality rather than gimmicks. Every console is handmade and delivers an incredibly low noise floor & extended frequency response. Even with a 32 or 48 bus in line structure, 12 aux sends & global signal path switching, a *Symphony* by Raindirk is considerably quieter than most consoles available at close to twice the Raindirk's price.

After years of success in Europe, Raindirk is now available in North America. In major American markets such as L.A. & Nashville, studio owners have already discovered the best kept secret in the console business.

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geometry of the room. Uneven distribution of standing waves produces peaks and dips in the system's bass response. Dealing with standing waves is one of the most difficult problems to solve. Contrary to what most people think, standing waves at the listening position cannot be minimized by slapping acoustical panels or carpet on the walls. Placing a couple of Fiberglas-filled tubes in the corners won't do much either, unless you sit in the corner. Remember, bass waves are very long and will go right through them to a stable surface behind. Normally, bass traps are not practical either, because they are massive or complicated to build.

When dealing with standing-wave problems, first try to avoid rooms that have 1:1 or 1:2 dimension ratios in length, width or height, as they will compound standing-wave problems. Room dimensions with non-equal and divisible dimensions are best. Likewise, rooms with flimsy construction will tend to be bass-shy, as the bass frequencies just push the walls around or go through to an adjacent area. Walls constructed with a minimum of two layers of gypsum board are preferred to reduce diaphragmatic action. Unfortunately, most of us are stuck with existing construction. The most viable solution is to move the speakers, subwoofers and/or the listening position to minimize standing-wave effects.

Mid- and high-frequency characteristics are influenced by room reflections, which can be controlled by surface treatments that absorb, redirect or diffuse sound. Reflections and flutter echoes can change the tonal or spectral balance, affect transient response, confuse vocals or dialog, and alter soundtrack ambience. In an empty room, voices sound hollow because of the large number of echoes or reflections. Coffee tables in front of sofas create a reflective surface and smear imaging. Chairs provide absorption as well as diffraction problems. Cabinets rattle and windows reflect. Best results can be obtained from a balance of reflective and absorptive materials strategically placed in the listening room, along with a judicious choice of furnishings. In general, the idea is to minimize interfering ceiling, floor and sidewall reflections that disrupt image focus, proper soundstage size and tonal balance.

To determine the source of the first

reflection, place a mirror or reflective mylar plastic strip on the side walls, floors and ceiling where the midrange and tweeter are visible from the listening position. At that point, either reduce the reflection by using absorptive material or diffuse the reflection as shown in Fig. 3. Typically, front and sidewall reflections are controlled with absorption, and rear-wall reflections are controlled with diffusion. Flutter echo, the repetitive reflection of sound energy, is caused by opposing parallel reflective surfaces. They can be identified by clapping your hands and listening for ringing. Flutter can be reduced by using ab-

sorptive or diffusive treatments on one or both of the opposing surfaces. When treating side walls near the sides of the loudspeakers and/or at the listening position, it is desirable to treat both walls similarly to provide a symmetrical soundfield.

Surface treatments should be used with care. Most absorptive materials reduce high frequencies more than low frequencies, creating a tilted frequency response. There are a variety of surface treatments available. Most have rated absorption coefficients to aid in selecting the right material. Absorption coefficients typically range from 0.01 for marble, which is almost

Palmtop Editing



It weighs only 3 lbs, small enough to fit in your hand. It is capable of storing, editing and processing 167 hours of broadcast quality digital video with 64 tracks of MIDI and 24 bit audio. It's called the Simulator. It's not available today, but it will be in the coming years. And when it is finally here, it will be available at EAR (*batteries not included*).

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a perfect reflector, to 0.9 for acoustical panels. Some of the obvious absorptive materials available are carpet, curtains and couches. Bookshelves, picture frames and other objects with surface relief provide diffusion. There are also some specialty products available such as Illbrook's Sonex," RPG's Diffusor" panels, ASC Tube Traps" and other types of room treatment products. You can also easily construct your own sound panels using various thicknesses and sizes of compressed Fiberglas (Owens Corning 703) covered with an open-weave fabric.

But, above all, remember: No two theaters are alike; no two studios are alike, and no two living rooms are alike. Take the time to move your speakers around and experiment with different room treatments. Then, trust your ears. ■

—FROM PAGE 111, MARC BONILLA

ton Howard, Marty Davich and Joel McNeely. His film credits include *Alive*, *Falling Down*, *American Heart*, *Terminal Velocity*, *My Girl* and *Diggstown*, to name a few. Then there's his television work, including *ER*, *90210* and *General Hospital*. He has also worked on *Days of Our Lives*, *I'll Fly Away* and *Robin's Hoods*. The songs from his two solo albums have appeared in the films *Airborne* and *Timecop* and have found television placement on the 1992 and 1994 CBS Winter Olympics, NCAA Men's Basketball *The Road to the Final Four* on CBS and on ABC's *Monday Night Football*.

It's no wonder he's had to rehearse "Tequila" and "I Feel Good"—he's been busy, for God's sake. Over the past year, Bonilla has been working extensively with Marty Davich, who gave him his first session gig four years ago on *General Hospital*. *ER* and *90210* followed. "Musically, we park in the same garage, so it's been great," Bonilla says of his relationship with Davich.

On Davich-composed shows, Bonilla's role varies from session guitar work to scoring, depending on the mood of the scene. For example, on a recent *ER*, a pizza delivery driver crashed through the emergency room, and the cue sheet called for a "rock from hell" bit. "Marty knows he's not capable of doing all that stuff, so he asked me to write 'em," he says. "By

definition, I usually do all the guitar-oriented stuff."

And on *90210*, another Davich show, Bonilla usually gets to do the cues that Marty doesn't want to do. He laughingly recalls the time Davich gave him the job of scoring a marching band. "Where do you start with a marching band? I went out and got a John Souza record, listened to what instruments were doing what things, and it actually worked out well. Normally, I wouldn't have pushed myself to ever create a marching band had it not been for this." Indeed, his work in the soundtrack world has forced him to stretch beyond the guitar god status he's achieved throughout his solo and band work. "What's great about this stuff is that you can span a lot of different styles, everything from classical to country-western. It really builds on your library of knowledge."

Since Davich and Bonilla have been working together for so long they've developed a unique relationship that enables them both to work in their respective home studios simultaneously. "I'm working at my place the same time he's working; that way we can work simultaneously without getting into each other's way."

Which makes perfect sense considering their production schedule: Davich meets with the shows' producers typically on a Thursday to spot the episode, then he meets with Bonilla and the other session players later that day. The two take the weekend to score, record on Monday. Bonilla delivers a DAT to Davich on Tuesday for a show that airs on Thursday. Give or take a half a day, and this could get pretty hairy, especially considering that the schedule is for just one show.

On the technical side of things, Bonilla says his studio in the master bedroom of his North Hollywood home is "very compact, very efficient." (The studio used to be in the guest room, but he just moved it so he could have enough room to set up a small drum kit, just in case he needed it.) The board is a Mackie 32x8, and he has a pair of Alesis ADATs; the main brain is an Akai MPC-60. Coming out of the MPC-60's first port, Bonilla's setup includes a Korg M1R, a Roland Juno 106, MKS-50 and S-760, and an Ensoniq ESQ-M. The second out goes to a Yamaha TX812 and an Akai S1000. The third includes an Akai S100, Korg M1, a piano module, a Proteus 3 and a Yamaha SY77. The

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The PBM II Series is the industry standard for reference monitors. They feature advanced technologies such as veneer thickness, injection molded cones with nitrile rubber surrounds and the highest quality components including polypropylene capacitors and carefully selected inductors. With a Tannoy monitor system you are assured of absolute fidelity to the source, true dynamic capability and most important, real world accuracy.



PBM 5 II

- Custom 5" injection-molded bass driver with a nitrile rubber surround for extended linearity and accurate low frequency reproduction. They are better damped for reduced distortion and exhibit more naturally open and detailed midrange.
- Woofer blends seamlessly with the 3/4" polyimide soft dome ferro-fluid cooled tweeter providing extended bandwidth for extremely precise sonically-balanced monitoring.

PBM 6.5 II

- Designed for nearfield use, the PBM 5 II cabinets are produced from high density medium for minimal resonance and features an anti-diffraction radiused front baffle design.
- Transportable and extremely powerful, the PBM 6.5 II is the ideal monitor for almost any project production environment. It features a 6.5" low frequency driver and 3/4" tweeter are led by a completely redesigned handwired hand selected crossover providing uncompromised detail, precise spectral resolution and flat response.
- Fully radiused and ported cabinet design reduces resonance and diffraction while providing deep linear extended bass.

PBM 8 II

- High tech 1" soft dome tweeter with unmatched pattern control and enormous dynamic capability 8" driver is capable of powerful bass extension under extreme SPL demands.
- Hard wired crossover features true bi-wire capability and utilizes the finest high power polypropylene capacitors and components available.
- Full cross-braced matrix midrange structure virtually eliminates cabinet resonance as a factor.
- Ensures precise low frequency tuning by incorporating a large diameter port featuring laminar air flow at higher port velocities.

Stewart PA1000/1400/1800 Power Amplifiers

- High frequency switch mode power supply fully charges 120,000 times per second (1000 times faster than conventional power supplies) requiring far less capacitance for filtering and storage.
- High speed recharging also reduces power supply "sagging" that afflicts other designs.
- Incredibly efficient, 5 PA-1000 or PA-1400's (4 PA-1800's) can be run on one standard 20 amp circuit. There is no need for staggered turn-on configurations or other preventive measures when using multiple amp set-ups, as current draw during turn-on is only 6 amps per unit.
- They produce smooth and uncolored sound, while offering very full detailed low end response and tons of horsepower.
- They each carry a 5 year warranty on parts and labor.

PA-1000 weighs 9 lbs. is 15" deep and occupies one standard rack space. Delivers 1000 watts into 4 Ω when bridged to mono.
 PA-1400 weighs 16 lbs. is 15" deep and takes 2 standard rack spaces. Delivers 1400 watts into 4 Ω when bridged to mono.
 PA-1800 weighs 17 lbs. is 17" deep and takes two rack spaces. Delivers 1800 watts into 4 Ω when bridged to mono.

TASCAM M-2600 Series 16/24/32 Channel Eight Channel Mixers

LOW NOISE CIRCUITRY

- Combining completely redesigned, low noise circuitry with Absolute Sound Transparency™ the M-2600 delivers high-quality extremely clean sound. No matter how many times your signal goes through the M-2600, it won't be colored or altered. The signal remains as close to the original as possible. The only coloring you hear is what you add with creative EQ and your outboard signal processing gear.

- Double reinforced grounding system eliminates any hum. World-class power supply provides higher voltage output for better headroom and higher S/N ratio.

PREMIUM QUALITY MIC PRE-AMPS

- The M-2600's mic pre-amps yield an extremely low noise floor, enormous headroom and an extremely flat frequency response. This lowers distortion and widens dynamic range. It also increases gain control to an amazing 51dB. Plus, you get phantom power on each channel.
- The M-2600 accepts balanced or unbalanced 1/4" inputs, and low-impedance XLR jacks. Better still, the TRIM controls operate over a 51dB input range. For the hottest incoming signals, all it takes is a press of the -20 dB PAD button atop each channel strip to bring any signal down to manageable levels. Plug anything into it—keyboards, guitars, basses, active or passive microphones, samplers and more. No matter what you put into it, you can be confident that signal can be placed at optimum levels without a lot of fuss.

THE BEST AUX SECTION IN THE BUSINESS

The most versatile AUX section in its class, featuring expensive high-end consoles. 8 sends total, 2 in stereo. Send signal in stereo or mono, pre- or post-fader. Available all at once. Return signal through any of 6 stereo paths.



FLEXIBLE EQ SECTION

You'll find both shelving and split-EQ sections on some mid-level consoles. But that's where the similarities with the M-2600 end. The M-2600's bi-directional split EQ means you can use either or both EQ sections in the Monitor or Channel path... or defeat the effect altogether with one bypass button. Most other comparably-priced mixers will lock the shelving mix into the Monitor path only, limiting your EQ application.

ADVANCED SIGNAL ROUTING OPTIONS

Direct channel input switching. Assign to one of eight busses, or direct to tape or disk, or to the master stereo bus. Because the group and direct-out jacks are one and the same, you can select either without repatching. You won't find this kind of speed or flexibility in a "one-size-fits-all" board.

ERGONOMIC DESIGN

The M-2600 has a big studio feel. All buttons are lightly spring loaded, lock into place with confidence and are large enough to accommodate even the biggest fingers. The faders and knobs have a light, smooth "expensive" feel and are easy to see, easy to reach and a pleasure to manipulate. Center detents assure zero positions for EQ and PAN knobs. Smooth long throw 100mm faders glide nicely yet still confidently allow you to position them securely without fear of accidentally slipping to another position.

MACKIE MICRO SERIES 1202

12-Channel Ultra-Compact Mic/Line Mixer

Usually the performance and durability of smaller mixers drops in direct proportion to their price. Fortunately, Mackie's fanatical approach to pro sound engineering has resulted in the Micro Series 1202—an affordable small mixer with studio specifications and rugged construction. The 1202 is a no-compromise, professional quality ultra-compact mixer designed for professional duty in broadcast studios, permanent PA applications and editing suites where nothing must ever go wrong.

BIG CONSOLE FEATURES

- Working S/N ratio of 90dB, distortion below 0.025% across the entire audio spectrum, switchable +48 volt phantom power and +28 dBu balanced line drivers.
- Real switchable phantom-powered mic inputs with discrete, balanced mic preamps as good as those found in big consoles. There are 4 mono channels, each with discrete front end mic pre-amp/line input and four stereo channels, each with separate left and right line inputs.
- Every input channel has a gain control with unity at the center detent for easy setup. Also a pan pot, low frequency EQ at 80Hz, high frequency EQ at 12.5 KHz, and two aux sends with up to 20dB available gain.
- Main outputs operate either balanced/unbalanced, as required.
- Switchable three-way 12-LED peak meter displays.



- Master section includes two stereo aux returns, a separate headphone level control, metering and two stereo aux returns.
- Line inputs and outputs are designed to work with any line level, from instrument level, to semi-pro -10dB, to professional +4dB.

HEAVY DUTY CONSTRUCTION

- Designed for non-stop, 24-hour-a-day professional duty in permanent PA applications, TV and radio station, etc.
- Sealed rotary controls instead of open frame phenolic potentiometers that suffer from dust and contamination.
- Has steel chassis, rugged fiberglass circuit boards and a built-in power supply. Also has exceptional RF protection.

MULTIPLE APPLICATIONS

- Ideal "entry level" mixer for those just starting a MIDI suite.
- Ideal as headphone or cue mixer, level matching pro audio "look kit", drum or effects sends submixer, 8-track monitor mixer.

CR-1604 16-Channel Mic-Line Mixer

The hands-down choice for major touring groups and studio session players, as well as for broadcast, sound contracting and recording studio users, the Mackie CR-1604 is the industry standard for compact 16-channel mixers. The CR-1604 offers features, specs, and day-in/day-out reliability that rival far larger boards. It features 24 usable line inputs with special headroom/ultra-low noise Unityplus circuitry, seven AUX sends, 3-band equalization, constant power pan controls, 10-segment LED output metering, discrete front end phantom-powered mic inputs and much more.

LOWEST NOISE, HIGHEST HEADROOM

- With the CR-1604, having the lowest noise and highest headroom (90 dB working S/N and 108 dB dynamic range) at the same time are not mutually exclusive. It is free of commonly encountered headroom restrictions, and is able to handle the occasional pegged input with ease. In fact, many drummers consider it the only mixer capable of handling the attack and transients of acoustic and electronic drums.

CONSTANT POWER PAN POTS

- Only with constant power pan pots will a source panned hard left or hard right have the same loudness as when it is sitting dead center. While most small mixers pass simple balance controls for pan pots, the CR-1604's carefully optimized constant power pan circuitry make it a professional tool with the kind of performance necessary for CD mastering, video posting and other critical audio production.

IN-PLACE STEREO SOLO

- Stereo "in place" solo allows not only the monitoring of level and EQ, but also stereo perspective. Usually found in very expensive mixers, stereo solo allows you to critically scrutinize and carefully build a mix using all the channels with their respective sends and AUX returns.

UNITYPLUS GAIN STRUCTURE

- Proper gain settings are facilitated by proper gain labeling, along with center-click detents on the faders, clearly understood input trim controls and output meters that read channel levels in solo mode. With properly set levels you achieve very high headroom and low noise at the same time.

EFFECTS SEND WITH GAIN

- Unusual circuit design that provides two different "zones" that reflect real world use: send from each channel can vary in level from off to unity gain, which is the normal range of effects sends in other mixers. Since you also get another whole zone from the center detent to +15 dB of gain, the channel fader can be pulled down and the effects send can be boosted above unity when more effect is needed.



INTELLIGENT EQ POINTS

- Low frequency EQ is at 80 Hz where it has more depth and less hollow midbass "bark". Midrange is centered at 2.5 KHz, providing for more control of vocal and instrumental harmonics. A specially-shaped HF curve that shelves at 12 KHz creates more sizzle and less aural fatigue.

REAL MIC PREAMPS

- The CR-1604 has genuine studio-grade phantom powered, balanced input mic preamps on channels 1 through 6. All CR-1604 (and XLR10) discrete input mic preamp stages incorporate four conjugate-pair, large-emitter geometry transistors just like the big mixers use. So, when recording nature sound effects to heavy metal or mixing flutes or kicking drums, you get the quietest, cleanest results possible.

BUILT TO LAST

- The CR-1604 is designed for non-stop, 24-hours-a-day professional duty—even for tours that log 100,000 miles in three months. It has sealed rotary potentiometers that are resistant to airborne contamination like dust, smoke, liquids, and even the oxidizing effects of air itself!

Optional Accessories

DTD-1604

Add sophisticated computer controlled automation to your CR-1604. When connected to the MIDI port of your computer (PC, Mac, Amiga or Atari), each one of the 16 input channels can be programmed to change gain or to mute, just as you would program a sequencer. Master levels can be programmed as well, along with all buss channels.

XLR10

While the standard CR-1604 comes with 6 high performance mic inputs, there are times when you need more. Enter the XLR10. This simple-to-install accessory adds 10 more (for a total of 16) mic inputs, with the same quality, performance and features as those in the CR-1604.

dorrough



With today's audio systems stretching the limits of program dynamics it's become critical for engineers to obtain maximum loudness with the minimum of distortion components, to fully utilize the dynamic range available. It is of equal importance that they have a method of monitoring and establishing the maximum safe level at which a system can operate. That's why every Dorrough Audio Level Meter simultaneously shows three dimensions of program material content: Peak, Average Power and Compression are displayed on a color-coded 40-segment LED scale. The meters are easily viewed while providing high precision indications of program energy content.

Loudness Meter Model 40-A

The Model 40-A has a scale allowing 14dB of headroom in 1dB steps. A stand-alone unit, it measures 8 1/2" x 2 1/2" x 6 1/2" and has an internal power supply. Model 40-AP has a peak-hold option as well.

Loudness Meter Model 40-B

The Model 40-B provides metering of relative loudness to peak modulation. The 40-B is a scale differentiation of the 40-A and is calibrated in percent (%) modulation, with the lower scale in dB from +3 dB to -3 dB. Model 40-BP has a peak-hold option as well.

BEHRINGER

MDX 1000 Autocompressor/Limiter



- Incorporates an interactive auto processor for intelligent program detection. With the auto processor, the attack and release times are derived automatically from the respective program material—preventing common adjustment errors.
- The auto processor also allows you to compress the signal heavily and "musically" in dynamic range without any audible "pumping," "breathing" or other side effects.
- Provides both Attack and Release controls allowing for deliberate and variable sound processing.
- Switchable soft knee/hard knee characteristics. Soft knee is the basis of the "inaudible" and "musical" compression of the material. Hard knee is a prerequisite for creative and effective dynamics processing and for limiting signal peaks reliably and precisely.

MDX2000 Compressor Interactive Dynamics Processor



- Powerful and versatile signal processing tool provides 4 most commonly dynamic control sections: fully automatic compressor, manually controlled compressor, expander and peak limiter.
- Innovative IKA (Interactive Knee Adaptation) circuit combines the "musicality" of the "soft knee" function with the precision of the "hard knee" characteristics. Provides subtle and "inaudible" compression of the sound allows creative dynamics processing.
- Auto processor provides fully automatic control of attack and release times. There is also manual control.
- Interactive Ratio Control (IRC) expander eliminates "clatter" on or around the threshold point.
- Interactive Gain Control (IGC) Peak Limiter combines a clipper and program limiter. This allows for "zero" attack, distortion-free limitation of signal peaks.
- IGC is invaluable in live applications. Servocontrolled inputs and outputs. Operating level switchable from -10dB to +4dB.

PEQ305 Studio Parametric The Musical Equalizer

- Five independently switchable bands. The quality of each band can be modified gradually from notch to broadband characteristics. This offers more flexibility than any graphic equalizer can provide.
- Bands 1 and 5 are switchable between shelf and peak. This is extremely useful, since acoustic problems usually occur in the upper and lower frequencies.
- Utilizes the "Consistent Q" principle to eliminate interaction of the parametrics frequency, bandwidth and amplitude. The same applies to interaction between the individual frequency bands.
- Parallel arrangement of the individual filters reduces phase shifting and associated delays to a minimum.
- Potentiometer response follows human hearing characteristics.
- Relay-controlled hard bypass with auto-bypass function during power failure.

TASCAM 103 Mastering Cassette Deck

Cost effective three head stereo midrange cassette deck, appropriate for audio and video production facilities. With its three head design you can hear what is actually on the tape as it is recorded. Auto Monitor Function switches from playback to input automatically while in record/pause mode, allowing you to set record levels or match tape levels. Dolby HX PRO circuitry provides extended high frequency performance while keeping distortion and noise to a minimum. Tape type is automatically sensed and adjusted for by the Auto Tape Selection feature.

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SENNHEISER RF CONDENSER MICROPHONES

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 pre-attenuation. 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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Symetrix

Signal Processing Products 601 Digital Voice Processor

- 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) mono/stereo line inputs and XLR-balanced stereo output, XLR-balanced and S/PDIF (RCA) inputs and outputs. MIDI input/output supports control 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-Squeeze have presence and increased articulation. Subtle sounds become more up front.
- Many professional mixing console have output levels that are much hotter than digital recorder inputs. The 488 matches any console to most any digital recorder.

We are a full stocking dealer for the entire Symetrix line

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 to be perfectly synchronized. What's more, this system guarantees perfect tracking and synchronization between all audio tracks on all cassetted 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 is 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.
- Cross-fade time is fully controllable in machine-to-machine editing. The 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 DAT 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 six 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 fine-tune local cuts.
- Comprehensive display includes program numbers, absolute time, program time, remaining time and Table of Contents, which displays total recorded time and total PBO count for commercial pre-recorded 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 seconds, making them unsuitable for professional applications. Easily adjust the Quick Start position and specify it by A-Time, Start ID or PND. Recording via Quick Start is also possible, allowing two SV-4100s to be used for frame-accurate punch-in/punch-out and to 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 cut 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.

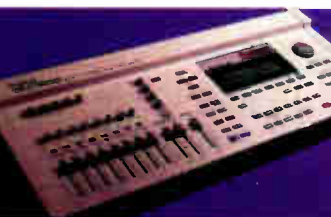
- 5-MODE EXTERNAL SYNC**
External sync is essential for applications such as video postproduction and stereo submix recording. It assures uniformity of timing between different equipment so the audio data consistently matches up with the target media. Select from 3 video external sync modes (25, 29.97 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.
- 1-WAY REMOTECONTROL**
GPI input allows simple triggering of Quick Start. 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 makes 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 transports 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 disturbance.
- 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 recording/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 15 tracks, skips forward or back up to 19 tracks, all at 100x normal speed.
- Has a Digital Volume Limiter System (DVLIS) 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 mode, 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 equipment.



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 spacing 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 3-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 just 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-C5 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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The new Studer D827 24/48-track DASH recorder (right) sets new standards in digital audio recording – just as its



partner, the A827 (left), offers new levels of quality for analog recording. The Studer D827 digital multitrack offers full field upgradability from 24 to 48-track. With 18-bit converter technology and advanced noise-shaping techniques for the very highest audio quality – in the Studer tradition. There's a unique 24-bit Studer-format recording option – while retaining full compatibility with existing DASH machines. Both analog and digital 827-series machines are always on cue when you need them, thanks to a fast, responsive transport and built-in locator. Enhanced servo control and dynamic tape-handling ensure your masters get the respect they deserve.

With the extended leasing options now available, Studer multitrack recorders are surprisingly affordable. Analog or digital, the Studer 827 series offers the ultimate in sound quality – and the ultimate return on your investment.

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fourth, and final out, is dedicated to a Proteus 2.

As far as effects, Bonilla uses Lexicon's LXP-15 and PCM42, an Alesis MIDverb 3, a Boss SE 50, DigiTech's IPS 33 harmonizer and a Yamaha D1500. His compression inserts include the dbx 166, a Roger Mayer Model RM 58 and a BBE 422A sonic maximizer. He uses a pair of Neve 1081s for a warmer sound and a Tubeworks RT 4002 direct box. His microphones include an AKG 414 and a Shure SM57. He mixes down to a Panasonic SV-3700 DAT and also has an SV-3500 just in case he needs a digital transfer machine. To get the most out of his board, he's set his Mackie up with channels 1-8 dedicated to drums, channels 9-21 for keyboards, 22-31 for guitars and the last channel for dialog.

While the move into the big bedroom enables him to set up a small drum kit, Bonilla still relies on the MPC-60 for all of his drum sounds. Over the years, he's sampled a number of different kits, including classic '60s- and '70s-sounding kits, to always have just the right one on hand.

"I try to be as authentic as I can,

depending on what it happens to be," Bonilla says. "I never program in anything but high resolution, so there's no quantization." He notes that the only "live" drummer he used on his soundtrack compilation album was (the late) Jeff Porcaro, who played on a blues track that was used in *American Heart*. That was also the only track that was recorded in a conventional studio. His guitar gear is all Yamaha. Electrically he uses the Yamaha Pacifica, acoustics include a Yamaha APX-10, APX-12 string and APX-10N.

Meanwhile, back on the soundstage, Bonilla is thinking about dodging the computer beeps found in this week's episode of *ER*. "All the different sounds in the machinery are like a rhythm in themselves," he says. "So, you don't want to compose too much stuff within that sonic range." Then, of course, there's the dialog and sound effects, which always come before the music. "The composer's main anxiety is that they've spent all this time on the music, and then all that's heard is the ride cymbal on top and the bass down below," he laughs. "All the stuff in the middle is gone."

Over the years, Bonilla's also

learned to be careful of what he's termed the "manipulating wall." "If it's a tragic scene," he explains, "you don't want to play this completely tragic music, because then the audience feels manipulated. You have to compose sometimes as if it's musical tofu that will suck in and absorb the flavor of the scene, rather than imposing a flavor on the scene." Mostly, he says, it depends on what subtext the director wants to draw out the most. "The composer is an actor in a film, no less or no more important than the other principal actors that are spoutin' dialog, because music is dialog. It can carry a scene sometimes if the dialog is mundane and the actors are bad."

So, it must be difficult for an artist to go from rock 'n' roll fast hand to soundscape creator, sometimes in the same hour, right? Not necessarily, says Bonilla. "You have to be able to turn it on and off, like an actor can. It's like the Marlon Brando school of acting, you're *this* now, do it." So Marc Bonilla, currently playing in a wedding band near you, is off again. ■

David John Farinella is a freelance writer based in Oakland, Calif.

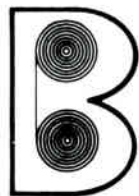
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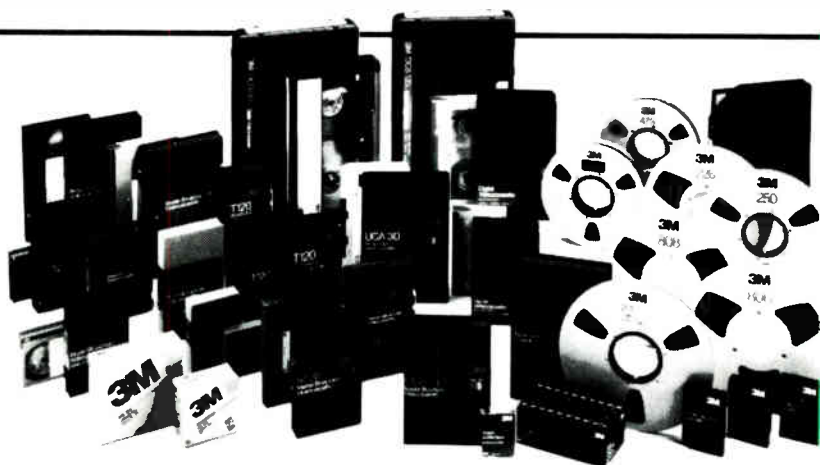
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COOPER CS 104 ENG MIXER

Cooper Sound Systems (San Juan Capistrano, CA) debuts the CS 104 ENG/EPF 4-channel stereo mixer. Housed in an all-metal chassis, the mixer features Jensen transformer-coupled inputs, multiple balanced/unbalanced outputs and operates on eight internal AA batteries or external DC via a standard 4-pin connector. Frequency response is 20-20k Hz, ± 0.5 dB; EIN is >128 dB. Targeted list price is \$3,300.

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TELEX ENG-500 UHF WIRELESS SYSTEM

The ENG-500/UT-500 UHF wireless microphone system from Telex Communications (Minneapolis) uses two crystal-controlled RF oscillators with frequencies selected for maximum compatibility within the 524-746MHz range. The compact ENG-

500 receiver easily mounts on standard portable cameras. The UT-500 transmitter plugs into any standard dynamic mic via a locking XLR connection. The ENG-500 and UT-500 operate six hours on a single 9V battery.

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ELECTRO-VOICE TL-440 SUBWOOFER

Electro-Voice (Buchanan, MI) intros the TL-440, a vented, direct-radiation loudspeaker for high-output at very low frequencies. Designed to meet the demands of digital sound for film, the TL-440 is loaded with an EVX-180A woofer handling 600 watts of continuous program power with a high sensitivity of 98 dB (1W/1M). Frequency response is stated as 33-32k Hz.

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AKG D230 MICROPHONE

AKG (Northridge, CA) debuts the new AKG D230, a rugged dynamic mic designed for demanding ENG field use. The D230's sensitive omnidirectional capsule produces usable signal output for very low noise. The D230 has an integrated wind-screen and advanced capsule isolation to virtually eliminate handling noise. Frequency response is said to be 40-20k Hz.



KLARK-TEKNIK DDL OPTIONS

Klark-Teknik (Mark IV Audio, Buchanan, MI) announces new options for its DN728 digital delay line. An RS-232 interface card provides sync with Leitch video-processing devices and recognizes Leitch DFS-3000/DFS-3002 protocol, changing all delay times according to messages received. Another software offering recognizes the custom BTS-type BNC remote interface, with sync to BTS model VSY 410 video-processing gear.

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SPROCKET PB540 VTR AUDIO INTERFACE

The PB540 VTR Audio Interface from Sprocket Digital (Burbank, CA) has four channels of audio I/O and timecode I/O. Audio outputs can be selected from any combination of the audio inputs or timecode. Balanced I/O as well as -10dB outputs are provided. On-board processing includes a limiter and multisource attenuator for each audio input. Retail is \$1,195.

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Studio Vision Pro 3.0

"The hands-down winner of the Towering Codehead Spectacular Achievement Award are the good folks at Opcode for Studio Vision Pro 3.0.

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—Keyboard Magazine, May 1995

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YAMAHA 02R 8-BUS DIGITAL CONSOLE

BY GEORGE PETERSEN

A year ago, Yamaha debuted its ProMix 01, a remarkable small-format digital console at an equally remarkable \$1,995 price. ProMix 01 offered a lot (onboard effects, moving fader automation, immediate snapshot reset of all console parameters, etc.), but the things it lacked—digital inputs, multitrack busing, insert points, tape returns, switchable sampling rates and enough inputs to satisfy the needs of modern studio production—led me to believe that we'd eventually be seeing such features in a future product.

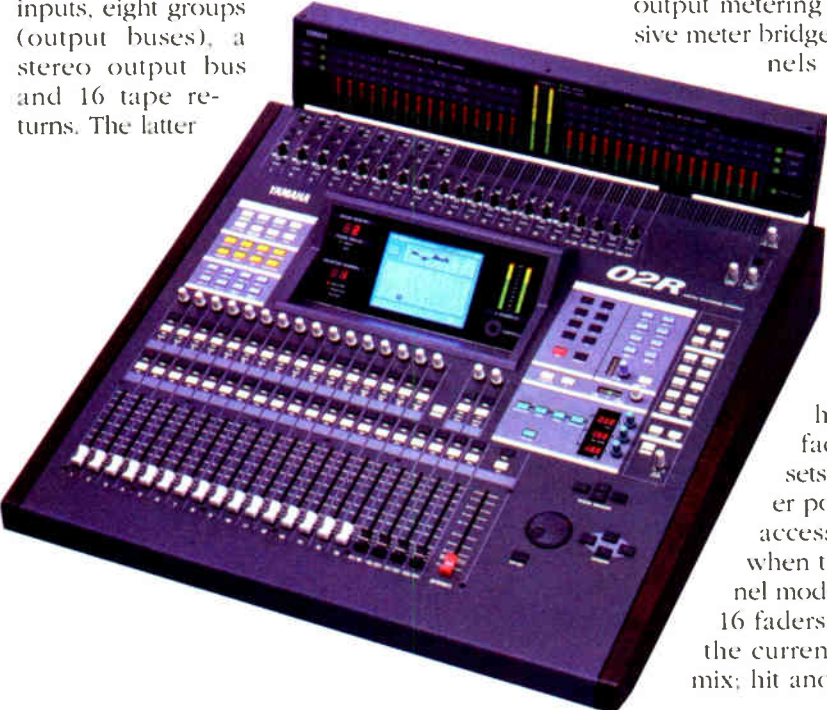
That product has finally arrived. Unveiled at this summer's APRS show in London, the Yamaha 02R will be shipping later in the year, probably about AES time. Housed in a tabletop, 3x2.5-foot chassis, the 02R has a 24x16x8x2 configuration, with 16 mic/line inputs (with switchable phantom power), four stereo line inputs, eight groups (output buses), a stereo output bus and 16 tape returns. The latter

can double as inputs, so the console can accommodate up to 40 input signals, not including the stereo returns for the two onboard, programmable, digital signal processors.

The 02R retail price is targeted to be less than \$10,000, including an 8-channel digital I/O card. The console can hold four of these cards, and supported formats include Alesis ADAT optical, Tascam TDIF-1 and eight AES/EBU pairs on XLRs. Obviously, accommodating the huge market of modular digital multitrack and multichannel workstation owners was important to Yamaha, and by implementing a card-slot I/O scheme, customers are free to select specific cards for specific applications. This approach also allows mixing from two different formats, say an ADAT and DA-88 simultaneously, or pairing a DA-88 with a Sony PCM-800, which uses AES/EBU rather than TDIF-1 interfacing. Both 44.1 and 48kHz sampling rates are supported. A single 02R could handle up to four ADATs or DA-88s, for 32-channels of tape inputs.

The 02R looks deceptively like any other console. Two channels of 11-segment, LED-output metering are standard; a comprehensive meter bridge is optional. The input channels are arranged in an in-line

fashion, with the rotary controls for the tape returns located above the long-throw, 100mm motorized faders for the "channel" inputs. Hit a global fader flip switch, and the faders and rotary controls reverse positions. Fader reverse is not exactly a new idea in console ergonomics; however, the internal moving fader automation instantly resets all the faders into their proper positions when the fader flip is accessed, and the reverse occurs when the user goes back into channel mode. Hit a switch, and these first 16 faders immediately move to show the current aux mix or performer cue mix; hit another switch, and they imme-



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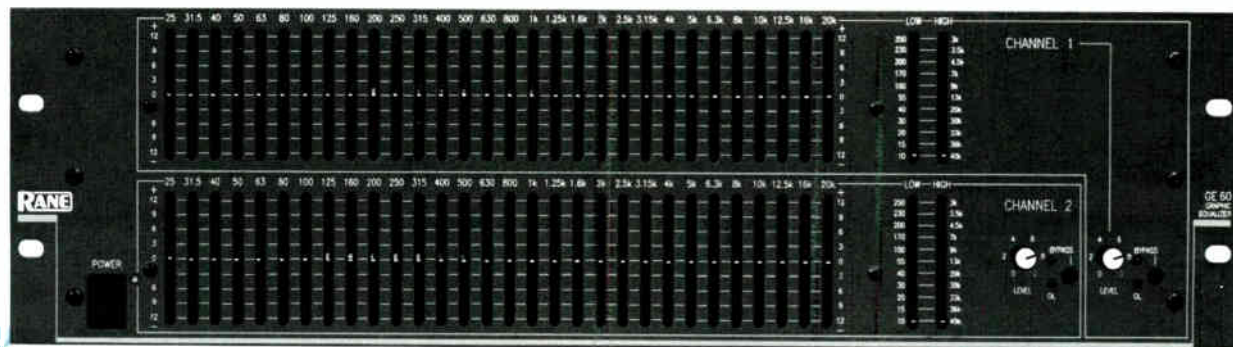
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diately revert to the main mix. You get the idea.

By the way, the operation of the 02R's moving faders is fast, and seems much smoother and more accurate than those on the 01. However, the faders only indicate *relative* positioning of the mix—the digital mixing and processing on the 02R occurs immediately and is not limited by the speed of the mechanical faders.

The main action of the 02R takes place in the master section, which has a single central control panel that can be assigned to any channel and provides access to individual channel functions such as pan, bus assign and EQ. Press the select key on any channel and the mixer immediately recalls that channel's current EQ and pan settings. A high-res, 4x5-inch, backlit LCD panel provides visual displays of EQ settings and curves, as well as console status, DSP parameters and automation settings.

The EQ is similar to that in the high-end DMC1000 digital mixer and can be displayed on the console's LCD panel or as number values shown on bright numeric LEDs for gain, bandwidth and frequency. The four parametric sections offer continuously sweepable center frequency from 20 to 20k Hz. Bandwidth is also adjustable. The upper and lower EQ bands can also be set to peak or shelf (several roll-off profiles are provided) or switched to operate as highpass and lowpass filters.

The onboard multieffects processors are essentially the same as those found on ProMix 01, offering a collection of reverb, chorus, flanging, echo, delay, auto-panning, tremolo and pitch-shifting effects. However, the 02R takes DSP one step further by providing a total of 50 storable dynamics processors (compressor/limiter/gates) on all inputs, outputs and buses. And external control of gating is also possible, as any gate can be keyed via any input signal. Delay is available on all inputs, which allows a number of neat tricks such as mic-alignment compensation. Another plus is the availability of eight aux sends, which can be allocated as needed, with all eight feeding external gear, or two routed internally and six externally. The aux buses and direct outputs can be either analog or digital, depending on customer needs.

Yamaha seems to have paid particular attention to the ergonomics of

the console design. The "buried under sub-pages" approach to operation is replaced with a few detailed screens on the LCD, and a combination of dedicated function keys and a strategically placed data wheel speed production along. The control room monitoring section is extensive and includes switching for two analog and three digital (AES-S/PDIF-S/PDIF) 2-track returns. The control room output and main stereo buses are provided in both analog and AES and S/PDIF digital formats. Word clock in and out ports (essential on a digital console) are standard and provided on rear-panel BNC connectors, as are

MIDI in/out/thru jacks.

The automation is extensive, with 50 snapshots that instantly reset every console control (except playback levels for the studio, control room and cue mixes, talkback level and input trims). The mixer has 256K of nonvolatile RAM storage for snapshots and automation data, which is expandable to 2.5 MB. Each snapshot requires approximately 5K of memory, so a complete console snapshot could theoretically be stored as a MIDI SysEx dump on the "Data" section on the head of an ADAT tape, which has the capacity to store 24K of external information.



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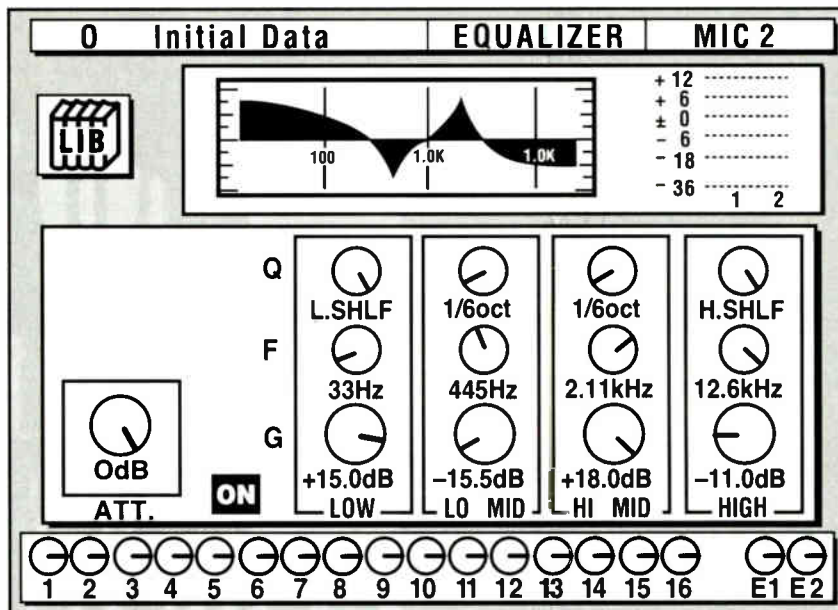
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The 02R doesn't have a disk drive or RAM card slot, but dynamic automation (groups, fader moves, mutes, effects changes, bus and aux levels, etc.) and/or snapshot information can be backed up as RS-422 or MIDI data, synced to external MTC or SMPTE devices.

As the number of these consoles eventually increases in the market, I would expect software developers (particularly sequencer companies) to include 02R support into their

exception to this is the group buses, whose levels are controlled by the data wheel, which is decidedly *unconventional*.

The only thing on my 02R wish list would be some sort of transport control capability, even if it were limited to simple MMC-driven "ff/d/rwd/stop/play" controls and return-to-cue or return-to-zero buttons. These are all the controls you need about 90 percent of the time, particularly when mixing, but while we're



EQ displayed on the console's LCD panel

packages. Additionally, the 02R includes a rear-panel RS-422 port for high-speed serial control, such as that provided by the Mac-based Project Manager software available for Yamaha's DMC1000 console.

Drawbacks? Some concessions had to be made to keep the 02R at its revolutionary price point. As with the ProMix 01, the 02R's packed rear panel doesn't have adequate room for XLRs on all the analog inputs. The first eight mic inputs have XLRs, while the second eight are TRS 1/4-inch, so connecting 16 mics to the 02R will require special snakes. And currently, there is no way to provide an external video or computer display of the backlit LCD. Fortunately, the high-resolution LCD provides a high-quality display. Besides, there aren't a lot of screens to concern oneself with, and the mixer provides a sufficient number of dedicated hardware controls, so mixing on the 02R isn't really much different than using a conventional console. One

at it, let's also throw in a SMPTE display with LED numerals large enough for us old folks to read.

Perhaps the best part about the 02R is an unassuming connector on the back panel: A digital cascade port is designed for interlinking multiple mixers, carrying the data from eight buses, the stereo and aux channels, and the logic switching for the solos. And speaking of cascade, the 02R's cascade bus will be compatible with Yamaha's DMC1000 console and DMR8 mixer/multitrack system. So if you are looking for that under-\$20,000, all-digital, 80-input console to go with your 32-track MDM system, a couple of 02Rs may be just the ticket. ■

The Fine Print: This article is based on the author's preliminary experiences with the 02R earlier this year, and as with any complex hardware/software system, specs, features and prices are subject to change. Your mileage may vary.

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What's New in ANALOG SIGNAL PROCESSORS

True classics never die. In this age of high technology, some 30-year-old analog signal processors—such as Pultec equalizers or Fairchild limiters—still gather praise from the audio community, while digital devices from a decade ago often gather dust.

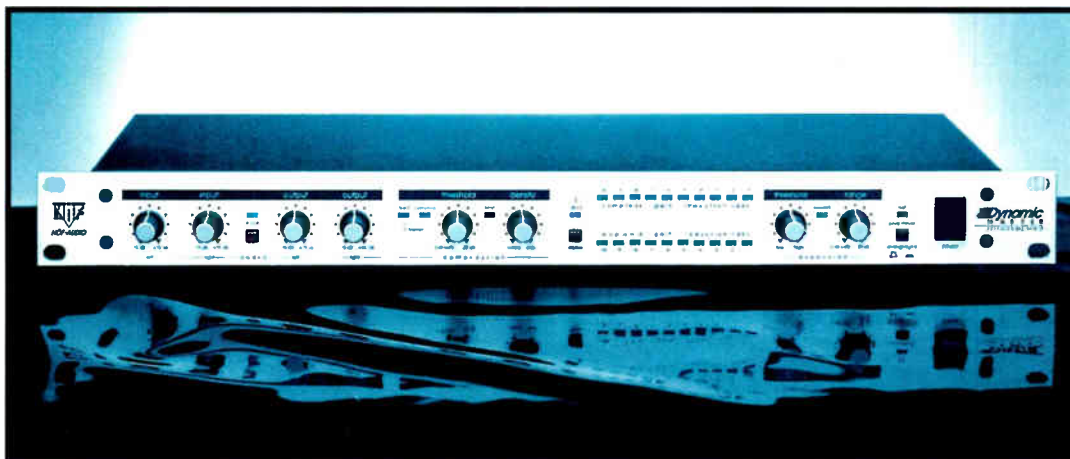
The market for 8-bit samplers just ain't what it used to be, and I don't know anyone who would trade an Ampex ATR-102 analog 2-track for a Sony PCM-F1 digital recording processor, even if it included the matching portable Betamax VCR.

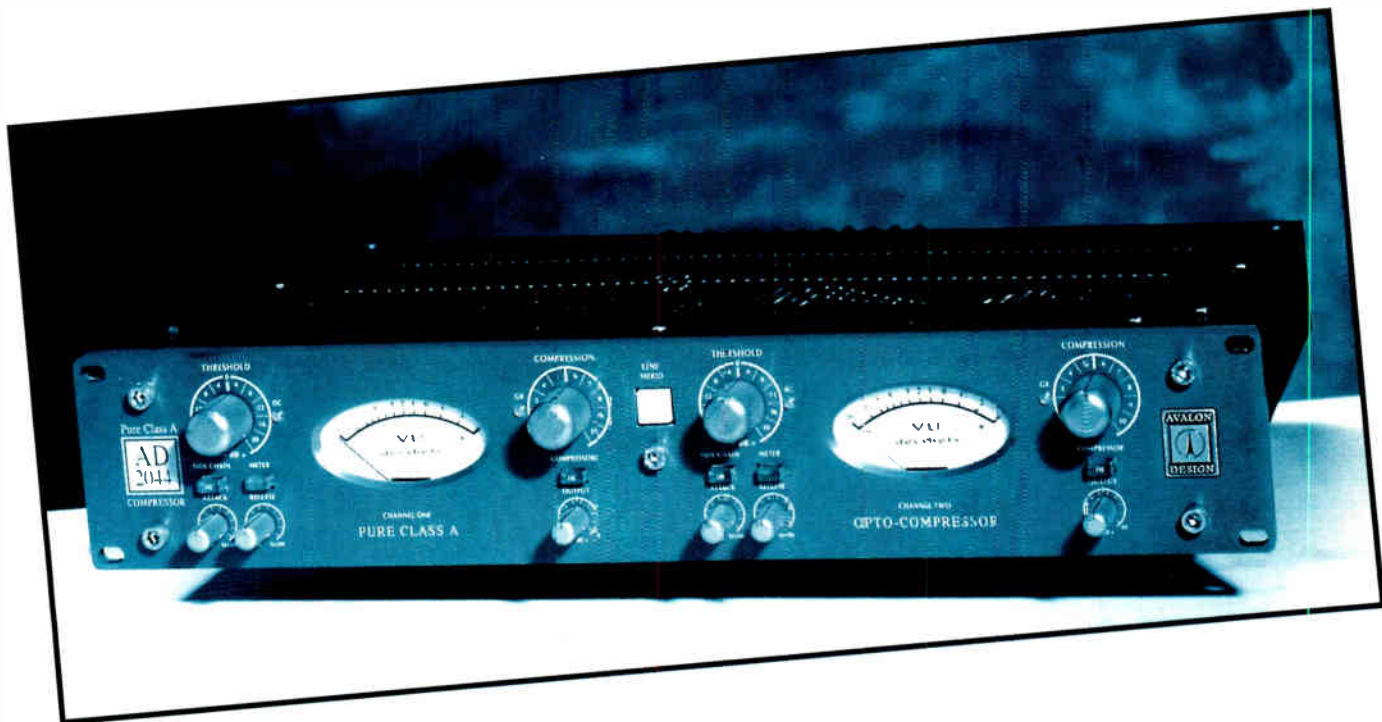
Despite all the hoopla about how wonderful digital is, analog signal processors continue to improve. Interest in tube gear has

reached its highest point in 20 years, and for many engineers, the combination of tube processing with digital recording systems provides the best of both worlds. An analog dynamics processor on the front end of a digital recorder or workstation often improves the available dynamic range of the system, by freeing the engineer from the worry of digital overload.

One relatively recent trend is the emergence of the digitally controlled analog signal processor, which offers analog versatility with the ability to recall presets at the touch of a button. Although this article ex-

BY GEORGE PETERSEN





plores traditional analog outboard devices, such as compressor/limiters and equalizers, an increasing number of outboard mic preamps are now incorporating such features into their designs.

Because this article looks at some of the newest analog signal processors—ones that have shipped recently or are about to be delivered—some familiar names, such as Drawmer, GML, Summit and Tube-Tech, are

ADL STEREO TUBE C/L1500

Anthony DeMaria Labs (New Paltz, N.Y.) offers the ADL Stereo Tube C/L1500, a dual-channel (stereo linkable) compressor/limiter using eight vacuum tubes in a two-rackspace chassis. Features include dual illuminated VU meters (switchable to gain reduction or output), balanced ins and outs, peak reduction and level controls, a 30kHz bandwidth and an opto-attenuator design.

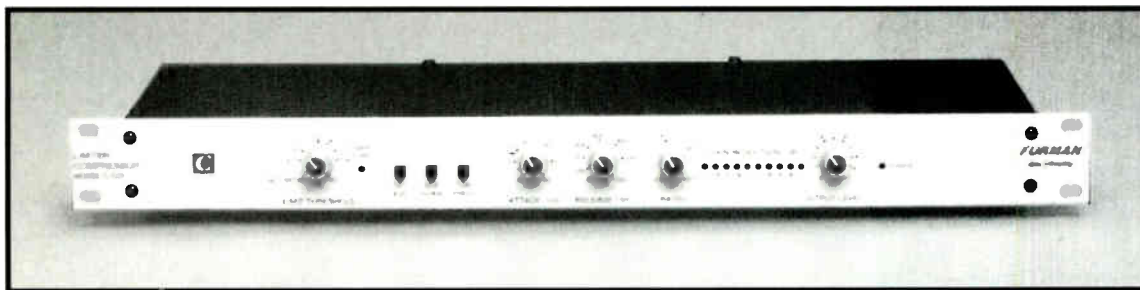


not included. Unlike digital devices, which tend to be fairly short-lived, analog gear often enjoys substantial longevity, and analog products from a few years back continue their steady sales. Twenty years from now, we may be looking back at today's analog offerings as classics. So, listed alphabetically, we begin with...

APHEX 661 EXPRESSOR

Slated to ship this month from Aphex (Sun Valley, Calif.) is the 661 Expressor™, a new version of its Expressor compressor/limiter, featuring the Tubessence™ circuitry from its Model 107 tube mic preamp. The new \$749, single-channel unit provides auto or manual adjustment modes, with control of threshold, ratio, attack and release, and a choice of hard-





puts/outputs and a hard-wire bypass.

ATI PRO⁶

ATI (Audio Toys Inc., Columbia, Md.) offers the PRO⁶ Multiple-Mode Audio Signal Processor, which essentially provides the functionality of a single channel of its high-end Paragon console in a one-rackspace unit. Its six stages of control (hence the name PRO⁶) include a high-voltage mic preamp, highpass and lowpass filters, 4-band parametric EQ, compressor, ducker and noise gate.

AVALON AD2044

The AD2044 from Avalon Design (San Clemente, Calif.) is a dual-mono (stereo linkable) compressor using all-discrete, pure Class-A cir-

BEHRINGER COMBINATOR

Behringer (dist. by Samson Technologies, Hicksville, N.Y.) offers the Combinator MDX 8000, a stereo multiband compressor/leveler/peak limiter offering versatility for recording and broadcast applications. The Combinator delivers simultaneous compression and leveling on four discrete frequency bands of stereo program material, with individual parameter control and in/out switching on each band.

BSS FCS-930

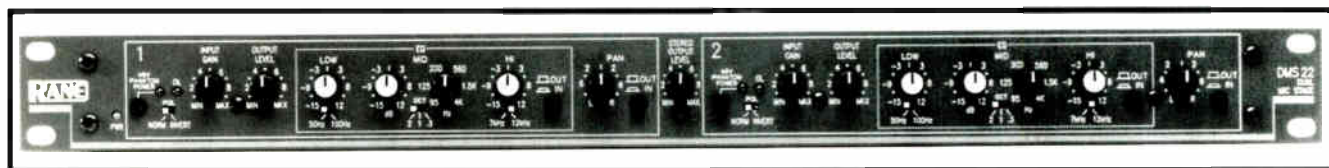
BSS Audio (Northridge, Calif.) has released the FCS-930, a single-channel version of its FCS-960 2-channel, dual-mode graphic equalizer. The unit's dual-mode function provides a

DAKING 52270

Geoffrey Daking and Co. (Wilmington, Del.) builds the 52270, a combination mic preamplifier and 4-band equalizer with highpass and lowpass filters, phase-reverse switch, -20dB pad and +48VDC phantom power. The all-discrete, transformer-coupled unit features Class A circuitry and no ICs. It's available in both vertical and horizontal (19-inch rack) versions at \$2,495 a pair, with a 48-volt power supply.

DBX 168A

Designed for stereo or dual-mono operation is the dbx (Sandy, Utah) Model 168A, which combines compression, de-essing and spectral enhancement functions in a single-rackspace unit. A "silence gate" gain



cuitry with linear optical control elements (no VCAs). Features include variable compression ratio, threshold, attack and release, along with large VU meters, sidechain access, electronically balanced inputs and twin balanced servo outputs, and a hard-wire bypass. The two-rack-space unit retails at \$3,990.

choice of two bandwidth settings: wide for room-response contouring, or narrower filters for feedback elimination. Other features include a variable highpass filter, peak warning LED, 30 45mm faders set on ISO centers, balanced input and output, and automatic relay bypass in case of power failure.

hold function prevents holes, pumping and breathing and noise build-up during pauses in program material, and both high- and low-frequency spectral enhancement is provided. Based on the popular dbx 902, the 168A's dual independent de-essers eliminate excessive sibilance, and the compression sections offer separate drive and density controls.



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DEMETER VTCL-2A

Demeter Amplification (Santa Monica, Calif.) has released an upgraded version of its popular VTCL-2 stereo tube compressor/limiter. Housed in a two-rackspace chassis, the VTCL-2A offers an all-tube audio path with electro-optical dynamics processing, variable attack and delay and dual VU meters; it is also available with balanced inputs or outputs using Jensen transformers. New features include an LED indicator for optimum input level and improved graphics to more precisely indicate attack and release settings. Retail is \$2,095.

DOD R410 II

New from DOD (Sandy, Utah) is the R410 II PA/Monitor Processor, offering EQ, notch filters, highpass filter and automatic Variable-Ratio Limiting™ in a single-rackspace package. Designed to increase system headroom in monitor or FOH live sound applications, the single-channel unit features a 15-band Constant-Q graphic EQ, two 2-band sweepable (-24dB) notch filters and 1/2-inch and XLR inputs and outputs.

EMPIRICAL LABS DISTRESSOR

From Empirical Labs (Garfield, N.J.) comes the Distressor, a classic knee compressor. With programmable analog distortion/warmth, distortion indicator lights, a built-in sidechain EQ and eight compression curves, this single-rackspace mono compressor can be strapped for stereo operation. It features 1/2-inch and XLR balanced connections, along with switchable 110/220 VAC operation. Retail is \$1,395.

FOCUSRITE RED 7

Focusrite (dist. by Group One Ltd., Farmingdale, N.Y.) announces Red 7, a single channel of its famous Focusrite mic preamp coupled with a compressor, de-esser and exciter. In addition to a mic input, the two-rackspace Red 7 also includes a line input and an output fader, which simplifies level matching when bypassing the console and cutting tracks directly to tape or disk. Priced at \$2,495, the unit features Focusrite's proprietary VCA for the de-esser, compressor and ex-

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citer functions. Transformer-balanced I/O is standard, as is a VU meter and internal power supply.

FURMAN C-128

Designed for studio, live sound or broadcast use, the C-128 from Furman Sound (Greenbrae, Calif.) is a single-channel compressor/limiter/de-esser priced at \$269. Features include controls for compression ratio, attack and release time, a 10-segment gain reduction LED, input/output level controls, overload LED, stereo link function and sidechain jacks for creating effects such as ducking or frequency-selective compression.

HÖF DYNAMIC MASTER

New from Höf Audio (dist. by Radikal Technologies of Teaneck, N.J.) is Dynamic Master, an automated stereo dynamic processing unit that includes compression, leveling, limiting, peak and expansion—all usable simultaneously for the processing of complex program material. The servo-balanced I/O allows a user to do digital live recordings with 0 dB of headroom while maintaining the attack transients. Retail is \$2,195.

LAFONT TELEPHONE BOX

The Lafont Telephone Box (dist. in North America by Sascom Marketing, Pickering, Ontario) is a \$1,495, single-rackspace processor that simulates the sound of a telephone conversation. It includes adjustable filtering EQ functions and has controls for adding distortion and phone-line noise to the signal, for an authentic touch.

MANLEY HIGH FREQUENCY LIMITER

The High Frequency Limiter (de-esser) from Manley Laboratories (Chino, Calif.) is designed to control the upper spectrum of critical tracks or mixes where audio performance is paramount. The 2-channel unit uses a passive device (variable reactor core) as the control element, followed by an all-tube line amp on the output. Controls include threshold, 5-9kHz bandpass filter, 7-16kHz highpass filter, sidechain monitor switch, bypass and sibilance control. Inputs are balanced, and one of the outputs can monitor the sidechain while the other is used to record direct.

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World Radio History

(Provo, Utah), is PREQ³, a single-rack unit combining four mic preamps with the same variable air band processing used in NTT's EQ³ equalizer. Standard features are state-of-the-art transformers, variable switched frequencies at 2.5/5/10/20/40 kHz, a +5Hz, 12dB/octave bass roll-off filter, phantom power, phase reverse, -20dB pad and line/mic switching, which allows the unit to be used as a line amplifier with air band processing.

PEAVEY XG

New from Peavey (Meridian, Miss.) is the XG[™], providing five channels of noise gating in a single rackspace. Features include adjustable threshold and release time controls, bi-color gate/threshold status LED on each channel, master bypass, 1/2-inch balanced TRS and unbalanced tip-sleeve (TS) inputs, unbalanced outputs and an internal power supply. Retail is \$199.99.

PRESONUS DCP-8

PreSonus (Baton Rouge, La.) offers the DCP-8 8-channel dynamics processor. Housed in a single rack-space, the DCP-8 features eight discrete analog compressor/limiters, noise gates, independent mutes and automated level channels, all under digital control. With a full-featured MIDI interface and storage for 100 audio scenes, the unit's software features four linked stereo channels, master/slave linking and software switching of input levels.

RANE DMS22

New from Rane (Mukilteo, Wash.) is the DMS22, a dual-channel mic pre-amp that combines two mic preamps with 3-band equalization individual channel outputs, phantom power and a stereo mix out control with pan control, allowing users to create custom stereo imaging, rather than traditional hard left/right. The 3-band EQ has a sweepable mid-band with three bandwidth settings, while the high and low bands each provide a choice of two center frequencies. Each output also has three switch-selectable bass roll-off points (15, 50 or 100 Hz). Retail is \$549.

ROLLS RP282

Slated for delivery next month is the RP282, a stereo/dual-mono tube compressor/limiter from Rolls Corporation (Salt Lake City). The two-rackspace package features inde-

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MASS

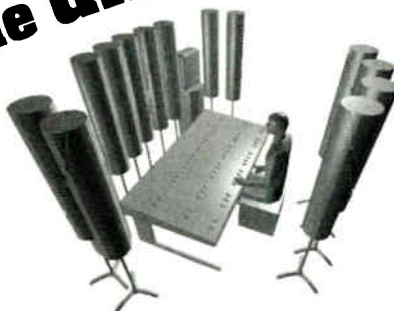
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pendent controls for output, threshold, attack, release and ratio, and dual illuminated VU meters can be switched to indicate input or gain reduction action. The circuit is designed so that the output doesn't change when threshold settings are changed, and balanced XLR and unbalanced 1/4-inch inputs/outputs are standard, as are sidechain access jacks. Retail is \$600.

RSP TECHNOLOGIES

Designed to provide "warmth" for digital recording, the Saturator, from RSP Technologies (Rochester Hills, Mich.) is a dual-channel, two-space unit based on 12AX7 vacuum tubes. It uses proprietary circuitry to create the classic saturation curves of hot signal level analog recordings. Each channel features drive and output controls to optimize character vs. gain staging, and the VU meters are switchable between saturation and output. Inputs and outputs are XLR and 1/4-inch. Retail is \$699.

SCV AUDIO

Distributed by ProMusica (Keene, N.H.), the SCV Audio 209 is a 2-channel unit combining a 9-band parametric equalizer, a set of high-pass and lowpass filters and variable-frequency shelving EQ. The 209 provides up to 15dB boost or cut at nine variable center frequencies, with a bandwidth spreading from 1/2-octave to two octaves. A ground-lift switch is standard. Retail is \$1,999.

SYMETRIX 488 DYNA-SQUEEZE

Symetrix Inc. (Lynwood, Wash.) is shipping the 488 DYNA-Squeeze, an 8-channel compressor for use with digital recorders. The unit allows users to optimize recording levels and "push" more information into the recorder's dynamic acceptance window, while providing eight channels of level-matching interface (+4/-10 dB). The single-rackspace unit retails for \$579.

WHITE 4828

The 4828 from White Instruments (Austin, Texas) is a single-channel, RC-active graphic equalizer with 28 1/2-octave bands on ISO centers from 31.5 to 16k Hz. The ±12dB sliders are 60mm; other standard features include variable highpass and lowpass filters, an LED headroom meter, and electronically balanced inputs and outputs on XLR and 1/4-inch jacks. ■

"The Clearest Path to Digital!"



AD-1000

Apogee's new AD-1000 20 Bit resolution Analog to Digital Conversion System is the combination of years of design expertise with the practical "real world" requirements of thousands of Apogee users. Descended from the industry standard AD-500E, the AD-1000 adds 20 Bit resolution with selectable UV22™ encoding, ADAT™ optical output, digital oscillator and transparent microphone preamps.

Portable 12 volt operation and dual stage, triple servo, direct coupled microphone preamps with phantom power, let you take reference standard conversion wherever you go. Effective input peak metering and "Over" indication ease the adjustment of separate mic gain and multi-turn CAL controls. Select the acclaimed SoftLimit™ function to position your recordings above the competition.

A special version of Apogee's UV22 process captures 20 Bit resolution and detail into 16 Bit formats such as CD, DAT and ADAT. UV22 encoding is the overwhelming choice of mastering engineers world wide for condensing high resolution sources onto CD's.

Outputs can be ADAT optical or simultaneous AES and SPDIF to support multiple recorders. Optional outputs include SDIF, SDIF-II and TASCAM TDIF™. With the input selector set to DIGITAL, AES or SPDIF inputs are converted to all outputs. A built-in digital

oscillator outputs all popular "0" reference levels for precise headroom setting. Patented Apogee Low Jitter Clock technology assures all digital outputs are free of the negative effects of clock jitter.

The AD-1000 can operate as a Sync Master or lock to external AES, SPDIF or Word Clock. Film and Video are supported by NTSC color, monochrome and PAL inputs. Transfer and repair work is further enhanced with Apogee's "1.001" circuit, allowing pull-up and pull-down.

Don't settle for shortcuts to digital. Your projects deserve the best. The clearest path from analog to digital is through Apogee's AD-1000.

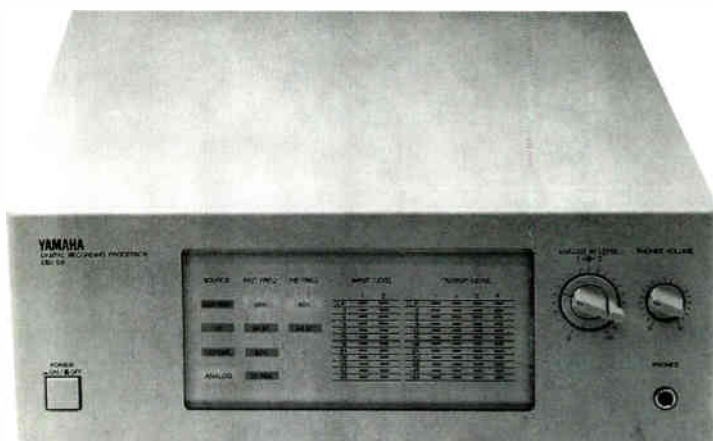
Digital audio unveiled

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AD-500 Owners, contact Apogee for upgrade information.

TM: SoftLimit, UV22, Apogee Electronics Corp.; ADAT: Alesis Corporation; TDIF, TEAC America, Inc.

NEW PRODUCTS



YAMAHA CBX-D3, D5

Yamaha's (Buena Park, CA) CBX-D3 Digital Recording Processor (\$995) is a 4-channel system offering two channels of simultaneous recording and four channels of playback when connected to a Windows-based or Macintosh computer. Featuring on-the-fly recording

and editing functions, the CBX-D3 also has S/PDIF digital outs. The CBX-D5 (\$1,995) includes all features of the D3 and adds balanced XLR analog, AES/EBU, S/PDIF and Y2 digital I/Os, 82 digital reverb and modulation-type effects and digital 4-band parametric EQ.

Circle 227 on Reader Service Card

SSL AXIOM PREP STATION

Solid State Logic's (U.S. offices in NYC) Axiom Preparation Station is a desktop unit providing shared access to Axiom's DiskTrack for recording, editing and prelay. The APS system selects up to 24 tracks from the maximum 128 available with DiskTrack, with remaining tracks available to Axiom. Similarly, the APS shares Axiom's I/O resources, reducing the expensive duplication of ins and outs. The addition of the APS unit as an extension to DiskTrack frees Axiom for large-scale mixing projects, while allowing program preparation to be conducted in a cost-effective manner through shared resources.

JBL 6208 MONITOR

The 6208 Bi-amplified Reference Monitor from JBL (Northridge, CA) has an 8-inch excursion woofer and a 1-inch titanium dome tweeter, with each driver powered by a dedicated amp module with discrete circuitry. An internal active crossover optimizes performance by tailoring the input signal to match the characteristics of the transducers and cabinet acoustics. Rear-panel connectors select either -10 or +4dB input levels, response is said to be 60-20k Hz (± 2 dB), and retail is \$499 each.

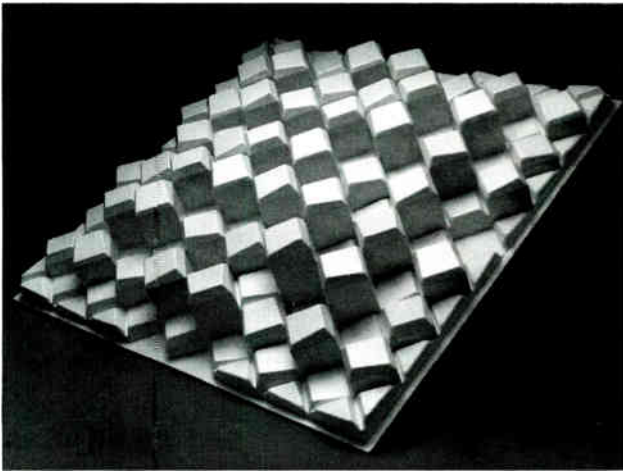
AUDIOMATION

AUDIOMATE 64

New from Audiomation (Ashland, MA) is AudioMate 64, an affordable moving fader system retrofittable to virtually all mixing consoles and based on a Macintosh computer. Color-coded screen buttons let the user quickly identify appropriate sections, and sophisticated offline editing features can be accessed when required. The system includes touch-sensitive motorized faders and the ability to instantly form groups.

Circle 226 on Reader Service Card





CASE CLOSED 8MM AND DAT CASES

The Case Closed Company (Sterling Heights, MI) offers cases for storing 8mm multitrack masters and DAT tapes, accommodating four 8mm, three 8mm/one DAT, or two 8mm and two DATs. An airtight seal protects against dust infiltration. Retail is \$5.

Circle 228 on Reader Service Card

COHERENCE MUSIC SYSTEMS WIZARD

Coherence Music Systems (Santa Monica, CA) intros the "Wizard," an electromagnetic field conditioner in a single-rackspace chassis that integrates into the AC that powers studio and portable rack gear. Featuring superconductive, electromotive coherent technology, the unit is said to counteract the negative effects of electromagnetic radiation produced by any kind of electrically powered device, resulting in clearer audio.

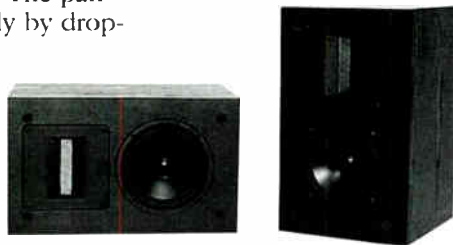
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SDG ART DIFFUSOR MODEL C

The ART Diffusor Model C, a two-dimensional diffuser from Systems Development Group (Frederick, MD), is molded from 1/4-inch-thick thermo-plastic and weighs less than 5 pounds. The panels install simply by dropping them into a 2x2-foot T-bar grid in place of ceiling tiles. Alternate versions accommodate light fixtures and wall-mounting.

Circle 230 on Reader Service Card



STARTRAX SFX LIBRARY

From German company MMS International (dist. by Hollywood Edge of Hollywood, CA) comes the new StarTrax sound effects library. The five-CD set includes authentic European sound material for film soundtracks and music productions.

Circle 231 on Reader Service Card

GROOVE TUBES MD3

Groove Tubes Audio (Sylmar, CA) announces the MD3 tube condenser microphone. Employing a dual-stage tube preamp, the mic features a large-diameter capsule with a 3-micron, gold-sputtered mylar diaphragm. The capsule's rear acoustical port can be closed or opened to provide both cardioid and omni response. Retail is \$1,840, including the power supply.

Circle 232 on Reader Service Card



MOTU DIGITAL PERFORMER 1.6

Mark of the Unicorn (Cambridge, MA) is shipping Digital Performer 1.6, the latest version of its acclaimed sequencer software. With 1.6, Digital Performer is said to be the first integrated MIDI sequencer to offer digital audio support for Pro Tools III. Other features include TDM bus support, DAE support, multitrack audio editing window, mixdown windows and support for QuickTime 2.0 and MMC.

Circle 234 on Reader Service Card

APOGEE RIBBON MONITOR

Apogee Acoustics Inc. (Randolph, MA) has introduced the Ribbon Monitor, combining the company's 4-inch MF/HF ribbon driver with a 6.5-inch woofer in a ported enclosure. Frequency response is said to be 45 Hz to beyond 25 kHz (±3 dB). Dimensions are 16x9.5x11.5 inches, and each speaker weighs 26 lbs. Features include bi-wired, gold-plated speaker terminals and mag shielding. The driver arrangement provides for vertical or horizontal positioning. Retail: \$1,000/pair.

Circle 233 on Reader Service Card

WENGER WAVEPRACTICE

WAVEpractice from Wenger Corp. (Owatonna, MN) is a music practice room using virtual acoustic technology to simulate the acoustical responses of ten environments, ranging from small rehearsal rooms to large arenas. Available in a variety of sizes and employing Lexicon's LARES technology, the rooms let musicians hear how different acoustical environments affect performance.

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ASC MODULAR ACOUSTIC SUB SPACE

Acoustic Sciences Corporation's (Eugene, OR) Modular Acoustic Sub Space (MASS) recording system is designed to provide a reliable and solid acoustic space for recording. The system produces adjustable absorption and diffusion for

room-independent acoustical backdrops that are mobile and versatile. The Tube Traps are 18-pound units with a tripod base that can be combined to create the acoustical space.

Circle 238 on Reader Service Card

MTU MICROEDITOR 2.4

From Micro Technology Unlimited (Raleigh, NC) comes MicroEditor 2.4, the sixth-generation software for MTU MicroSound workstations. New features include transparent auto-save backup every 60 seconds; expansion of the auto-pilot error detectors that prevent crashes; and automatic adjustment of delete edits within segments, making them two to five times faster.

Circle 239 on Reader Service Card

TASCAM DA-20 DAT

The DA-20 DAT recorder from Tascam (Montebello, CA) is designed for project studio applications. Featuring multiple-sampling-rate recording, long play/record mode (for up to four hours of operation on a single tape), S/PDIF digital I/O and a wireless remote control, the 3U rackmountable recorder retails at \$999.

Circle 240 on Reader Service Card

HOT OFF THE SHELF

Lexicon's Artist Series Preset Program for the PCM80 features custom presets developed by leading artists: 617/736-0300...Sound Quest is now shipping MidiQuest V.5.0, a \$319 universal editor/librarian for Windows. Call 604/874-9499...Need a portable iso booth for guitar recording? Folded Space Technologies' Micro Room sealed isolation enclosure measures 12x12x22-inches and contains a vintage-type speaker and internally mounted Shure SM57. Call 404/633-2507...Optical Media International is shipping the ColorScribe 6000 CD-recordable printer and the Macintosh and Windows versions of its QuickTOPIx 2x CD recording system: 408/376-3511...Ducks Deluxe Power Cord Restorer fluid cleans and restores cables and lines with plastic or rubber jackets: 818/363-1323... "The Allen Sides Microphone Cabinet" (\$49.95) is a Mac/Windows-compatible CD-ROM that allows users to audition 66 classic studio mics on a variety of instruments, played back with 16-bit audio clarity. Call Mix Bookshelf at 800/233-9604 to order...BASF is now shipping its Eco Pack tape packaging for

reels of 1/4-inch tape. Call 617/271-6752...Just out: NetWell Noise Control's new 20-page product catalog of acoustic control products. Call 612/939-9845 for a free copy... Pulizzi Engineering's single-rackspace, TPC 2234 dual-input, auto-switching power controller automatically switches from one AC input to the other in case of primary power source failure. 714/540-4229...The new ERK Series of freestanding, steel rack enclosures from Middle Atlantic Products is now available. Call 201/839-1011...The Crystal-Aire Modular Air Cleaning System by United Air Specialists offers the versatility to solve almost any indoor air-quality problem. Call 800/551-5401, dept. 4-95-143...In-Vision Interactive has new CD-ROM samples and software products for Digidesign SampleCell systems. Call 800/468-5530...The 1995 edition of the Texas Music Industry Directory is now available: 512/463-6666... Greysounds & SFX Unlimited have released a CD-ROM of the original sound effects from the Keith Stafford library, with over 500 MB of samples and instruments: 800/266-3475...Get your copy of Sescom's summer sale flyer with dozens of audio interfacing solutions. Call 800/634-3457. ■

SOUND ANCHOR MONITOR STANDS

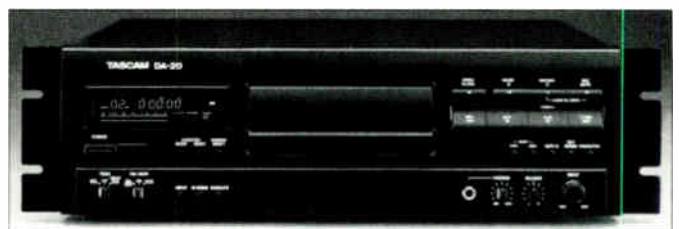
Adjustable monitor stands from Sound Anchor (Palm Bay, FL) are designed to safely support a wide range of small to medium-sized monitors. The stands allow positioning monitors in two configurations—either directly above the meter bridge, or with 5° tilt forward or backward with some overhang. The stands are made of square steel tube, internally damped to eliminate ringing.

Circle 236 on Reader Service Card

E-MU E-64 SAMPLER

E-mu Systems Inc. (Scotts Valley, CA) is shipping its e-64 digital sampling system. Including 64-voice polyphony and up to 64 MB of sample memory, the e-64 is based on E-mu's latest-generation VLSI technology and is said to deliver a new level of features and functionality to the mid-priced dedicated sampler market. It features 64 sixth-order digital resonant filters, re-sampling capabilities, load-while-play, audition from disc ability, and an icon-based user interface.

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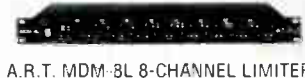
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MACKIE DESIGNS 8-BUS MIXER



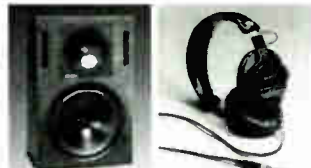
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A.R.T. MDM-8L 8-CHANNEL LIMITER



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EQJITEKE-100 MIC COMMUNITY SPEAKERS



AUDIO TECHNICA AT4050 MIC KRK K-ROK MONITORS



DIGITECH GSP2101 PREAMP/PROCESSOR



AKAI DR8 DIGITAL MULTITRACK



FOSTEX RD8 DIGITAL MULTITRACK



TANNOY PBM 6.5 II KAT TRAPKAT



APHEX SYSTEMS DOMINATOR II



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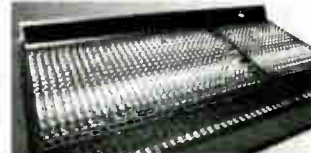
LEXICON PCM-80 DIGITAL REVERB



ROLAND JV-1080 SYNTH MODULE



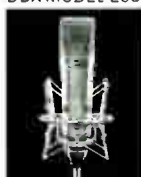
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by Mel Lambert

TIMELINE DAW-80

I'll come clean: When I first saw the nascent DAW-80 about a year ago at the SPARS Audio Workstation Conference, I was underwhelmed. I probably should have been a shade more charitable—after all, the firm had only recently purchased the original WaveFrame designs from Digital F/X Corporation, but I was less than impressed by the system's speed and user-friendliness. It provided all of the basic editing functions that you would expect from a powerful digital audio workstation, but a year ago,

100 edit controller, plus interface with the remarkable Peavey Media Matrix software, the DAW-80 with Studioframe 6.01 is a monster! (The new software is also available for earlier WaveFrame 400, 401 and 1000 systems.)

BASIC SYSTEM COMPONENTS

The DAW-80 consists of two basic, rack-mounted system components: the host computer system and an expansion rack. The computer rack houses a PC-compatible motherboard and back plane based on an Intel Pentium processor running at 66 MHz (earlier versions featured the 80486 at 66 MHz); a 340-Megabyte hard drive that contains the various systems software modules, Windows and other utilities; plus a 3.5-inch floppy drive for software updates and other functions. Three flavors of TimeLine plug-in cards handle master synchronization (video, timecode, word sync, etc.); disk recording/playback (in blocks of eight audio "tracks," plus companion processing for real-time crossfades and other functions); and input/output conversion (again in blocks of eight analog I/O channels). The back plane interconnect is based on a fast TDM (time domain multi-

plexed) bus, which encodes up to 256 channels of 24-bit data. At a basic sampling rate of 48 kHz, the TDM bus runs at 12.288 MHz.

In this way, up to 24 analog and/or digital I/Os can be accommodated, recording to a total of eight disk tracks; other formats, including eight I/Os routing to 24 tape tracks, are also possible. The addition of a Peavey Media Matrix card, as we shall see



Dave Frederick of Takumi Sound using the DAW-80

the interface was rather clumsy and, well, just plain *slow*.

What a change in less than 12 months. As I discovered, the new Version 6.01 Studioframe software for the DAW-80 is extremely fast and, with some major enhancements to the user interface, a revelation. This is a system that's quick, intuitive, and extremely easy to master. And with the recent introduction of the DSC-

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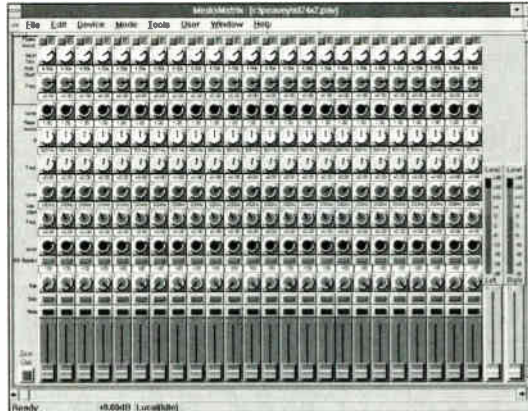
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FIELD TEST

later, offers full mixing, signal routing and DSP functions for the DAW-80, and takes the system to another plateau of functionality. The computer rack accommodates a total of 14 plug-in boards.



Media Matrix card screen

Rear-panel connections include SCSI parallel ports for the outboard hard disk drives. D-Sub connectors for analog I/Os and synchronization, plus connections to an external keyboard, mouse, RS422-compatible audio/video transports, video monitor and S/PDIF digital input and output ports. Also on the rear panel is a SAM (Software Access Module) that keys the system to a specific hardware configuration shipped from the factory; subsequent systems upgrades, plus the addition of new hardware, are accompanied by a replacement SAM key.

The expansion rack houses the system's audio hard drives; to ensure fast access speeds and data bandwidth, each drive is configured to record/replay four audio tracks (totaling eight simultaneous disk events during real-time crossfade and other system gymnastics). In addition to conventional Winchester-style drives, the double-height bays will also

house Exabyte 8mm and MO drives for backup and file-transfer. Provided on the rear of each expansion rack are the various analog I/Os (eight XLRs handle inputs, and another eight outputs), plus video sync, VITC and LTC, MIDI In/Out/Thru and Word Clock. The lack of direct

digital I/Os per channel is a nuisance, although the single digital port on the processor rack can be used to connect dual-channel sources to and from the DAW-80. Additional expansion racks interconnect to provide the appropriate number of analog I/Os and disk drives.

STUDIOFRAME SOFTWARE FUNCTIONS

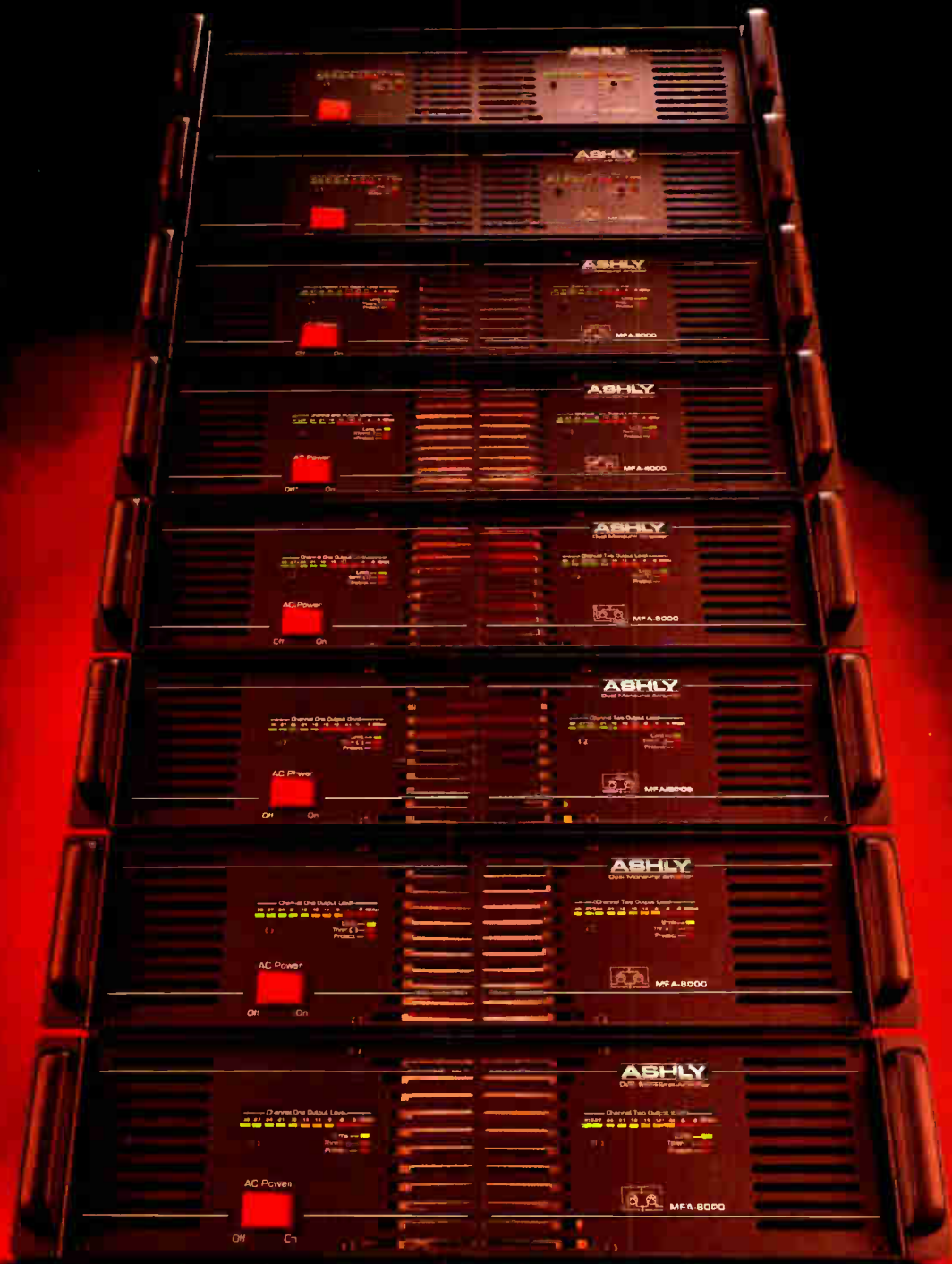
After powering the system, booting Windows and selecting the master Studioframe program—all of which can be implemented via the familiar initialization file sequence—the DAW-80 presents a family of interrelated screens comprising the hard disk editor. The screen is divided into three main areas: a primary Edit Window, providing a visual display of the disk tracks; an Audio/Track Control window for setting solo/mute, record-select, input and output options for each disk track, plus monitor levels and pans; and a Transport Control window with familiar tape transport-style buttons, ten main and ten auxiliary autolocator registers, plus time-code displays (in H:M:S:F or film feet/frame readouts). Also available are a primary and up to three floating Tool Bars, which can be customized to offer single-click control of any system function.

As each window can be placed at various locations on the screen—perhaps with the track control on the right, the edit window set to scroll

DAW-80 Radio Edition

TimeLine recently announced the formation of a strategic alliance with Computer Concepts Inc., enabling CCI to market a radio production version of the DAW-80 digital audio workstation. Using 8-track Studioframe software, the new system will maintain a majority of the system's functionality, including editing, mixing and manipulation of audio data. AES/EBU-compatible digital I/Os will interface this Studioframe "Radio Edition" to Computer Concepts' disk-based Digital Commercial System (DCS). So rather than recording, editing and assembling spots on multitrack tape and transferring them to broadcast carts, the Studioframe/DCS system will allow all of these functions to be handled within a single digital environment. ■

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right to left with the Now Line in the center—it's possible to custom-design your own layouts. These layouts can be modified to suit different music, broadcast and post-production applications. All three windows, plus tool bars, fit comfortably on a 20-inch screen.

As would be expected from a system made by TimeLine, the DAW-80 locks accurately to timecode and video sync, and will run in reverse mode at play speed. Location to target timecode locations is fast and reliable, either with the workstation providing the numbers or when running, for example, in chase-sync to an external video deck. Setting master and slave configurations is easy to understand, as is setting either variety of machine to off- or online mode.

Material can be laid into the system with either its parent timecode (or feet/frame) designations, or local timecode from the Now Line. Sound elements can be given automatic name and take/reel number extensions during inload, or named afterwards via a library utility. Each clip

identified by the DAW-80 is stored in a hierarchy of file locations—a Project is divided into Episodes (an option for TV/film production), Reels, Versions (or Dubs) and Tracks—so sorting through the lists of available material is a breeze. Cues are tagged with a start time and an end time, plus a single internal sync point; paste to the Now Line can be tagged to any one of these timing references.

Each onscreen sound cue can be displayed as either a solid Event Block with event titles, or as an Event Waveform. Currently, the redraw time for the latter type of display is somewhat slow, but I understand this will be accelerated in an upcoming software revision. Elements can be selected singly or in groups (using mouse lassos, or shift-click routines), and moved horizontally (forward and backward in time) or vertically to different tracks. It's easy to split elements, re-label them as necessary, and perform the variety of copy/paste/insert/ripple functions that we have come to expect from a nondestructive hard-disk editor. Up to 256 levels of Undo are available.

GETTING ON TRACK

An unlimited number of tracks are available to the user, the only reservation being the number of simultaneous track outputs that have been supplied with the system. Inputs to each track during recording can be selected from the various analog and digital ports; similarly the off-disk playback can be routed to user-selectable outputs, or re-recorded back into the system on new tracks.

Studioframe is powerful and extremely intuitive; after about 30 minutes with the manual (which, by the way, is a masterpiece in visual clarity and simple English expressions), it's possible to develop some powerful chops. While only simple edit profiles are currently available—you simply drag a top or bottom handle to extend or reduce the crossfade ramps—an imminent software revision is said to add log/linear profiles. The overall level of an element can also be trimmed using a central handle located in the top surface of each event block. Scrub editing is extremely simple, with audio that sounds very tape-like.

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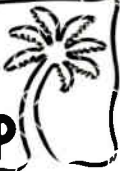
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tions, tracks can be set for preprogrammed drop-ins, with user-selectable pre/post-roll times. Handles can also be set in a user-preference file to a couple of seconds before and after the preselected drop-in/out times, to ensure that the user can extend an envelope if the talent anticipated a cue. Takes can also be layered one above the other in sync, and then revealed as necessary to select the required element to the current replay layer.

And if the read is too long for a 30-second commercial, let's say, then Studioframe's TimeFile utility will shorten a sound cue by up to 50%, or extend it by 150%, without pitch changes. Parameters can be set for classical music, pop music, speech or a user-defined set that determines whether the expansion or compression will honor transient details, rhythmic details or occur at a preset threshold in silence (or a combination of all three). All I can say is that it works extremely well and is almost impossible to detect, except on particularly demanding material.

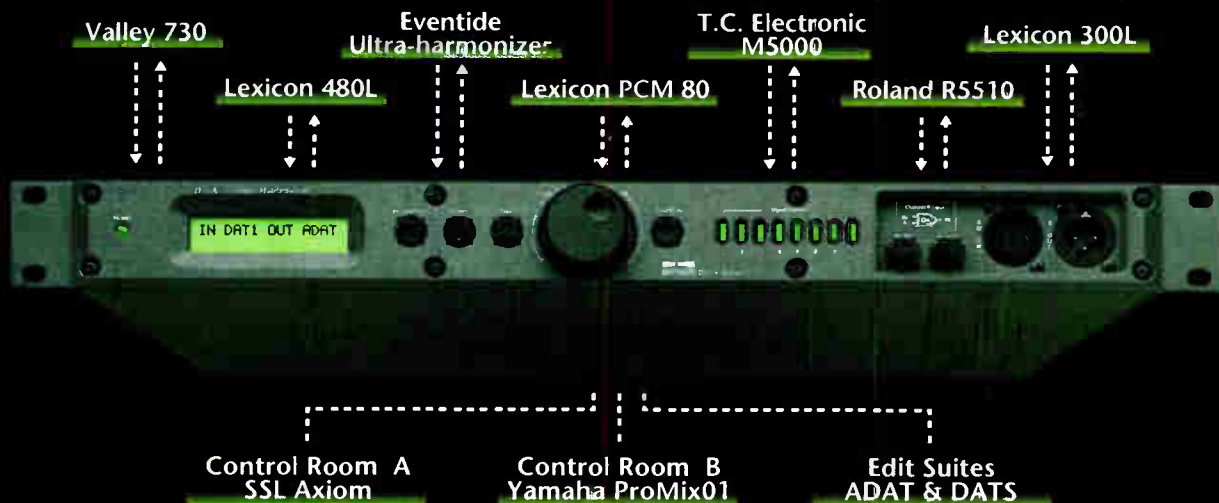
DSC-100 DIGITAL SYSTEM CONTROLLER

While all system functions can be controlled using the mouse and keyboard—and the latter is supplied with useful keycap labels that identify functions available on the function and numeric keys—most users prefer a hardware controller with a dedicated scrub/jog wheel, transport and edit controls. The recently unveiled DSC-100 edit controller features all of the kinds of controls you might reasonably expect to find on such a unit, and an LCD window showing current timecode location and various status indicators. The prototype I used was well-laid-out, although its small type will be hard to read under less than ideal lighting conditions, and there are simply too many keys scattered across its front panel. I understand, however, that the design will go through one more revision before it is released; I would plead for simplicity over comprehensiveness, as some functions would be better left to a conventional ASCII keyboard.

Simple monitoring is achieved via the built-in fader and pan displays, allowing multiple tracks to be set to

—CONTINUED ON PAGE 217

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by Paul Potyten

CRYSTAL RIVER PROTRON

“AUDIOREALITY” TDM PLUG-IN

Announced at last fall's AES show, Protron is one of the more intriguing third-party software plug-ins for Pro Tools and other software applications that support Digidesign's TDM architecture. Palo Alto, Calif.-based Crystal River Engineering has been pioneering developments in audio spatialization for several years now, and Protron is the company's first Macintosh-based application of its technology.

Protron operates on a mono source and localizes it in a 3-D acoustic space according to a user-specified position. The output—a stereo signal—results from head-related transfer functions (HRTF) and acoustic environment rendering techniques that are performed in the digital domain using the DSP chips of Digidesign's TDM system. (For more about TDM, read the Field Test of Pro Tools III in *Mix* April, 1995.) You can use the system in two ways: First, simply adjust Protron's settings

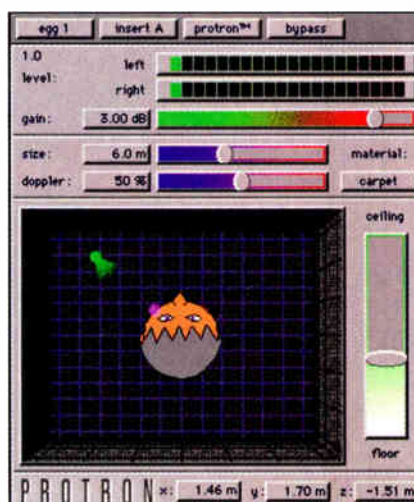


Figure 1: Protron user interface

SETUP

Protron requires a 68040-based Macintosh computer or a PowerMac 8100 or 7100 with at least 16 MB of RAM and either a Digidesign Pro Tools III system (which includes TDM) or a Pro Tools II system with the TDM option. Protron can be installed sim-

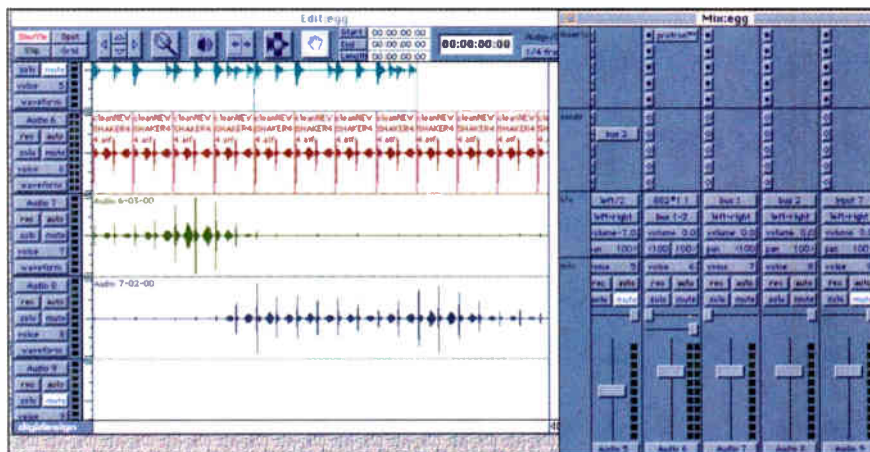


Figure 2: Pro Tools setup for dynamic spatialization using Protron

as you might create a static EQ setting, or you can perform real-time spatialization mixing by recording the path of your sound source.

ply, and though the software is copy-protected, it provides the user with three install authorizations. The Protron control panel can then be opened

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in Pro Tools just as you would open any other DSP option. Protron also works with any other software application that supports TDM, such as EMAGIC's Logic Audio 2.5.

THE PROTRON CONTROL PANEL WINDOW

On selecting Protron in the Inserts menu of a mono channel, that channel will become stereo. Protron's controls and features are grouped into four areas of the control panel window (Fig. 1). At the top, the standard TDM controls allow you to change the routing of the signal path. Next, the I/O area lets you adjust the input gain from +12 dB to -60 dB, and the output level meters display the spatialized output RMS power.

The Environment section lets you define an acoustic space. Room size is adjustable from 1 meter to 100 meters as measured from the listener's head to the wall. The Doppler slider indicates the amount of Doppler shift applied to the sound source. A Doppler setting of 100% will give the true Doppler shift on all paths (direct and reflected), resulting in audible pitch changes in the source audio when it's moved relative to the listener. A setting of 0% removes any propagation delay from the direct path and therefore removes any Doppler shift resulting directly from the source. However, as reflection times are computed from the scenario geometry, a 0% Doppler setting can still impart a degree of flanging in a reflective environment. You can select the room reflectivity from among the following surface materials: carpet, plywood, velour, glass, marble, fiberglass, cellulose and no walls.

The lower half of the window has the Source Position Panel, which includes the "virtual room," the Sound Source icon, the Up/Down slider, and the x, y, z position boxes. The sound source (always omnidirectional in this model) is represented by a green flashlight icon. It projects a corresponding yellow or purple dot on the listener—yellow when the source is below the listener's ears, purple when above. The Source x/y position is controlled by mousing the source icon in the room. Source z (height) position is controlled via the up/down slider; it can also be adjusted via the up/down arrows on

the computer keyboard, thereby allowing full 3-D positional manipulation in real time.

APPLICATIONS

The Protron user's guide offers some valuable psychoacoustic guidelines in connection with using the plug-in.

- Audio with broadband or high-frequency content will spatialize more effectively than narrow-band or low-frequency dominated audio.
- The effect of spatialization is more readily discernible on sources that are moving than on stationary sources.

• We are more sensitive to elevation cues when they occur to our right or left, as opposed to directly in front of or behind us.

To this I will add that movement along a z axis is somewhat more difficult to simulate than along the x and y axes, and spatialization using Protron (and in general) is much more dramatic when the listener uses headphones than with normal stereo loudspeakers. However, successful results can be achieved using Protron with stereo loudspeakers.

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user through specific ways to use Protron, and depending on the audio material and the settings, the results can range from subtle to dramatic. For example, I used multiple Protron inserts to place the various elements of a drum kit at slightly different locations in the same acoustic space, creating more life to the overall drum track. Other possibilities include using a single sound source coming from multiple locations simultaneously, and routing multiple tracks through a single Protron setting. For example, you could create a sound-

scape of city noises coming through an open apartment window located to your left.

Protron's most dramatic effects result from moving sounds through space in time. This is most easily achieved by placing a Protron setting in an insert on the track to be manipulated. Then send the output to a stereo bus. Use the two buses for the left and right inputs of a new pair of channels, place them in record and move the sound source icon around the virtual room. Fig. 2 shows the track routing and results (Audio 7 and 8) of flying a shaker (Audio 6) around a 12x12-meter carpeted room.

The main drawback of dynamic spatialization using Pro Tools is that it's a trial-and-error process. If you don't get the exact path you want, you must start all over. An editable MIDI stream of location events over time would greatly improve the usability of this feature. When you were satisfied with your path, you could then record the resulting audio to the output tracks. However this is not a shortcoming of Protron: Version 2.5 of EMAGIC's LogicAudio does in fact provide this option for Protron.

It should be noted that Protron requires considerable DSP processing to do its thing and has the potential for maxing out the capabilities of all but the most fully loaded DSP Farms. A session that called for extensive use of the plug-in could alternatively be built up by using the Pro Tools' Bounce-to-Disk feature. Simply select a Protron setting for a given track, and then bounce that track to disk, freeing the plug-in for another track.

It's also important to make a distinction between Protron and digital reverb plug-ins such as D-Verb. Protron is *not* a reverb plug-in: It deals only with first-order reflections. In fact, some of the best effects can be achieved by intelligent use of Protron with D-Verb (or with any reverb unit). Here again, the user's guide offers some valuable suggestions for creating realistic tracks. Speaking of the user's guide, I found it to be uniformly well-written, with an excellent introduction to the general subject of aural spatialization.

CONCLUSION

Protron is a valuable addition to the Pro Tools tool kit. The user interface is easy to understand and use—a major achievement when you consider the complexity of the spatialization process. Although SMPTE support and translatability into surround sound format would be great, Protron still offers a lot of utility for a wide variety of audio applications. Whether you are a sound designer, an audio-for-multimedia producer, or a music producer, if you have a Pro Tools system, you'll want to check out this unique plug-in. Suggested retail is \$995.

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3-D Sound for Virtual Reality and Multimedia

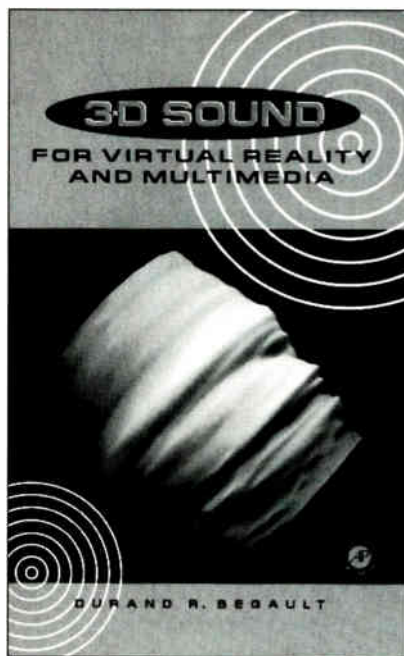
Until recently, 3-D audio was the domain of a relatively small group of university-funded psychoacoustic researchers and computer musicians. With the latest generation of powerful personal computers and the widespread availability of software for manipulating digital audio, the public has awakened to the concept of 3-D sound. High-tech trade shows usually have at least one example demonstrating the technology, and some consumer products that incorporate 3-D audio have appeared in the marketplace. Apparently, its time has come.

As one of those researchers who has been waist-deep in 3-D audio for many years at NASA's Ames Research Center, Durand Begault is arguably one of the most knowledgeable sources of reliable information on the subject. And his book, *3-D Sound for Virtual Reality and Multimedia*, attests to that fact. It's a valuable—if somewhat unevenly written—collection of information about 3-D sound. Topics range from the theoretical (historical and ongoing research and experimentation on auralization) to the practical (existing and proposed applications in this rapidly developing field).

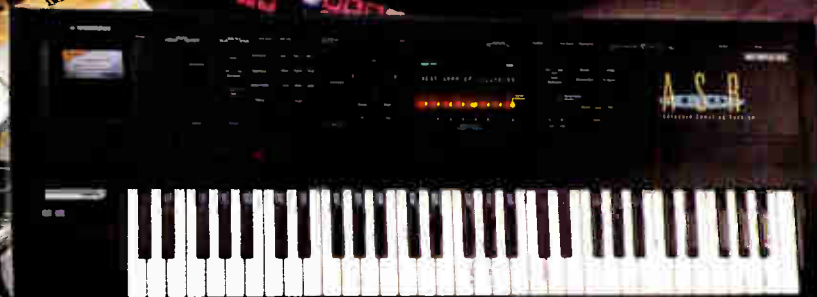
With its numerous well-documented references and diagrams, the 293-page book tends to drift in and out of the style of an academic textbook, but the information is clearly presented. It is divided into six chapters: The first discusses the basic physics and perceptual aspects of 3-D sound, comparing the natural acoustic environment with the virtual auditory space. Chapters two and three provide an overview of spatial hearing. Chapter four describes the nuts and bolts of implementing 3-D sound, using digital signal processing to model spatial hearing cues such as distance and reverberation. Real-life and proposed virtual acoustic applications are considered in chapter five. The last section contains a useful and comprehensive listing of manufacturers of related hardware and software, as well as books, journals and magazine articles. By itself, this last chapter is worth the price of the book.

3-D Sound for Virtual Reality and Multimedia, by Durand R. Begault, is published by AP Professional, Cambridge, Mass., and available through Mix Bookshelf, (800) 233-9604. Anyone interested in synthesizing auditory spatial experience—whether for a multimedia, virtual reality or other related application—will find this book a valuable resource.

—Paul Potyten



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by Jeremy Darby

SOUND CHECK



Dolores O'Riordan of The Cranberries

Squeeze). Audio on those early shows was not a major concern, making use of whatever the TV studio had in-house for reinforcement. Monitors were a luxury, and the entire show was mixed from a single console. As with many TV shows, audio was the poor relation. I remember one director asking why microphones were needed in front of the artist, as the "look" was supposed to be unplugged.

As a result of the relentless effort and enthusiasm of producer Alex Colletti and his team, the show has gone from humble beginnings to a high-tech success story. The case in point is the multi-Platinum Eric Clapton *Unplugged* album, after which every record company wanted its artists to follow suit. Other big names have included Mariah Carey, Rod Stewart, Nirvana, The Eagles, Pearl Jam and Tony Bennett, who won a 1995 Grammy for Album of the Year with his *Tony Bennett—MTV Unplugged* (this guy has spent his entire career unplugged!).

Most of the shows shot in New York now take place at Sony Studios on West 54th Street. This complex of recording studios and audio sweetening rooms also houses a television studio and serves as one-stop shopping for many MTV shows. Unfortunately, for the most recent series of *Unplugged* shows, the studio had already been booked to another client. This led Colletti and line producer Audrey Johns on a frantic search of the Big Apple for a suitable studio or performance space.

Deciding on the Brooklyn Academy of Music meant that a remote video truck and an audio

—CONTINUED ON PAGE 168

SHOWTIME FOR MTV "UNPLUGGED"

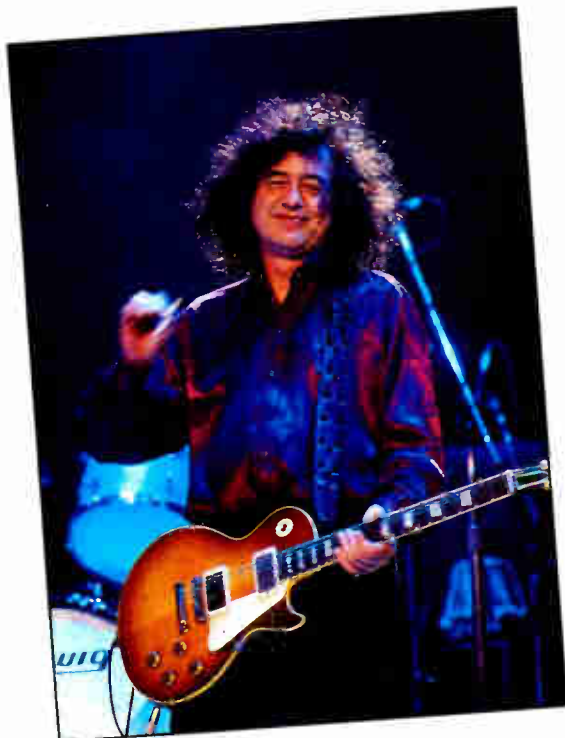
The original idea behind *Unplugged*, MTV's unique and hugely successful television concert series, was to lure artists to perform their songs in a stripped-down, acoustic format, so that a small studio audience could enjoy an intimate evening in the round with favorite artists and hear the songs as they had been written, on acoustic guitar

or piano. The concept has taken hold of the industry to become a standard "second movement" in live concerts, such as the Stones performing "Angie" on their current world tour.

The original 1989 show had a host, singer-songwriter Jules Shear, who performed with several guests. In the first low-budget series, artists included Elton John and British pop writers Difford and Tilbrook (a.k.a.



Live!



TOUR PROFILE

Jimmy Page and Robert Plant

by Tim Moshansky



SOUND COMPANY

Clair Brothers Audio Inc.

CREW

Dave Kob (FOH mixer), Don Garber (crew chief), Ed Dracoules (monitor engineer), Ed Conrad (2nd monitor mixer, CBA sound tech), Shane Swisher (orchestra mixer, CBA sound tech), Marty "Neil" Strayer (CBA sound tech)

Any musicians who have reached the point in their successful careers where they have the luxury of not attending any sort of a soundcheck before their concerts obviously must have a lot of confidence in the people running the show. So I guess I should not have been surprised when Dave Kob told me that Jimmy Page and Robert Plant don't do a soundcheck. The show, in a sense a "reunion tour" of Led Zeppelin's two most famous members, is part of a series of sold-out shows across North America and throughout Europe. But this is far from a simple rehash of old Zep tunes. The tour features a 22-piece

string section and eight Egyptian musicians in addition to Page, Plant, Porl Thompson from The Cure (guitar), Michael Lee (drums), Charlie Jones (bass) and Nigel Eaton (hurdy gurdy), as well as some very interesting arrangements.

Mix caught up with Dave Kob, FOH mixer for the tour, on a sunny Vancouver day to find out how he approaches mixing such a diverse and powerful range of talent.

Kob hails from Pennsylvania, and has worked for Clair Bros. Audio for just over 20 years. He started out as a musician

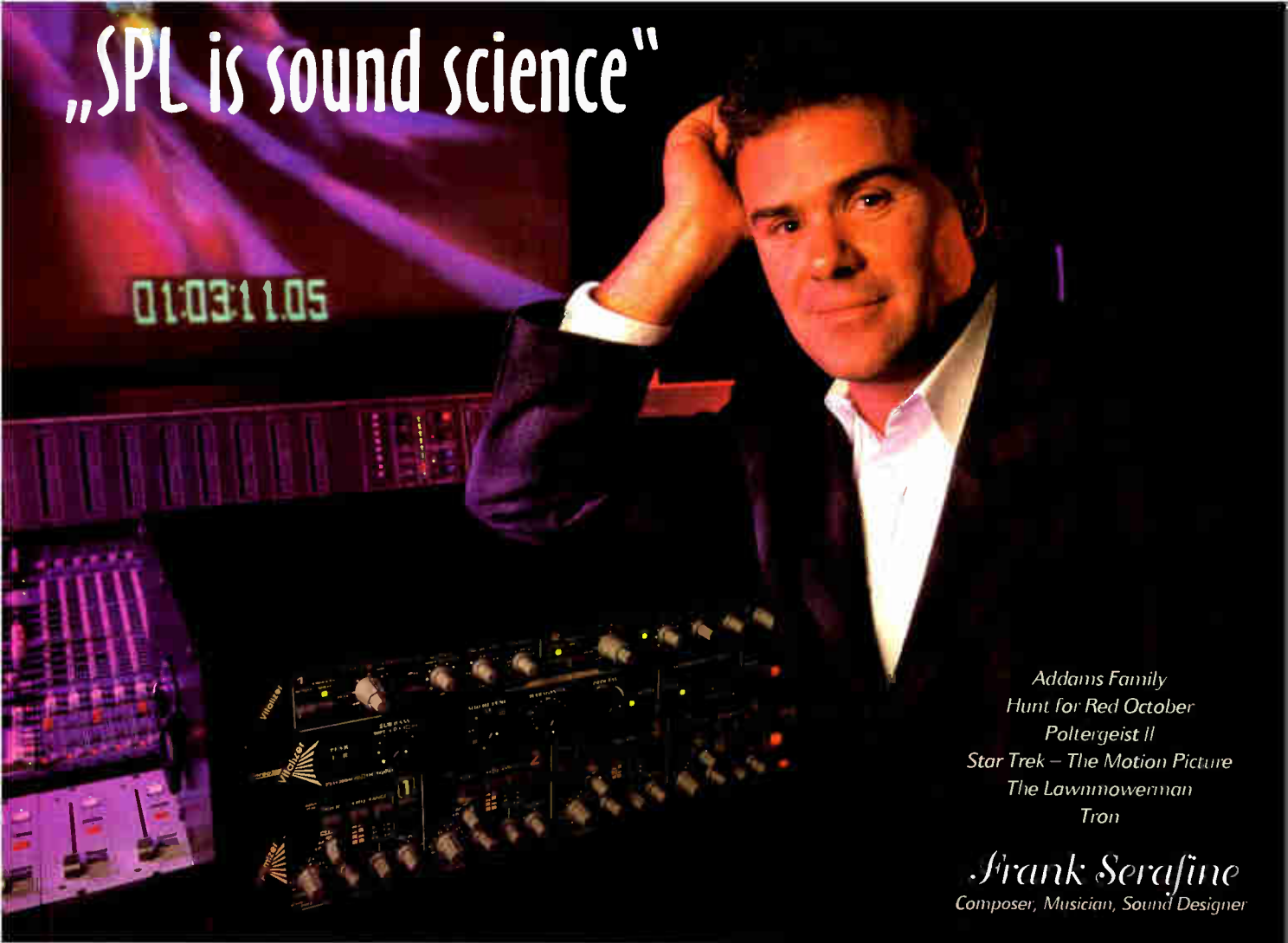
who "went broke playing in blues bands just like everybody else," he explains. "Around 1971, my blues band was going *really* broke, so I returned to Pennsylvania and got a job with a local music store that had recently



FOH engineer Dave Kob

PHOTO: S. JAY BLAKESBERG

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picked up the Sunn Coliseum P.A. system." Kob toured in the early years with musicians such as Johnny Cash, Joan Baez, Boz Scaggs (during the *Silk Degrees* tour), Isaac Hayes, Buddy Miles Express and many others. Over the last decade or so, Kob has been extremely busy with a multitude of tours with Sting (including the final Police years), Fleetwood Mac, Don Henley, Madonna's first two tours and Robert Plant's solo tours.

Rehearsals for this Page/Plant tour began in February in a small London studio, with the tour scheduled to commence in March. "Robert asked me early on in rehearsals when was the last time I had mixed an orchestra," recalls Kob. "I had to think about it for a minute, and it was Tony Orlando & Dawn in 1976." To prepare for the show, Kob did research on pickups and called people who had done orchestras more recently. He

ended up using Fishmans on the symphony instruments.

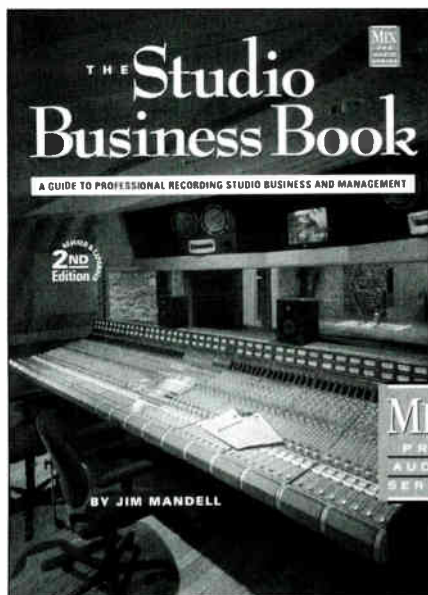
Shane Swisher sends sub-mixes of the orchestra out to the FOH console from an isolated place behind the stage, on a Yamaha PM3000. "Shane's been doing a really great job mixing the symphony," says Kob, "and I just take first and second chair violins, violas and cellos so I can goose low end and get a little flexibility." Four custom-made Clair hotspots on stands provide monitoring for the string section, which is surrounded by a low plexiglass wall for isolation.

Kob admits it was a struggle at the beginning to find the right hang for the P.A. "The levels we're working with are a bit louder than most bands I mix, so I had to EQ it a lot more radically than I had done before," he explains. "I had to EQ the P.A. as loud as the show almost, and if I didn't, it just didn't work out. You learn all the time, and after 25 years, I'm still learning. There's a whole lot of low-mid

stuff in this show that was just really bunching up on me, and I couldn't get distinction or separation. Jimmy's guitar onstage just has an incredible amount of low end, and there's a lot of stuff in the low-mid, upper-high-end register that was just keeping me from getting distinction, especially with the symphony. The goal is to have it sound good loud and not *ouch* loud."

Kob uses a TC Electronic 6032, motorized fader, graphic EQ remote module to EQ the various coliseums and stadiums. "If you EQ from the middle of the room in most halls, there's always a weird spot right in the middle," he explains. "So I EQ the medium short-throw cabinets off to the side where they're facing and then EQ the long-throw cabinets back a bit behind the riser and off from center, and then I go up on the riser and make adjustments so it sounds okay to me."

One aspect of the show that makes it a continuous challenge



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for Kob is the diversity of musicians, instruments and personalities he is dealing with, in particular the eight Egyptian Pharaohs. "They're a lot of fun," he says with a smile. "I couldn't imagine the show without them. That half of the show I thought would be the hardest to mix. I dreaded it, with the symphony and everything going, but invariably every night it winds up sounding the best, and it has the most energy, and it's the most fun to do. It makes it truly multidimensional, which is what Jimmy and Robert had in mind. The last thing they wanted it to be was a couple of old guys playing copies of themselves 20 years ago."

The Egyptian violinists are the only ones onstage to use in-ear monitors, because they really can't hear themselves in any other way. "We never tried them on Jimmy," says Kob. "He didn't want to hear about it, so we tried them with Robert, but he didn't like them. You have to get used to that sense of isolation without ambient sound. Ed, our monitor mixer, had a tough time originally because Robert wanted to hear everything all the time, including all of my front-of-house effects. It took quite a bit to get all of that going and to get Robert into a place where he's comfortable working onstage."

The show traverses almost as many musical terrains as there are musicians. There's a whole acoustic part of the show where they break out mandolins, banjos and acoustic guitars, and then it segues into a heavy rock number. The orchestra comes out to play a blues number, and

finally the Egyptians come out and everything is mixed together for the last four or five songs. "It keeps you on your toes," laughs Kob. "You don't just sit there and turn up the solos."

Kob says mixing any show is about translating the energy onstage and making it even larger than life. "I get to play around with a lot of cheesy old effects with Robert," he says. "We play off each other a lot, a lot of long delays and stuff. I got an old Eventide Instant Phaser out of one of Jimmy's guitar racks that Robert liked for a vocal effect. I did buy a backup, because they're not particularly reliable."

On Plant's voice, he uses a Lexicon 480 for reverb about half the time, and the H3000 all of the time at different settings. Kob says he also likes to play with the long delays on the TC 2290. He uses a rack of nine SPX 1000s for instruments and drums and Summit tube compressors on bass and Plant's vocals.

Several Aphex 612 gates are used for the drum kit and the strings so they don't feed back when they're just sitting there, and a Wendell Jr. sampler is used when Kob has trouble with snare drum tuning. "Michael's a very hard hitter," he says. "Anywhere from eight bars to eight songs, it'll either break completely or it will progressively get worse and worse. At some point, I just start to fade in the Wendell so I still get a solid snare."

Kob mixes FOH on a Yamaha PM4000 desk, with an extra PM3000 out front for the support act and eight inputs for the

Pharaohs, which he submixes down to strings and percussion. Onstage monitoring is done through two PM3000s.

In the system, there are two types of cabinets: a long-throw cabinet called the S-42 P and a medium short-throw F-cabinet. Each has its own driver systems, left and right, long-throws and short-throws. The Clair Bros. CTS processors (designed specifically for the Clair cabinets) do all of the line amps, crossovers, phase corrects, frequency corrects, time aligns and limits.

Aside from the violins, violas, cellos, banjos, mandolins, guitars, drums, finger cymbals, tambourines and other somewhat "conventional" instruments that Kob has to deal with, a few antiques and curios are thrown in as well, including a 500-year-old hurdy gurdy and a Theremin that seems to be continuously breaking down.

During the Vancouver show, Kob seemed to be enjoying himself, rocking in his seat and nodding his head to the heavy beats. It's hard not to enjoy being a part of such a multidimensional tour that features two of the most influential and creative musical legends of the past 25 years. "This is the loudest crowd I've ever heard, every night, consistently," he concludes. "It actually drowns out the P.A. at certain points in the show. They're on their feet from beginning to end, screaming. The vibe is incredible, it really is." ■

Tim Moshansky is a freelance writer and singer/guitarist for The Bush Pilots in beautiful Vancouver, B.C.

—FROM PAGE 164, *MTV UNPLUGGED*
truck had to be booked for the event. MTV technical manager George Eppley hired All Mobile Video's truck. For sound, Effanel provided its 45-foot trailer, equipped with an SSL console and a Sony 3348 48-track digital machine. See Factor of New York City was again hired for sound reinforcement, having provided equipment for most of

the New York *Unplugged* shows in the past.

Veteran house engineer Tony Blanc was hired by MTV to take care of front-of-house mixing. The audio truck recording engineer was Effanel's John Harris. I returned to staff the monitor mix position, which is really like being an audio stage manager. The following is a report of a few days in the life of *MTV*

Unplugged.

7 a.m., Monday: Blanc and I head by subway to the Brooklyn Academy of Music. The set pieces and lighting had been loaded in over the weekend, leaving an almost clear stage area to work around. Set designer Tom McPhillips has opted to use the cavernous stage at BAM as both the performance and audience space, leaving the

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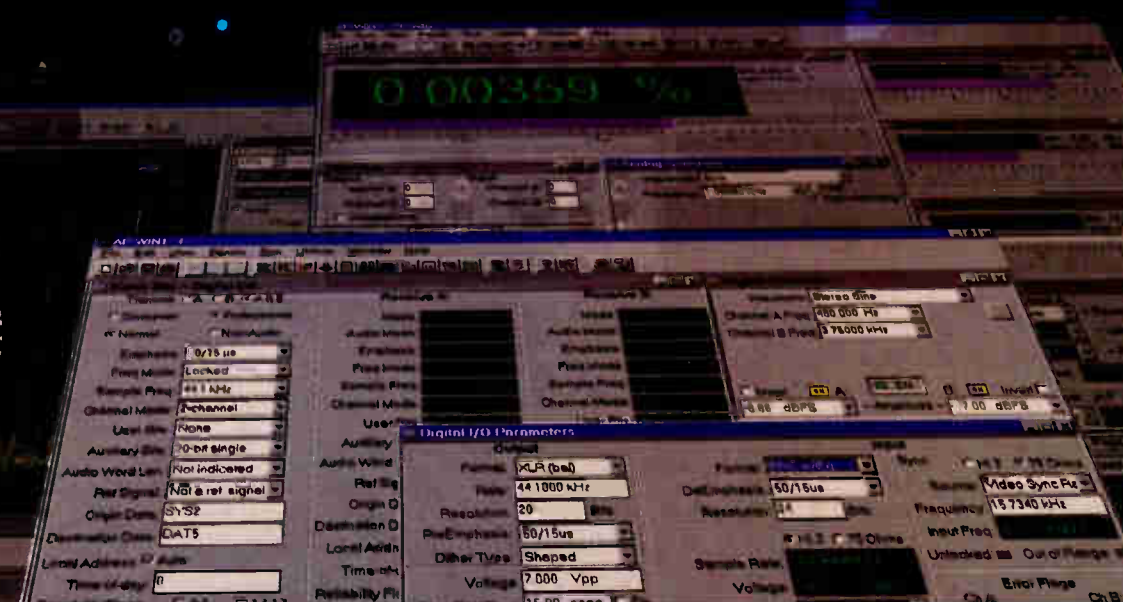
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auditorium itself empty. A 20-foot, diamond-shaped riser in the middle of the stage floor is our artist-performance position, with the audience seated 360 degrees around them. McPhillips, along with lighting designer Allen Branton, has to be able to create a different "look" for each artist within the confines of the space. This involves augmenting the area with various set pieces and furnishings, the placement of which will affect how we will set up the band equipment and monitors.

Twelve Meyer UPAs had already been hung around the perimeter of the stage at lighting truss height, zoned as "upstage, downstage, stage-left and stage-right." See Factor's Sean Kelly and John Pernal came in at the same time as the lighting company to negotiate the best positions for these cabinets. With television, it's always a compromise between cameras, sets, lights and finally audio, as to who gets the best position. You must be prepared to politely, but firmly, state your reasons for speaker and microphone placement, but be prepared to give in to the visual aspect of the show. Always have a plan B and plan C in hand if you do not get your way. Give a little, take a little.

Today, the monitor mix and main splitter position is approximately 35 feet from the center of the stage, hidden behind the audience seating. We must run all our monitor speaker and microphone sub-box multicore cables around the outside of the audience seats, to the upstage corner of the stage, avoiding camera and lighting runs. This simple precaution is often overlooked. Good housekeeping can save hours of headaches chasing hums and buzzes, which can jeopardize the recording. A little noise that might be acceptable in an arena or club will be scrutinized in the remote truck.

While the stage-hands and I are building the monitor and amplifier position, Blanc is setting up the house position in what will turn out to be the first

of three locations for the day. Equipmentwise, our rigs are pretty standard. At FOH, Blanc has a Yamaha PM3000 console and outboard racks with a Lexicon 224 and PCM70, an Eventide H3000, Yamaha SPX900 and REV5 reverbs, dbx 160XT compressors, and a 900 frame with 903 compressors and 904 gates. There is a Klark Teknik DN60 analyzer and DN360 equalizer, a BSS TDS-804 stereo digital delay line and four IRP 1/2-octave equalizers. Besides the flown UPAs,

there are also Meyer 650 double-18s hidden behind the audience seating. House amps are all Crest model 7001.

In monitor-land, I have a Ramsa 840, with Klark EQs, Meyer processors and Crest amps. A modest effects rack includes two BSS DPR-402s, a dbx 900 frame with 903 and 904 cards, a Drawmer DS-201 and a Yamaha SPX900, SPX90 and REV7. The system is configured for 18 mixes. Monitor speakers are all Meyer UM-1A slants, and

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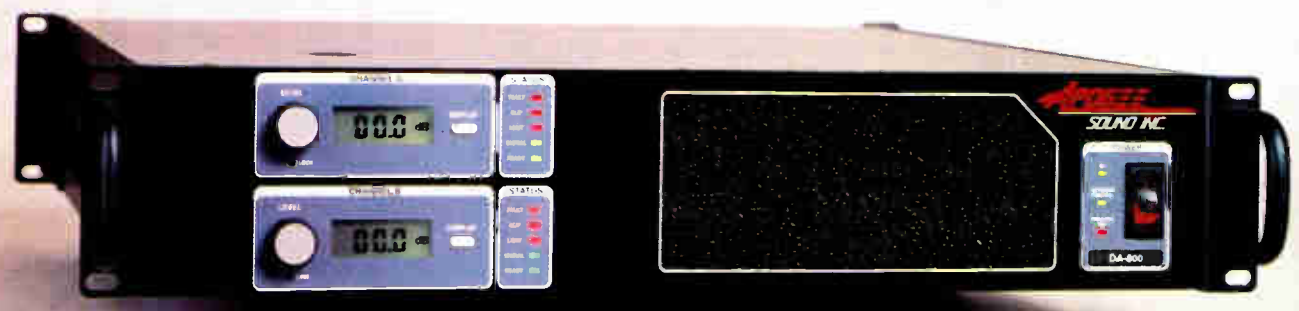
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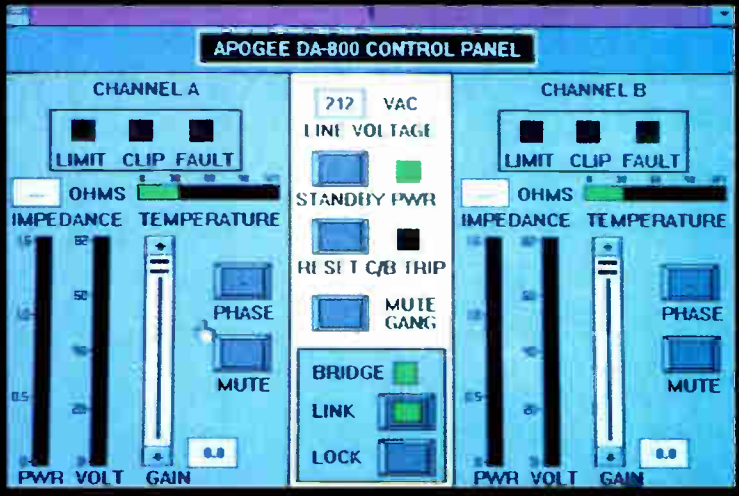


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the drum mix also has a Meyer USW double-15.

9 a.m., Monday: The Effanel truck arrives to park and power. The Effanel crew of Brian Faehndrich and James Briggs handles the running of the 52-pair multi-core from the truck to the main See Factor 96-input stage box located by the monitor position. Here, Faehndrich sets up the 52 John Hardy M-1 mic preamps that will send line-level signal to the truck. Apart from being an excellent mic amp, it's sonically preferable to boost the mic sig-



MTV Unplugged performance by Melissa Etheridge, with special guest appearance by Bruce Springsteen

nals near the stage and send line-level over the long distance to the truck. At the stage box, the mic signals from the stage are first split through Jensen transformers. Effanel will be the direct signal recipient; house and monitors receive isolated outputs, meaning any microphone that needs phantom power will get it from the Hardys. Meanwhile, Briggs is looking for positions for the AKG 451 audience mics. It's no easy task when the seating is in the round and cameras will be everywhere. See Factor's Kelly is hooking up power for "all things audio." It's important that the truck and the P.A. system all run off the same power, especially the ground. To help reduce any interference between the lighting, a large AC isolation transformer is used.

While this is going on, Harris, Blanc and I have an input list meeting. Blanc was able to

call in to rehearsal at S.I.R. the previous night and has a better idea about a possible input list. John and I abandon the idea of the generic list, in favor of an artist-by-artist list, though this is complicated by the fact that we have to soundcheck Hole first, then strike the stage and set up The Cranberries, but we think we might get both acts into 40 inputs.

10 a.m., Monday: Blanc is informed that the FOH mix position he has just finished wiring must move, because it is in a camera shot.

11 a.m., Monday:

Hole's band gear arrives. They definitely have their own concept of "unplugged." The acoustic guitars and bass will go from the pickup output, through various effects pedals, and into guitar amps. The band will be augmented by three other musicians. Arranger Hal Wilner's interesting combination of cello, tuba, clarinet, whistle, acoustic and electric

harp (through an amp, of course) adds to the input list.

11:30 a.m.: We start a line check from the stage through the splitter to the Hardy preamps and out to the truck, using a condenser mic to make sure phantom passes through all lines. As we complete this, band gear is being set up, and mics are being put on stands. Jebbi, Hole's monitor engineer, advises me that Courtney Love has brought her own double-15 wedge monitors and wants to use them. We agree, as sometimes having an artist see a familiar monitor can make everyone's day a little smoother (but, boy, what ugly cabinets). Just before the break for lunch, Blanc is told that the FOH position he has just finished re-wiring must move back five feet.

Noon: Strict union meal break. Hands off.

1 p.m.: Blanc and the BAM audio crew move his console

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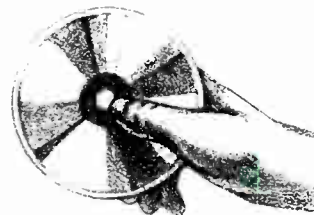
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AUGUST 1995, MIX 173

again. Jebbi and I start ringing out the monitors for Hole. For this *Unplugged* series, Audix OM-7s were chosen as the primary vocal mic. This is a new mic for me, and I am impressed. The mic is a very good-sounding, transformerless hypercardioid dynamic, extremely useful today due to the stage volume of the amplified "unplugged" instruments and the small size of this stage. For drum mics, Beyer M88 on kick, Shure 57s on snare (top and bottom), Audix D-2 dynamics for toms, Audix SCX-1 condensers for the hi-hat and ride cymbals and Schoeps for overheads. Along with the usual Countryman direct box for the bass, we also mike its Ampeg B-15 cabinet with a Neumann U67. Love's guitar gets DI'ed, and her Fender Twin gets another U67 and an Audix D-3. The lead guitarist has a DI and an RCA 44 on his Roland JC-120. Because the stage level is louder than it should be (even after repeated requests from the band's producer to turn down), we have to place 3/4-inch Plexiglas baffles

between the drum kit and the harp player to get any separation. For the other musicians, we put a Countryman Isomax by the bridge of the cello and miked the body with an Audix SCX-1. The tuba has a Neumann 170; the clarinet and whistle position, an AKG 535; and the harp amp is a Fender Twin with a 57 in front of it. The acoustic harp has an AKG 460 wrapped in foam and pushed into a hole of the body, while a Neumann KM84 captures the strings. Unusual, but it worked.

2 p.m.: Soundcheck time (without Courtney Love) for monitors, house and truck. Faehndrich and Briggs are at the Hardy mic preamps and monitor input levels throughout soundcheck and the show.

2:30 p.m.: Love arrives. She and the band continue to rehearse the arrangements. The video truck has positioned a hand-held camera on a tripod so that director Milton Lage and Colletti can get a preview of what shots will work tomorrow when the camera crew arrives.

5:30 p.m.: For the past three

hours, the only audio concern has been the stage volume interfering with the recording of the cello and the harp. Colletti decides to move the drum kit further stage left, away from the cello and harp, for visual reasons, but this also helps audio. Thicker Plexiglas baffles are also ordered. Soundcheck for Hole is now over.

6 p.m.: Officially, it's break time for everyone except the audio crew, who must mark all the settings and positions of monitors, stands, cables, etc.

7 p.m.: The crews come back from break, and we remove all of Hole's equipment and monitors from the stage, then wait for The Cranberries to arrive. They are stuck in traffic on their way from Manhattan.

7:30 p.m.: Declan and Murt, crew for The Cranberries, arrive, and we begin setup for them. The lineup consists of percussion, bass, guitar, lead vocal, guitar for singer Dolores O'Riordan, and a string quartet.

8:45 p.m.: We start getting levels and monitor check. It goes smoothly, considering the band flew in from Europe the night before. The band play through their set, and we fine-tune our cues.

9:30 p.m.: Soundcheck is over, and the band is released. As the audio crew meets to discuss the next day's schedule, the set designer informs us that he wishes to lay a different floor covering on the stage and put his set pieces in position. This means we have to strike everything from the stage. Carefully, piece by piece, we move mics, stands and cables, while the crew unrolls the cloth sections. At the halfway point, we follow behind, putting our stuff back on top of the new cloth. This means we must stay a little longer to confirm that everything was plugged back in and positioned correctly.

10:45 p.m.: The audio crew is released, and we cab it back to Manhattan. I have not sat down since 6:30 a.m.

Tuesday, 10 a.m.: Shoot day. Replenished from a night's rest

QUICKTIPS

Bits 'n' Pieces: **The Z-Bar miking bracket** for guitar amps, discontinued by Shure in 1994, is now being sold by Z Right Stuff (800/520-4380) of Deerfield, IL, for \$17.95 and is now anodized instead of painted. Particularly popular with the Nashville crowd, this Z-shaped piece of flat aluminum holds a mic in front of a speaker, slipping either under the amp's handle or under the speaker, taking the place of a mic stand, and you can stash it in the back of a Twin... Those of you using C-Tapes for piano pick-ups might want to try using Scotch brand, double-sided, adhesive **FOAM tape** (Cat. #114). Originally designed for mounting pictures to plaster, tile and wood walls, this works well and removes easily. Available at most stationery and art supply stores for about \$3 for a 4-foot roll. Veteran L.A.-area piano tech Ed Kolakowski recommends going across the ribs instead of between them for extra high-end response... Finding a durable vocal mic clip has been a constant battle. Several years ago, the Beyer and Peavey clips became popular for withstanding abuse. A new contender is the durable **Audix MC-1 nylon vocal mic clip** (\$7.95 list), which can simply be left on mic stands as they are tossed back into the road case (or at the monitor engineer).

Mark Frink is done mixing Tony Bennett for the summer, and back home at 4050 Admiral Way #305, West Seattle, WA 98116.

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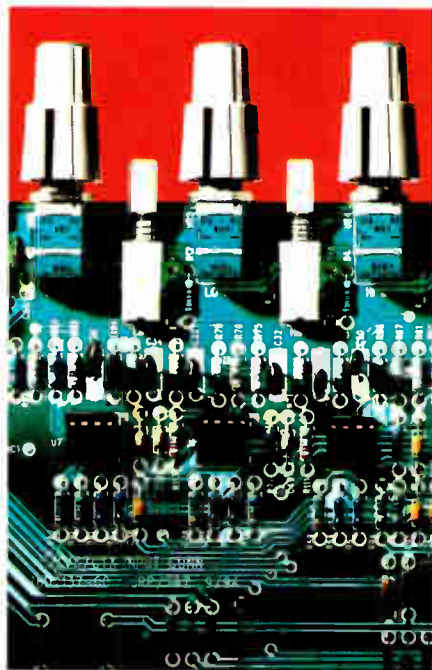
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and a New York bagel, we return to BAM. Stage hands are busy placing audience chairs around the stage, set people are doing touch-ups to the overall area, and Varilite personnel are positioning extra units all around. Camera operators, camera utility people and camera boom people are busy laying their cables and preparing for the blocking rehearsal. We check that none of our equipment has to be, or has been, moved. Blanc

is grateful that he does not have to move his mix position, but where he ended up is away from any of his house speakers, making mixing a little difficult. BAM audio head Tommy offers use of his in-house Meyer rig to reinforce the mix position. He has some UPA-1As pointing into the auditorium, where Blanc is now located.

A request comes from John Harris at the Effanel truck for all available hands to come to the sidewalk. The second Sony 3348

tape machine has arrived, and the forklift cannot get to the door of the trailer because of ice on the street. The only alternative is to physically wrestle the 700-pound machine up the steps and into the truck. With stage-hands shoulder-to-shoulder around the machine, it's gently moved up the steps and through the door of the truck without a scratch.

11 a.m.: It's time for the camera rehearsal, where the director looks at the artist through the different camera positions to decide which shots to take, change any lighting look or reposition the artist to suit the angles. For audio, it gives us another chance to tweak and make notes, and to tidy up any cables that may appear on camera. The artist is asked to run through the entire set in order, though not required to sing all the songs in "full voice," as they may tire before the actual taping in front of the audience.

12:45 p.m.: Camera blocking is interrupted by the fire alarm, and the entire building empties onto the chilly February sidewalk. After 25 minutes, the fire department says there are no flames, but we cannot return to the main part of the building. We do, however have access to catering, where a hot lunch is being served.

2 p.m.: The audience coordinators have started the seating, which is by invitation only. You can't buy tickets, although local radio stations and MTV organize give-aways. Producer Colletti acts as the show's informal off-camera host and warm-up act, telling the audience the do's and don'ts of being on TV.

2:30 p.m.: As the last reposition of the audience is completed, stage manager Chris Kelly conducts the audience in an applause level check for the audio truck, and the video truck rolls tape to use for inserts on the show in post-production, if necessary.

2:35 p.m.: Roll tape, Kelly introduces The Cranberries, and another *Unplugged* is under way.

3:30 p.m.: The Cranberries finish their set and are ushered

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to a holding area at the side of the stage, where Colletti and the band discuss any parts they might be unhappy with. During this short time, the audience is asked to remain seated, in case we have to re-shoot any songs, but they never seem to mind seeing the artist do the same song over. Today, we have a first for MTV. Neither band nor director wants any retakes, so the audience is released.

3:45 p.m.: The Cranberries' equipment, along with mics, stands, cables and monitors, must be struck before the scenic crew can remove the props and floor cloth to reset for Hole. The extra-thick Plexiglas baffles have arrived and are put in place after Hole's band gear and monitors. Fortunately, the FOH and monitor consoles needed very little changing. Because The Cranberries had so few inputs, we were able to fit them in at one end of the console. Property people are now covering the entire stage with toy dolls! After all the mics are in place, we line-check absolutely everything again.

7 p.m.: After coming back from a one-hour meal break, we start the Hole camera rehearsal. Love swears that everything sounds entirely different from yesterday. Her monitor engineer moves one of her enormous wedges up onto the stage and calms her. Camera rehearsal continues, though Love is anxious that her doctor's prescription for her sore throat arrives in time for the show.

9 p.m.: The wranglers have the audience in, but there is still no sign of the prescription, and things are tense in the dressing room area, while Audrey Johns is calmly trying to rectify the situation. Meanwhile, Colletti goes into the pre-show warm-up. Half an hour later, Hole is introduced.

10:30 p.m.: The audience gives them a standing ovation after the last song. The band goes into the offstage huddle. Hole returns to the stage to do four retakes.

11:15 p.m.: Thanked for their patience, the audience is

released after the final take. All hands descend on the stage for teardown. The audio crew is discussing the next day's situation and trying to figure out where we picked up a strange, intermittent buzz. We continue clearing cables, and See Factor's Kelly traces back some Varilite control cables that have been run on top of one of the sub-box multicables. We go to the truck and listen as he removes each cable one at a time. His hunch pays off, and he isolates the offending cable. By the time we get back to the hotel, it's 1:30 a.m.

Wednesday: The next morning at 9 a.m., it started all over again, this time with three acts. First up was Sheryl Crow, beginning with setup at 10 a.m., followed by soundcheck at 11 and showtime at 2:45. Struck the stage at 4 and began setup for Melissa Etheridge 45 minutes later. This could not be easier, with an OM-7 for vocals and a Countryman for her 12-string guitar. There is also another mic and DI for her surprise guest, Bruce Springsteen. That's it. Four inputs. An excellent set, showing how one artist all alone can hold an audience in the palm of her hand. Only one retake, the "Thunder Road" duet with Springsteen, which the audience doesn't seem to mind.

At 9 p.m., we start setup for the band Live. Soundcheck is problematic. The band is used to playing at extremely loud levels onstage and usually use ear monitors. The transition back to wedges and turning things down, instead of up, takes a little while to get used to, but things eventually settle down. At 12:15 a.m., a visibly tired Colletti gives his fifth and final warm-up this week, and tape rolls. At 1:30, we do two retakes, and it's a wrap! Live has two new fans. Blanc and myself are very impressed with their *Unplugged* performance. Congratulations and thank yous are said while we dismantle the equipment in the rush to load-out. An hour later, we head off in search of a cab. ■

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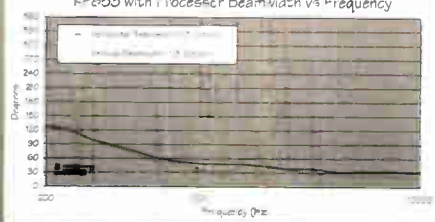
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RECORDING SESSIONS



Ian Moore at Mark Howard's studio in San Francisco

PHOTO STEVE JENNINGS

Ian Moore's Experimental "Folklore"

by Jeff Forlenza

"I have a real deep sense of roots," guitarist Ian Moore says. "Coming from Austin, you get to where you get by being deep. In other words, you don't just start playing Jimi Hendrix songs and become a guitar hero. You gotta pay your dues." And Moore has paid his dues—along with his bandmates, keyboardist Bukka Allen, Chris White on bass and drummer Michael Villegas—playing the blues in clubs through the Midwest and Southeast for six years before signing with Capricorn Records and being tapped to open for arena acts like ZZ Top and the Rolling Stones.

Moore's latest Capri-

corn release, *Modernday Folklore*, shows a bluesman mature beyond his 26 years. It's filled with strong songwriting, virtuoso guitar playing and soulful singing. Moore co-produced the album with Mark Howard, who engineered Daniel Lanois projects for Bob Dylan, the Neville Brothers and Peter Gabriel.

"I wanted the project to be quite a bit looser than my first album," says Moore, referring to his Capricorn debut, which was produced by Barry Beckett and engineered by Justin Niebank. "We had done our first album in Nashville with Justin and Barry, who did a really good job of production, but I wanted something a lot

looser and experimental. A good example of the production style I like would be Sly Stone's stuff, which is real sloppy, with all kinds of screw-ups that he leaves in on purpose. And Hendrix did that, too: Hendrix really saw the beauty of golden mistakes.

—CONTINUED ON PAGE 185

Mark Howard inside his warehouse studio

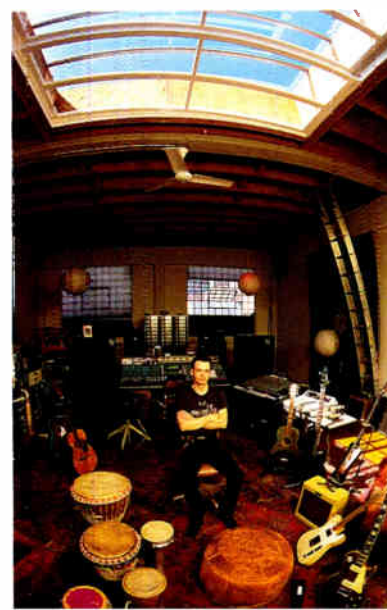


PHOTO STEVE JENNINGS

Artist's Studio

TUCK & PATTI: SMALL IS BEAUTIFUL

by Blair Jackson

Tuck & Patti make what are, on the surface at least, very simple records. Patti Cathcart sings, Tuck Andress plays ultraclean, nondistorted guitar. They play a highly evocative blend of folk and pop music with what is clearly a jazz approach, rooted heavily in vocal and guitar improvisation. The most recent T&P album, *Learning*

How to Fly (their first on major label Epic, after years with Windham Hill), mixes highly original interpretations of songs by the likes of Jimi Hendrix, Joni Mitchell, Georgie Fame and The Beatles, with emotion-filled tunes of their own and even a zippy vocal "percussion" piece.

There is an almost startling intimacy to both the performances and the production, which is exactly what Tuck and Patti strive for as they toil away in their small but high-tech home studio known as Binky Studios (located in Menlo Park, Calif., south of San Francisco). They record completely live, with no overdubs, and Patti's vocals are up-front, "right in your



PHOTO: MICHELLE CLEMENT



Tuck & Patti's Binky Studios

face." as Tuck puts it. Tuck engineers, while Patti produces and is the primary musical arranger.

"The feedback we've gotten," Patti says, "is that it sounds like we're right in the room with [the listener]. When you put on

headphones, you can hear every breath, and you can hear the space, and you can hear that we didn't pull down the faders on that silence—it's really what's there. That's wonderful, because what that

—CONTINUED ON PAGE 186

CLASSIC TRACKS

"Spill the Wine" by Eric Burdon & War

by Blair Jackson

After guiding the British band The Animals through a long succession of hits beginning in 1965, Eric Burdon abruptly announced his retirement from the music business in late 1968, and he kept his word—for nearly a year! First he hooked up with a budding, soulful harmonica wizard named Lee Oskar, determined to start a band built around the two of

them. Then, in the fall of 1969, Burdon and Oskar went to an L.A. club and "discovered" a young band of players from Compton and Long Beach called Night Shift, who were the backing group for L.A. Rams football star Deacon Jones, then attempting to cash in on his fame by establishing a singing career. Burdon hired the band away from Jones (whose career never took off) and changed their name to War. By the end of 1969, the group was ensconced in L.A.'s Wally Heider Recording with producer/engineer Chris Huston—a transplanted Brit who'd worked on records by

everyone from The Who and Led Zeppelin to The Rascals and Solomon Burke. The record, titled *Eric Burdon Declares War*, was an out-of-the-box

smash, largely because of the success of the first U.S. single, "Spill the Wine," which made it to Number 3 late in the spring of 1970.

—CONTINUED ON PAGE 190



Eric Burdon and War

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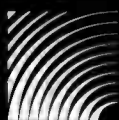
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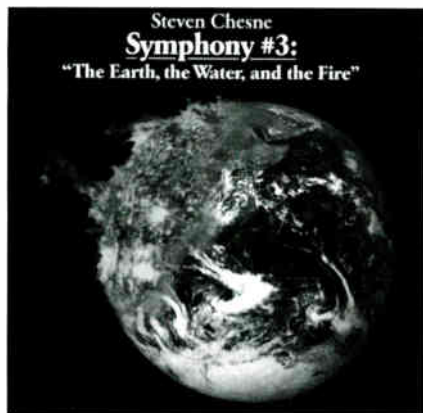
Steven Chesne

MULTITRACK SYMPHONIC RECORDING ON A BUDGET

by Blair Jackson

Los Angeles-based composer Steven Chesne pays the bills by working with his partner, Gary Boren, composing scores for the television series *Hangin' with Mr. Cooper*, *Family Matters* and *Step by Step*. But like so many others in that field, Chesne has a private agenda as well. He has written several large symphonic pieces, two concertos, three dance suites, and a number of smaller orchestral works and chamber pieces. Two years ago he decided to realize one of his dreams by recording his "Symphony #3: The Earth, The Water and The Fire," which is the third part of a cycle of a projected seven symphonies, collectively entitled *The Seven Worlds of Doorsmith Bloom*. This programmatic work uses mythological symbolism (in the vein of J.R.R. Tolkien or Richard Wagner) to tell the story of the "blossoming of human consciousness."

Now it's one thing to be a songwriter who wants to cut a song with a four-piece band in a studio, and quite another to record a work with



an 80-piece orchestra that's never been performed in public.

"My options were very limited because it can be very expensive," the affable composer says. "Getting a grant wasn't really an option. A friend of mine who sits on the board of one of the major grant organizations confirmed my suspicions that there is a strong stylistic bias toward the academic avant-garde with these organizations, and this music I'm writing falls into the cracks because it is abstract in some ways—it's not that accessible to someone who just listens to Mozart, for example—but at the same time it has romantic [tra-



ditional] leanings, so it's not taken as seriously by the very academic crowd." Indeed, the generally accessible "Symphony #3" has much more in common with Mahler, Sibelius, Tchaikovsky or Prokofiev than with Jolin Cage or Steve Reich.

"I thought of putting on a concert and enlisting a bunch of my friends who I've worked with in the studios and who work in various local orchestras, except that getting all those people together in the room at the same time, especially *en gratis*, would be impossible," Chesne says. "If I'd hired the Pacific Symphony, or an established group like that, they would charge me over \$7,500 per rehearsal, and a work of this magnitude would need at least three rehearsals; four would be really great. You rent a hall, buy insurance; all that adds up. Then you've got 80 people there at the rehearsals. Let's say there's a difficulty in the clarinets. You have 77 people waiting for the clarinets to work on their part. If you want to work with the timpanist, you've got 79 people sitting around."

The solution to Chesne's problem was to record sectionally over a period of many months with just 32 players from the Hollywood Bowl Orchestra, The L.A. Chamber Orchestra, the Pacific Symphony, etc., about half of whom he paid a minimal wage, while the other half donated their time to the project. Recording as inexpensively as possible, he used ADATs to give him the track-bouncing flexibility he needed to build the work. Chesne chose Castle Oaks Studio in Simi Valley, a

facility owned by a Warner Bros. dubbing mixer named Frank Jones, to begin work on the recording. "It's a nice-sized studio with wooden walls, a wood floor and one of the best mic collections I've ever seen in an inexpensive studio," Chesne comments. The studio is also equipped with a Neve 8038 that once resided in London's CTS Studio, and offered an engineer with extensive experience in recording all sorts of music, Mike Aarvold.

Step one in the long process was to bring in eight players to record the first-violin part. "One of the first things I did after I bought my two ADATs is create a sequence of each of the three movements," Chesne says. "I programmed in the perfect ritards and other expressions, because I knew that once I started putting down tracks, I could never change it, so I remember spending as long as half an hour on just one of the ritards. One track had SMPTE in case I needed to re-sync the sequence, another had variable click, another had me yelling out the bar numbers, which proved to be extremely important when we got into doing punch-ins. Another track had the synth realization of the piece just for intonation, and when I started out, I even had a track on the other ADAT that had the part that would be played on that day's session. I used a clarinet sound for the first violins, so it was timbrely different to help them distinguish their part.

"What happened, though, is that when you record with headphones, pitch becomes a difficult issue. I don't know exactly what the acousti-

cal phenomenon is that creates this, but people playing against what they're hearing in the headphones are often very surprised by what they hear when they take off the phones and hear it reverberating in the room with what's already been recorded. That turned out to be one of the main difficulties in working this way, especially when you have really thick Mahlerian textures all compressed into a tiny speaker in your ear. So the violins tended to drift sharp of the synth track, and the synth track was maybe played too low in the first couple of sessions. That was a lesson hard won—

that I had to crank it up over the protestations of the players. But I didn't want to end up with different strata of opinions about where pitch is." Chesne notes that when a full orchestra is playing together in a room, "opinions about pitch are usually resolved very quickly, usually right after the attack of a note. The slight phasing and fluctuations between the players is part of the natural beauty of a live orchestra."

For the first and second violins, Aarvold used a combination of a C-24 stereo mic and KM84s, up and back, to capture some of the room ambience. For the cellos, he used

the C-24 in conjunction with U67s. "The first day with the violinists was about a five-hour session," Chesne says. "I had the eight violinists play the first-violin part twice. We'd get a passage and then we'd double it, so we'd have the sound of 16 players playing the first-violin part. I had the same people come back a few days later and do the second violins, then the violas were done the same way. One of the players played both first and second violins and later came back to play in the viola section, so she is heard as six different players on the recording.

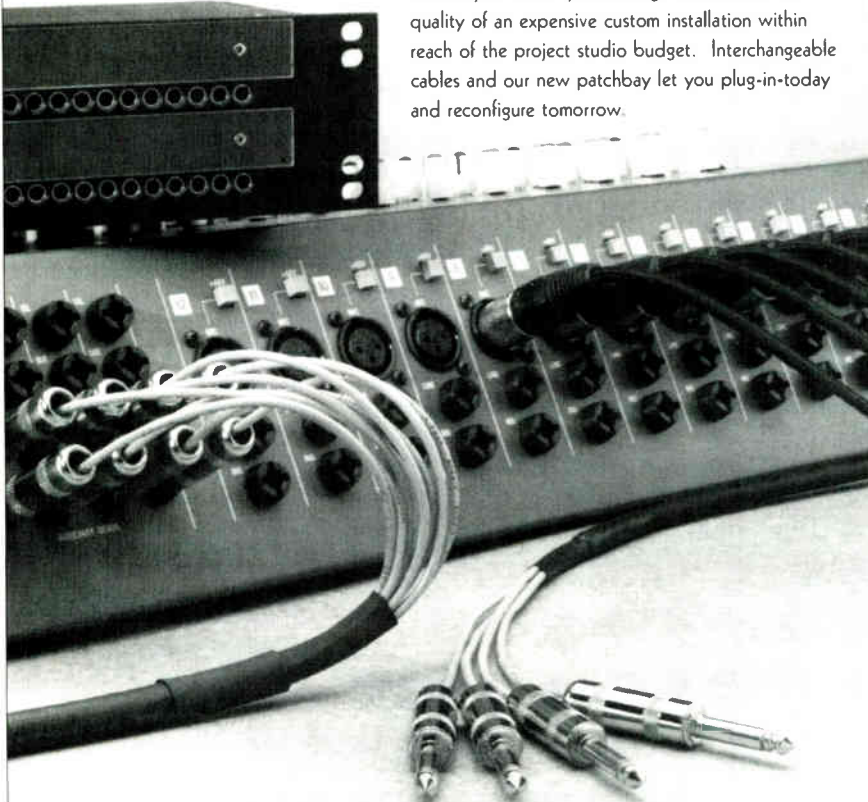
"Every night at the end of a session I'd go home and make a new reference track in which I'd take everything that had already been performed and do a quick mono mix as reference for the players doing the next part. Having two ADATs made it possible to do that at home. I have a little Mackie [1604] mixer, and I'd bounce back and forth between the ADATs." After a certain point, too, Chesne took out the synth guide track.

Next came an offer Chesne couldn't refuse. His friend Gary Herbig, who is a first-call woodwind player with credits including work with Michael Jackson, Paul McCartney and Dave Grusin to name just a few, volunteered to handle all the woodwind parts in the score (except for the bassoon) himself. "He donated four and a half days of his life to the project," Chesne says. "I used a 414 on him because I knew that would sound decent, but in retrospect, I wish I had backed off a bit and not miked him so closely. If you listen really carefully, you hear more key slap and breath than you would if the mic were back more, although the overall wash of reverb we put on later helped out. But just as one notices his own blemishes and pimples that other people may not, I'm sure that most listeners won't perceive this to the degree that I do."

Recording the horn parts back at Castle Oaks was a similar process to tracking the strings except that they were recorded as sectional choirs. Aarvold chose some different mics: For the trumpets he combined the C-24 with 67s; for the tuba an M49; and on the trombones an old RCA BK-5B ribbon mic. The percussion parts were recorded at a fourth studio, Tiny Lights, with Scott Cochran engineering.

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On paper it sounds like a relatively smooth process, but Chesne says that well into the project he started to have some grave misgivings about how things were going. "I got very depressed at one point," he says. "Everything seemed to be a mess. It seemed like there were hundreds of little problems that I had hoped would become diluted in the bigger picture, but instead the problems just seemed to be adding up—everything from considerations about pitch to noise from click bleed [from the musicians' headphones] and page turns; the way the woodwinds were miked differently from the other instruments—all these little things.

"One of my problems, though, was that I was never able to listen to the total picture because I would've needed 48 tracks, and my little mono mixes weren't very telling. It wasn't until we got to the mix [at Jay Graydon's home studio] and put all the tracks up on his Neve [V] board and added some Lexicon 480 that I started to take in a big breath of relief and began to think that it was going to be okay." Aarvold used seven ADATs for the mix. "My goal was just to try to make it all sound like an orchestra playing in a large room," Aarvold says. "The only problem I ran into really was trying to create a cohesive room sound with the woodwinds, because they were a little close-miked for our purposes."

Chesne says that at the mix stage there were a few digital edits, "and we worked a lot with the dynamics of certain passages, enhancing some of the dramatic crescendos. Mike did a great job, working one track at a time, building this wonderful, natural sound. The mix is where it really came to life."

Chesne himself is largely satisfied with the finished CD, available at Tower Records or through Chezworks Music (see below). "Considering the sweat and tears that went into it, I'm happy," he notes. "Could it be better? Of course. And the next one will be. I'm thinking of doing the same thing with 'Symphony #2,' which I'm rewriting this summer," he says, the months of hard labor spent on "#3" momentarily wiped out of his brain by boyish enthusiasm. "It should be a lot easier for me next time." ■

For more info: Chezworks Music, P.O. Box 5042, Santa Monica, CA 90409-5042. Phone/fax: (310) 399-6781.

—FROM PAGE 180. IAN MOORE

We weren't losing what we had on the first album, but we were definitely trying to make it a little more three-dimensional." So Moore sought out Mark Howard, who had just finished producing Tragically Hip's album *Day for Night*, which garnered him a nomination for best producer at Canada's Juno Awards.

"I heard some of the records I had made, and he was interested in the sounds I was getting," Howard says. "His manager hunted me down and sent me his first record—it was a pretty straight-ahead production, and it didn't really excite me. Then a friend of mine told me about Ian, so I was kind of interested. I went down to Austin and checked him out. We did a demo in a little room at The A.R.C. [Austin Rehearsal Complex], and it turned out great. So we decided to do a record together."

Then, the question became where to do it. "This warehouse in San Francisco became available," Howard says, "and I told Ian about it. He seemed excited about doing it, so I went ahead and pulled everything together." Coming off gigs with Lanois in Mexico and Joshua Tree, Calif., Howard simply had to unload the console, recorders and various gear out of flight cases and set up in the warehouse. Similar to Lanois' studio in New Orleans, Kingsway, Howard's space had the console in the tracking room, and comfort was king. Engineer Wayne Lorenz helped set things up and helped troubleshoot the system. "It's a pretty live room," Howard says of the converted warehouse. "It's a really good-sounding room for drums. The guitar gets a good Hendrix-type of open sound. I put Indian carpets on the walls for a control-room vibe and to deaden the room up near the console."

"The most important thing about this space was that I felt comfortable in it," Moore explains. "The first studio we were in was just too sterile—you couldn't smoke in it; you couldn't even see the control room, so there wasn't much communication. When Mark said it's just one big room with the board in it, I said, 'Let's do it.' Frisco seemed like a cool town to record in, and it influenced the music a lot. The first day we got here, Dan [Lanois] was here, and we all had this big percussion jam, and I think that helped set the tone for the record. [ZZ Top guitarist] Billy Gibbons came to



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check the setup and hang out. He brought this little secret weapon pedal that he has, and we put it on this little Tweed Deluxe amp and just came up with some amazing tones."

The setup was based around a 40-channel Amek TAC SR6000 console: "It's one of the top touring consoles," Howard says. "It has a fantastic EQ on it—really big bands, big warm bottom. For live shows, you need that kind of EQ. We had a modification done on it by Amek, and it has a monitor section built in." He also equipped the studio with a Studer A80 2-inch multitrack with Dolby A, which was also used on Peter Gabriel's *So* record, and a Mackie 24x8 mixer, which was used for effects and tape return inputs.

"The sound that Mark gets is different," Moore says, "It's a big sound; you can definitely tell it's analog—there's just a liveliness to it." But how does he do it? "It's just the way I send it to tape," Howard explains. "I don't spend a lot of time with miking. If it sounds good, it goes to tape like that. I send it through Neve and API [modules] and then to tape. We record at 15 ips. The bottom is definitely warmer [at that speed]. We'll do like five or six takes and pick the best sections and cut and paste them together."

Howard explains his miking preferences: "For his vocals we've been using the U47. It sounds great on the quieter things, but we have a problem when he sings really loud. The 47 doesn't take it so well. So I've been using a Shure Beta 58, hand-held, with the 47 on a stand at the same time. That mic adds the warmth, and the 58 holds the punch when he really screams into it."

For guitars, "We've been doing different combinations," Howard says. "When we do a big rig [amp setup], we've been using a 57 on one amp and a Sennheiser 409 on the other amp. I kind of bring them both back and do a blend of them, hard-panned, and it's a big, fat sound. I compress the 57, and I don't use compression on the 409—to give it a bigger sound. One of the amps that we've been using is a Fender Deluxe Tweed, a 1950s tube amp. It looks old, but it's one of the biggest sounds we got on the record.

"Bass has been pretty much direct, and we were tracking an SVT cabinet along with it. In the mixes, I've been mostly using the the DI and supple-

menting with the bass cabinet." Howard continues. "Keyboards, we've been having a bit of fun with. We've been doing some interesting effects with the B-3. We also had a Wurlitzer, and we processed it through an envelope filter; it's been fun.

"I was tracking with two kits," Howard says about drums. "I was using a 47 in front of the kick, a D-12 close on the kick, mostly close-miking because it was tracked loud in a live room—so you've got to keep it close. I used a lot of blankets around the front of the kit because the 47 picks up a lot. We did all the horns [The Uptown Horns] down in New Orleans, using RCA 77s—old ribbon mics, five of 'em lined up, and all the horn players in front of them with two EV monitors in front of them blasting music."

About mixing, Howard says, "I don't like to use automation. The way I mix, I do about 30 mixes, just getting good mixes, and then we'll cut different ones together and get different vibes. Mixing is a performance art for me. Every mix is completely different. Some things I nail better. Some things are happy accidents—you'll hit an effect that will create a whole 'nother thing, which would never normally happen if you were using automation. It takes a long time, but I think the end result is a little more dynamic and more interesting."

"There were a lot of chances taken on this album; we took different approaches," Moore says. "The way [Mark and Wayne] record, being in here in the room and really being interactive creates a different sound. The record as a whole really is a big step from the first one, and a lot of that has to do with production. It's a real varied album—there are a couple of acoustic numbers, as well as some songs that are pretty intense and industrial. We tried different things that most people wouldn't expect from someone in the genre that they've put us into.

"My goal in music is to not be definable," Moore concludes. "I want to be someone like an Elvis Costello or a Tom Petty—somebody that has a sound but is able to stretch their boundaries. It's real important in these early albums to define that, 'cause if you don't do it early on, they won't let you do it later. The bottom line is this band is an experimental band and always has been." ■

—FROM PAGE 181, TUCK & PATTI

does is make the music more immediate, and what this is all about is the music."

"Technology for us has always been a quest to get greater transparency," Tuck adds. "We hope that people aren't aware of what we're doing technically. What we do is sort of like modern chamber music; it's that aesthetic anyway. The si-



Vocal booth at Tuck & Patti's studio

lences stand out, so you can't have something hissing and spitting at you in the silences."

T&P's studio is not your typical home setup: "The constraint we had going into it is that it had to fit into the area that had previously been occupied by one compact car," Tuck says with a smile. No problemo. The car space is now occupied by a vocal booth, a custom-made audiologist's booth made by Industrial Acoustics. "It's ultracool," Tuck says. "If you sliced off about a third of the end of a remote truck, that would be our studio. It's double-walled, double-floored, double-ceilinged. The walls are a foot thick, and the isolation is really unbelievable." Internally, it's 48 inches by 40 inches. "It's somewhere between a phone booth and a vocal booth," Tuck says, only half-joking. "It's Patti's little world in there." The duo worked with ace room-tuner Bob Hodas and their longtime engineer, Howard Johnston of San Francisco's Different Fur studios ("He's almost like a member of the group," Tuck says), to make sure the environment was perfect for their

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needs. The other half of the erstwhile garage is where their recording equipment is located.

"We have what we feel is the cleanest conceivable signal path to disc," Tuck says. In the vocal booth, Patti sings into a pair of phase-matched B&K 4003 microphones. That signal goes into a Millennia Media HV-3 preamp, through about a foot of Monster Sigma cable, straight into a GML HRT-9300 20-bit A/D converter, and on into the Sonic Solutions workstation. To capture Tuck's guitar—a '53 Gibson L-5CES with Ernie Ball strings—the signal travels from a single Bartolini "very transparent-sounding, hum-canceling pickup" into an onboard Carrotron buffer pre-amp, through more Monster Sigma cable into an Aphex 124A -10/+4 interface, into the GML, and on into the Sonic system.

"We record pure, raw tracks," Tuck says. "We don't pre-EQ, and there's no compression or limiting or anything else. We have a distributed console setup where each of us has a Mackie 1604, and we've got reverber units and Varicurve EQs for voice and guitar, and we each monitor with Future Sonics Ear Monitors. [The studio's monitors are Meyer HD-1s.] We modified the Mackies to get them quiet enough by yanking the power transformers out and putting those in a different room to get the noise floor down to the point where you could very easily trust the monitoring environment and hear all the detail of the 20-bit noise floor. But it's in the mixdown that the sonics are really created."

For the mix, which was done by Johnston (with Tuck and Patti) at Different Fur, the Sonic Solutions tracks (usually just stereo vocals and guitar—three tracks) are brought to the analog domain by Apogee DA-1000E-20 converters, through an Avalon LA-4 compressor (for Tuck's guitar) and Avalon E-55 EQs, into the studio's SSL 4048 E/G console. Reverbs used on *Learning How to Fly* included Lexicon 480L and PCM70, EMT 140 Plate and 240 Gold Foil Plate, Yamaha REV7 and SPX-90, TC M5000, AMS RMX-16 and Eventide H3000. The mix then went through the GML 20-bit converter back to the Sonic workstation. Bernie Grundman mastered the disc (using no additional processing) and brought it down to 16 bits for CD release.

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someday the [release] medium is going to get there, and you'll be able to hear a difference," Patti says. "It's subtle, but there definitely is more in there [in the 20-bit]."

"For our music," Tuck adds, "and, of course, we're very much specialists—the sound is close to as good as it needs to be. I think we could use the equipment we have right now literally for years and be really happy." He pauses. "Although the minute something better comes along, we'll be out there checking it out." ■

—FROM PAGE 181, ERIC BURDON & WAR

"Spill the Wine" was a quirky single, to be sure. It featured Burdon reciting an airy, almost stream-of-consciousness ramble over a steady, percolating funk beat highlighted by congas and various percussion, and a fluttering flute part (by Charles Miller) that darted through the song like a bird that's just been uncaged. The chorus, with Burdon singing "Spill the wine/dig that girl," was the catchy payoff for his odd little story—simple but somehow utterly memorable.

"'Spill the Wine' was actually written about spilling wine on one of Wally Heider's consoles; that really happened," says Huston from his Oregon home. "We were in Studio D there, and Lonnie Jordan, the keyboard player, spilled some wine over the mixdown section of their great old Frank De Medeo console, with its API parts. So we had to leave that room and go into another one while the maintenance guy—and back then it was Deane Jensen, who was absolutely the best there was—spent two days cleaning it up."

"It sizzled out a couple of faders instantly," adds Lonnie Jordan by phone from New Haven, Conn., where he was on tour with the latest incarnation of War. "They were so mad—they said it was going to cost me \$20,000 to repair the problem. I said, 'How in the world am I supposed to pay for that? You guys must be out of your minds! I didn't have any money! But I think it was just them saying I owed \$20,000 because they were pissed. The damage wasn't really that much, of course, and Jerry Goldstein, our producer, said he'd take care of it.'"

"So the group worked [spilling the wine] into a song," Huston says, picking up the story. "I remember we all used to sit around the control room and work on words together; everyone would help. Then we'd go out into the studio and try to make it happen." The song was written by the entire band and Jerry Goldstein. The group brought in a Puerto Rican girl named Carmen to contribute the track's sexy, cooing Spanish background track.

"She came in and...uh...I shouldn't say anymore about what she did," Jordan says with a laugh. "If you keep listening to her voice only on the track, you may hear some things going on back there. I'll keep that to myself!"

"'Spill the Wine' was very spontaneous because that's the way the group as a whole was," Huston says. "War's greatest ability was to take almost anything and turn it into a groove. That was one of the joys of the group—the fact that one of them could be sitting there and, theoretically, slapping the back of his hand with a sandwich, and somebody else would put a bass line to it, and then



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everyone else would come in. They could take anything and make it rhythmic. It was not at all unusual for them to jam for three or four hours, almost nonstop, just investigating different grooves. That was particularly true later on, but 'Spill the Wine' was on the beginning end of that. It was maybe a little more contrived than a lot of their later songs because when they recorded that, they hadn't really found themselves yet. Later on, we'd take tracks that had happened two or three years before, and someone would come in and say, 'Hey, I've got an idea for that old track,' and we'd go back into the tape files and find it. It might just have been a 12-bar section or even less, in the middle of another jam, but they sometimes became new songs.

"One thing I learned very early with War was that as soon as someone came into the studio and picked up an instrument, I'd start rolling tape, because you never knew where it was going to lead, and because it was all so spontaneous you didn't want to miss something great. We had microphones all over the place. Lonnie would have a U-shape [of keyboards—Fender Rhodes, RMI, Clavinet, a cut-down B-3] around him, so he'd have three vocal microphones. The conga player [the great Papa Dee Allen] would also have a timpani microphone, a vocal microphone, a gong microphone. We ended up with 38 or 39 mics in the studio," and Huston would have to make split-second decisions on which ones to open up by closely following where the jams were going.

"If it wasn't for Chris Huston, War would not have had a sound all those years," Jordan says. "He's the guy who really created how we sounded, by knowing how to place the mics and baffle us so things sounded good and knowing how to get what we did on tape. We already had a sound and a way of working together as musicians, but he was able to get it out to the foreground and make it sound good on a record, which was not that easy because there was a lot going on in that band."

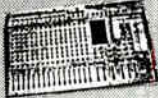
Jordan adds that producer Jerry Goldstein "was the greatest editor in the world. He did most of the mixing; he was the best. And Chris handled the sound end and the technical end of actually doing the edits by hand. I learned most of what I know

—CONTINUED ON PAGE 231



SPEIR MUSIC

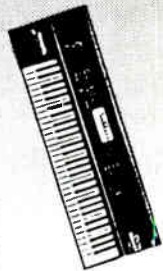
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by Philip De Lancie

TAPE & DISC NEWS

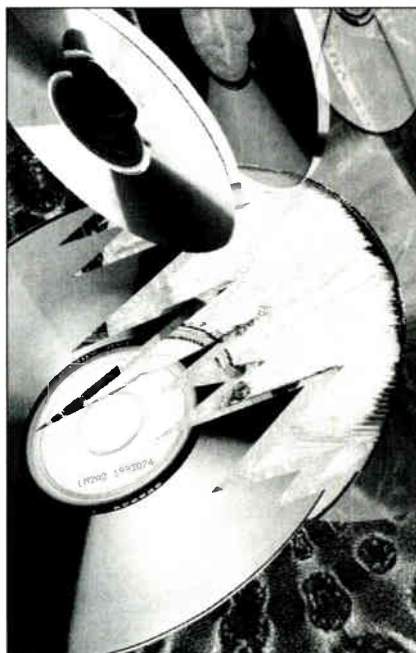
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IMA RESPONDS TO CONSUMER CD-ROM FRUSTRATION

Noting an alarming increase in product returns caused by what it calls "the mismatch of many multimedia CD-ROM titles with the computing platforms for which they have been created," the Interactive Multimedia Association is giving high priority to encouraging title publishers to find ways to reduce consumer and retailer frustration with the new medium. The problem exists primarily on the IBM-compatible side of the market, where returns are said to be running as high as 40%; Apple's tight control over its platform has apparently minimized the hassles for Macintosh owners.

The IMA has dubbed its efforts—spearheaded by new VP of technology Phil Corman—the "Parallax Project." Acknowledging that better compatibility and ease of use are crucial if the market for interactive media is to continue growing, the trade group has developed a *Recommended Practices for CD-ROM Title Developers*. The document includes "a detailed set of guidelines for coding, testing and evaluating titles and for uniform labeling of packaging," and "a configuration software 'applet' to assist consumers in matching CD-ROM titles to their hardware configurations." The *Practices* were expected to be formally reviewed and ready for dissemination in June.

Beyond the initial document, the IMA is actively soliciting input and ideas. "We have not ruled out any possibilities at this point," says Corman. Information on the Parallax Project is available on the IMA FAXBack system by dialing (410) 268-2100 from the handset of a fax machine and requesting document #5100. The trade group also can be reached at (410) 626-1380, or via e-mail at parallax@ima.org.



CD-R LOADING COMES TO DIGITAL BINS

Yet another use has been found for recordable CD technology, this time as a high-speed loading system for the "digital bins" (master reproducers) that are becoming increasingly common in high-speed cassette duplication. A new system developed by Concept Design as an option for its DAAD, DAAD R² and MAX bins allows audio program material to be loaded into the bin at 8-times real time by simultaneously using two 4x CD-ROM readers (one for each side of the cassette). The CDs are recorded on Concept Design's Master Maker system, a 4x CD-R (Orange Book) recorder hosted by a 486/DX66-based PC. The ROM-LOAD option also will be available for Gauss MAX bins.

BUSY CONFERENCE SCHEDULE

As trade show organizers announce their plans for upcoming events, Oc-

tober's AES show in New York looks to be just the beginning of a busy season for dedicated trade conference attendees. REPLtech Asia, produced by Knowledge Industry Publications (914/328-9157) and cosponsored by the ITA, will be held in Singapore from October 24-26. Then comes the Macromedia Users Conference—for keeping up with the latest on tools such as Sound Edit 16 and Director—in San Francisco on October 31 (bring a costume) and November 1, organized by Reed Exhibition (800/287-7141). While in town, those with an interest in media manufacturing issues can stick around for the Magnetic and Optical Media Seminar (MOMS) presented by the ITA (212/643-0620) on November 2-3.

After a holiday respite, San Francisco will be the setting for another show, the newly expanded *intermediaWorld*, to be held March 5-7, 1996. Produced by Reed, the show now has three interrelated components covering "the creation of all forms of interactive digital content and programming," "the creation of digital infrastructures and technology solutions," and an "interactive programming market and festival."

If you still don't have enough frequent-flyer miles after all that, consider the new Consumer Electronics Show scheduled for May 23-25, 1996, in Orlando, Fla. Focused on "the retailing of new digital consumer products," the Electronics Industries Association event also has the sponsorship of the Software Publishers Association.

NEW NAMES, MASTERING PRODUCTS FROM ODC

Optical Disc Corporation has formalized the name of DRAW Mastering for its unique glass-mastering process for CDs, widely referred to as NPR (non-photosensitive). The new name refers to the direct-read-after-write capabilities of ODC's glass-mastering systems. The company also came out with two enhancements for its Series 500 line: "TrueMold" progressively deepens pit recording depth as mastering proceeds, compensating for the tendency of the molding process—especially at faster cycle times—to create pits that are shallower at the outer edge of the disc, resulting in decreased HF fidelity. "TrueYield" compensates for another molding problem, which is that pits of differing lengths tend to mold to different depths.

SPICES

Gauss (Sun Valley, CA) is introducing fully automatic videocassette loading equipment. The CD 9000V, manufactured by Concept Design (Graham, NC), features microprocessor control, a fast feeder, automatic stacker, ultra-precision splicer and vacuum column-controlled servo systems. Gauss also announced five international sales of Model 9002 double-pancake audio cassette loaders... Emerald Technology (Lincoln, NE) has introduced the CD8000 jewel box inserter, capable of packaging more than 3,600 CDs per hour. Packaging components are fed from bottom-delivering hoppers,



Koch Digitaldisc's Optitest Player

which can be stocked while the machine is in use... Saki Magnetics (Calabasas, CA) reports that 18 duplicators have chosen Saki ferrite heads as replacements for their in-cassette dupli-

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TAPE & DISC

cating systems. The duplicators include five using Telex systems, five using KABA and eight using Otari DP4050 machines...Otari (Foster City, CA) reports installation of a fully automated turnkey VHS loading system, based on its VI-352 loaders, at West Coast Video in San Leandro, CA... Koch Digitaldisc (represented by data-CD, Woodland Hills, CA) introduced



Future Disc Systems' partners, Steve Hall (left) and Gary Rice, breaking ground for their new mastering studio.

the Optitest Player to measure birefringence, transparency, true reflectivity and true skew. The system may be incorporated into Koch's CDCS-4 disc-analysis system or operated as a stand-alone. Koch also reported that Nimbus CD International has ordered six more of the CDCS-4 systems...Technotrans has been selected to supply a complete CD electroforming department to Optimal Production. Both companies are located in Germany...*The Cream of Clapton*, a retrospective of the guitarist's career, has been mastered at PolyGram Studios by Joseph Palmaccio using Apogee UV22 encoding...Ground has been broken at Future Disc Systems (Hollywood, CA) for the company's expansion to 8,000 square feet of rooms for mastering and related services. The company also reports recent mastering for Sweetwater, U.N.V., Reverend Horton Heat and Domino...Barry Diament Audio (City Island, NY) mastered two HDCD (high-definition CD) releases for Gary Nicholson and Bellvue Cadillac on the Ardeo label...Projects mastered at SAE Mastering in Phoenix, AZ, include a CD for Coco Montoya on Blind Pig Records, as well as LPs for Lookout! Records and Slumberland Records...Timbuk 3, David Raitt and Hangman's Daughter were among the projects mastered recently at San Francisco's Rocket Lab. ■

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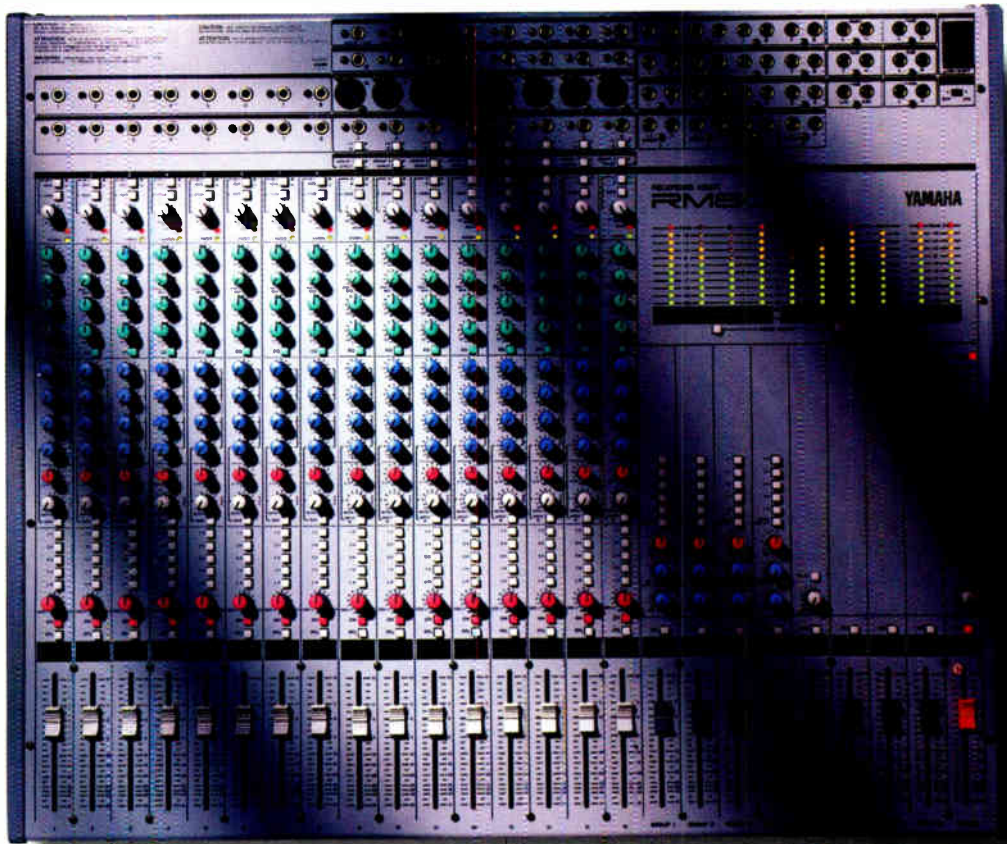
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C O A S T

L.A. GRAPEVINE

by Maureen Droney

Pat Schneider has been making a name for himself for some time now as one of the hottest console technicians in L.A. Although he plays no favorites and works on any model board, he's particularly known for refurbishing vintage Neves. And since it seems the 80 Series desks have become so many people's favorite over the past few years, business has been jumping. Chances are,

—CONTINUED ON PAGE 199

Producer DJ Battlecat (left) and engineer Rob Chiarelli were mixing tracks for Battlecat's debut album on Maverick/Warner Bros. Records at Master Control in Burbank.



Producer Erik Neilsen (left) was at Austin's Cedar Creek Recorders tracking conjunto accordionist Flaco Jimenez as a guest musician on Denny Brown's latest release, Got the Whole Night. Fred R Emmert and Bill Halverson engineered the sessions for Avenue Communications.

SOUTHWEST STORIES

by Jeff Forlenza

At Houston's Digital Services, owner John Moran reports that they added a Sonic Solutions system, Focusrite out-board gear and a TC Electronic M5000 multieffects unit into their mastering room, Studio B. Digital Services' recent sessions: Night Ranger was in with producer David Prader and engineers James Hoover and Roger Tausz for Drive Entertainment; producer N.O. Joe was in tracking and mixing Bahamadig for Epic; multi-Platinum act Scarface and The Mobb were recording their latest Virgin/NooTrybe release with Scarface producing and Mike Dean engineering; and Virgin/Nubian act Krucked M-Age was working with Preston Middleton producing and James Hoover and Roger Tausz engineering.

Also in Houston, 34th Street Music recently built a new control room and added 40 tracks of ADATs and a Mackie 24x8 console ganged with two 1604s and a MIDI rig. Engineer Gary Moon (Timbuk 3) was at 34th



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Specializing in audio-for-video work, Prodigit West (Phoenix) features a Sonic Solutions system, Tascam DA-88s and a Mackie 24x8 console.



PHOTO: MICHAEL PALISEN

Street working on several projects, including local punk thrashers the Melon Farmers. Owner/engineer Pat O'Bryan reports other 34th Street sessions: Songwriter Sandy Stewart and multi-instrumentalist Dave Monday were working on demos for producer Rick Knowles. The University of Houston percussion ensemble (led and produced by Marvin Sparks) did an album with O'Bryan.

Austin's Congress House Studio is a 24-track project studio, with two tracking rooms and two iso booths. The control room features an Amek Big 32-input console with Supertrue automation, along with Otari MX-80 24-track, Ampex ATR-102 2-track, and Panasonic 3700 DAT recorders. Owner Mark Hallman says they do a lot of singer-songwriter sessions. Recent sessions: British pop group

Oasis stopped by to track two songs for an English EP; Hightone Records producer Dale Watson tracked Bruce Bromberg with engineer James Tuttle; another Hightone artist, Chris

—CONTINUED ON PAGE 201

NY METRO REPORT

by Dan Daley

It's pleasant to be able to report the arrival of new studios in New York, and in this case, not all in Manhattan.

Mystic Recording Studios is located on the top floor of an old bank building on Bay Street in Staten Island, a couple of hundred yards from the ferry landing. According to Greg Angelides, one of three owners of the facility, the studio is one component of a larger organization that he and his family are building, which includes LAN

—CONTINUED ON PAGE 208

At New York's Power Station Studios, tenor saxophonist George Garzone was working on *Alone*, his debut for NYC Records. Seated from left are executive producer/vibraphonist Mike Mainieri, pianist David Kikoski, Garzone and producer/guitarist Chuck Loeb. Standing (l to r) are drummer Lenny White and engineer Dan Gellert.



PHOTO: THOMAS SKOVSENDE

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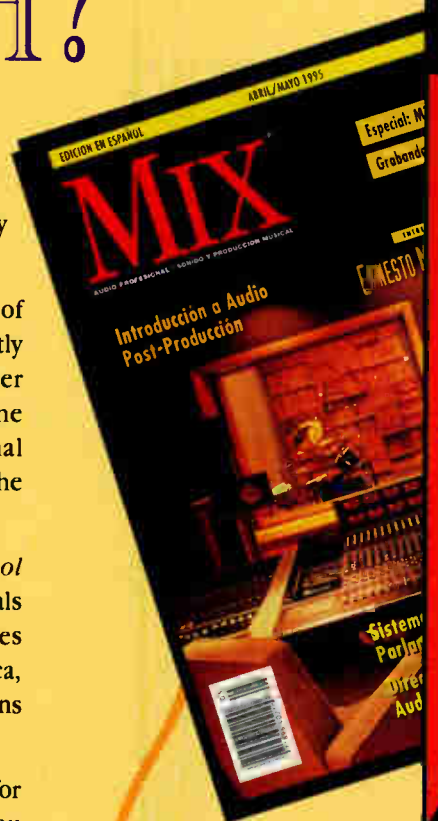
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—FROM PAGE 196, L.A. GRAPEVINE

he'll get even busier now that he's formed an alliance with AMS/Neve to help with their analog service.

"I've been doing a lot of work for them anyway," he says. "We're just making it a bit more official." Pat Schneider Productions, or PS Tech, will remain independent, though, with plans to move into a building in the Van Nuys area in July. "Yeah," he laughs, "I'm trying to get a building and a real shop so I can start living in my house instead of just working in it."

Asked to describe what he does, he says, "Refurbishing, updating, upgrading, whatever you want to call it. I work on Tridents, Soundcrafts, I do all of them, but it just seems like the Neve stuff is a little more specialized, so I guess that's why they call me. I've been working on them forever, it seems like, but all my jobs are different. I've never seen two Neves that are the same. They are all similar, but I think they were all built custom; people always wanted little things different on them."

Asked what he's done lately that he's particularly proud of, Schneider mentions two projects. "The board at NRG—it's an 8058 and an 8068 stuck together for 64 inputs, and it's gorgeous. It looks and sounds great. They've already had a few Platinum albums out of there. And the B room at Mad Hatter is a very cool 8078—it's 64-in also. It's an 8078, but we added an extra bucket on the end. Normally a 40-in board with 32 monitors—actually 16 monitor modules because the channels were half-width and every module was two channels—basically just faders with no preamp or EQ and only four sends. What we did was add the extra bucket on the end and make each module one whole channel, with eight sends and a 1073 EQ. Then we put in all GML faders down the line. What was fun, but aggravating, was to get those extra eight modules, because they didn't exist. I had to build them from scratch—all the metalwork and everything—I had to build Neve modules from the ground up."

As to what he'll do when all the old boards have finally been redone, Schneider says, "I want to get into building my own at some point, something real high-quality. If there's ever time to do it, I think it would be a lot of fun." Since he's al-

ready building Neve modules from the ground up, the Schneider board may not be that far in the future... Hmm, vintage Schneiders—it's got a nice ring to it!

Jandemonium in North Hollywood celebrated the end of its first year in business by adding a Studer 820 to its equipment list. The facility started out with a Neve 8108-48 fitted with GML automation and a Studer A827. Now that the A room has been busy with the likes of Adina Howard (East West), To The Extreme (Gasoline Alley) and the Penny Dreadfuls (Restless), a second tracking area is being built. Engineer-owner Jan Lucas says it will be a "get-your-work-done" kind of live room, and it's already in use for pre-production by the rock-rap group Gang A Noise, in tracking their second album for Jandemonium-affiliate Soundhole Records. Lucas, who has worked with Jody Watley, Shaquille O'Neal and Ku De Tah, seems to have a real feel for the rock-rap genre. He also recently remixed, with producers 88X-Unit, "B.G./ Thing," which has been garnering airtime for New Breed of Hustlas on Mobstyle Records.

Stopped over at Devonshire Studios in North Hollywood to check out the rumors that have been flying about the six-room facility for the past few months. Owner David Mancini gave me a tour of both the existing studios and the under-construction annex. Mancini, a building contractor with construction of (among others) the Village Recorder, Wally Heider's, Record Plant Sausalito, Larrabee and, of course, Devonshire, to his credit, has been building again. The new space is filled with natural light and is being designed to house editing suites and dubbing theaters, including a THX room. Plans are to ally with a post-production house and develop an in-house boutique record company.

Comments Mancini about the label plans, "These days, it's hard for any small business to make it, from a mom and pop grocery store to a recording studio. You need to ally yourself and vertically integrate. Here we have the ability to produce the product—we'd like to also control our own distribution." As a first project, Mancini collaborated with James Ward to produce a single for the controversial rapper Code Blue

—CONTINUED ON PAGE 201

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DIGIEXPO HEATS UP BROADWAY

by **Evan Ambinder**

They say those neon lights are bright on Broadway, but not even the King Kong-sized Jumbotron in Times Square could tear away 200 audio engineers from the computer screens and monitor speakers blaring away at DigiExpo, the New York Digital Audio Workstation Show that was held in June at the Marriott Marquis.

The exposition and conference, which was sponsored by the New York section of the Audio Engineering Society, featured Sonic Solutions, Avid/Digidesign, Digital Expressions, Orban, Roland, SADiE, Otari, AMS Neve, Soundscape, Fairlight, RCS and Z-Systems. It also hosted a discourse on digital audio theory and a comparison of workstation ergonomics.

On the floor, attendees checked out some of the newest DAWs, software upgrades and digital patchbays. Sonic Solutions demonstrated its UltraSonic Processor, which offers up to 16 channels of I/O and 32 channels of playback per card, and software V.2.2.0. Digidesign showed off Pro Tools V.3.1, which now has dithering and a 24-bit delay software module. Otari displayed its UFC-24 Universal Multitrack Digital Audio Converter, which translates and re-routes ADAT, TDIF-1, SDIF-2, AES/EBU, and PD signals, as well as its Radar View graphic controller software for use with the RADAR hard-disk recorder. And Orban presented software V.5.0 for its DSE 7000 workstation, which can now time-compress and expand audio $\pm 25\%$ without altering the pitch of the signal, according to the company.

Not to be left out, one anonymous manufacturer exhibited a full-blown analog workstation that comes equipped with a 10-inch reel of $\frac{1}{2}$ -inch analog tape, one splicing block, a razor blade, a grease pencil and a roll of splicing tape. List price? \$24.95. (Who says a piece of gear has to have a vacuum tube in it in order to be considered hip?)

In addition to the sounds and sights—Fairlight, Sonic, AMS Neve and Avid/Digidesign couldn't resist demonstrating the synergy between their audio and video editing systems. Orban's Dick Pierce and Digital Domain's Bob Katz dazzled the crowd with their oratorical skills and engineering insights. Pierce's illuminating lecture, "Smoke and Mirrors in Analog and Digital Audio," addressed common misconceptions of audio resolution, oversampling, error correction and other processes involved in the transfer of audio between the analog and digital domains.

Katz's "Workstation Ergonomics Test" then took the concept of "taking a test drive" to the next level. Prior to DigiExpo, Katz sent a DAT with separate music and dialog tracks to the nine manufacturers participating in the test. They were then asked to produce a 30-second radio spot for Katz's "latest product": Dither ("It cleans up your sound. It removes distortion. No messy floors to mop! Linearizes all kinds of music, even rock 'n' roll!"). The catch? The manufacturers had to videotape the editing procedure in order to demonstrate just how quickly and efficiently their systems could create the commercial.

Each manufacturer took a different editing and videotaping approach in their pursuit of impressing the SRO crowd. For example, Digidesign added reverb, EQ, compression and limiting after they finished editing the spot (unfortunately, the system they were using was not equipped with the kitchen sink, but they promised that one will be available in the next software upgrade), while Fairlight's Lukas Bower did the entire edit using one hand. But it was Orban's Jay "Autobahn" Rosen who left the crowd breathless by clocking his edit in at under two minutes, and that included the time it took him to slurp down his cup of coffee upon completion!

Kudos to New York section chairman Gabe Wiener and the rest of the show staff who helped to make DigiExpo a memorable event for all. Now, did anyone get the number of that analog workstation manufacturer? ■

—FROM PAGE 199, L.A. GRAPEVINE

called "Don't Squeeze the Juice," which was released through Bellmark (the home label for last year's hit "Whoomp, There It Is"). In the works next is an album for Code Blue.

Says Mancini, "Right now, a lot of studios in L.A. are all in the same barrel. To climb out of that barrel we can't all be climbing up the same rope. We want to grow and diversify and have more control over our own destiny. When Devonshire started, it was basically a home studio, an in-house production studio. Because of city ordinances, we had to move, and then we had to become commercial to pay for the facility. But now we're coming a bit full circle, continuing to have outside clients but developing our own projects on our downtime. We're definitely not closing down. We're determined to expand what we're doing and make a go of it through these troubled and strange times in the music business." ■

Fax L.A. news to Mautreen Dronoy at (818) 346-3062.

—FROM PAGE 197, SOUTHWEST STORIES

Gaffney, was working with producer Dave Alvin and engineer James Tuttle; and Eric Taylor recorded an album for Watermelon Records with producer Hallman and engineer Iain Matthews.

Phase IV Studios in Tempe, Ariz., has a Neve VR console with Flying Faders, Studer A827 analog multitrack, a Mitsubishi X-880 digital recorder and a Pro Tools system in Studio A; Studio B is more modest, with its 24-track, 2-inch Otari MTR-90 and Alesis X2 console. Studio manager Curt Anthon reports recent sessions: The Meat Puppets tracked with producer Paul Leary and engineer Chris Shaw; producer/engineer Attie Bauw recorded Fight (featuring former Judas Priest vocalist Rob Halford); Patti LaBelle mixed one of the songs off of her *Gems* album with producer James Bud Ellison and engineer Jay Lean; and Sheryl Crow stopped by Phase IV to track demos while on tour in Arizona.

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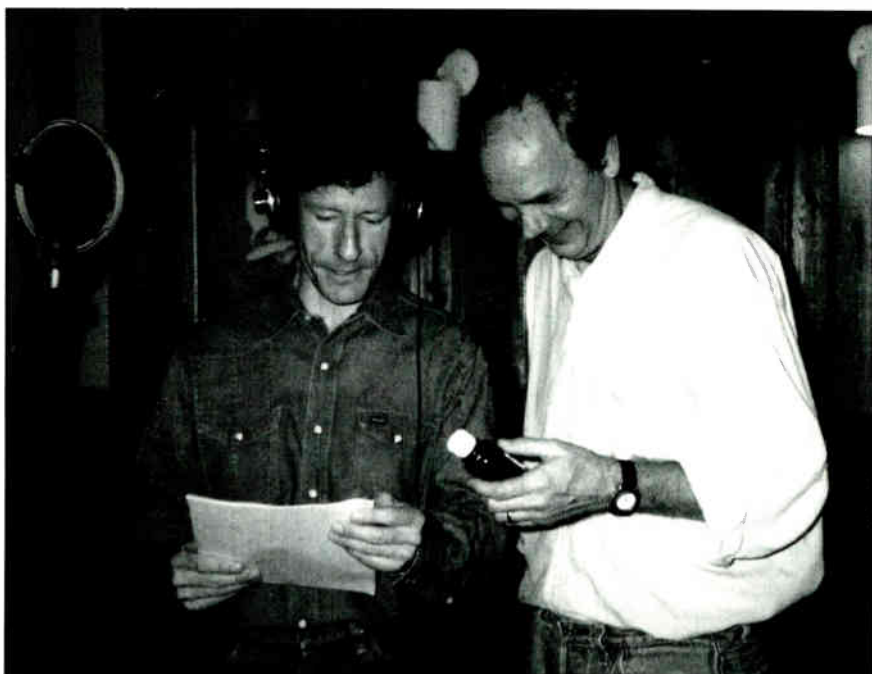
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Lyle Lovett visited Austin's Congress House Studio to contribute backing vocals on several songs for the new Eric Taylor (right) album on Watermelon Records.

PHOTO: MICHAEL MERRINS

design the facility, which has a 20x15-foot studio and a 19x13-foot control room. Slobodan Popovic, president and owner of ProDigit West, reports that they do digital post-production work on a 24-track

Sonic Solutions system and Tascam DA-88s, to go with the Mackie 24x8 console. Popovic says they do a lot of corporate TV and radio spots, like the sales video they recently did for McDonnell Douglas, and they plan to

get into more CD-ROM and premastering work.

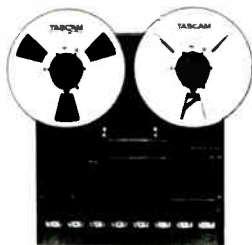
Houston's Sound Arts is a 24-track facility with a Trident 80B console, 2-inch Tascam ATR-80 recorders, and a digital editing room with Sonic Solutions for CD-R mastering. Owner Jeff Wells says they added a Hammond B3 organ. Recent sessions include singer Patti Rayne working with producer Robbie Parrish and engineer Dan Yaney; alternative rockers Under the Sun recording with producer Richard Cagle and engineer Eddie Hawkins for independent CD release; and rockers Zyphoid recorded an independent release with engineer Brian Baker.

In the Big D, Planet Dallas president Rick Rooney reports that they added several vintage Neve EQs and preamps to the facility, which has a customized MCI/Sony 528B board (with Otari DiskMix automation) and a Digidesign digital editing system, to go along with tons of analog gear—AKG ADR, Eventide H3000 and SPX 9000—and vintage amps from Marshall, Fender and Vox. Recent sessions: MC 900-Ft. Jesus (a.k.a., Mark Griffin) tracked and mixed his latest American/Warner's release; Fu-Shnickens remixed their single "Breakdown" on Jive Records, with engineer Rick Rooney; and Austin rockers Happyface recorded an independent release, which was mixed by Mike Edwards of the band Jesus Jones.

Antone's Nightclub celebrated its 20th anniversary on Austin's Sixth Street row of clubs recently with a weeklong bluesfest. Opened by Clifford Antone in 1975, the venue has hosted countless blues greats like Albert King, Buddy Guy and Albert Collins, and helped others get their start—Stevie Ray Vaughan, Angela Strehli and the Fabulous Thunderbirds, to name a few. Antone's Records started in 1987 as a means of recording and distributing the blues jams from the club, and today Antone's has two subsidiary labels: dos Records, which specializes in singer-songwriters, and DMZ Records, which presents Texas rock 'n' rollers. ■

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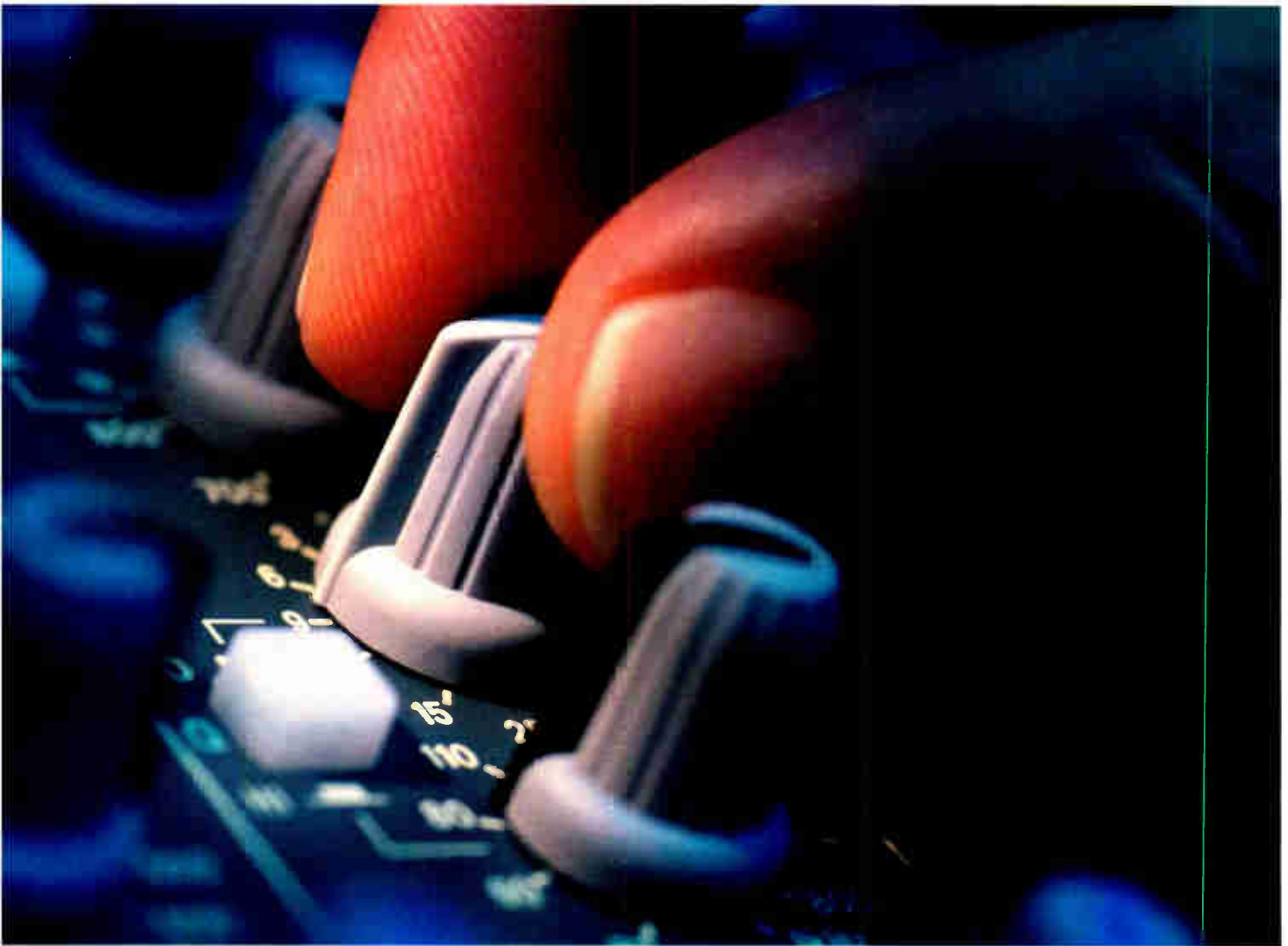


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SESSIONS & STUDIO NEWS

by Jeff Forlenza

SOUTHWEST

Doug Sahn (Sir Douglas Quintet, Texas Tornados) was captured live at Antone's Nightclub with "The Last Real Texas Blues Band" by engineer Malcolm Harper from his Reelsound Recording Company remote truck. Studio tracks for Sahn's new album were recorded at Arlyn and Peder-nales Studios, both in Austin, by engineers Stuart Sullivan and Larry Greenhill. All tracks were mixed by Sahn, Harper and Derek O'Brien... Blues pianist Pinetop Perkins was at Studio Seven (Oklahoma City) recording and mixing his album *Solitaire* for Lunacy Records with engineer Dave Copenhagen... Blues guitarist Sue Foley recorded and mixed her latest Antone's release, *Big City Blues*, with producer T.S. Bruton and engineer

Jay Hudson at The Hit Shack in Austin...

NORTHEAST

British rockers The The were at Sear Sound (NYC) recording basic tracks for their latest Sony/UK CD with producer/engineer Bruce Lampcov... BearTracks Recording (Suffern, NY) hosted 10,000 Maniacs, with new vocalist Mary Ramsey, when they recorded tracks for their latest album with producer/engineer Armand John Petri and assistant Steve Regina... Guitarist Robbie Dupree recorded his latest Polystar album at The Make Believe Ballroom in West Shokan, NY. Tom Mark engineered the Dupree project, which included session stalwarts Steve Gadd and Tony Levin... Producer Rodney Jerkins was at Mystic Recording (Staten Island, NY) mixing two songs for Mercury recording artist Veronica with engineer Dexter Simmons... Former Kiss guitarist Ace Frehley recorded an album of original material at New York's Baby Monster Studios with engineer Ian Bryan...

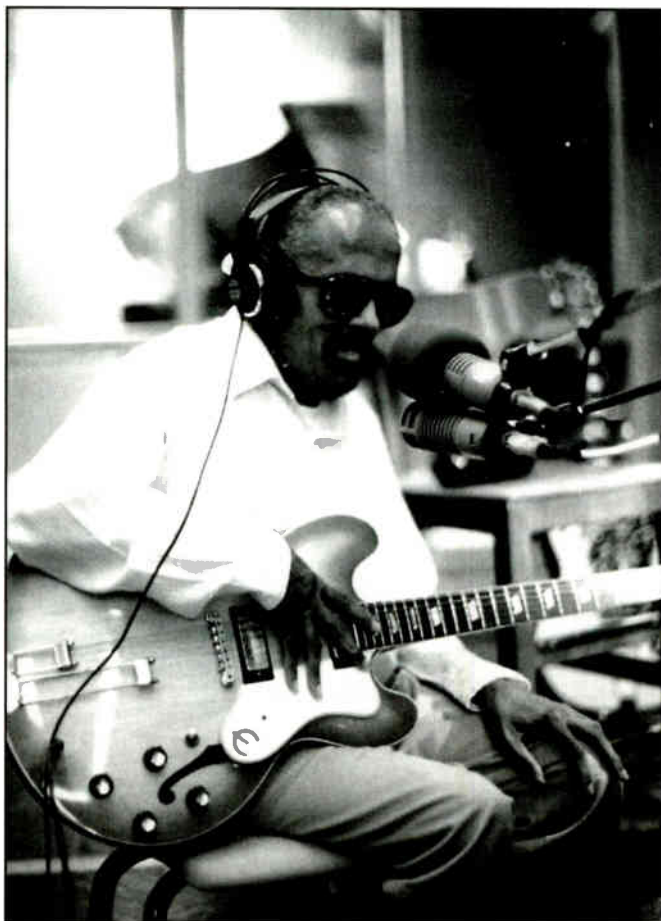
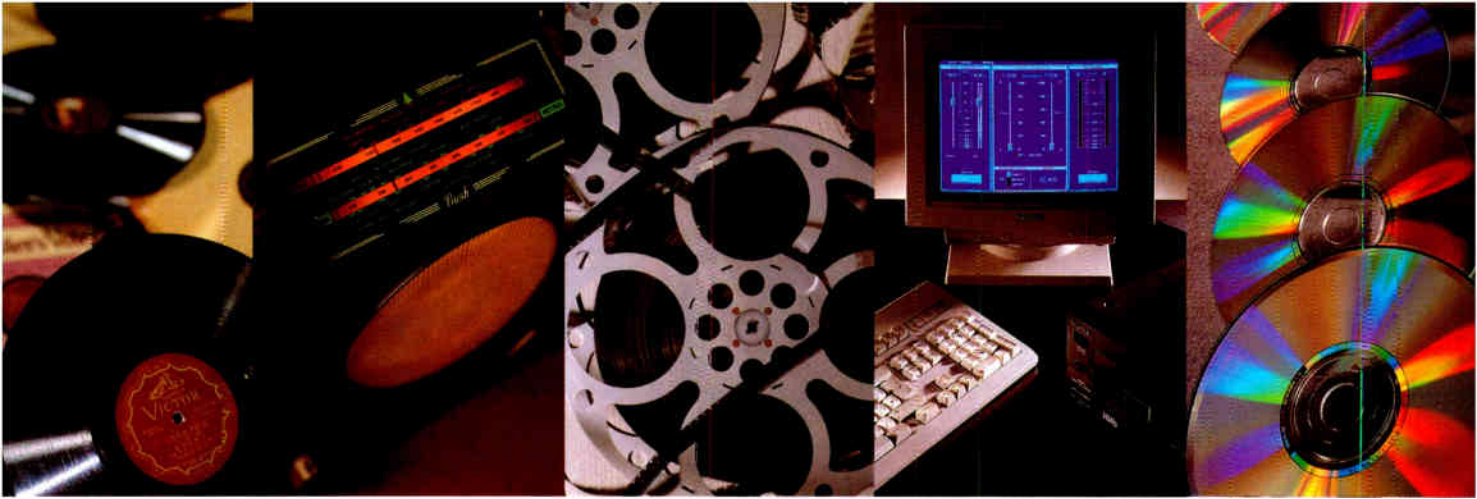


PHOTO: DAVID FARRELL

**Bluesman Snooks Eaglin recorded and mixed his
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New Orleans with producer Hammond Scott and engineer David Farrell.**



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World Radio History

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Rapper Grand Puba was at Acme Recording (Mamaroneck, NY) tracking his latest Elektra release with producer Chris Liggio and engineer Derrick Garrett...Producers Scott Herzog and Al Fichera produced underground scenester Kenn Kweder's new self-titled CD at Philadelphia's Third Story Recording...

SOUTHERN CALIFORNIA/HAWAII

At Hollywood's Music Grinder Studios, producer Dallas Austin was recording Fishbone (co-producing with the band) and engineer John Travis, and Cypress Hill's DJ Muggs produced the second album from Funkdoobiest with engineer Jason Roberts...The Wallflowers (featuring Jakob Dylan) were at L.A.'s Brooklyn Recording working on their second album for Virgin Records with producer T. Bone Burnett and engineer Neal Avron... Hard rockers Poison were at Hollywood's Image Recording mixing with producers John Purdell and Duane Baron and engineer Chris Lord-Alge...Producer Keith Crouch was Hollywood's Studio 56 working on projects for Anita Baker and Montel Jordan with engineer Booker T. Jones...Slash recording artists Grant Lee Buffalo were at Burbank's Master Control mixing a live CD with producer Paul Kimble and engineer Jeff Robinson...Capricorn recording artists Sonia Dada were at North Hollywood's Lighthouse Recorders remixing a single with engineer Paul Lani...Producer/pianist George Winston traveled to Audio Resource Honolulu (on the big island) to record slack-key guitarist Glenn Madeiros for his Dancing Cat label, which is distributed by Windham Hill...

SOUTHEAST

Atlantic recording artist Ricky Skaggs was at Nashville's Sound Emporium tracking, mixing and co-producing his latest album with co-producer Mac McNally and engineers Ken Hutton and Alan Schulman...The Independents recorded their debut for Rockduster Records at The Sound Lab in Greensboro, NC. Producer/engineer Thomas Rowan recorded the project, which included C.J. "Ramone" Ward providing backup vocals on two songs...Ambush recording artist Terence Lonan was at Strawberry Skys Recording Studio (West Columbia, SC) mixing his latest CD with producer Charlie Jones and engineer Gary Bolton...

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—FROM PAGE 197. N.Y. METRO

and WAN networking for major corporations (the *New York Times* is a client) and ultimately CD-ROM and multimedia production, which will be done out of a smaller studio on a lower floor.

The main room, though, is impressive, with an 80-input SSL 4000 G Series with Ultimotion. The acoustical design is by Richard Oliver, studio design by Andy Munro and interior by Angelides and his brother and cousin, who are his venture partners and co-remixers for dance versions for acts like the Red Hot Chili Peppers and Bon Jovi. Remixing was their entrée into the business, although Greg Angelides' white Brooklyn homeboy appearance belies his Princeton economics degree. "Right now, this studio represents about 80 percent of what the overall company is doing," he says. "But as the multimedia comes online, that'll change to about 50-50. We look at the studio as a tool for building something larger."

Mystic has plans to open another room in the future, and Angelides doesn't believe that New York Harbor will be a barrier that can't be overcome. "Look, people don't think of Staten Island as a music center, and they think it's a pain to get here," he says. "But once they see how fast and pleasant the ferry trip is and how close we are to the slip, they look at the room in a very different light."

Another new arrival is **Savebone Music**, on the site of the old Hit Factory room on West 42nd Street. Operated by former Vienna, Austria, studio owner Sasha Gracanin and his son and chief engineer, Sasha Jr., Savebone has left the 5,000-square-foot studio essentially the same. The main control room has an SSL 4000 G with Total Recall and Sony 3324 multitrack. A second, smaller control

room has an Akai MG-1212 linked to a pair of Sony PCM-800 MDMs for pre-production, with the ability to digitally transfer to the 3324.

Current projects include a production by the elder Gracanin of former Stones guitarist Mick Taylor. Savebone is a base for in-house productions but is a for-hire facility, as well, according to Gracanin. "What we're trying to do is offer a good studio without charging extra for additional outboard equipment," he says. "We did well in Austria doing mastering and classical projects. But we wanted a challenge, and New York is definitely that." ■

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—FROM PAGE 207. SESSIONS & STUDIO NEWS

NORTHWEST

Geffen recording artists The Posies were at Bad Animals/Seattle mixing their latest release with engineer Adam Kasper and assistant John Burton... On a Llama recorded their first complete album project with engineer Pete Plympton at Poundhouse Productions in Portland, OR... Also in Portland, Robert Rude recorded his latest ten-song album with producer Gavin Pursinger and engineers Billy Hagen and Blake Wood at Red Carpet Treatment...

NORTH CENTRAL

Grammy-winners Sounds of Blackness recorded the song "Power to The People" for an upcoming John Lennon tribute album with producer

Carlos Santana was at The Plant Studios (Sausalito, CA) adding his guitar to Junior

Wells' new Telarc release, Everybody's Gettin' Some. From left: Telarc engineer/producer Michael Bishop, Santana and engineer Devon Reitveld.





Blues Traveler's John Popper stopped by Acme Recording (Mamaroneck, NY) to play harmonica on several tracks off the debut release by indie rockers The Fool. (L to R) Engineer/co-producer Thom Leinbach, Popper, Gillian White, Ben Lewis and Bruce Wilpon.

Jimmy Wright and engineer Jeff Taylor...Canadian band Barstool Prophets were at Smart Studios (Madison, WI) mixing their Mercury/Polydor debut with engineer Doug Olson and assistant Mark Haines...RCA recording artists The Lupins tracked and mixed material for their latest album with engineer Van Christie at Chicago's WarZone Recorders...

STUDIO NEWS

Sweetfish Recording (Argyle, NY) redesigned and expanded its A room with the help of the Walters-Stork Design Group. Built into a former dairy barn, Sweetfish specializes in alternative rock recording...Bob Fowler and Steve Branca (Silver Wave recording artists Fowler and Branca) opened their own recording room in Smithville, NJ: Sea Song Recording 2 was constructed by Fowler and Branca, and the room features an Alesis X2 console and Alesis ADAT recorders...Modern Tribe Digital Recording Studio moved into a new 10,000-square-foot space in Highland Park, MI. Dan Harjung (formerly of Royal Recorders in Lake Geneva, WI) will run the new facility, which is also the home of Modern Tribe Records...Scream Studios (Studio City, CA) installed a custom Tannoy Dual 15 monitor system, designed by Chris Pelonis Sound and Acoustics and powered by a Crown Macro Reference amp...Nashville's Music Mill recently renovated its facility with the help of the Russ Berger Design Group...Greg Rike Productions (Altamonte Springs, FL) recently redesigned its control room and installed a custom 40-input API console.

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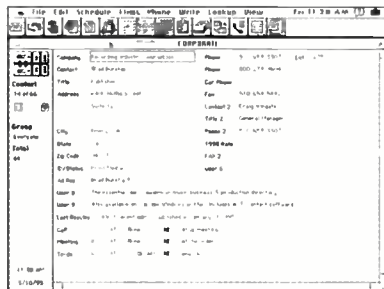
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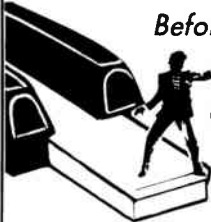
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INSIDER AUDIO

—FROM PAGE 21, TOM HIDLEY'S INFRASOUND

pit traps that are similar in volume to ceiling traps for vertically symmetrical "acoustic unloading" equal to the horizontal unloading. Traps in front and back with a floated slab on massive 3.2Hz viscous damped springs, mounted on concrete pillars, isolate from trains, trucks and other devices that cause vibrations.

The Hidley Infrasound 10Hz monitoring environment is designed to enable the engineer to identify and remove unwanted signal and to add exactly the amount of infrasonic sound desired for, say, the special effects in a motion picture. This is not the brute-force random sound of subwoofers, but the precise use of measurable infrasonic frequencies. The 10Hz to 20Hz region of pressure may not be heard, but it is perceived physically and psychoacoustically by the listener, either at home or in the theater.

HISTORICAL HERTZ

In the '40s and '50s, we had acoustic bands generating sound down to roughly 40 Hz. Studio monitoring systems were operating in the 50Hz to 60Hz range into the '60s. Moving into the '70s, electronic bands proliferated, and we experienced the sound of 35Hz frequencies in recording studios. Monitoring was inching its way down to the 45Hz to 50Hz range, with a few custom systems reaching as low as 40 Hz. In the '80s, we found electronic keyboards doubling bass parts down to that bottom rung of the human listening range, and possibly below. We had 30 ips tape machines that had a bandwidth down to about 30 Hz, maybe 25 Hz if you got lucky. In a sense, there was an analog barrier, a safety net protecting against infrasonic recording activity getting onto the final recording. Most control rooms could only monitor music at 40 Hz and above.

In 1986, Hidley designed the first 20Hz monitoring and room design for Masterfonics Studios in Nashville. By 1991, with the completion of the \$22-million BOP Studios in South Africa, Hidley had exposed the (inaudible) sound barrier. It's not widely known that half of the budget for Hidley's acoustic construction went into an elaborate and massive air-conditioning system that would meet

his demand for an infrasonically clean recording environment with at least a 15dBA noise floor. Because he's such a taskmaster, the A/C contractor called in the South African Bureau of Standards to prove that they had achieved what Hidley specified. They did.

Most of today's world-class studios, with air conditioning running, exhibit a noise floor of 19 to 22 dBA, which is better than most contemporary studio designers expect. At BOP, the noise floor that had been achieved and monitors capable of bottoming out at 10 Hz made for incredible dynamic range.

After the results he saw at BOP, Hidley endeavored to design more Infrasound facilities. There are two U.S. studios in the planning stages that he says will be what he calls "Infrasound ready," meaning that construction specs will have been met and the studios, one in Nashville and one in Atlanta, will be awaiting only the installation of the 10Hz Hidley-Kinoshita monitors to be complete. Nearing conclusion of the planning and financing phase is a third project, an \$80-million performance/recording venue and post-production facility in Marrakech, Morocco.

THE ROAD TO MOROCCO

As a friend and business associate of Hidley, I was called on last year to help put together a marketing/operations package for a two-phase Hidley-designed project in Marrakech, with a projected budget of \$25 million for Phase 1 and \$55 million for Phase 2.

Hidley says, "For Marrakech, we are developing a production environment with entirely new levels of sonic neutrality, extending the generated bandwidth one octave into the infrasonic pressure zone—a facility yet to be experienced by either the professional audio or picture industries."

To realize a project of this magnitude, scheduled to begin construction this fall, the cost of the monitor systems alone is estimated at \$1.4 million for Phase 1. At the center of the three-building complex are plans for Club Marrakech, a 1,500-square-meter (16,500-square-foot) Infrasound musical performance and recording space equipped for live television/film production and/or broadcast syndication. The main room will accommodate 1,000 in auditorium seat-

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Mix's 24-page Southeastern Studios advertising supplement in September, featuring top studios of Georgia and Florida!

ing or disco format. The room doubles as a scoring stage for up to 150 musicians. An adjacent building will include a recording studio (250 square meters/2,750 square feet), with a Hildley Infrasound 10Hz control room. The club will be equipped for eight-camera video shoots, interfaced with a dual antenna digital teleport (four independent signals) for live transmission via ARABSAT and other international satellites. In addition, the facility will double as the world's first Infrasound discotheque.

A third building will house a 500-square-meter/5,500-square-foot shooting stage for television and film production. This room also is designed with Infrasound acoustics to accommodate the most sophisticated music production.

Phase 2 of this project is to be a companion facility devoted to post-production. In Building 1 will be Studio A, a scoring stage designed to accommodate a complete symphony orchestra of 150 musicians or serve as a giant dubbing theater. The room also will double as a straight music recording studio with Infrasound control room. A second building will house an Infrasound 10Hz surround sound TV or music mix room and a dedicated Infrasound dubbing theater/screening room with projection for analog/digital mix-to-film recording and viewing of film and video projects either during production or in finished form. The theater is fitted with 80 seats for screening applications. The third building will contain studios for Foley/SFX to picture and an ADR studio for film and video voice-overs, with Infrasound control room, which will serve double duty as a smaller music production studio. The fourth building is designed to be a twin facility to the dubbing theater/screening room, allowing the facility to work on up to three dubbing projects simultaneously. Also housed here will be 26 post-production suites of various configurations.

Getting down to the foundation of recorded music is at the heart of Hildley's ongoing research and refinement of infrasonic principles. Making the music better is as exciting as it gets, and as the story unfolds, *Mix* will report further on the future of the Infrasound studio. ■

Chris Stone, co-founder of the Record Plant, is now chairman of the World Studio Group.

FAST LANE

—FROM PAGE 26, *DAS BOOT*

longer attempting to satisfy my craving for 20Hz energy by adding more 40Hz. Now the horrible whoompiness (medical term) is gone, and a new, embarrassingly fun, 20Hz violence is mine at last.

There is no substitute for power. My cats don't watch *Jurassic Park* with me anymore; in fact, they now run to the bedroom as soon as they see the rainbow refraction of the disk. I have replaced 11 glasses (all broken in cabinets two rooms away), three pictures and two neighbors, and apparently there is some concussion damage to my kidneys. Now isn't this what high-quality, precision audio is all about? Oh. Okay. Well, then, isn't this what *fun* is all about? You can't fire a .44-Magnum *every* day, and you can't ride that straight pipe Harley on winter ice. You gotta get those compression fronts somewhere.

*NOTE

This is a very complex and dangerous game, and I am surprised that most of the manufacturers advocate it as one of the preferred setup options, as it takes considerable skill to get dissimilar drivers in different physical locations within a real-world reactive room to work together.

On a related note, there were common points in the manuals about the results and consequences of placement. Basically, if you stick one of these things in the center of the room, you will get some bass, and it will be fairly flat, depending on variables such as the floor and room construction: best choice for Buddy Guy. If you put one against a wall, however, you get the half-space gain that you might expect (more bass), with the penalty of more evil resonances (less flat): best choice for ZZ Top. Now if you are crazed enough to put one in a *corner*, you get *mondo basso*, but the resonances are so severe that it could probably be fairly stated that they account for *everything you are hearing*. Very peaky, monster standing waves: best choice for *Terminator 2*.

So you can have some not-insignificant, low-end extension, at higher levels to boot, with a fairly tight and flat overall response, or a lung-collapsing bottom end that might simply miss a note or two, and maybe play a few others a bit longer

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than they were meant to be played. Or somewhere in between.

DUALING SUBS

There were other common points in the manuals about the use of dual subs; they recommend buying two and sticking them in various places in the room. The premise is that two subwoofers will: (A) give you a few more dB because, well, because there are *two* of them; twice as many drivers, twice the cabinet displacement and twice the amplifier power; (B) give you a few more dB because it's pretty hard to get two subwoofers physically far enough apart to lose coupling gain at those long wavelengths; and (C) give you better, smoother, flatter response due to nodal dispersion.

Ah, now C is interesting. No two subwoofers are going to simultaneously act the same in a given room, as they cannot occupy the same space and so will excite different room resonances. A bit of experimenting with this can produce impressive results: A few high-powered subs strategically placed in a room can actually produce both vision-distorting bottom end *and* a smooth response. It didn't take much experimenting with multiple M&Ks to discover that you should completely ignore your initial gut-level instinct to build a single monster wall of subs (with my apologies to Phil Spector and his Wall of Sound) and instead place them intelligently around the room, and then move them and try again, and again, and again...until every note hurts as much as every other.

10,000 MILE UPDATE

In the months since I started this column I have backed the subs down to the "proper" level (I don't really sense them as separate entities anymore), but I do find myself waiting with anticipation for any severely demanding musical passage or movie effect to come along and wake them up. And every time it happens, I smile.

I almost promise more on subwoofers in 30 days, including a graphic description of how they smell after playing Grand Funk's "Funk 49" clocked down 10% to lower the bass notes. To be continued. ■

Mr. St. Croix also writes dry, hard-line, arrow-straight technical papers. Pretty scary, huh?

—FROM PAGE 61, RUSSELL BOND

rooms ourselves, with some help from my brother David, who is an expert with materials. The rooms are square. Dealing with acoustics in a square room is tricky. But I learned enough from building other studios to know how to treat various areas of each room. I didn't want to make a completely dead room. I wanted a sort of Live End-Dead End® room, so I set the acoustic focal point at a 45-degree angle in the room and treated the front corner with harder surfaces. The surfaces get softer and more broken up as you go further toward the back of the room.

If you were to build it again, would you do anything differently? How and why?

You know, I'm not really sure I'd do anything differently. It's working pretty darn well. It seems that you can never plan ahead for enough expansion, but so far we haven't been limited by the amount of rackspace or the amount of cabling that we ran. Of course, the potential for that is there... *Did you run the cabling under a false floor?*

No, we actually cut through the concrete slab and ran conduit underneath the slab and up through the walls.

Why did you do that?

I didn't want to have a step to deal with when entering the control room. The whole thing is basically sitting on a concrete slab. I didn't think a false floor was necessary. We're not doing rock 'n' roll in here. We're doing voice-over, acoustic guitar, piano—acoustic instruments. The room has limitations: You don't have any isolation booths, although I did run tielines to the bathroom, so we could kluge something together. But I don't get much call for that kind of recording any more. It made more sense to design around the solo-instrument recording projects that we had been getting. Of course, it works as a voice room very well.

How do you modify the room for voice work?

The plan was to have a tunable room. Indeed, that's what we've got. There's a lot of hardwood, along with movable baffles to cover any percentage of the hardwood that we need. So the room can be dampened completely down. And even though it's not a large room, there is enough "room sound" to help acoustic in-

struments without sounding boxy.

So when we do a voice-over session, we slide the baffles over in front of the hardwood, and it knocks the room down quite a bit. It's a very versatile room.

What about mics and preamps?

We have a number of mint-condition Neumann and AKG microphones. Our standard setup is a Focusrite 215 into a Summit dual-tube compressor, and then directly to the hard drive using Pro Tools. I love that combination. We also have a lot of other outboard processors.

On a conceptual level, we wanted to have a variety of front ends for the Pro Tools system. So just as we use different mics for different applications, we wanted to be able to use different mic preamps for different applications. We have the Focusrite, a Neve Prism rack, a Summit Audio mic preamp rack, the Summit dual-tube preamp rack, Demeter and so on. It's like having a lot of different consoles at your disposal.

Tell me a little more about your concept for wiring the facility.

Probably the most unique thing about this studio is the patching system we came up with. We wired the entire studio so that you can run a "typical" session without any patch cords, but everything does come up at a point, so you have the option of cross-patching. We have a very tricky normalizing scheme to route all of the outboard gear without any patch cords. One of the limitations of the Pro Tools system is that, unlike a console, it has only one in and one out on each "track." So with this kind of equipment, it's pretty easy to get crazy with patch cords.

Some of it is digital routing, as well. We have a couple of pieces of outboard gear, such as the Eventide DSP 4000 and a TC Electronic M5000, which both have AES/EBU I/O. When you route a signal out of Pro Tools, it goes out both the analog and the digital port simultaneously. We also have a Roland 550 delay unit, a Zoom 9200, a Roland E-600 digital parametric equalizer, a Dynacord DRP-20, to name a few.

How do you expect your studio business to change over the next couple of years?

The facility is set up so well for doing multimedia that it's hard to overlook that. And there's so much multimedia work out there, and it's still growing. I know that a lot of the calls that we

get for multimedia-oriented projects result from someone being plopped into a situation where they are expected to produce something, and they have only a vague idea of how to do it. I enjoy guiding them in terms of how to do it, what to look out for, what not to do—that kind of thing. So I love the kind of client who wants to learn about it and has a project to do. That's the best way to learn, especially where multimedia is concerned. You've got to have a real project to learn how to work through all the little idiosyncracies that make up a multimedia product.

But up to this point you are doing only audio, as opposed to other media types?

Yes, but we're going to need to get into the video realm. In just doing audio for multimedia, you're limited to doing sound design for picture, straight voice-over or straight music for accompaniment to some kind of visual. I think that desktop video capability is vital to providing a complete multimedia service. That's really where we're headed. We have plans to market a few of our own multimedia projects. We want to be audio partners with teams that are putting multimedia projects together, and we have the expertise to do that.

What are some examples of typical multimedia projects you've done?

I recorded and edited the narrator intros and the interviews on the *Amnesty Interactive* CD-ROM for Amnesty International. It was originally a Mac CD, so we created Macintosh and resource files for Director. I also recorded and edited all the narration, sound effects and music for the Apple CD-ROM Explorer, which demonstrated the capabilities of Macintoshes.

I'm currently working on a huge audio looping project that will be published on CD-ROM. It will support all the major samplers: Korg, Emu, Akai, Roland, SampleCell. It consists of over 600 Latin percussion audio loops—4- and 8-bar grooves at three different tempi, with drums, drum/perc mix, and various combinations of percussion mixes, as well as individual percussion grooves. It's a 3-CD set, and each set will have to be formatted differently for each sampling system. ■

Paul Potyén is a Mix contributing editor and producer at ESCAtech media Inc., a multimedia production company located in Half Moon Bay, Calif.

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—FROM PAGE 156, TIMELINE DAW-80

playback and then balanced into a 2-channel mix. In this way, a simple sound editing facility could be set up using just the DAW-80 and a patch-bay; no additional mixer would be required to provide monitoring.

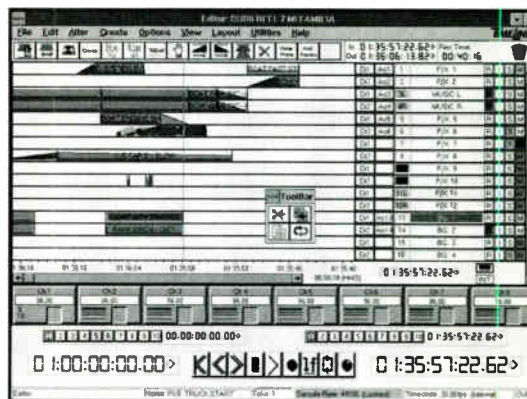
For more complex situations, and to provide MIDI-based automation of key functions, TimeLine's Windows-based StudioCAD Digital Mixer provides onscreen control of a 10x4 mixer with two aux sends, solo/mute, level metering, phase reverse, plus simple EQ (high/low shelves and a parametric midrange). Each element can be moved and assigned to a MIDI channel for external data storage and/or control. Although relatively simple, the StudioCAD mixer proved to be extremely useful in mixing a variety of external signals prior to recording to disk, and then providing a stereo mix with effects outputs during replay. While the Digital Mixer might not set the world alight with its sophistication, it gets the job done with a minimum of fuss.

For truly powerful mixing and signal processing, TimeLine is offering a Studioframe-compatible version of Peavey's Media Matrix DSP board, which provides programmable design of a wide variety of console topologies. While lack of space prevents me providing more than a brief overview of Media Matrix' myriad features, suffice it to say that the user can de-

sign—using a sequence of point-and-click routines—complex, I/O patch configurations and assign a variety of parametric/graphic EQ, compressor, limiter, ducker, delay, routing, mixing sections, distribution amps and other circuit elements. Once the design is finished, a simple keyboard sequence causes the software to compile the circuit layout as complex algorithms running on the Media Matrix DSP chips.

Using software hooks to the DAW-80's analog I/Os and hard drives, Media Matrix enables a fully functional, mixer/recorder to be built by the user. Currently, no automation is offered, although this may be made available as a system update in the near future. My only, admittedly minor, gripe is that no dedicated controller is yet available to handle real-time mixing and DSP functions using faders and knobs, rather than the current "glass console" user interface.

All in all, the DAW-80/Studioframe 6.01 combination is powerful and extremely easy-to-use. Its basic functions can be mastered in a short period of time, at which point it will add some powerful recording, mixing and processing functions to virtually any music, broadcast or post facility. My only reservations are centered around pretty minor software funnies—such as slow screen-redraw of event waveforms—plus layout of



Studioframe full screen

the DCS-100 controller and automation functions for Media Matrix. But these become virtually insignificant when balanced against the flexibility, user-friendliness and value-for-money that the TimeLine DAW-80 offers.

SYSTEM COSTS

A basic 8-8-8 DAW-80 system (eight analog inputs; eight tracks; eight analog outputs) sells for \$17,500; a full-featured 24-24-24 configuration runs to \$33,000. (Systems can also be expanded by the user via the installation of additional I/O and disk-controller cards.) Hard drives are available in both 1.2GB and 2.4GB capacities (\$825 and \$1,450, respectively); a 1.3GB MO drive is \$2,800, and a 2.5GB Exabyte 8205 adds \$1,800. The optional Assembler EDL Input software is \$1,000, as is the GP I/O card and Machine Control hardware with companion software. The DSC-100 dedicated Digital System Controller is \$2,750.

My sincere thanks to Mike Galane of Galane Productions, Cupertino, Calif., for the use of his well-equipped facility, and to Dave Frederick of Takumi Sound, for invaluable comments during evaluation sessions with his 8-track system, while viewing several audio-for-video projects that he has produced for such clients as Hewlett-Packard, Silicon Graphics, National Semiconductor and Apple Corporation. (Dave also served as film-sound editor on Zoetrope's *Mi Familia* and *The Secret Garden*.)

TimeLine/Vista, 2401 Dogwood Way, Vista, CA 92083; (619) 727-3300; Fax: (619) 727-3620. ■

TimeLine "Digital Dubber"

Currently in development is TimeLine's The Player, a new "digital dubber" format for the DAW-80, intended for use in video/film post-production. The Player comprises a standalone rack-mounted unit capable of accepting removable media (MO or hard drives) in TimeLine or OMF formats. Each DAW-80/Studioframe-based unit will play back eight channels; multiple units will sync via built-in Lynx-style controllers. Through networking, the system will provide a virtually unlimited number of tape tracks, both in Forward and Reverse mode, plus advance/retard of individual tracks or groups of tracks from a remote PC. Additionally, network software will enable Studioframe editing software to access any of the online units, allowing editing operations on the dub stage.

TimeLine believes that The Player, configured as a viable digital playback source, will serve as a key enabling component in future all-digital facilities. Elimination of the transfer operation prior to dubbing—to either mag film or audio tape—will improve flexibility, as copy/loop operations can now be handled online. Also, the ability to perform single-track or multitrack editorial changes or picture conformation on the dub stage, if necessary—without physically handling the media—should also dramatically enhance film/video post productivity.

The Player is scheduled for delivery in the fourth quarter of 1995. ■

Former 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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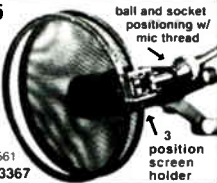
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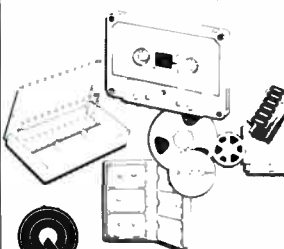
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—FROM PAGE 191, ERIC BURDON & WAR

about recording from those guys, and then I developed my own techniques from there."

Huston says that Wally Heider's "always had the best of everything—from microphones to maintenance. His studios went through a lot of changes later on, but in those days it was just about the best around. His environment was always real conducive to working hard." "Spill the Wine" was mainly live in the studio, with just a few overdubs, tracked on the studio's relatively new Ampex 16-track, with no Dolby.

On paper, the combination of a bloke from Newcastle and a bunch of young black guys into funk, gospel, jazz and Latin beats must've seemed odd to some people. But the fact is The Animals were very heavily rooted in American R&B music (it was a toss-up whether they or the Stones were the "blackest" British rock band), and Burdon drew his vocal inspiration almost entirely from blues and soul singers. Having Burdon in the band certainly gave War an entree into the music scene, particularly in England.

"What happened was we went to England after the album came out," Jordan says, "and [the record company] had released the A-side, which was a song called 'Magic Mountain.' Nothing was happening with that—the radio people said it was too drug-oriented; they couldn't deal with it. So they started playing the B-side, which was 'Spill the Wine.' By the time we got to England, that was all we heard on the radio. It was on every station." Success in America came quickly after that.

Still, after a little more than a year (and two albums together), Burdon left War in the middle of a European tour (claiming exhaustion), and the band immediately carried on very successfully without him. "What happened," Huston says, "is War ended up upstaging Eric. They were better than Eric; in fact, on their European tour, they'd go on first and be so great that when he'd come out, he'd have to try to catch up to them. Still, during their time with Eric, the guys in War really came alive and developed, almost independently of him. Eric was a catalyst and a mentor for them.

They were very young and naive. But they hit very fast. Within a year, they were driving Ferraris and living way beyond any dream they'd ever had."

And the hits just kept on coming. Huston worked with them on their first post-Burdon album, *All Day Music*, which contained the hit "Slipping Into Darkness," and then watched his friends score again and again through the '70s and early '80s with one groovelicious, socially conscious song after another: "The World Is a Ghetto," "Gypsy Man," "The Cisco Kid," "Low Rider," and "Why Can't We Be Friends," among others. Today, original members Lonnie Jordan and Harold Brown still front the band, who now record for Avenue Records. Their most recent album, the under-appreciated *Peace Sign*, showed that the group still has something to say.

"They've given so much to the music world," says Huston fondly. "I think they were totally underrated. I still think Lonnie Jordan is one of the best voices around, and they could always really play. And one thing you could always say about War: They always played from the heart." ■

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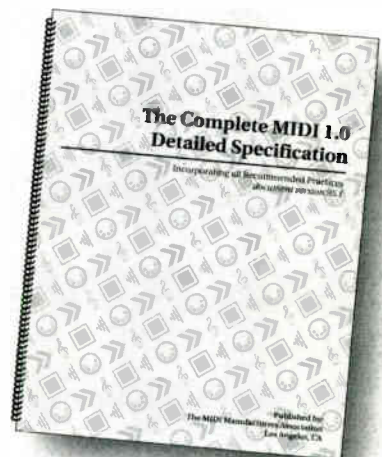
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FEEDBACK

DON'T FORGET 'BANG FOR THE BUCK' AND 'GURU'

Here is a list of words that should not be used by *Mix* magazine this year: classic, vintage, legendary, hip, clean, renowned, veteran, cool, golden ears, warm, respected and transparent. Thank you.

David Bock

Soundelux

Hollywood, Calif.

MOTOWN MEMORIES

My name is Aaron Smith, and I was employed as a recording and touring drummer at Motown Records from 1971 to 1974. My first two years at Motown were spent pretty much entirely working with Norman Whitfield on his many projects in the studio and in concert. I was very fortunate to have performed on recordings by the Undisputed Truth, Edwin Starr, Eddie Kendricks, David Ruffin and The Temptations, and to have toured extensively with both the Undisputed Truth and The Temptations. One of the most treasured moments of my tenure and association with Motown was my participation in the recording of The Temptations' hit "Papa Was a Rolling Stone."

I am writing in regards to Blair Jackson's "Classic Tracks" article (*Mix*, April 1995), "The Temptations' Papa Was a Rolling Stone." I was a drummer on that session and was shocked to read that Andrew Smith had been given credit for playing the main drum part, as well as crediting Paul Warren and Melvin "Wah-Wah" Watson with performing all of those many guitar tracks on the song. (Granted, they both played an important role but were not entirely alone in creating all of those great parts). On that session, there were two drummers as well as a percussionist, two bassists, six guitarists and Earl Van Dyke on keyboards. We all played together as Norman Whitfield went around humming parts to each player. It was an

exciting day in the studio, and it eventually turned out to be a monumental hit, monetarily and socially. After reading the article and getting numerous phone calls from my peers and friends here in Nashville, I had to set the record straight. It is my playing that starts the song and continues throughout. The only drumming I recall Andrew doing was the big fills during the out-vamp fade. I remember being envious at the time because I had considered my role as being such a small one. I was young (21) and wanted to play the "licks," so to speak. If he did any more than that, I truly can't remember it. Other unmentioned players were bassist Leroy Taylor and guitarists Billy Cooper (Wali Ali) and Dennis Coffey. There were two other guitarists whose names I can't remember.

Aaron Smith

Nashville

BJ Replies:

My apologies for the oversight. In reconstructing the personnel who played on the track, I relied on the perhaps bazy memories of the three musicians I spoke with, as well as the best efforts of three Motown historians. Norman Whitfield is probably the only one who could settle this once and for all, and he's not talking.

SIZING UP (DOWN) STEPHEN

Inasmuch as Stephen St.Croix believes that all should be what it is manufactured and professed to be, I must differ with the fact that he is 6'2", as stated at the end of his April article on compression entitled "Data Density: Da Digital Dilemma." I know of what I speak, because I used to be married to Steve before he became a full-fledged techno-dweeb, and I looked up to him a mere inch (I'm 5'11"), unless he was wearing motorcycle boots, which was much of the time. He would have worn them to the wedding had he not

married into a conservative family. Well, at one time, he occasionally attempted compliance!

I know you'll want to print this ex-spousal retraction because *Mix* appears to strive to be technically correct. This letter is, after all, written in the spirit of admiration and friendly banter.

I only subscribe to *Mix* to read "Fast Lane," which I find very entertaining—even informative. I have little use for the magazine as a whole, given that I am engaged in a totally unrelated field of endeavor. I admit this is a unique way to stay in touch with a former spouse, but as you can imagine, he is the kinda guy a woman just can't forget.

Ann K. Murray

Taspole Communications

Baltimore, Md.

TRUTH FROM THE FAST LANE

Yes, I always thought it was the better part of valor to stand completely straight when I was close to her.

Stephen St.Croix

ANALOG ADVOCATE

It took a century or more to perfect analog recording. How long has digital really been around? Sure, broadcasters love the digital stuff because it's quiet and easy. Admittedly, digital is better, in most respects, than a 1½ ips analog cassette.

As a musician, I am more concerned about overall fidelity. Maybe the next generation of ADATs and DA-88s will deliver the warmth of analog. Till then, I'll be recording on analog and listening to vinyl. Silence is not always Golden.

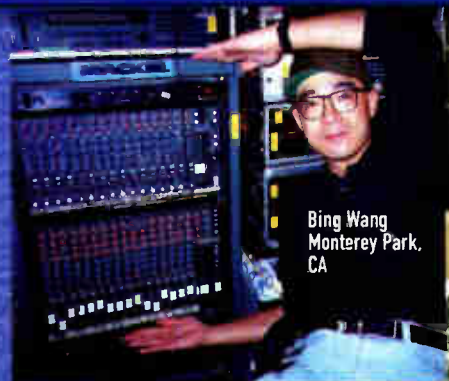
Steve Woodham

Murrieta, Calif.

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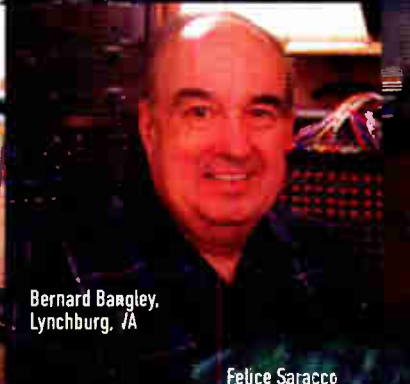
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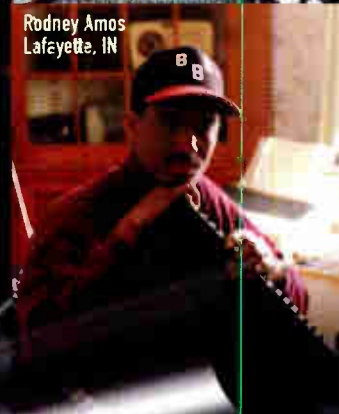
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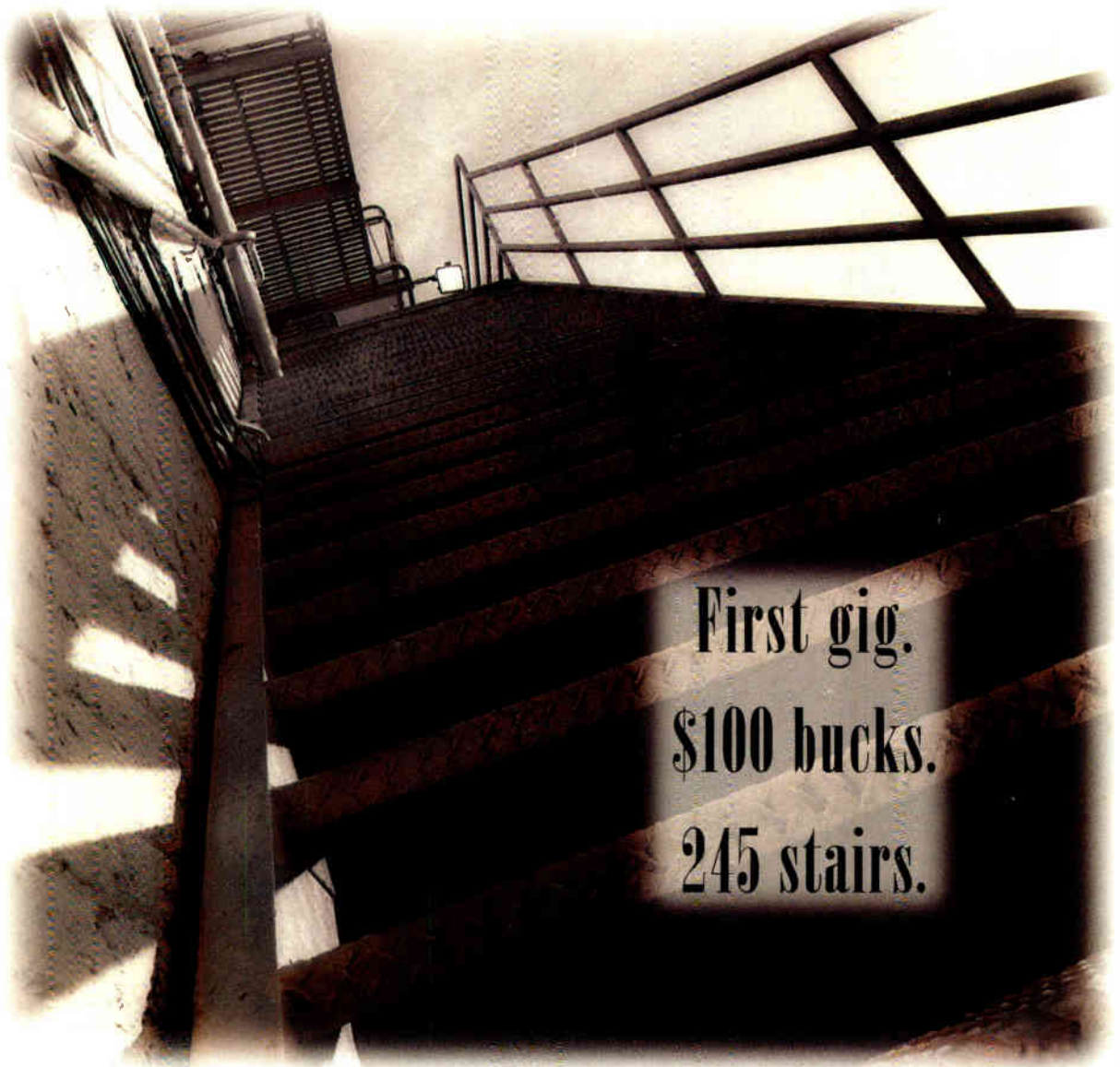


Rodney Amos
Lafayette, IN

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