Recording Roy Orbison · Hearing Protection · Yamaha O2R Digital Console

U.S. $4.95 CANADA $5.95 JANUARY 1996

MIX®

PROFESSIONAL RECORDING [illegible] AND MUSIC PRODUCTION

LIVE SOUND SPECIAL

- Bowie and Nine Inch Nails On Tour
- Handheld Vocal Mics
- New Gear From AES

REMOTE RECORDING ··
Seven Stories

INTERVIEW WITH
k.d. lang

Go To Your Room

Q2 2.0

Actually, with the powerful reverb algorithms in the Alesis Q2™, you can go to any room you want.

Q2 has the power to take your music to shimmering halls, bright chambers, dark caverns, or anywhere your creativity leads you. There's 300 carefully-designed reverbs, delays, EQ, pitch and special effects that provide the high-end professional processing you need without breaking the bank.

But the best reason to use a Q2 is the incredible flexibility it gives you to create your own space. Because the place where the music sounds the best – the room to be in – might be the room you call your own.

"I love the Q2. I'm using it in the show every night."
— Robert Scovill, 3 Time TEC Award Winner (Sound Reinforcement Engineer)

"I love that Q2. We're using the hell out of it."
— Ray Benson (Asleep At The Wheel), Multiple Grammy® Winner

"Q2 is the presetter's fantasy and the tweaker's dream."
— Francis Buckley, Top Independent Dance/Pop Engineer

- Stereo or Independent Dual-Channel Operation
- 100 Preset And 200 User-Editable Programs
- Octal Processing™—Up to Eight Effects At Once, In Any Order
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- +4dBu Balanced and -10dBV Unbalanced Operation
- ADAT® Optical Digital I/O
- Custom LCD Graphic User Interface with Virtual Patch Cables
- **NEW!** Version 2.0 Software Now Features Up To 5 Seconds Of Sampling, Plus Overdrive, Surround Encoding, Triggered Pan with Doppler and More!

Phase, Leslie, Pitch Shift, 2-Band Sweep, 384-Band s, separate L/R input levels stuff. For more Q2 info, see trademark of NARAS.

Alesis Corporation 3630 Holdrege Avenue Los Angeles CA 90016 310-841-2252 alecorp@alesis1.usa.com

ALESIS STUDIO ELECTRONICS

See us at NAMM Booth #4042 & #3735

The ultimate console At Studio Guillaume Tell

Located in Paris, Studio Guillaume Tell is one of Europe's leading recording facilities with an international reputation for creative excellence. For Managing Director Roland Guillotel, the decision to install an SL 9000 J Series console was an easy one:

"Both our national and international clients demand the best equipment available. The SL 9000 J Series provides them with excellent sonic quality and impressive automation features, yet is familiar to most users".

For further information on Studio Guillaume Tell, please contact:
Alain Aubert, Studio Guillaume Tell, 20 avenue de la Belle Gabrielle, 92150 Suresnes, France.
Tel: (33 1) 42 04 05 05 Fax: (33 1) 42 04 68 69

Solid State Logic

International Headquarters: Begbroke, Oxford, England OX5 1RU Tel: (01865) 842300 Fax: (01865) 842118
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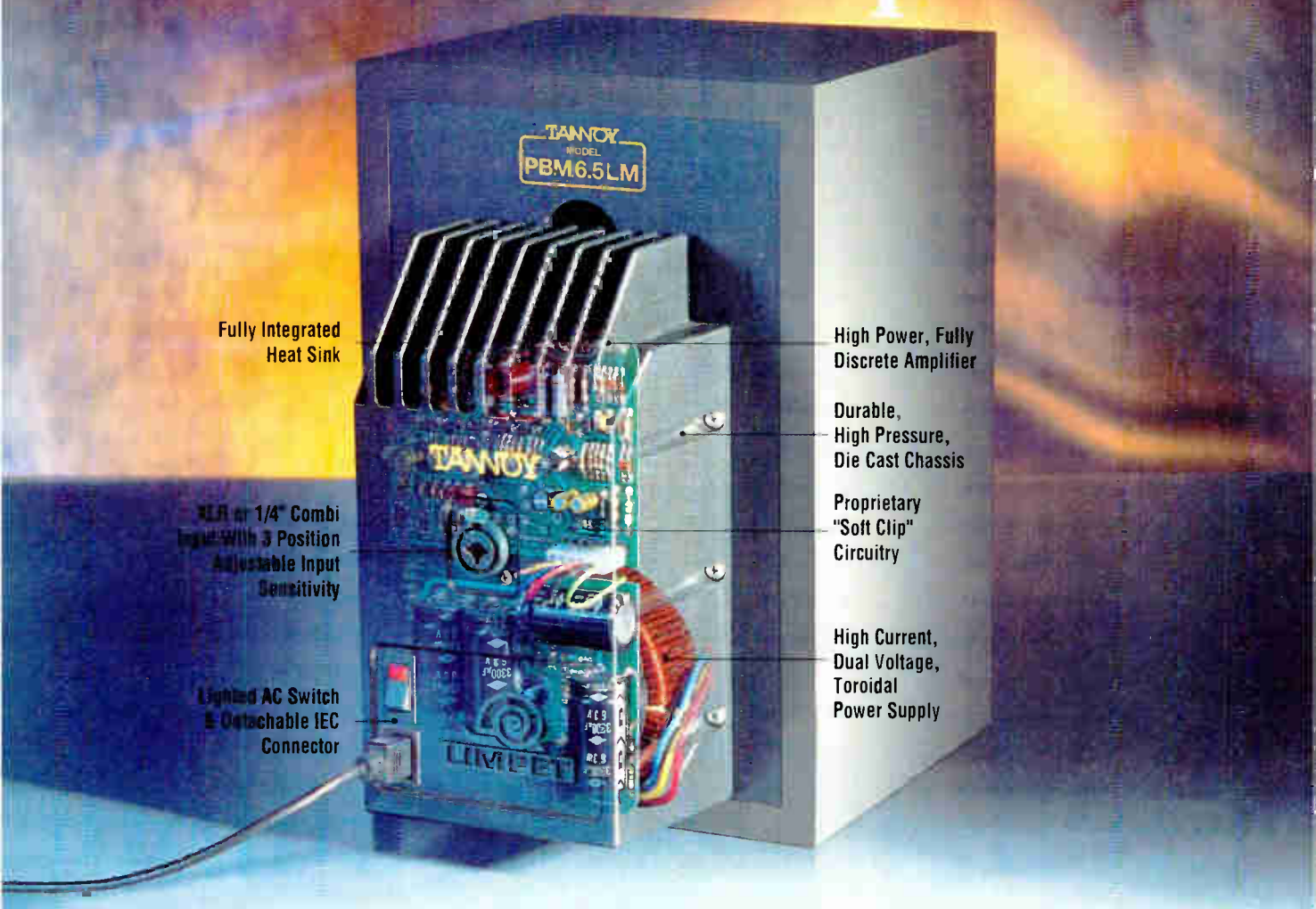
They Call Him "Mr." Limpet®



■ Every once in a while a product comes along which not only meets the ever increasing demands of the market, but one whose smooth commercial styling, ergonomics, durability and outstanding performance demands respect. Introducing MR. LIMPET. ■ The LIMPET is a unique, compact design that combines a very high current toroidal power supply, fully discrete amplification stages, and ultra wide (10 Hz to 80 kHz) bandwidth capabilities in a very affordable system. ■ Built using a one piece high pressure die-cast metal housing, the LIMPET is not only very rugged electrically and mechanically, its internal construction takes advantage of the industry's most advanced assembly techniques. ■ The LIMPET amplification system can be used with a wide range of TANNOY professional reference monitor systems, and provides the user with a number of improvements in both the performance of the loudspeaker system, and its flexibility. ■ Each single channel LIMPET system delivers an enhanced stereo image because the channels are fully separated - no power supply sagging due to inter-channel coupling, no crosstalk, no interference. Almost any kind of input level and connector can be used, since the LIMPET offers a balanced or unbalanced "combi" connector that can utilize either 1/4" or 3 pin jacks. ■ The ultra-low noise input section can accommodate either 0.775, 1.0, or 1.5 volt drive levels with no performance sacrifice. ■ The LIMPET's universal power supply, equipped with an industry standard IEC connector easily deals with almost any voltage, making the LIMPET a true global traveler. Finally, you can take your monitors wherever your work takes you, and not have to worry about cumbersome and troublesome adaptors, power converters, or strange electrical systems. ■ In addition, the unique and proprietary soft-clip circuitry and the significant reserves in the power supply ensure that no damage will occur to the drive units while providing the headroom needed for even the most demanding requirements. ■ The LIMPET is ideal for professional recording, broadcast/post production facilities, remote and live recording reinforcement applications, and finally gives the private/home recording studio truly reference quality performance unequaled at twice the price. ■ Instead of settling for the ordinary, get a LIMPET and get a real grip on your reference monitor performance.

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STUDER
PROFESSIONAL AUDIO EQUIPMENT

A Harman International Company

1995 TEC NOMINEE

MIX®

PROFESSIONAL RECORDING • SOUND AND MUSIC PRODUCTION

JANUARY 1996, VOLUME 20, NUMBER 1

AUDIO

PAGE 100

LIVE SOUND

POST-PRODUCTION

PAGE 70

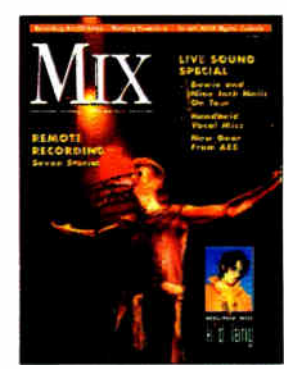
PRODUCTS

PAGE 82

PAGE 130

DEPARTMENTS

Cover: David Bowie onstage at the Shoreline Amphitheater in Mountain View, California, during the fall Bowie-Nine Inch Nails U.S. tour. For technical details about the tour, see page 113.
Photo: Steve Jennings



In 1991 the Alesis ADAT changed the way you think about recording

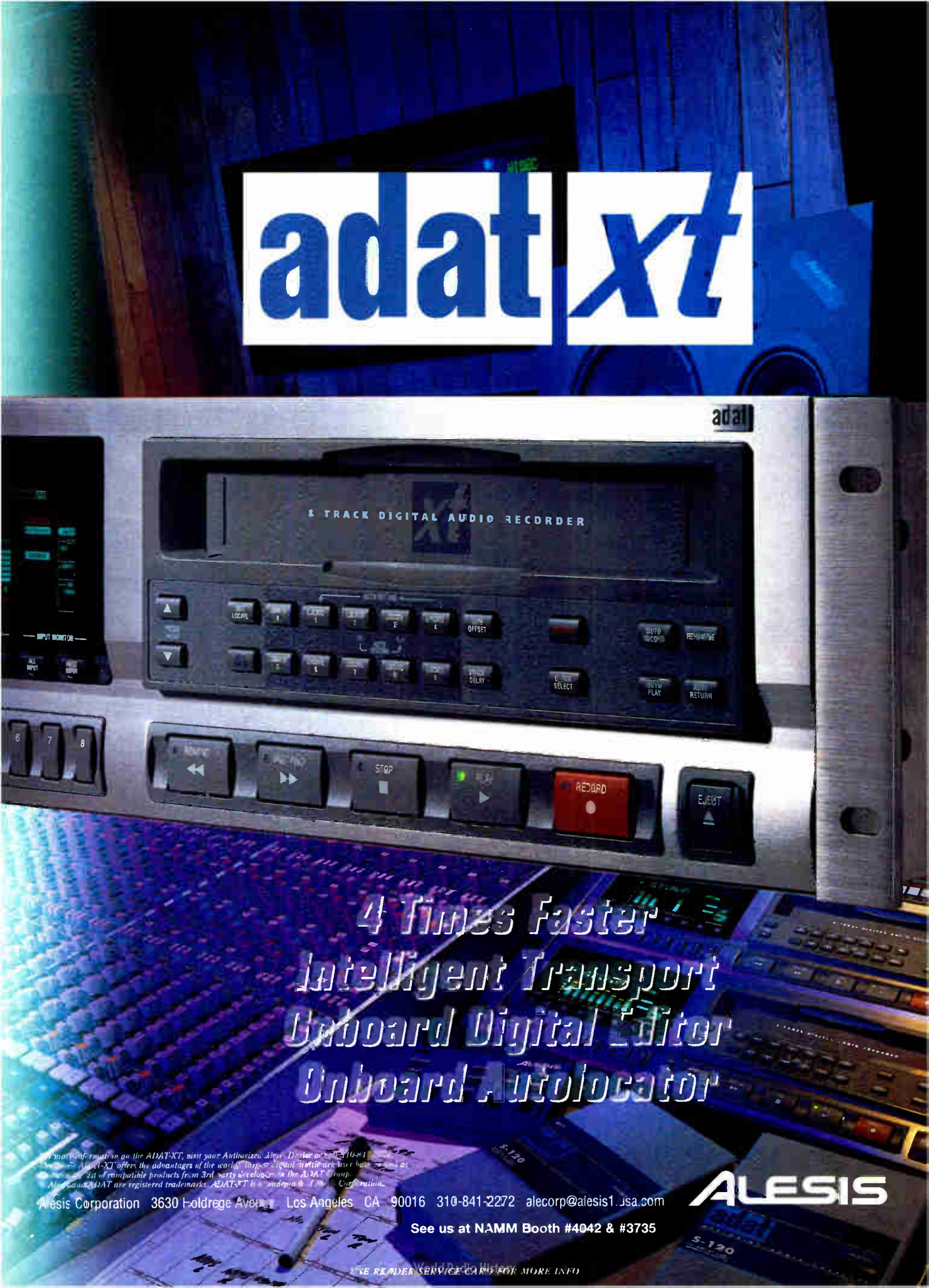
Think Again

How do you improve on the most successful professional multitrack tape recorder of all time? Listen to your customers. Do some heavy thinking, and...

Make the transport four times faster and put it under constant software control. Incorporate advanced onboard digital

editing with track copy, auto punch, track delay, tape offset, 10-point autolocator, rehearse mode and more. Use the latest oversampling converters for the ultimate in digital audio quality. Design a beautiful vacuum fluorescent display that provides all the critical information. Wrap all this well-thought-out technology in an utterly professional six-pound solid die-cast aluminum chassis. Of course, make it 100% compatible with over 70,000 ADATs already in use worldwide.

Introducing the new, definitely improved **ADAT-XT™ 8 Track Digital Audio Recorder.** Consider it a think tank for your creativity. See your Alesis dealer. Don't think twice.



For more information on the ADAT-XT, visit your Authorized Alesis Dealer or call 800-5[illegible]. The ADAT-XT offers the advantages of the world's [illegible] digital audio tape recorder, as well as a vast list of compatible products from 3rd party developers in the ADAT Group.
Alesis and ADAT are registered trademarks. ADAT-XT is a trademark of Alesis Corporation.

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See us at NAMM Booth #4042 & #3735

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FROM THE EDITOR

THE PRIME DIRECTIVE

Fans of *Star Trek* know all about The Prime Directive, a regulation which mandates that interplanetary explorers should not interfere in the technological, socio-cultural or biological evolution of a species. Perhaps we need our own guiding principle in the music business. We all-too-frequently lose sight of our industry's prime directive, which is to create sounds that will make an emotional impact on an audience. Whether onstage onscreen or on-disc, glitz, glitter, glamor, special effects and pyrotechnics are a poor substitute for an emotional response.

Tour lighting designers are among the worst offenders. Don't these *artistes* realize that some people actually attend concerts to see performers, rather than banks of PAR lamps pointed into the eyes of the audience? Apparently not. I attended a show where one of the songs featured a brilliant solo by drummer Dennis Chambers, yet its cliche flash-to-the-beat lighting made it impossible to actually see what he was doing. Believe me, Chambers is capable of creating plenty of excitement on his own—without the razzmatazz.

But there are signs of hope. The recent Van Halen tour featured a bare, uncluttered stage. The band didn't obscure its musical talents behind smoke-belching dragons or a re-created Pyramid of Cheops. Five guys poured out their hearts and souls to a packed house, and no one in the audience felt slighted by the lack of a folding cardboard backdrop.

These days, with the exception of events on the scale of a Rolling Stones tour or a Beatles reunion, huge stadium shows are a rarity, replaced by smaller, more intimate gatherings. Bruce Springsteen—a guy who could pack any venue on the planet—made a stop on his recent solo acoustic tour to deliver a spellbinding set to 3,000 fans at the Berkeley Community Theatre. Sounds like Bruce had audio's prime directive in mind when he arranged this tour.

Our goal at *Mix* is to deliver solid, useful information to the professional audio industry. We're constantly looking to improve what we do, and here are a few of the changes afoot for *Mix*: Producer/engineer/composer/audio educator/MIDI raconteur Paul Lehrman will bring his unique perspectives—and occasional acerbic charms—to "Insider Audio." The ever-entertaining Mr. Bonzai will present his Bonzai-esque interviews on a bi-monthly basis, alternating with Mel Lambert's new "Insights" column, featuring conversations with technological innovators of the industry, beginning with Greg Mackie next month. We've been spotlighting project rooms since our "Artist Studio" column began in the 1970s, and we'll continue to look at new personal-use facilities in "The Project Studio." This month, we visit veteran film mixer/sound designer Richard Beggs (*Apocalypse Now*, *Ghostbusters*, *Strange Days*) at his home-room in San Francisco.

Also in this issue, our art director Tim Gleason debuts his new design for *Mix*. He has added new "hot buttons" at the tops of articles for ease in finding your favorite sections, and a new typeface and layout increase readability and add 10% to 20% more text on each page. You'll get more *Mix* per issue, which, of course, is our prime directive.

Happy New Year,

George Petersen

BPA INTERNATIONAL SPARS

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No wonder more studios go gold on Ampex than on all other tapes combined.**

You've recorded the richest sound possible. Laid down track after track. Spent hours mixing. So why take chances mixing down onto ordinary 2-track tape?

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

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

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

Ampex 467. Stay on track for the gold.

AMPEX

Ampex Recording Media Corporation, 401 Broadway, M.S. 22-02, Redwood City, California 94063

202 VLZ

LOW-NOISE MIC/LINE MIXER • MADE IN USA

MS1202 VLZ

- mono mic/line chs. with
- udio-grade mic preamps
- 4 stereo line-level chs.
- 2 aux sends per ch.
- 2 stereo aux returns
- Aux 1 master level
- Efx return to Mon. 1
- Aux 1 pre/post switch
- -band EQ w/Lo Cut filter
- Mutes on every channel
- xtra stereo bus via Mute
- sy metering via PFL Solo
- Control Room monitoring
- XLR & 1/4" outputs
- Multi-way metering
- Headphone output
- 4 channel inserts
- Sealed rotary controls
- Built-in power supply

also includes Mackie extras you don't get with other comparably-priced mixers:

- A 50-page manual written in easy-to-understand language. It includes step-by-step hook-up and operating instructions, a glossary of pro audio terms, hints and tips on everything from phantom power to balanced lines and numerous attempts at lame jokes (Dense, boring, humorless manual translated from another language available upon request).
- Tech support from real people. No trips through a voice mail maze; no endless waits on hold. If you need help or advice at any time you'll quickly get through to a pro audio veteran who knows the MS1202 VLZ backwards and forwards.

NEW MS1202 VLZ

12-CHANNEL HIGH-HEADROOM LOW-NOISE MIC/LINE MIXER • 12-CHANNEL HIGH-HEADROOM LOW-NOIS

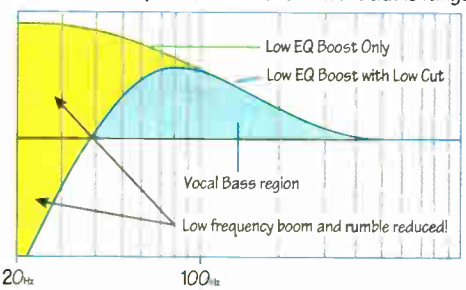
IN STOCK AT MACKIE DEALERS NOW EVEN AS YOU READ THIS!

NEW

WE'VE ADDED A DOZEN NEW

60dB GAIN on first 4 channels via balanced XLR mic inputs let you record even the faintest sound sources with incredible clarity.

LO CUT FILTER (Chs. 1-4). With the exception of bass guitar, low frequency synth sounds and kick drums, almost all sound is in the audio range



above 75Hz. Our Lo Cut Filter reduces or eliminates unwanted frequencies below 75Hz. It's great for cleaning up the "mud" in recording & live sound work, and also lets you boost lower vocal ranges without increasing stage rumble, mic thumps, etc. (see the drawing above). This 18dB/octave filter lets you safely and creatively use the Lo EQ on the higher bass frequencies.

3-BAND EQ on all channels. You asked for it. Musical EQ like on our CR-1604 & LM-3204. Others have copied our EQ points (12kHz, 2.5kHz and 80Hz) but not the warm, musical sound that our expensive, discrete circuitry produces.

EFX TO MONITOR switch and level control on Aux Return 1. When you're using the output of Aux Send 1 to feed stage monitors, you can now blend reverb or other effects back into the Aux Send 1 monitor mix, separate from the house mix (just like with our SR Series.)

A MUTE ON EVERY CHANNEL PLUS AN EXTRA STEREO BUS! As on our CR-1604, pressing a MUTE switch UNassigns the channel from the main L/R bus and reassigns it to the Alt 3-4 output. You can create two stereo pairs for output to a 4-track, bounce multiple tracks onto 2 more tracks, or preview a source not yet in the main mix via phones or monitors.

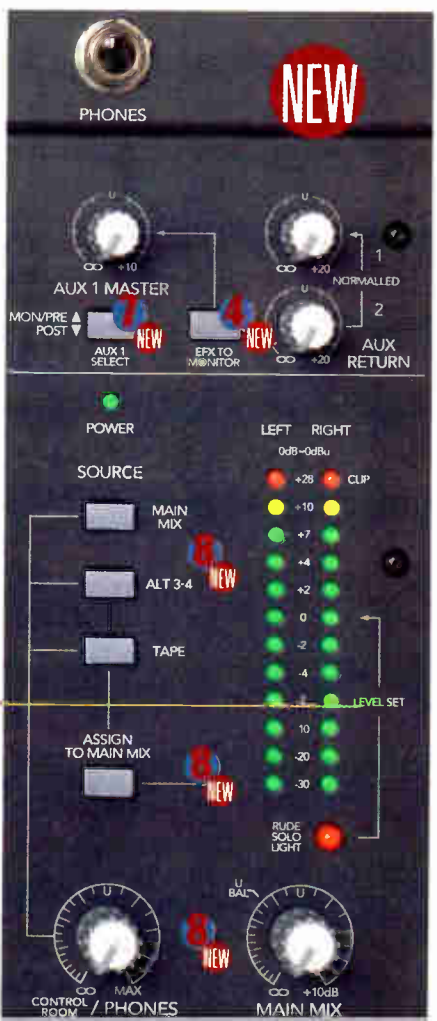
PFL SOLO makes level setting easy. Just push a solo button, watch the famous Rude Solo LED start blinking, and adjust the trim control (ch. 1-4) for 0dB on the meters. Solo also replaces your source selection, feeding the control room and phones. Great for previewing or cueing a signal prior to adding it into the mix. This solo is non-destructive. It doesn't interrupt the main left/right, 1/4" TRS or XLR outputs.

LEVEL SET MARKER. When used with PFL/SOLO, the level set procedure gives you low noise, maximum headroom and best dynamic range every time! No more guessing about how to set your gain trims. No more worrying about internal clipping!

OTHER COOL STUFF includes sealed rotary controls, solid steel chassis, thick, double-sided fiberglass circuit board and our signature built-in power supply that provides plenty of current for the MS1202 (instead of a wimpy, outlet-eating wall wart).

Global AUX 1 PRE/POST switch. Aux Send 1 on each channel can be pre-fader/pre-EQ (great for stage monitor mixes), or post-fader/post EQ (for effects in the studio).

CONTROL ROOM/PHONES SECTION with level control. A mini-version of a popular 8•Bus feature that adds boocoo monitoring, mixdown and metering flexibility. Headphone and Control room amp outputs are now separate. Switches let you select any combination of Main Mix, Tape In and Alt 3-4 signals for routing to the Phones and Control Room outputs and meters. Perfect for creating custom headphone mixes, monitoring tape levels, etc. Plus, an extra button lets you re-route this multi-source signal back to the main mix! For example, a new input via Tape In or a source from the ALT 3-4 stereo bus. It's a feature that has been appreciated on our CR-1604.



MS1202 NEW VLZ

MS1202 VLZ

• 12-CHANNEL HIGH-HEADROOM LOW-NOISE MIC/LINE MIXER • MADE IN USA

12x2 MIC/LINE MIXER

12-CHANNEL

IMPROVED MS1202

FEATURES & VLZ CIRCUITRY TO OUR CLASSIC 12-CH. MICROSERIES MIXER!

WHAT IS VLZ? *VLZ stands for Very Low Impedance. Originally developed for our 8•Bus consoles, it's a unique Mackie approach to circuit design that reduces thermal noise and seriously cuts down on crosstalk. The end result is that VLZ design cuts circuit thermal noise in half! VLZ demands high current – which requires a beefy power supply. Naturally the MS1202 VLZ has one with far more current output than any other ultra-compact mixer.*

ALL INPUTS & OUTPUTS BALANCED *(except RCA-type tape inputs & ch. inserts). The MS1202 VLZ is compatible with anything you can plug into it. Plus, balanced lines let you run long cable distances with minimal hum and buzz. You can also use unbalanced lines, if ya need 'em.*

AN ESSENTIAL PART OF ANY PRO AUDIO TOOLKIT.

No matter what size your main mixer is, there's always a use for a MicroSeries 1202 VLZ. With its great specs and superb sound quality, you can use the 1202 right alongside big PA or recording consoles as...

- *A keyboard or drum submixer*
- *A high quality mic preamp*
- *An effects submixer*
- *A –10dBV to +4dBu level matcher*
- *A headphone or monitor mixer*
- *An emergency back-up mixer*

BALANCED XLR MAIN OUTPUTS *(along with balanced 1/4" TRS output jacks). XLR outputs let you connect the MS1202 VLZ directly into amps, workstation modules, pro VTRs and other equipment that have female XLR line level inputs without having to use an adaptor. Press the adjacent 30dB pad switch to match the higher input sensitivity of camcorders and other mic level inputs.*

RCA TAPE LOOP INTERFACE *provides convenient hookup to tape decks and other line level devices with "phono"-style connectors. The interface's internal +4dBu operation lets you get the most from both semipro and pro equipment.*

VIRTUAL PAD *on first 4 channels' line inputs. Now there's 10dB of attenuation when trim is all the way down. Unity is at 9:00 instead of 7:00. When mixing down the hot outputs of digital multitrack recorders, this extra "pad" lets you add gobs of equalization without overload.*

1) Although the MS1202 is designed as a desktop mixer, it can also be rack-mounted in 7 spaces.

2) Keith Medley, our Applications Specialist likes to demonstrate its ruggedness by throwing a 1202 onto the floor and then standing on it. No damage. A true story, but don't try this at home unless you really trust us.

IT TAKES UP UNDER ONE SQUARE FOOT OF WORKSPACE, BUT WE DIDN'T COMPROMISE.

The MS1202 VLZ is directly descended from our 8•Bus consoles. Same high headroom & low noise. Same electronic components. It's designed to play in the big leagues with digital multitrack recorders, workstations and hard disk recorders. Yet its suggested retail price is just $429.*

PHANTOM POWER *(with it's own switch) so that you can use high-quality condenser microphones.*

For 5 years, our Micro Series 1202 12-ch. mic/line mixer has racked up an impressive track record[1]. It's toured with superstars, gathered network news, worked 24 hours a day in video post suites, pinch-hit as a submixer next to mega-consoles and recorded audiophile direct-to-DAT albums. The 1202 has also been the ultra-reliable main mixer in more home studios than you can shake a patch cord at.

Why? Because the MicroSeries 1202 has proven itself to be the best sounding – and best value – small mixer you can buy. Better mic preamps. Less noise. More headroom. And legendary reliability[2].

But we haven't let the MS1202's success go to our heads. For the last 5 years, we've been reading warranty cards for suggestions on how we could improve it.

This is the result. Same great value. Same rack-mountable, built-like-a-tank construction. But with some exquisitely handy new goodies that make it an even more effective tool for both recording and live performance.

For instance, we've added a complete Control Room section that makes monitoring, tracking and mixdown easier. For on-stage performers, we added PFL Solo switches on every channel, reverb foldback into Mon. 1, and balanced inputs & outputs.

Plus stuff everyone will appreciate, such as midrange EQ, ALT 3-4 (the extra stereo bus first introduced on our CR-1604), mute switches on every channel and 8•Bus VLZ circuitry for even less noise and crosstalk.

Visit your Mackie dealer (the new MS1202 VLZ's in stock right now) or call us toll-free for detailed information.

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CURRENT

NAMM SHOW THIS MONTH!

The 1996 NAMM International Music Market brings changes and improvements to the NAMM show floor. This winter's convention will take place at the Anaheim Convention Center, from Thursday, January 18 through Sunday, January 21, and is expected to be even larger than the 1995 show, which welcomed more than 900 exhibitors and 48,000 attendees. The new full-day, Thursday-through-Sunday schedule was created in response to requests from attendees at previous shows. In addition, more than two dozen practical seminars will be offered this year; capacity crowds are expected.

A notable addition to the 1996 show is a 2,000-square-foot model retail store, located in the Center's Hall E. The store, developed by Chris Miller of Pacific Store Designs, will feature display and store layout ideas for all segments of the industry. Hall E hours will be from 9:30 to 6:00 each day; the rest of the convention center will be open from 10:00 to 6:00. For more information, call NAMM at 800/767-6266.

1996 TEC AWARDS PRODUCT NOMINATIONS SOUGHT

The Technical Excellence and Creativity Awards Nominating Panel is currently accepting product nominations for the Twelfth Annual TEC Awards. To qualify for review, your product must have been released and in commercial use during the eligibility year of March 1, 1995 to February 29, 1996. Product categories are: Ancillary Equipment, Amplifier Technology, Computer Software and Peripherals, Microphone Technology, Sound Reinforcement Loudspeaker Technology, Studio Monitor Technology, Musical Instrument Technology, Signal Processing Technology, Recording Devices/Storage Technology, Workstation Technology, Sound Reinforcement Console Technology, Tape/Disc Manufacturing, Small Format Console Technology and Large Format Console Technology.

Those wishing to nominate products should include the following information: product name and qualifying category; date first commercially available (proof of shipment may be required; beta test sites do not qualify); and a contact name and telephone number.

—CONTINUED ON PAGE 16

3M TAPE IS HISTORY

AMPEX IS NOW QUANTEGY

Simultaneous announcements from two major manufacturers shook up the tape industry in November. 3M, which blew open the analog race with the introduction of the first "hot" tape formulation, 996, in 1991, announced that it was getting out of the tape business altogether. Manufacturing at its Hutchinson, Minn., factory was scheduled to cease on December 31, 1996, with the loss of an estimated 5,000 jobs. In its place, 3M said, it would continue to develop and manufacture optical and imaging technologies, creating a new, independent, publicly traded and so far unnamed company whose relationship–if any–to 3M remains unclear.

On the same day, Quantegy Inc., comprising a varied group of creditors, including affiliates of the Equitable Life Assurance Society, acquired the tape manufacturing assets of Ampex Corp.

The 3M move leaves Quantegy as the sole U.S. tape manufacturer. Quantegy inherits Ampex's estimated 85% market share of the U.S. studio tape business, along with the entire product line, including 456 and 499, and the large Ampex manufacturing plant in Opelika, Ala. 3M's total tape media sales, including video, for 1994 were stated at $650 million, including consumer tape products; Ampex's sales were $150 million.

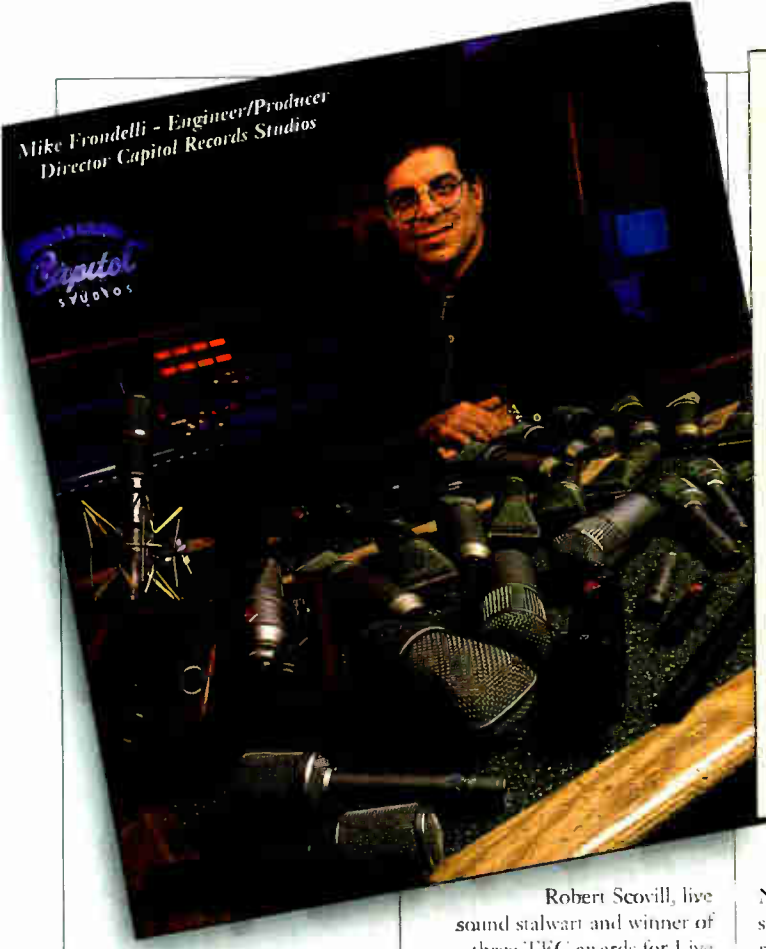
Reaction to 3M's announcement—which caught much of 3M's own tape division middle management by surprise—was swift. Sony made a statement reaffirming its commitment to linear formats. Sony does not manufacture professional analog tapes, although its market share in DASH-format tape is estimated at between 10% and 20%. However, "The horizon for open-reel digital formats is good, and the [MDM] line is growing significantly," according to a Sony spokesman.

The International Recording Media Association (ITA) released figures the following day citing "record sales for audio and video tape products" in 1995. "3M's announcement appears to run counter to the trend in our industry," said Charles Van Horn, ITA's executive vice president.

3M's tape sales were across the consumer and professional range, including both audio and video, thus exposing them to the lowest-margin markets, such as consumer audio cassette sales, which are subject to fierce downward price pressures and rapidly increasing raw materials costs.

Quantegy's narrower focus–Ampex left the analog audio cassette business several years ago and has no consumer products–and high market share in an audio sector that allows higher mark-ups, could serve them well for the forseeable future, as could strategic arrangements such as its deal to provide branded S-VHS tape that Alesis packs out with its ADATs. However, Quantegy vice president of marketing Phil Ritti acknowledged, "We're starting to see the peak of analog. But it's still a big market, and even with flattened or slightly negative growth it's still an opportunity for us. [Quantegy] has not ruled out expansion into other storage markets. As an independent company...we also now have options, not only for new product development, but also for strategic alliances that we didn't have in the past." Ritti would not comment on what types of media Quantegy might pursue in the future.

—Dan Daley



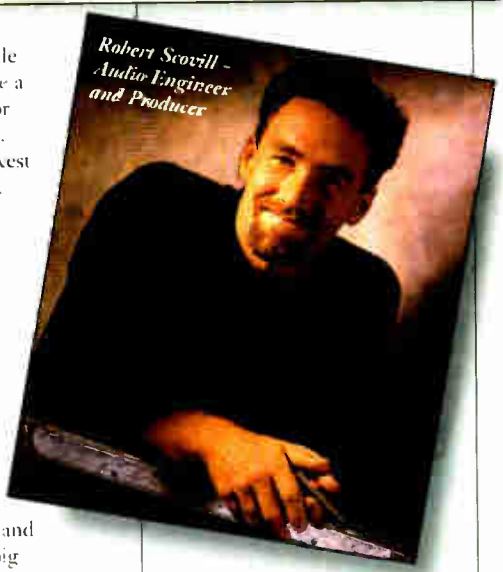
TWO PROS WHO KNOW GREAT SOUND.

TWO MICS THAT MAKE THEM VERY HAPPY.

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

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

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.

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INDUSTRY NOTES

Tim Harrison was named Soundcraft national sales manager for Harman Pro North America, based in Northridge, CA...Solid State Logic (Los Angeles) hired Jim Rosenthal as western regional salesperson, responsible for the new Axiom system and the current digital product line, and Patrick MacDougall, to provide product training and support for the new SL 9000 J Series...Galaxy Audio, of Wichita, KS, named Roger Jackson as director of marketing and advertising...Clive Green & Co. Ltd. (Bedfordshire, UK), manufacturer of Cadac live mixing consoles, named New-York-based ProMix Inc. as its principal distributor for the United States. Call 914/668-8886 for information...SCV London, UK distributor for Fostex, Marantz, LA Audio and SCV Electronics products, hired Sally Haseman as marketing coordinator and Steven Helm as northern area sales representative...Yoshi Asahi joined BBE Sound (Huntington Beach, CA) as licensing manager and will support manufacturers featuring BBE circuitry in their products...David Schwind of San Francisco-based Charles M. Salter Associates was named a fellow in the Audio Engineering Society at last fall's AES convention in New York. In other Charles Salter news, Cristina Miyar was brought on board as acoustical consultant...Michael Greene, president/CEO of the National Academy of Recording Arts and Sciences (NARAS), was selected as corporate spokesperson for the National Academy of Music Therapy (NAMT)...Roland Corp. U.S., of Los Angeles, appointed independent sales reps nationwide to handle its contractor product line. New firms include Mid America Marketing Associates, Henry W. Phillips Co. Inc., Mainline Marketing, CAJ Inc., Online Enterprises, Eaton Sales and Marketing, John B. Anthony Co., Audio Associates, Cal West and Northshore Marketing...In a recent growth move, Bauer Audio Video of Dallas, TX acquired Audio Visual America (AVA)/Stage Sound of Phoenix, AZ...Former Music Annex Inc. vice president of sales and marketing Keith Hatschek opened a marketing and public relations firm, Keith Hatschek and Associates. The firm is located at 535 Market Street Ste. 1350, San Francisco, CA 94105. Phone 415/227-0894; fax 415/543-1725...Christopher Shuler was promoted to vice president of public relations for Jesse Walsh Communications Inc. The company recently moved its corporate offices to 115 E. Front St., Buchanan, MI 49107. Phone 616/695-5948; fax 616/695-7623...Rolls Corporation of Salt Lake City appointed Lienau Associates as its sales rep firm for the Mid-Atlantic area...MIDIMAN just opened its first international sales office: MIDIMAN UK is located at Hubberts Bridge House, Hubberts Bridge; Boston, Lincs PE20 3QU. Phone (44) 1205/290-680; fax (44) 1205/290-671...KAO Infosystems (Plymouth, MA) appointed Lynn Ward-Kenney to the marketing post of brand manager...Chatsworth, CA-based E/W Electronics was named distributor for the full line of capacitors manufactured by Arcotronics, a division of Nissei Electronics...TDK can now be found on the World Wide Web at http://www.tdk.com...Klay Anderson Audio moved to a new location. The address is 7054 South 2300 East, Salt Lake City, UT 84121. Phone 801/942-8345; fax 801/942-3136...The National Association of Music Merchants introduced its new Web site: http://www.namm.com/namm...The San Francisco Section of the Audio Engineering Society has added a link through Silicon Graphic's community service pages to the AES San Francisco Web site. The address is http://reality.sgi.com/csp/aessf. ■

—FROM PAGE 12, CURRENT

Send the information to: TEC Awards, 6400 Hollis Street #12, Emeryville, CA 94608; attn: Karen Dunn. **All entries must be postmarked by Thursday, February 15.** Late submissions will not be accepted. For more information call 510/939-6149.

PHOENIX GOLD ACQUIRES CARVER PRO DIVISION

Phoenix Gold, Portland, Ore.-based manufacturer of accessories, electronics and speakers for car audio and custom home audio/video, acquired the assets of Carver Corp.'s (Lynnwood, Wash.) professional sound amplifiers. Phoenix will manufacture and sell amplifier and accessory products for use in pro applications under the name "Carver Professional by Phoenix Gold" and plans to market aggressively and expand the product line.

YAMAHA AND QSOUND CODEVELOP FOR WINDOWS

Yamaha Systems Technology (San Jose, Calif.) entered into a nonexclusive licensing agreement with QSound Labs (Calgary, Alberta) to incorporate its multidimensional sound localization technology in Yamaha audio effects chips. The collaboration will conform to the Windows 95 application programming interface designed to provide game developers with a uniform means of modeling the 3-D environment. First products based on this new technology are expected to be available in early 1996.

SONY WINS EMMY FOR DIGITAL BETACAM

The National Academy of Television Arts and Sciences gave an Emmy Award to Sony Electronics of Montvale, N.J., for its development of half-inch component digital video tape recording technology, the root of the Digital Betacam format. The Emmy—Sony's 20th—was presented in October 1995, at an awards ceremony honoring Outstanding Achievement in the Sciences of Television Technology.

ROLAND MERGES MI, PRO DIVISIONS

In a recent restructuring move, Los Angeles-based Roland Corp. U.S. consolidated its musical instrument and pro audio divisions. The merger, designed to strengthen presence in the industry as well as maximize resources and offer greater service, takes effect on January 1, after a six-week transition. ■

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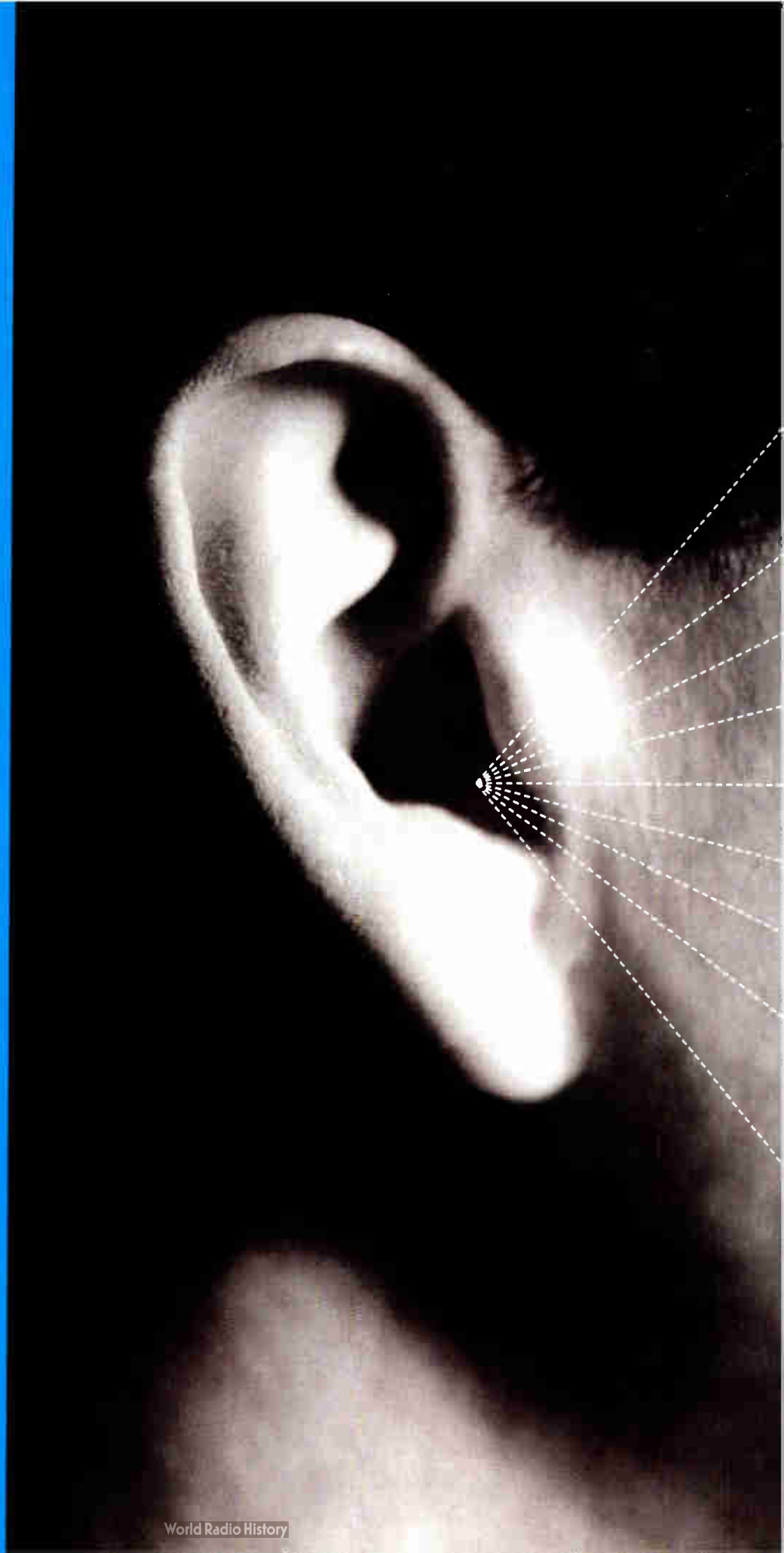
Gregg Rubin, Engineer
After several platinum and gold CDs, and an Emmy, he has an ear for sound.



He listens. Half the year in the studio. The other half on the road as a live sound mixer. For Gregg Rubin the challenge is to capture the immediacy of music. After hundreds of live performances and countless hours in the studio, he knows what music really sounds like. What goes in his ear is what gets laid down on Sony Digital Audio Recording Media.

"It doesn't matter if a performance is great if the tape you're recording it on, isn't. That's why I trust Sony DAT tape for my live and 2-track masters. In the studio, I prefer Sony DASH tape. It's so precise, and I can punch as many times as I want without compromising the quality of the recording. And for live multitrack recording, I've discovered the DARS series for 8mm MDMS — it's performed flawlessly. The bottom line is that I know everything I'm putting down is safe — so the sound I hear the day of the recording is exactly the sound I hear the day of the mix."

Whether you're working in the control room, on location or in your basement, make the most of every note. Sony Digital Audio. After all, sound that inspires is not a luxury, it's a necessity. For a brochure call 1-800-955-SONY.

SONY

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actually it is because the virtual realities that we can build have the potential, both technically and financially, to grow beyond our physical world, and soon. Virtual equipment can deliver much more power and performance for much less money, and with much less negative impact on the environment. I know that the power/dollar thing makes sense to you, but have you ever thought of the environmental issue before? Imagine how much energy is used, how much raw physical material—metal, plastic, chemicals, inks, adhesives—and how much pollution is dumped into the world for every rack-mount limiter or DSP box. Now compare that to the impact of making one floppy disk and an owner's manual. Then compare again when you throw each away a year or so later.

But that's not the main thrust behind such a basic conceptual change in the definition of a product. More performance for less money is a large part of it, shorter development times is another part, and both definitions of *maintenance* are the clinchers. Customer maintenance is one—no knobs get dirty, no power supplies fry, no ¼-inch jacks oxidize, no capacitors leak. No heat is generated, and you probably won't break your foot if you drop a soft EQ floppy on it, while you certainly would if you did the same with a 2U piece.

And then there is manufacturer maintenance: updates. This is extremely unpleasant for analog gear. If a design weakness becomes apparent, all the gear must come back to the factory or to a service center where real people will spend real hours with real soldering irons for real days or weeks, while you get real mad. For DSP hardware, how bad it is depends on whether you are lucky enough to be able to fix it with a ROM update, and then only if the manufacturer designed ROM access cleverly so that you can pop the new chip in yourself. Even so, real growth is basically out of the question—the manufacturer ships the thing with effects that use all the available horsepower the hardware can generate. New effects can come along later—but they are always limited to the foresight that may or may not have existed when the original hardware was conceived. The sad truth is that attempts to design for postponed obsolescence in today's digital hardware have failed dismally. I am sure you have noticed that all your cool DSP toys become obsolete even faster than your old analog ones.

We write science fiction about humans leaving the corporeal shell and moving on to the next pure state. Isn't it interesting that our tools are making this ultimate jump before us?

No, the answer is to let the computer companies do the hardware. They do it better than anyone else. Maybe a little application-specific I/O hardware is needed, and of course interface hardware, but that's about it for most cases. The tools themselves should be soft—low cost, easy to update, easy to repair and no mechanical maintenance. There

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While DC to LIGHT response is sometimes joked about in audio circles, it *is* very desirable to extend a system's bandwidth beyond the audible range because it provides a real sonic improvement.

Unlike any other monitor system, our Studio-A system responds flat from above 20 kHz down to 8 Hz and meets the Time-Align® specification from E.M. Long, even in the bass range.

The MM-8 is a precision 8" coaxial studio monitor with a calibrated flat frequency response and a licensed Time-Aligned™ crossover. Precisely manufactured and tested, the MM-8 system offers you an honest listen to your mix.

The D10E-S INFRA-sub™ utilizes patented ELF™ technology. Experts agree the ELF™ technology offers the most superior sounding and honest low frequency reproduction available.

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BAG END

TEC

simply isn't a good reason any more for physical gear other than the transition process is not yet complete. The reasons for this are obvious: The state of technology is not quite ready for total transition, and a great deal of the money and talent that drive techno-industry is still in hardware. But this is changing.

So now that we are committed to the shift from hardware to software tools, we must give serious consideration to the future of interface. I mean our tools are on the other side of a piece of glass now, and every day even more of them cross over. We will all be reaching into that new world more and more, to work, and to play.

We write science fiction about humans leaving the corporeal shell and moving on to the next pure state. Isn't it interesting that our tools are making this ultimate jump before us?

Computer software can already do things for audio that cannot be done in the real world, and believe me, some stunning new stuff is on the way. And interfaces will be forced to catch up. You and I *will* be sitting in dark rooms with helmets and data gloves on, not only to play *Doom '38* with a friend in Europe, but to track and mix an album or film. Three-dimensional tools that allow the manipulation of audio by literally touching, pulling, bending, squeezing...mmm, sounds interesting. How about rolling off the high end of a guitar track by simply sliding your hand over the track as it floats in 3-D space before you, a totally informative full-color solid landscape with the time axis left to right, amplitude bottom to top, and spectral distribution front to back? Did I mention that any clipping peaks are glowing hot pink? Maybe you would like to eliminate those peaks by merely *pushing* them down. Grab a section with your left hand, pull another point with your right: time expansion. Grab the floating white "now line" vertical plane and move it around: shuttle and other transport control. Right index fingertip has a razor on it: cut. Middle finger: pastes. Touch a point with your index finger and thumb together and separate them: cut and open for insert. Tracks stacked like pancakes. Working to film? Picture floats right behind the pancakes. You get the picture, don't you? Soon. Sooner than you imagine. ■

Stephen St.Croix has been playing with his "Virtual Boy" game again.

Once in a while a product comes along that is so unique, so powerful, that it changes the way we look at things.

Such a product is the Aphex 661 Compressor Limiter– creating a new standard by combining four Aphex inventions. A skillfully engineered instrument of unprecedented flexibility, ease of use and sonic excellence.

Tubessence® - true vacuum tube technology and warmth; High Frequency Expander (HFX)™ for automatically retaining the high frequencies lost during compression; Easyrider® circuitry for an Auto mode that really works; and the world's best VCA - the Aphex 1001, the fastest, most accurate and transparent available.

The Aphex Model 661 - another revolutionary step toward improving the way the world sounds.

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- 8 tk. simultaneous disk recording
- Non-destructive editing
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- Expand to 128 tracks
- Link up to 8 machines

You Could Always Hear What AKAI Did For Your Music . . .

In 1992 we introduced low cost disk recording with our 4-track DR4d. Thousands of DR4d's have found their way into broadcast facilities, recording studios, post production houses, and project studios. Combining our experience with input from thousands of end users, we created the DR8 and DR16. Whether you're just starting out with your first 8-track, upgrading your current tape-based MDM, or even if you're planning on a double-whammy, 128-track, multi-interfaced, graphically-based, post production facility, the new DR Series from Akai will serve your needs and grow with you in the future. It's an important fact to consider when someone tries to sell you a "budget" digital recorder that never really meets your needs. Check out these features and you'll "see" what we're talking about.

Record/Edit The new DR Series utilize our latest 24-bit internal processing technology enabling simultaneous 8-track recording with the transparent digital audio quality that has become an Akai trademark

Three dedicated LSI's (Large Scale Integrated circuit) for recording, mixing, and optional EQ provide real-time performance and stability of operation that computer based units simply cannot provide.

Real-time random-access editing features like copy, insert,copy + insert, move, move + insert, erase, delete, slip, and sliptrack inspire creative efforts that are simply unthinkable with tape based recorders. The TAKE function allows you to record up to five separate takes of a critical solo, or enables you to compare separate effects treatments of a singular passage. The jog and shuttle wheels make finding precise edit points a breeze, while the familiar tape-machine style transport controls and autolocator make operating the DR Series recorders like working with an old friend.

DR8 - $3495.00 Sugg. Retail Price
8 Track Disk Recorder

MORE FEATURES:

- 18 bit ADC + 64X oversampling
- 20 bit DAC + 8X oversampling
- 24 bit internal processing
- 16 channel digital mixer
- Dynamic MIDI mix automation
- Built-in mic preamps
- 2AUX sends
- 109 point autolocator
- AES/EBU and S/PDIF digital I/O
- 50 pin SCSI port

DR16 - $4995.00 Sugg. Retail Price
16 Track Disk Recorder

EVEN MORE FEATURES:

- Balanced 1/4" TRS in/out
- Switchable +4/-10dB line levels
- 8 in 8 out + stereo master (DR8)
- 8 in 16 out + stereo master (DR16)

Media The DR8 can be equipped with an optional internal 1 GB SCSI drive, while the DR16 is available with an optional 2 GB internal SCSI drive. The DR Series recorders are both equipped with a standard 50 pin SCSI port alowing a combination of up to seven SCSI drives with disk overflow recording capability. Lists of compatible drives are available from Akai product information.

Data backup is achieved through standard audio DAT or Exabyte.

At the time of this writing, the Iomega Company is preparing to go into production with their new 1 GB "JAZ" drive, a removable media SCSI drive which will greatly enhance the capabilities of our new DR Series recorders. Stay tuned for more info in our upcoming ads. Better yet, test drive a new DR Series recorder today at your local Akai dealer.

Now You Can See It.

OPTIONS:

- SuperView™ SVGA card - $699
- ADAT interface - $299
- MIDI interface - $299
- S.M.P.T.E. read/gen - $379
- RS422 video sync - $299
- BiPhase film sync - $299
- 2nd SCSI port - $299
- MT8 MIX controller - $799
- 8 channel 3 band parametric EQ - $550
- 16 channel 3 band parametric EQ - $699

Mixing Some of our competitors' disk recorders use a portion of their recording LSI to provide mix capability. While this saves money, it can also produce audio artifacts like "zipper" noise when adjusting such critical functions like EQ, pan, and fader level. On top of that, many disk recorders won't even let you make real-time adjustments during mix down, eliminating a critical part of the creative recording process. The heart of the DR mixer is a 16-channel, 24 bit custom LSI designed to provide real-time dynamic digital mix capability. Built-in 99 scene snap-shot automation for all functions and dynamic automation via external MIDI sequencers, combined with 8 or 16 channel 3-band parametric EQ option, ensures that the only limit in the DR Series mixer is your imagination. With its built-in 16 channel mixer, the DR8 becomes the perfect compliment to any 8-track recorder you might currently own. It can mix down its 8 tracks of internal digital audio with an additional 8 inputs from a sampler, tape machine, or a live performance, all in the digital domain. The MT8 mix controller provides a 16 track console format for dynamic remote control of all mix and EQ parameters.

(Monitor/Keyboard/Iomega Drive and Batteries not included.)

SuperView™ We sort of went into a frenzy packing new features into our DR8 and DR16. When we stepped back to take a look at what we'd done, we realized we crammed a whole roomful of equipment into a single 5U box. In order to help keep track of everything that's going on inside our "studio in a box", we developed the SuperView™ SVGA monitor board. SuperView™ mounts internally in the DR8 or DR16 and provides envelope and track information for up to 16 tracks of audio, as well as region highlighting for record, playback, and edit. SuperView™ is further enhanced by 16 track level meters with indicators for left/right master out and aux 1/2 out. The time indicator will read in the same format as the DR front panel. SuperView™ requires no external computer, simply plug your SVGA compatible monitor into a SuperView™ equipped DR Series recorder and you're ready to go. SuperView™ enables real-time video representation of audio status; no waiting for screen re-draws. What you hear is what you see.

SEE US AT NAMM BOOTH #4031

Keyboard Interface To increase the power of SuperView™ even further, we added an ASCII keyboard input to the SuperView™ card, allowing a standard ASCII keyboard to operate as a control interface for SuperView™ equipped DR Series recorders. Function keys will provide the ability to zoom in on a single track, as well as zoom in/out timewise for precise edit capability. All tracks and locate points can be named, allowing you to manipulate and track large amounts of data in a very simple manner. A unique interface has been developed to allow track arming, transport control, and edit functions directly from the keyboard, providing enhanced productivity through an intuitive human interface design.

AKAI DIGITAL

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TRUTH AND CONSEQUENCES

WHAT WE DO MAKES A DIFFERENCE—WHETHER WE ADMIT IT OR NOT

There's an ad that's been running in some of the trades lately that rubs me entirely the wrong way. No, it doesn't feature female body parts or underclothing, or close-ups of bodily secretions. We all have opinions on *those* ads, and mine are that they are silly but hardly worth getting riled up over. The one that gets me says something like, to paraphrase broadly, "While the nation was engrossed in a dumb, sordid, real-life legal soap opera, fascists sneaked in and took over your government. But it's not our fault, we just wrote the soundtrack."

The ad, not surprisingly, is for a music company. Their point is that whatever happens, they can write appropriate music for its presentation on television. In fact, it's their "responsibility" to do so. Now, I've done some business with this company, and they do terrific work, and I have a lot of respect for them. The message in the ad is completely honest—no matter what's going on, when it comes to reporting it, they want a piece of the action.

But what bothers me is its "We're just hired hands!" subtext. Strange things are happening in this society as we approach the millennium, and those of us who work in the entertainment and information fields (remember when they were separate?) aren't just observers—we have tremendous influence over the way people perceive what's going on. Whatever we do, whether records, commercials, soundtracks, broadcast or video games, we don't work in a vacuum. Which leads to a very, very complicated question: Do we, as engineers, producers, editors and musicians, have any responsibility for the effect on society of the work that we do?

When I was in high school, a history teacher taught us about moral dilemmas—situations in which an individual is caught between strong, opposing forces. His favorite example was a Southern farmer before the Civil War who hated slavery but knew that without it, he and his family faced financial ruin. The types of dilemmas faced by today's audio professionals may not be in the same moral universe, but they're there nonetheless. I'm not just talking about putting up with clients you don't like; I mean dealing with people you think are doing bad things with the services you are providing them. But with all of the pressures on us to be the best, the fastest, the coolest and the most up-to-date, not to mention

BY PAUL D. LEHRMAN

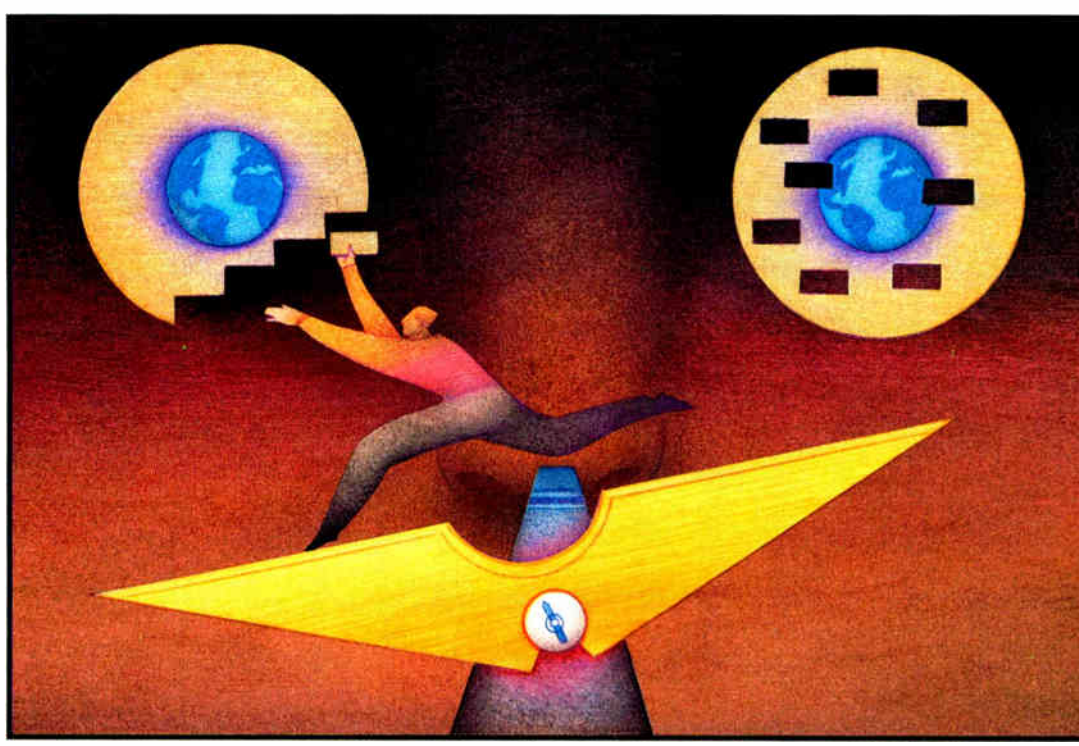

ILLUSTRATION JAMES ENDICOTT

SPIRIT 8

THE EXTRAS COME AS STANDARD
THE PRICE COMES AS A SURPRISE

Spirit 8 is a quiet, compact and rugged 8-bus mixing console, hardly surprising from a company with over 22 years of knowhow in audio design.

What may be surprising is that it comes with every feature you could wish for, as standard, at a price that will make the competition wonder how we did it.*

METER BRIDGE BUILT IN

UP TO 40 BULLET-PROOF MIC INPUTS

4 MUTE GROUPS

INDIVIDUAL CHANNEL BOARDS

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n mono channels. An
credible 66dB of gain
nge provides 28dB of
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e hottest line level
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vel condenser mics.
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dB/octave slope,
sential for combatting
age rumble and mic
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BAND EQ with 2 swept
ids on every mono
put. ■ 2-BAND EQ on
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witch on every input

6 AUX buses with 6
ntrols, 2 of which are
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ternal solderless
mpers can be accessed
r pre- or post-EQ
nfiguring

8 GROUP BUSES

4 MUTE GROUPS
r scene setting

Multi-tap PEAK/PFL
dicator

IRECT OUT on every
ono channel allows
ultitrack recording or
dividual effects sends
nternally selectable
re- or post-fader for
ve recording)

MONO INPUT

DUAL STEREO INPUT

GROUP SECTION

■ 8 STEREO RETURNS for additional stereo sound sources or effects units: 4 have EQ

■ 10 X 2 MATRIX section for additional mixes

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the fact that some of us would like to have personal lives, it's hard to turn down paying work, no matter how revolting it may seem.

Here are some moral dilemmas we might face. Say you set up a production facility in an area of the country where there isn't much competition, as a friend of mine did. By being there, you attract talent and business to that area, raise standards for everyone and build up an impressive staff. After a few years, you catch the attention of local hate-mongers with more money than brains, and they want to use your place to produce slick programs that denounce the international Zionist conspiracy and "prove" the genetic inferiority of nonwhite people. Do you tell them to go to hell? Or do you do your usual great job, but figure you can take advantage of them by charging full card rate and snickering all the way to the bank?

Say you believe, as many intelligent people do, that tabloid television news shows have brought the practice of journalism to new lows, and that the resultant pressure on traditional news departments has made the nightly news so dependent on sensationalism and scandal that it's impossible to watch. Because "more Americans get their news from TV than any other source," as one network solemnly assures us, more Americans than ever are ignorant about issues of any real importance. You know this, and at parties you'll tell it to anyone who listens. So what happens when *Hard Copy* calls you up to produce a segment on yet another Washington bimbo eruption?

Say you believe, as the staff of a fiercely independent radio station I know once did, that the military is a hateful institution and an ultimately destructive career choice for minority youth. Suddenly, the Army's budget for recruiting advertising goes up. Do you shun them when they come knocking, or do you say, "Well, better their money should come to us than to someone else"?

Say you're a composer whose parents fled persecution in Yugoslavia a generation ago and taught you all the songs of their childhood. A producer wants to use you to produce some stirring, heart-wrenching arrangements of those songs for an overseas client. What do you do when you find that the music you're making is being used to punctuate impassioned speeches on Serbian radio calling for the extermination of Moslems? Observers of the civil war in the Balkans say that "patriotic" music on the radio has been an important tool in getting the various sides to hate each other.

Say you've got a record label that you've been building for years, and some of your artists are finally catching on. But you're seeing new acts come along espousing violence, misogyny and racism, and they think that drive-by shootings are fun and a murder indictment is a badge of honor. You know that their more venomous creations will create quite a stir, maybe boosting your entire roster. But you're also disgusted by them. Do you sign them, tell the media you're championing free speech and just pray that no one takes them seriously enough to actually put some of their preachings into practice?

I'm sure that something similar to these examples has happened to you at least once in your career. I've been there, too. Some years ago, I was hired to score an in-house instructional film for a large defense contractor. At first I

didn't like the idea, being a dyed-in-the-wool swords-into-ploughshares type, but the independent producer who hired me, a former network news producer with political leanings not far from my own, assured me that the film would be strictly "civilian"—it was to promote integrity and responsibility within the ranks of the workers and would focus on products from non-defense-related divisions of the company. The company had just been caught by the government being a bit, shall we say, overcreative in their contract-procurement procedures, and this was one way they hoped to show that they were sincere in their efforts to reform. I took the gig.

Most of the film was innocuous enough, but when they sent me the final cut, the last minute or so had somehow become a glorious montage of military hardware, climaxing with a shot of a fighter jet roaring into a red-white-and-blue sunset. I finished the piece and later groused to the producer that I resented his misrepresenting the content to me. He shrugged his shoulders and promised the next assignment would be more to my liking. Despite my misgivings about the film, I enjoyed working with the producer and his team, and I was quite proud of the work I did. I even used that last minute, war technology and all, on my demo reel for a time.

Not long after, the producer called again. The client had conceived some major new hardware for the "Star Wars" initiative, and he wanted to promote it to the Pentagon. Could I score the video? I replied that I could not. His response was, "Boy, I wish we could turn down work like that!" and he found someone else. In fact, since that time, he has *always* found someone else, and although we have remained friendly, I've never worked for him again.

Did I lose a lot of potential work because of a moral stance? Maybe. Would I make the same decision again? I would. But for me it wasn't such a hard decision—I've got other ways to make a living, and I don't have a huge facility to maintain.

In the early '80s, I was doing sales and marketing for a startup music-technology company. We had a great product, and I loved selling it. But a lot of people were having trouble with it. In the best tradition (which actually wasn't a tradition yet) of high-tech customer support, I told everyone who called that a) it was their fault; and b) it would be fixed real soon. But when customers' problems got worse, and it was obvious that they were *our* fault and they were *not* getting fixed, I had to do something. Should I stick it out, continuing to draw a salary and increasing my stock position, and hope that I could influence the people responsible for the product to get their act together? Or should I bail, cutting myself off financially and pissing away many months of unpaid work? Was my responsibility to the company, to the customers or to myself? And if I could figure that out, would I be more effective trying to change things from the inside or the outside?

Ultimately, I jumped. But again, it wasn't such a hard decision—I knew the big bucks I had originally thought would be mine just weren't going to come, and the company was headed for the toilet. And that's where it ended up, a victim of lawsuits brought on by its deceptive practices.

The choices are not always this clear-cut. One client of mine is a charitable organization that finances major building projects overseas. My more po-

—CONTINUED ON PAGE 217

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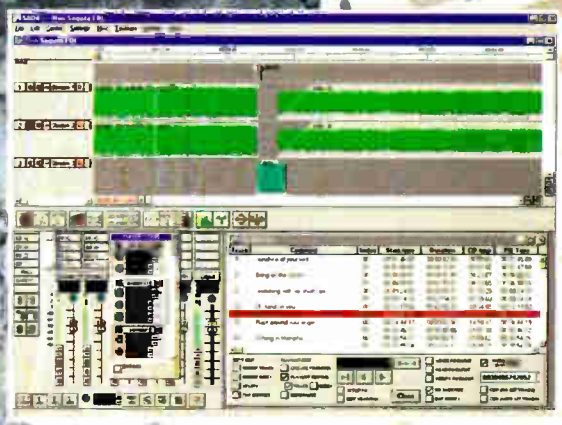

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K.D. LANG AND BEN MINK

FOOD FOR THOUGHT

All You Can Eat is k.d. lang's most forthright and personal statement to date. The album was co-produced by lang and her songwriting partner, Ben Mink, with engineer Marc Ramaer and was recorded in lang's and Mink's home studios in Vancouver. Soaring over the songs' compelling grooves, surrounded by colorful instrumentation and sensual rhythms, lang's vocal is confident and carefree, bold yet vulnerable.

Since her major-label debut, *Angel With a Lariat* (1986), k.d. lang has intrigued and surprised fans and critics alike. Her initial rowdy energy mellowed a bit (but showed no less passion) with the Owen Bradley-produced *Shadowland* (1988), an excursion through sensual, yet traditional, country stylings. *Absolute Torch and Twang* (1989), co-produced with Ben Mink and Greg Penny, showcased her unmistakable vocal command and stretched the C&W boundaries further.

In 1992, her ten-gallon hat and chaps were traded in for the silk and satin of *Ingenue*. "Constant Craving" yielded lang's third Grammy, taking her provocative torch singing to the widest audience yet. Teamed with co-producer/composer Ben Mink for 1993's *Even Cowgirls Get the Blues* soundtrack, lang never sounded better. An overlooked gem, the film music allowed a diversified exploration typically forbidden in pop albums.

I was invited to join k.d. lang and Ben Mink at L.A.'s Chateau Marmont for a vegetarian repast in the hotel gardens. Our menu: pesto pasta, roasted squash, parsley potatoes and spinach-filled pastry puffs.

PHOTO GUZMAN

Bonzai: Did the *Cowgirls* soundtrack open up new areas of creativity?

lang: I was extremely intrigued by the film, and especially by working with Uma [Thurman], Rain [Phoenix] and Gus [director Gus Van Sant]. I was excited, and I came to the project really open. It was great because not only did it culminate the past, present and the future for Ben and I, but it allowed him to do a lot of instrumental material. The string work and the overture were Ben's creations, and for me it was fantastic to be able to do that acoustic trance thing in "Lifted By Love" and then "Sweet Little Cherokee," back-to-back.

Bonzai: It wasn't a big commercial success, was it?

lang: No, but other than the fact that eclectic albums don't have a market, it's easy to explain. I didn't have the energy to promote it, because I had just toured with *Ingenue* for two years. And the film didn't do well, so the album didn't really have a chance. But it's very nice to have it in the catalog.

Bonzai: Didn't you and Ben first meet in Japan?

lang: Yes, in 1985.

Mink: We participated in the Canadian cultural exhibition at the 1985 World's Fair over there.

Bonzai: Was it love at first sight?

Mink: It was raised eyebrows at first sight. There were a good number of months that went by before we actually did anything.

lang: He kinda looked down at me. I thought he was condescending.

Mink: I looked down at everything at that point. I was pretty jaded with the music industry altogether.

lang: And I was the opposite. I was all "go get 'em," because I was so young. But between us there was this common lust for

BY MR. BONZAI

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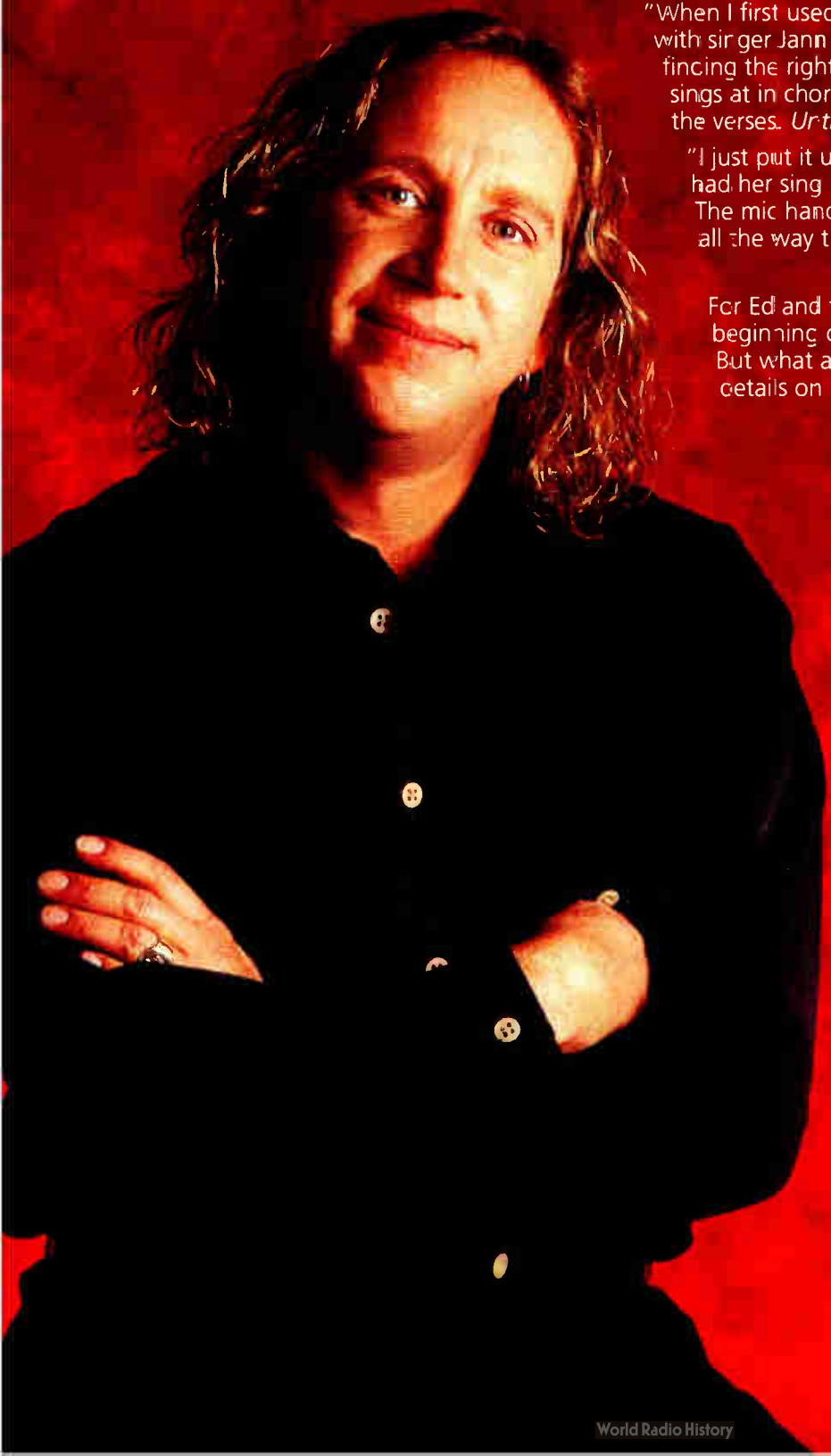
Grammy-award winning recording engineer and producer Ed Cherney has worked with some of the most talented people in the business. Bonnie Raitt, Eric Clapton, Little Feat, Elton John, and The Rolling Stones just to name a few. So it was inevitable that he would eventually work with one of the finest microphones. The AT4033.



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music, and common lust for opposing contradicting styles and melding them. I could see that in Ben and in his fiddle. It's a famous fiddle by now, isn't it?

Mink: It's getting there. It's an electric violin I sort of chopped up to get rid of the feedback. In putting it back together I attached a bunch of farm animals and small figurines that are open to interpretation. I suppose it's my unconscious mind—it's a piece of folk art as well as a functioning instrument. Anyway, it resembled some of the outfits that k.d. was wearing, and I felt we both had the same angle of looking at country music, and probably music altogether. A rare angle of reverence...

lang: Irreverance...

Mink: And a wry smile at the same time, through respect.

Bonzai: Country music was on both of your minds?

lang: It was experimenting with the limitations of a traditional style and seeing how creative one could be, and at the same time showing respect and understanding of the form. The whole idea of the country thing was to see how far we could go without bastardizing the music. Ben's big guy was Buck Owens, and mine was Patsy Cline, and we truly loved those people.

Bonzai: Why Patsy Cline for you?

lang: Because I loved her voice, the emotion and pathos and humor and power. She was a very progressive woman who was trying to make it in this business. I guess I related to her in a sense—the woman struggling against the odds.

Bonzai: When did you first discover your voice?

lang: I was pretty young. I competed for the first time when I was five and won. That seemed to give me a boost. It was never a discovery, though. It was just sort of there and understood.

Bonzai: When did you realize it was your calling?

lang: I knew it all along. I also went through stages where I wanted to be a cinematographer and involved in sports, but I knew it was music all along.

Mink: You were a heart surgeon for a while, too, weren't you?

Bonzai: And you still are...

lang: Mmm, yes.

Bonzai: Why do you spell your name with no capital letters?

lang: I think I was influenced by the fact that my mother was a Grade 2 schoolteacher, and what I saw was usu-

DUELING STUDIOS

RECORDING "ALL YOU CAN EAT" AT HOME(S)

by Barbara Schultz

All You Can Eat really sounds like an *album*—like one, flowing musical work that explores the feelings of love and desire in increasingly strong, passionate language. It starts with a quietly insistent R&B groove and a wistful dream of love ("If I Were You") and follows an almost linear path to the daring assertion "I Want It All." So it's rather surprising that this mesmerizing, well-formed work was made from a pile of more than 350 DA-88 tapes.

The album was recorded over several months, in k.d. lang's and Ben Mink's home studios. lang's studio was designed and outfitted by Marc Ramaer, the album's engineer and co-producer. Ramaer began working on lang/Mink projects when he served as assistant engineer on the country masterpiece *Absolute Torch and Twang*. Since then, he's been the collaborators' right hand in all things technical. "After we made the *Even Cowgirls Get the Blues* record," Ramaer says, "I asked them about setting up a studio, working with MDMs. It made sense from a financial standpoint as well as an artistic one. They write as a team, and we wanted to have the opportunity to bridge the demo/recording/production stages so that those early performances, which were so good, could be used."

After months of research and math, Ramaer came up with a combination of gear he thought would work well for lang, and Mink followed suit by installing a slightly smaller-scale version of the same control room. For lang's room, they gutted a floor of her home in Vancouver (Mink's studio is in his garage), and Ramaer consulted with Ron Obvious (from Bryan Adams' camp) on the wiring and some technical issues. "He had some really good ideas about how to make things work as a bundle," Ramaer says. "But all the gear and the layout was my dream studio. I was able to purchase all the toys and get a small room together that was built the way I work—the first studio on earth that had all the gear I like.

"There were absolutely no rules," he continues. "In the beginning of the project, Ben and k.d. were coming up with the concept and writing songs; they did that pretty much exclusively at Ben's place while I was getting k.d.'s place up and running. When it was ready for them to come in, we spent the first two months with a couple of hours in the morning just talking over stuff and doing a couple of overdubs, and then a lot of times we would split up, and Ben would go home and do some rhythm guitars, and k.d. would go upstairs and write lyrics, and I would be in k.d.'s studio editing song forms and performances and putting everything together on the tapes for them both to work with. Once the songs progressed, we started spending time together at k.d.'s place and getting some musicians to come in and play."

k.d. lang's home studio

lang's control room is equipped with a Mackie 8-bus, 32-input console with a 24-channel expander, as well as three DA-88s. She also has a Macintosh Centris 650 computer running Pro Tools III and Cubase. There is a piano room with a Yamaha 7-foot Disklavier and a 5x6-foot "dead" room that Ramaer says they used for "some guitar amps and other noise-making things, including the drums."

Mink's studio also has a Mackie 8-bus and three DA-88s. Both of the studios are equipped with Meyer HD-1 monitors and identical outboard gear: Focusrite 115 EQs, customized Jensen M-1s, SSL compressors and EQs and a Z-Systems digital patchbay. "What we decided to do for a microphone is instead of going out and buying a whole whack of mediocre ones," says Ramaer, "we contacted Stephen Paul

—CONTINUED ON PAGE 40

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ally in lower case, when kids are just learning how to write. And I remember seeing an e.e. cummings poster in high-school, plus it's a marketing gimmick.

Bonzai: When did you make your first record?

lang: I guess it would be "Friday Dance Promenade," my first single. I recorded at Larry Wanagas' studio—he's my manager. The second was the independent record, *A Truly Western Experience*. Those were made in 1983 and 1984, and in 1985 I was signed to Sire Records and met Ben.

Bonzai: What was the first work you created together?

lang: "High Time for a Detour."

Mink: We're still working on it.

lang: A song yet to be topped or surpassed.

Mink: I had sent k.d.'s manager a song, "Turn Me 'Round" [*Angel With A Lariat*], that I had mentioned when we met in Japan. She said she was looking for material for her new album, and I told her I had a song that I had never really finished. I started writing it when I was 17. So, I sent it off, and someone thought that we should get together and write. k.d. had suggested that in Japan, but it's one of those things like "let's have lunch together," and you don't really expect anything to happen. But she flew to Toronto, and we got together at my place, and "High Time for a Detour" emerged.

lang: Stupidest song I'd ever written, but we had so much fun.

Mink: So much fun writing, and we are yet to figure it out. But that was the first.

lang: One version is available on *Angel With a Lariat*.

Mink: After the giddiness of that settled down we actually started writing together. What came next?

lang: The next song was "Pulling Back the Reins," and "Didn't I" was close afterwards.

Mink: We started that during *Angel With a Lariat*.

lang: We just went full steam ahead.

Bonzai: Who's in charge of the lyrics, and who's in charge of the music?

Mink: k.d. is generally in charge of the lyrics.

lang: Although they have to meet with Ben's approval.

Mink: Sometimes there are ongoing themes, jokes or even serious things running through our lives that become phrases and emotional concepts to be used as the basis for what a song might be. It might mull around for a couple of months, but we will eventually know that the song will be clarified and derived from these ideas. The details of the lyrics—what you hang on the tree—come after the general theme has been developed.

lang: At the same time, we develop melody, instrumentation and the basic emotional feeling of the song.

Bonzai: Has the procedure remained stable through the years of your collaboration?

Mink: It changes all the time. The only thing that stays stable is that we really try not to repeat ourselves. If we see ourselves going down a comfortable path, we'll ditch out, because we know that comfort means boredom...

lang: And mediocrity.

Mink: If it's too easy, you're not testing yourself, and the right juices won't emerge. We try to trip ourselves up all the time.

Bonzai: How did your new home studios alter your work style?

Mink: Enormously.

lang: A major change.

Mink: We had a glimpse of it on *In-*

genuine, because when we started we were using some rental equipment, 16-track Tascam machines. It's the old story of chasing the demo, because the feeling of the demo is so good. Sometimes we couldn't recapture it, so we just transferred over the original recordings. A good portion of major parts on *Ingenue* were framed up right from the original demo.

lang: Recorded in my tiny Chinatown apartment in Vancouver, but you couldn't replace what we originally got.

Mink: We decided that the next time there wouldn't be any demos. There's no reason for it anymore. You can make a good recording if you can get the equipment in your room and frame up the procedure in the right way, get all your SMPTE times right, your tapes lined up...

lang: And record as cleanly as possible without wrecking the vibe, the instantaneousness. Lots of times I would be setting up the mic while Ben was working out a part so that we could get it down right away.

Mink: We had tapes all formatted beforehand and did as much as we could so that the creative side wouldn't be interrupted. And it worked. We started at my place, because k.d.'s wasn't quite finished. My place is a scaled down version, a twin to her studio. We wrote there and did the prelimary recording. About four months into the project we moved everything to k.d.'s studio, but mine was running at the same time.

lang: Ben did most of the strings and guitar parts at his studio.

PHOTO: KIM BONZA

Ben Mink and k.d. lang

Mink: We're ten minutes away from each other, and it really worked well.

Bonzai: Do you have matching consoles?

Mink: We both have Mackies, but her's has been modified for balanced in and out. I haven't had time to do that, so I use mine primarily for monitoring. And her studio has all the heavy computer

equipment. We used eight tracks of Pro Tools to do all our editing.

The detailed computer work and all the major editing is done at k.d.'s place, and the raw materials are done over at mine.

Bonzai: How does this style compare with recording in a traditional studio?

lang: No comparison. In a commercial studio there's the intensity of knowing that you are spending that kind of money, plus the vibe of people you don't know sitting around, watching TV and smoking cigarettes. No air, no light. My studio had an incredible view of downtown Vancouver, the mountains and the ocean. We left the doors open all the time, and we listened at low levels. We never got any complaints, except when we tracked drums one day.

Mink: We set up our entire drum kit in a closet. We used a scaled down Junior Gretsch kit with a baby snare on most of the album.

lang: It's like a children's snare drum. If you listen carefully you can actually hear the snare head drop in tone as the head stretched.

Mink: It was so thin that it was only good for one or two takes. We had to call around to find snare heads that only exist for these children's kits.

Bonzai: Did this free creativity cause any consternation for your engineer, Marc Ramaer?

lang: A little. There's a great sense of pride in an engineer, and Ben and I have very untraditional styles of recording. [laughs]

Mink: We basically use anything. Some of the most memorable guitar tones, the ones I am most proud of on the record, came from using a microphone that I picked up at the local video shop for four dollars. It's called a Carol, and it's all plastic. The cord wasn't long enough, so we used some alligator clips. It was buzzing, wasn't even grounded or shielded, but you want to get the idea down *now*. It has to be done that second, because your juices are going. If you wait for a proper patchbay, a proper microphone, and you try to get rid of a ground hum, by that point you'll be sleeping.

lang: Plus there's something about inertia—being radical with the recording technique adds something.

Mink: It's all performance, performance.

lang: You're creating these crazy techniques, and it adds to the performance.

Mink: If there's really a problem later, you can find a way to get rid of it. We had a lot of hums on a number of tracks that we got rid of with a computer program called DINR that's part of the Digidesign software, and it worked like a charm. Mark found a way to really zero in, and it got rid of almost all the hiss and the ground hums. But some of them are still there.

lang: If it added to the charm, we definitely wanted it. We would have to fight with Marc, not in a serious manner, but we had to convince him that we were prepared to suffer the consequences.

Mink: On "Maybe," using headphones, you can hear me talking to the cello player telling him what part to play as it comes up. But the important thing is the live energy of making the record.

Bonzai: You certainly play a lot of strange instruments. Do you have a huge collection?

Mink: Well, it's getting bigger and bigger.

Bonzai: What's a Mandola?

Mink: That's a mandolin, the viola counterpart. A mandolin is tuned exactly like a violin, and a viola has a lower fifth string and the higher string is absent. The mandola is just a lower version of a mandolin, longer neck, a little bit lower in pitch.

Bonzai: What's an urhu?

Mink: The urhu is a traditional Chinese

—FROM PAGE 36, DUELING STUDIOS

in L.A., and he had a new Delta 9 capsule that he was putting in [Neumann] U87s and U47s. We got two of the U87s built as a matching stereo pair, the tolerances of which were very tight, and we had one over at Ben's place and one at k.d.'s. We pretty much used them exclusively for everything." Ramaer admits, however, that they did experiment at times with

Engineer/co-producer Marc Ramaer

what he calls Mink's collection of "extremely old, very crappy microphones. We used them on some of the guitar sounds."

For lang's vocal, Ramaer uses the custom U87 with an SSL G preamp. Shure SM57s were used on drums and AKG 451s on overheads. Bass was recorded DI through a Tubetech preamp and an LA-2A compressor. The album also features some odd instruments that Ramaer says he and the artists dubbed "the orphans." "The orphans came from pawn brokers and tiny music shops. We'd blow the dust off of them and plug them in, and some of them worked, and some didn't. Some of the organ sounds are from an old Brisco. I think it cost $30. The electronics had seen their heyday, and we had to physically hit the organ sometimes during the takes to make it keep working. You can actually hear on the album that sometimes the organ is completely crapping out. But the orphans seemed to be very thankful that they were played on this album."

When the demo/recording phase was complete, Ramaer, lang and Mink headed to Studio A of Burbank's Encore Studios, which is equipped with an SSL G Series console with Ultimation and a Sony PCM 3348 recorder. "We basically just used outboard, EQ and compression for her voice, but the tracks themselves, especially the rhythm section, are completely dry and ungated," Ramaer says. The six-week mixing/editing process also required transferring the many tapes from DA-88 to 48-track.

Ramaer says that the first two songs they mixed—"This" and "World of Love"—were fairly trying to do because they hadn't yet developed a clear vision of the album, but once they'd completed those, the work took shape and picked up speed. He also says that with the amount of material they had accumulated, they could have made an album out of each song; instead, they created a collection of shimmering, sensual songs in which lang's indisputably breathtaking voice shows the benefits of a homelike, relaxed recording atmosphere. "I don't think we could have made the album that we have now if we had done it in conventional ways," Ramaer says. "It really was a very special way to make an album, and, of course, a luxury for most people, but the feeling that you get off it translates to a very appealing, floating, flowing album that works well in context with her voice." ■

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violin. You might see them played at fairs. It's got a snakeskin acoustical cavity—because they haven't developed a soy skin yet [laughs]. It's like a primitive violin, with two strings. I was told that the tonal objective is the "crying of an old grandmother." I took one lesson from an old fellow, and it requires a very different technique than for violin.

Bonzai: Is violin your main instrument?

Mink: Violin and guitar.

Bonzai: On the new album, "Sexuality" is especially interesting, so straightforward but so romantic. Great song.

Mink: The working title was "Hawaii 6.0." It started off as a romantic Hawaiian number.

lang: Until I picked up the electric guitar [laughs].

Mink: So we threw out the Hawaiian thing, but on the computer the title was still "Hawaii." As it developed, we reached the sixth version and it became "Hawaii 6.0."

lang: It's funny, but that song had the first lyrics written for the new album. I had a completely different set of lyrics written for it, but it had nothing to do with anything. It was again my sort of metaphorical, spiritual style of writing that I've developed.

And then I just literally felt sick. I physically felt ill, and I had to go lay down on my bed for a nap. Then all of a sudden I went, "C'mon, c'mon, shed the skin." I woke up and *wham* it came to me, and I called Ben and told him, "Okay, number one is here." It was a little bit scary, but I think both Ben and I wanted to be direct both sonically and lyrically on this record. We just wanted to make a very dry, straight-ahead forward record.

Mink: A lean meal.

lang: Lean cuisine.

Bonzai: On the song "Get Some," we have Teddy Borowiecki playing the Brisco organ. [both laugh]

Mink: It's a vegetable oil and an organ! No, there's a local pawn shop around the corner from where I live, and I check it out every week. They get junk all the time, and we have this thing about "orphan" instruments that nobody wants. They're so bad that they are poor imitations of other cheap instruments. The Brisco is a bad imitation of a Farfisa or a Vox organ. It's budget line Farfisa. The top is cracked and the circuit board is gone and the tones change in the middle of a song.

lang: We bang on it, and then you'll hear *foomph*, and the organ kicks back in. The performance was so important that we didn't want to fix it.

Mink: Now we've sampled the sound because we need it for live work, and the Brisco will go into a museum somewhere.

Bonzai: Is that a little homage to The Beatles on this song?

lang: That was from my love for those psychedelic background parts that I've always wanted to do. I've been harping on Ben to do it for years, and finally on "Get Some" we got to do it. I just had it all in my head when I wrote it.

Bonzai: You do all the background vocals on your records. How many tracks do you eat up?

lang: Not that many—eight at most.

Mink: We usually do six and occasionally eight if it needs an extra touch. And the eighth part is usually not a full part; it's just shading.

lang: It's usually just three or four parts doubled.

Mink: Same with the strings.

lang: You just make sure that your tone is a little bit different, so it sounds fatter. If one is a bit pitchy, you go the other way and balance it out.

Mink: We also work within the sonic frequencies that are already laid out in the track, so you don't crowd any-

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thing. It's like driving down a freeway. When we're doubling our own parts, the first part is an instinctive rendition, and you go, what did I do? It's a lot like getting in the tunnel and you know where the boundaries are when your shoulders hit the wall. But you follow it through.

Bonzai: Do you like breaking the rules?

Mink: Technically, we stretch it as far as it can go. We had to create technical formulas because they didn't exist yet. Everyone who uses the DA-88s has their own system, and for us, there are thousands of sheets and careful computerized ways of documenting. Although it sounds as if we are in a garage kicking things—which we are—there is a precision and a method that lets it happen in pieces and then allows us to construct it all.

Bonzai: Where did you mix?

lang: Encore Studios in Burbank.

Bonzai: And you mastered with Bob Ludwig up at his new place in Maine?

lang: Yes—a beautful way to finish up and chill out.

Bonzai: What's next? Promoting this puppy?

lang: Yes, I've been in promotion since four days after mastering. And I start a tour in January that goes through next September, so far.

Bonzai: What's most important to you, love or a recording career?

lang: Number one, they're inseparable, because I don't think I'm capable of either one without the other. Number two, I think it's shifted a bit. For the first ten years of my career, there's no question that was it, but as I get older and more comfortable, I've gotten more "over" show business. I'll never be over music, but maybe a little tired of show business, and I think love will ultimately be king. But it's inseparable. I'm a singer. I can't dissect myself that way.

Bonzai: How do you deal with phonies?

lang: I try not to. I try to eliminate them from my life. But I don't want to answer the question simply. I can't judge, because I'm sure that people who meet me in certain instances say "She's phony." I just try to adhere to my own value system, and Ben's, as it pertains to our music and our life. You just try to live really clearly with your own instincts and morals, and react to situations staying true to those instincts, that's all.

Bonzai: Any advice for those just getting started in the music business, something that might help them avoid pitfalls?

lang: I'd avoid it in general [laughs].

Mink: You gotta love it a lot, and you have to love the correct part of it.

lang: You have to not be in control of your passion for it.

Mink: That's right. You have to be head over heels, blind...

lang: In love with it...

Mink: Because that's all that's going to get you through it. It's so heartbreaking what goes on sometimes—you go home and cry about it and lick your wounds. But eventually you have to become excited again.

lang: Or, you have to not give a shit at all.

Mink: For me, music was healing. I just felt better when I did it, like a psychological shower.

lang: It's a conduit. I don't think true musicians, actors, artists, have any choice. You don't have a choice. ■

Roving editor Mr. Bonzai's cowboy torch song act is now in its tenth year at the Gene Autry Lounge.

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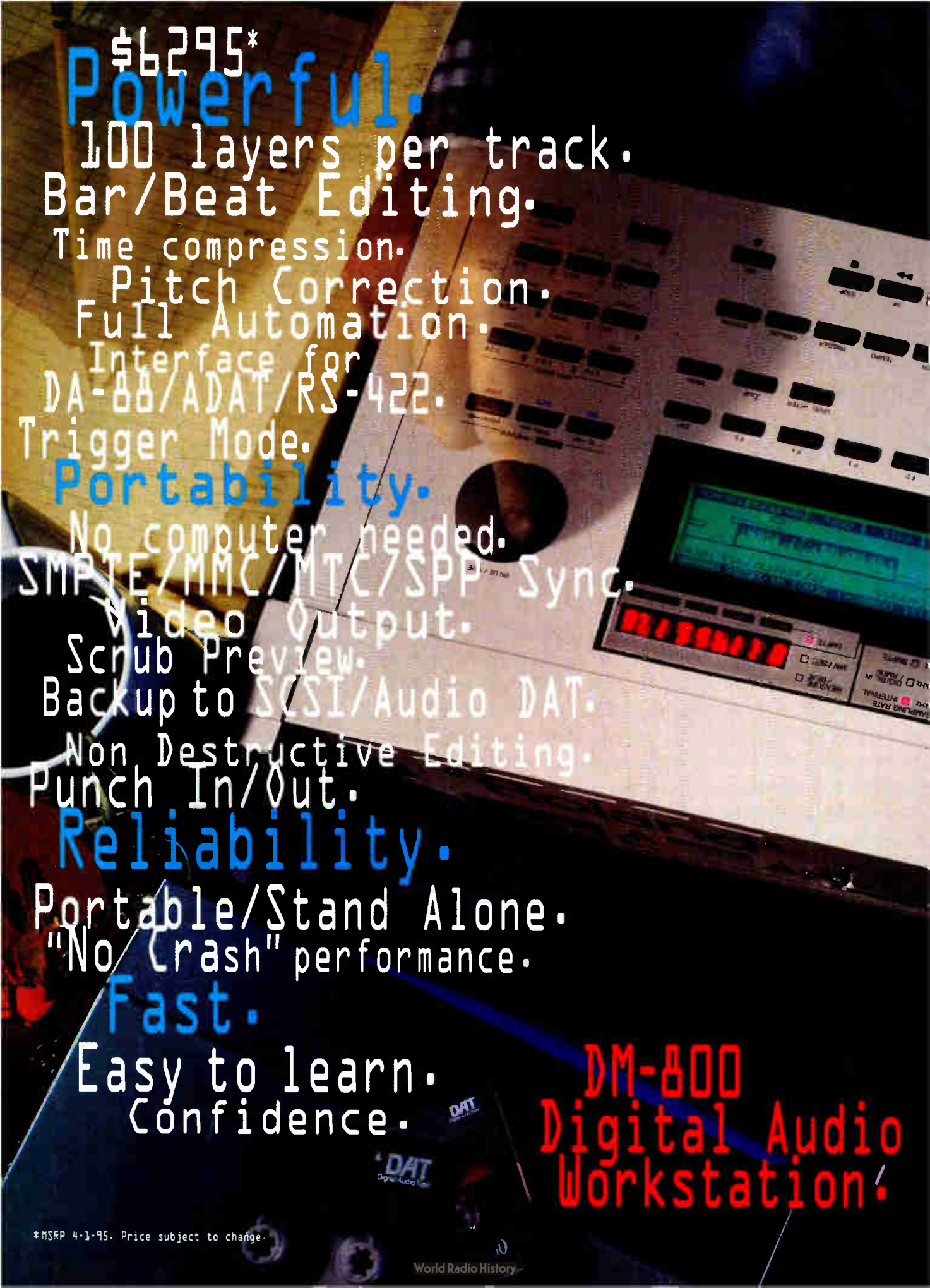


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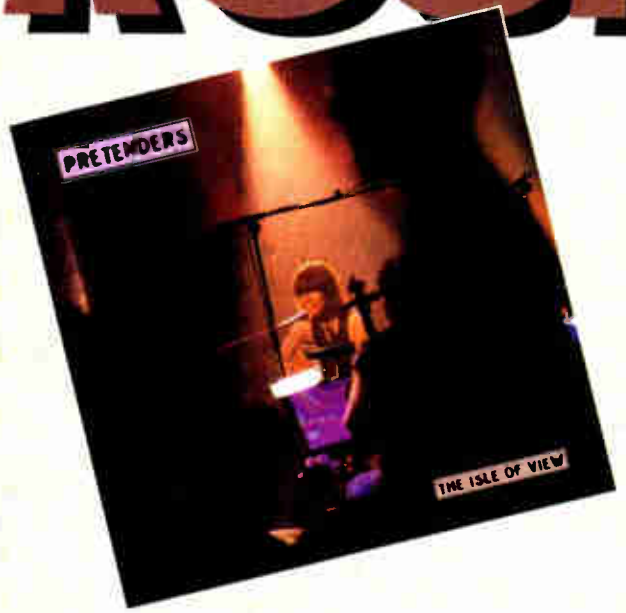
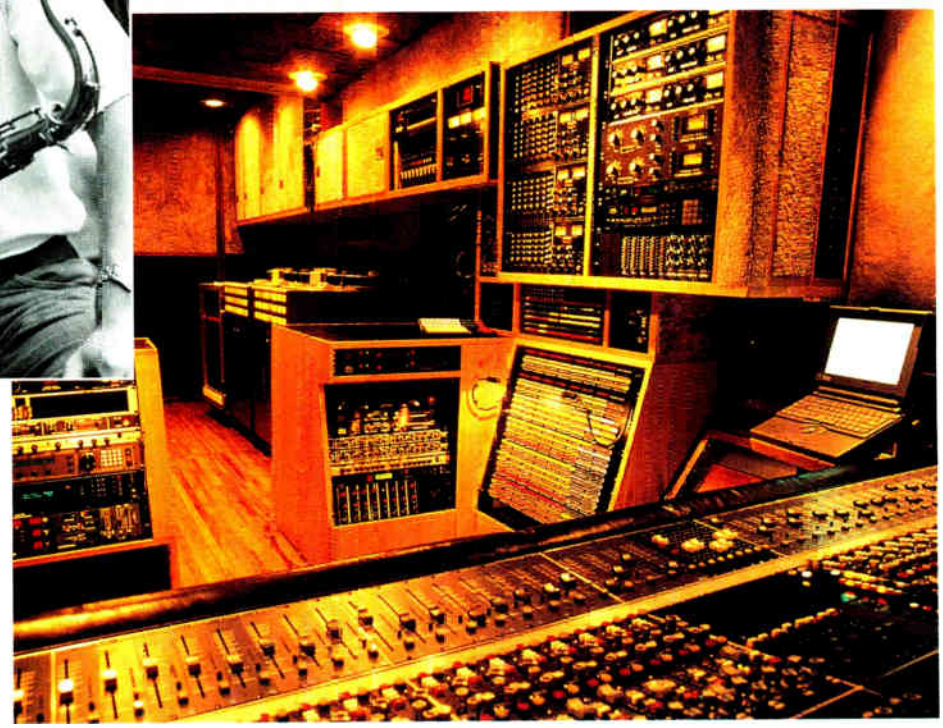
Remote Recording ROUNDUP



by Chris Michie

It seems only yesterday that we published Blair Jackson's "It's Alive!" article describing nine recent remote recording sessions (in fact it was last July). So what's been happening in remote recording since then? Based on recent conversations with several remote recording operations managers, quite a lot. Here are some dispatches from the field.

Joshua Redman



Record Plant Remote

Le Mobile

TISH HINOJOSA AND LE MOBILE: TEX-MEX WITH A FRENCH-CANADIAN FLAVOR

Though the vast majority of today's recordings are made in function-specific facilities, the list of great records made in less traditional surroundings is impressive. Robert Johnson's hotel room recordings and *The Band* are but two examples of recordings made in somewhat "makeshift" technical circumstances, yet who can argue with the quality of the work? Nevertheless, when Tex-Mex artist Tish Hinojosa proposed a convent chapel as the recording venue for her new Warner Bros. record, some doubts were expressed.

"I was a little concerned when we first went down there," says Tish's regular studio engineer Fred Remmert. "The original idea of the record was to cut as much live as possible with the full band and try to get as many vocals live with the band as we could. [But] the room had almost 3½ seconds of natural reverb, and to put a full drum kit in there and try to get keeper vocals at the same time seemed like it would be difficult."

"Pas de probléme," as Le Mobile owner Guy Charbonneau would put it. Since moving his remote recording operation from Canada to the U.S. in 1978, Charbonneau has made a specialty of onsite, or residential recording. In fact, Charbonneau felt so confident that he could make the Tish Hinojosa recording a success that he offered to forego his engineering fee if he couldn't get a satisfactory sound. Duly impressed, Tish's producer, Warner Bros.' Jim Ed Norman, signed up Le Mobile for a two-week session at the South West Craft Center, a former Catholic girls' school and convent in San Antonio, Texas, just blocks away from where Tish went to high school.

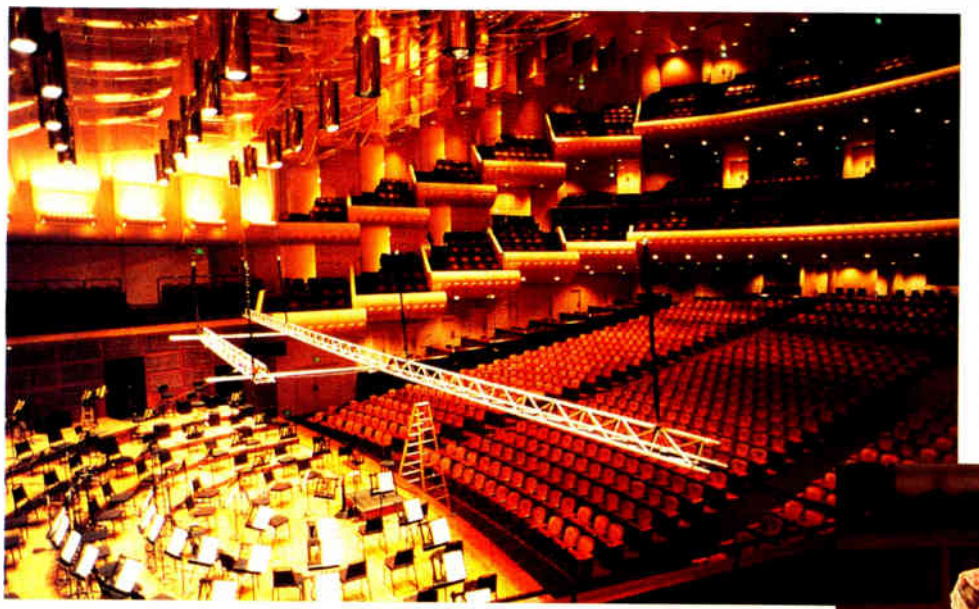
Charbonneau's confidence proved well-founded. "Once we got all the stuff in the room—all the equipment—and we put some carpets down and we put some

blankets on the walls, it ended up being a really nice-looking big studio room," says Remmert. Judicious draping cut the L-shaped room down to a rectangle. "We treated the acoustics in there to the point where the reverb was pretty much under control, and we could use it for what we wanted."

Which is not to say that the acoustic character of the chapel was totally tamed. "[On one track] we would have liked to record acoustic guitar and drums at the same time," says Remmert. "[But] we ended up cutting the guitars live; the drummer played shaker, and then overdubbed his drums. On another [tune] we put pickups on the guitars and cut the drum track with scratch guitars and then went back and replaced the guitars."

Ambient noise posed another challenge. The sessions were taped analog at 15 ips with Dolby SR, but as Rem-

—CONTINUED ON PAGE 53



Left: Davies Symphony Hall preparations for the live recording. Below: Michael Tilson Thomas, music director, San Francisco Symphony.

PHOTOS TERRANCE MCCARTHY

RECORDING LIVE

THE SAN FRANCISCO SYMPHONY

By David John Farinella

The Green Room at the Louise M. Davies Symphony Hall in San Francisco is a bit disheveled. The couches are stacked on top of each other, the lounge chairs are holding empty cases, and the beverage table is loaded not with cold mineral water, but a rack of recording equipment. The excitement of a live recording hangs in the air and, from the Green Room to the stage, the pre-show jitters are a bit stronger tonight.

Tonight's recording is of the San Francisco Symphony performing Sergei Prokofiev's *Romeo and Juliet* under the baton of musical director Michael Tilson Thomas (aka MTT). Featuring principal trumpet Glenn Fischthal, the recording will be the first project under an exclusive 15-disc, five-year contract the Symphony signed with classical powerhouse BMG Classics. It is also the first live recording in this orchestra's 80-year history. Although the S.F. Symphony is no stranger to recording—it won a Grammy for its 1993 interpretation of Carl Orff's *Carmina Burana*—MTT has decided that recording before an audience will bring more out of the musicians.

Davies Hall provides an ideal recording environment. Acoustic renovation, which included installation of a new wood floor and a series of canopies and dishes above the orchestra stage, was completed in 1992. Room acoustics are particularly important for this recording because no equalization is used. In fact, the only processor used on this project is a Lexicon 480L, used to add reverb and keep the timbre consistent between performances recorded in front of an audience and later recordings made in the empty hall.

Producer Andreas Neubronner's recording philosophy is based on two omni B&K 4006S microphones in a stereo pair, supplemented by a strategic arrangement of spot mics throughout the orchestra. "The spot mics are used to pick up a solo a bit more or give us the ability later to bring it up a bit," says Neubronner. "We use them only for very small adjustments later." There are 26 spot microphones in all, including Sennheiser PZMs, Schoeps CMC series, and a pair of Neumann 130s that have been taken apart to reduce visual clutter and hang from a truss above MTT's head. The mic amplifiers are secured to the truss itself, while the capsules dangle about two feet below.

(L to R) Markus Heiland, Gabriele Starke, engineers and Andreas Neubromner, producer

—CONTINUED ON PAGE 52

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—FROM PAGE 50, RECORDING LIVE

The temporary control room in the Davies Green Room is devoid of outboard gear, except for the Lexicon 480L. A rack of Tascam DA-88s is fed from A/D converters built by the German company Lake People. Using a Prism Sound MR 2024-T wordmapper, the recording team is able to use the 8-track, 16-bit DA-88s as 6-track, 20-bit recorders. Monitors are Quad ESL-63s driven by Quad 520F amps, and the console is a 28-input Studer.

The Green Room has also been outfitted with video monitors, although during recording no one in the control room watches them. In fact, all three of the members of the Tritonus Musikproduction GmbH recording team have their heads buried in their scores, where they are following the performance and making notes about the flow of the show. Neubronner has created his own code, including notations for the symphony playing too flat, too slow, etc. The balance engineer, Markus Heiland, is reading the score along with the performance, noting instrument levels. Gabriele Starke operates the machines and times each piece.

Timing each performance is crucial because during editing the tempo must be consistent. In the classical world, there is no such thing as a "punch-in, punch-out" *a la* pop music; in fact, Neubronner laughs at the idea. "You cannot place the whole orchestra on the stage and tell them to play one part." Instead, the final product will be a literal patchwork. "The whole piece consists of 100, 200, 300 splices between all of the five concerts. This is a sensitive process, because you have to avoid a bouncing tempo." Later he explains that although a better solo or performance may occur on one night, it cannot be used if the tempo doesn't match another night.

The San Francisco recordings are just the latest in a long series of performances Neubronner's Tritonus team has captured. Recently, they've worked in Vienna, Amsterdam and St. Petersburg, and they've developed a type of snapshot setup, so they already know where the microphones should go and how the stage should be designed. The majority of the actual mixing is done before they leave on the first night. In fact, time in the studio (about 40 to 60 hours) is spent only fixing minor details, like if someone in the audience coughs. "The special thing in our recording process," Neubronner says, "is that we are trying to make a final 2-track mix and only do necessary remixes in some special cases later. This is possible because we have everything at 20 bits, and we can do all of the mixing in the digital domain. There is no degradation of sound quality."

Six days later, Neubronner and his team pack up and head back into their studio in Stuttgart, Germany, where the audio quilting begins. There they will do a normal 2-track edit and send the tape back to MTT for final changes. "Normally, there are only small changes," Neubronner says. "Maybe a passage of eight bars where he'd like to show a bit more of a violin solo or something. But the basic mix of the 75-minute program is already done." ■

—FROM PAGE 50, REMOTE RECORDING

mert notes, "we could have easily been running at 30 and not using SR because the ambient noise was up around the same level [as the tape noise floor]. And the wood floors were real creaky, so you couldn't be walking around there when there was any recording going on."

But the chapel and its surroundings also offered some unique recording spaces. One of Tish's vocal and guitar tracks was cut outside the building in a stone-lined courtyard, which resulted in ambient noise and traffic sounds becoming part of the master. No matter. Later overdubs included an entire mariachi band complete with strings and horns, according to Remmert. "By the time we got all the other stuff on it you really don't hear the background noises anyway."

After the two weeks with Charbonneau and Le Mobile, Remmert took the session tapes to his brother's Meridian Records Studios, a residential studio near San Antonio, and spent ten days creating slave 24-track tapes and overdubbing keyboards and background vocals. Final mixing was completed at Remmert's own studio, Cedar Creek Recording, in Austin, Texas.

PHOTO: SUSANNE MASON

Tish Hinojosa

Coincidentally, all phases of the recording were engineered on Neve consoles. Le Mobile's is a Neve 8058 with Flying Faders, modified from its original 32-input format with the addition of ten Neve Prism VR channels. Meridian's is a newer, V Series Neve, and the Cedar Creek console is a one-of-a-kind 3068 variant that was built in 1972 as a classical remote-recording console for RCA. "I found it in the back of *Mix*, in the classifieds," says Remmert, who bought the 32-input, all discrete console from then-owners Ocean Way, subsequently adding Optifile 3D automation.

Charbonneau says his primary concern is "vibe," not equipment. "The main priority for me when I do a record is the musicians—to make sure that they are comfortable in their work environment," he says. If the results are any guide, Charbonneau succeeded admirably with Tish Hinojosa. "What Tish was hoping for was an inspirational location," says Remmert. "We ended up getting about 90 percent of the lead vocal tracks in that location, including some of the best vocals I think she's ever done. I know that Tish is very happy. I think she really accomplished what she set out to do."

JOSHUA REDMAN AT THE VILLAGE VANGUARD

When Matt Pierson, senior VP of Jazz at Warner Bros., was planning the production of saxophonist Joshua Redman's latest record, the recently released double album *Spirit of the Moment*, he faced a difficult decision. Pierson wanted to capture five nights of live performances by Redman and his band, but the projected cost of taping every night on multitrack and then going into the studio to mix was

more than the budget would allow.

Returning to record-making techniques that produced many of the great jazz records of the '50s and '60s, Pierson decided instead to tape direct to 2-track. Randy Ezratty's Effanel Music got the call, and for five nights in May, Effanel's 45-foot semi trailer could be found parked outside the Village Vanguard, the legendary club in lower Manhattan's Greenwich Village.

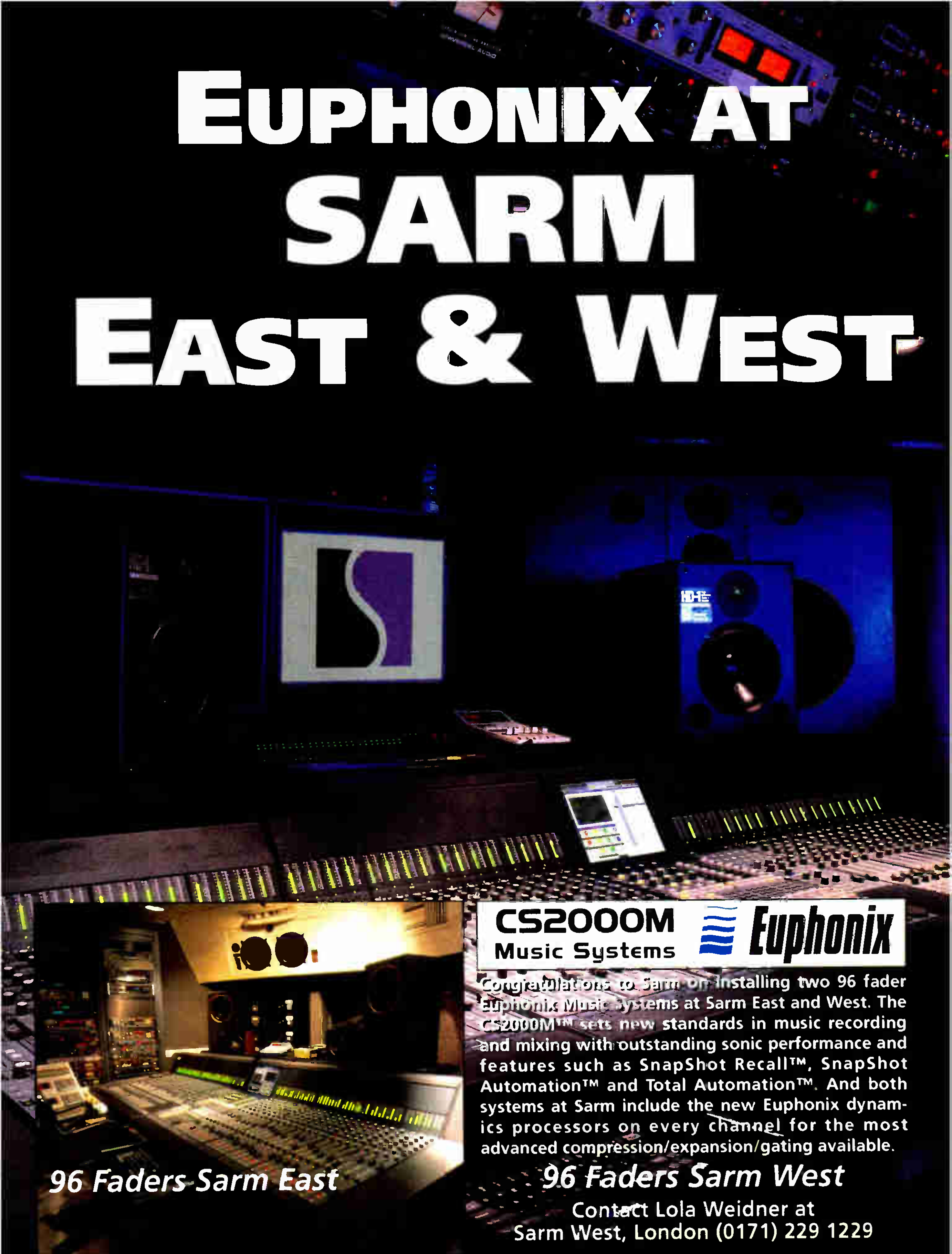
Engineer James Farber chose a Telefunken 251 tube microphone for Redman's saxophone and used AKG C-12s on piano. "Apart from using a Schoeps stereo 501 as drum overhead, James just miked everything pop-style and used whatever sounded good," says Ezratty, who has worked with Farber in the past, notably on James Taylor records. "James does whatever is right, and isn't dogmatic at all. That's what I like about James—he's not a purist who absolutely must have this particular mic or that piece of equipment."

Nevertheless, great care was taken to ensure a high-quality signal path. Microphones were connected at the stage to John Hardy M1 mic preamplifiers. "We have 52 mic pre's that we use on all of our remotes," Ezratty says. "We put them in the venue as close to the mics as possible, and we have a tech sitting at the units to watch levels. So you have two engineers—one guy to watch the pre levels, and a mixing engineer who can concentrate on the mix itself, which I feel is superior to using remotely controlled mic pre's."

Line-level outs from the mic pre's were fed direct to a 60-channel GML HRT9100 line mixing system and then to 2-track ½-inch tape running at 15 ips on a Studer deck equipped with Dolby SR. As Ezratty explains it, the Ultimation faders on Effanel's SSL G Plus console have been modified so that they can control levels in the GML mixer. "So you sit at the SSL in the sweet spot in the control room, but the signal path is through the GML mixer only. It's sort of a classical audiophile approach combined with the advantages of multimic pop techniques."

Switches on the SSL allow channel modules to be inserted into the signal path, but Ezratty believes that Farber only used the aux sends to add reverb from a Lexicon 480. There was no overall compression on the mix, and Farber patched no more than a dozen of Effanel's 40 vintage Neve 3115 EQ modules into the signal path.

Effanel's Brian Kingman ran a 24-track backup on the first night "in case



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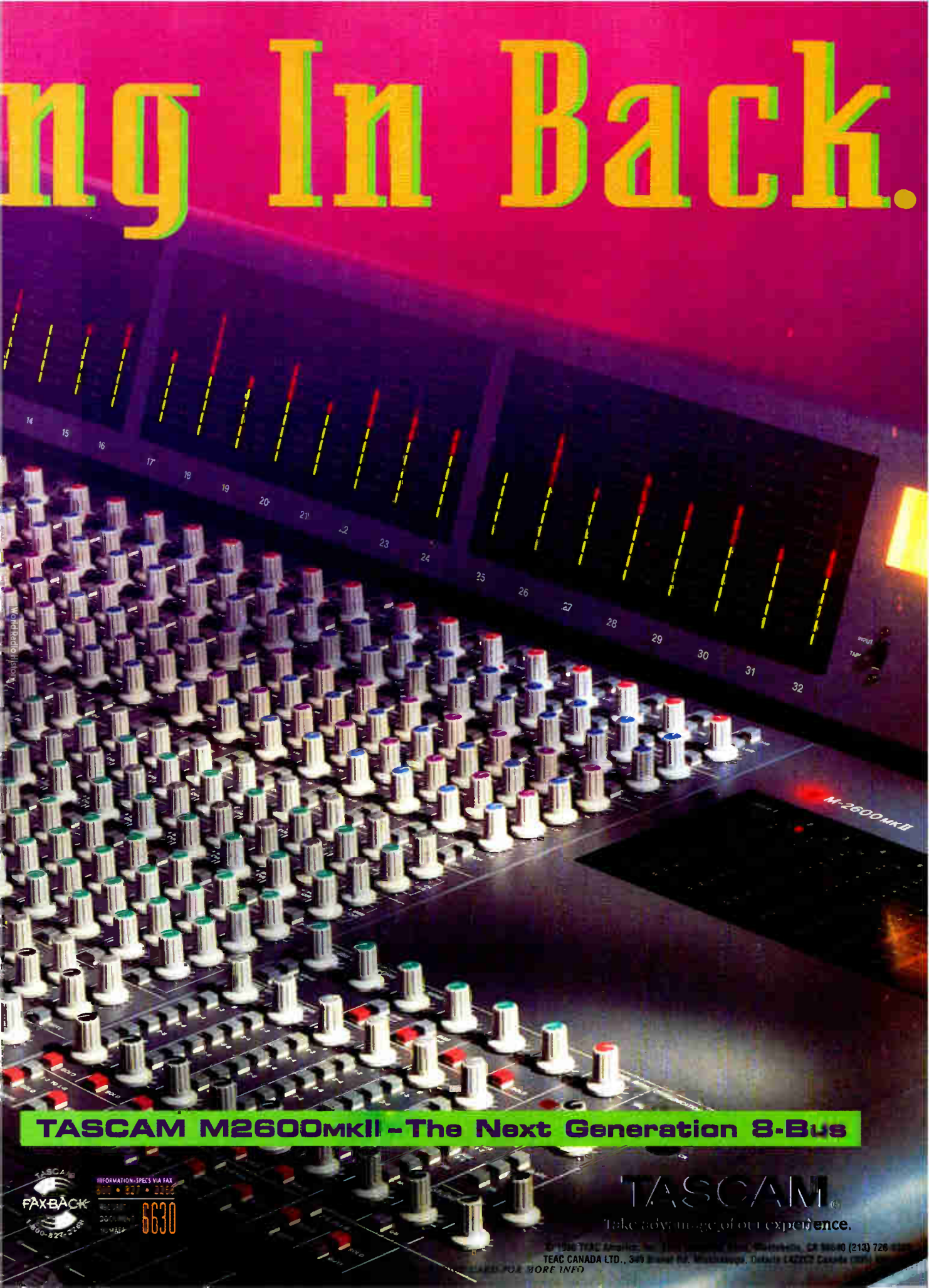

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the music was wonderful and the mix wasn't quite together yet," explains Ezratty. "As it turned out, the mix and the music came together at the same pace." Nothing from the first set was used for the record, so remixing was never an issue.

Ezratty is extremely pleased with the resulting record, which he says has been very well-received in jazz circles. But the crew admit that at the time of the recording they had no clear perception of whether the project was going to succeed. "You're listening to literally over 20 hours of music and thinking 'I really don't know how well this is going,'" says Ezratty. "But when it's condensed into two hours of music, and you hear all the great moments, it's brilliant."

PRETENDERS GET CLOSER ON "THE ISLE OF VIEW"

Producer/engineer Stephen Street first met The Pretenders' Chrissie Hynde when they collaborated on a track for a Jimi Hendrix tribute album. But the idea for the latest Pretenders record grew out of sessions for a Street-produced track for the group's *Last of the Independents* album. Working with a full string section for the first time, Hynde was struck by the dynamics and power of strings in combination with her voice and acoustic guitar. She decided to do an acoustic-based album of favorite Pretenders songs, accompanied by a string section.

"The idea was to do it in front of an audience, much like the *MTV Unplugged* series, to give it some extra buzz," says Street of *The Isle of View* album. Because plans called for the show to be videotaped, the venue chosen was a huge TV studio in London's Docklands, a less than ideal acoustic space.

"When I first walked in, I thought 'Oh my God, how am I going to get the sound out of this place,'" recalls Street. "My main worry was the vocal mic. I thought, if that picks up all the rubbish that I don't need, I'm going to be in trouble here."

Fortunately, Street found the perfect vocal mic for the project—the Shure Beta 87 electret condenser. Unfamiliar with the mic before this project, Street found that the mic's pickup characteristic was ideal. "It's incredible," he says of the mic. "The sound is very good, but it doesn't pick up anything apart from what's directly in front. It was a revelation to me. I was absolutely amazed by the way this mic performs."

The Beta 87's off-axis rejection characteristic was especially useful as Hynde prefers sidefill monitors to traditional wedge monitors. "She doesn't like to have a wedge monitor in front of her—she abhors it," Street says. "In fact, I've used that mic again in the studio with Chrissie when we did some tracks for her next album. The 87 enables her to sing to the speakers, which she much prefers to using headphones."

For the live sessions, Street set the band up in a circle, facing each other, and placed drummer Martin Chambers behind a set of perspex screens for isolation. Andy Hobson's semi-acoustic bass was taken direct, and the acoustic guitars played by Hynde and Adam Seymour were picked up with a combination of DIs and clip-on mics. "I tried some conventional miking [on the guitars] but the ambience made it unusable," Street says. Facing the same isolation problems with the string quartet, Street ended up using clip-on mics attached behind the bridge of the instruments. "They worked exceedingly well—I was very impressed," he says.

Street recorded the shows in the BBC Mobile. "I let the BBC engineers set everything up and route everything and then made sure that everything went down on tape the way I wanted it," says

Street, who chose to record 24-track analog at 30 ips on Ampex 499 tape. He also ran a Tascam DA-88 for backup, routing Hynde's vocal to both digital and analog for safety, and put some extra tracks on the DA-88 after running out of spare tracks on the 24-track.

Preparations for the record had included rehearsing about 20 songs with the Duke String Quartet, with arrangements written by leader John Metcalfe. The final set list included 18 Pretenders favorites, of which 14 made it to the record. The performance of one song, "Brass in Pocket," failed to live up to expectations in performance, but Street managed to record a useable version at a soundcheck in the afternoon before the second show. Like most "unplugged"-style records, the electric instrumentation on *The Isle of View* is at a minimum, though Adam Seymour did use a Voodoo Vibe effects pedal and an overdrive unit on some of his acoustic guitar solos.

Street mixed the tapes at London's Townhouse Studios. "I was absolutely delighted with the way it turned out," he says. "I was really amazed. Because when we walked into this huge TV studio—it was absolutely massive—I had palpitations! The whole idea for this record was it was supposed to be an intimate thing, and here we were with this huge, cavernous room. But it worked out very well."

ED CHERNEY GOES MOBILE WITH THE ROLLING STONES AND BONNIE RAITT

1995 TEC Award winner Ed Cherney is best known for his studio work, but two of his high-profile gigs last year were remote recordings—the *Stripped* record from the Rolling Stones, and Bonnie Raitt's new live album, *Road Tested*.

Sessions for the Stones began the night after Cherney and producer Don Was won Grammys for Bonnie Raitt's *Longing in Their Hearts* record. Was and Cherney flew straight to the EMI-Toshiba recording studios in Tokyo, where the Stones were rehearsing for an "unplugged"-style album. Cherney recorded the band in a semi-circle without gobos or isolation and then went on to record two shows at the Tokyo Dome, "which was an entirely different exercise," he says. In fact, the recordings of the four acoustic numbers that the band played in the middle of their Tokyo set proved unusable for the album. "We wanted to see if we could just pull [acoustic performances] from live shows," said Cher-

Inside the Remote Recording Services truck. Standing, L to R: Ed Cherney (recording engineer), Sean McClintock (RRS stage tech.), David Hewitt (RRS owner), Phil Gitomer (RRS tech.), Don Was (producer). Kneeling at front is unidentified assistant.

ney. "It turned out that in a venue that big you really couldn't get it personal-sounding enough."

Mixed by Bob Clearmountain, the *Stripped* record is a collation of performances from the Tokyo rehearsals and live shows at The Paradiso Club in Amsterdam, the Olympia Theater in Paris, the Brixton Academy in London and a Lisbon, Portugal, show taped on a TV soundstage. Despite the multiple venues, Cherney was able to use one remote service, Eurosound, using the Mobile One unit for Amsterdam and Brixton and the Mobile Three unit for the Lisbon show.

To ensure some consistency among the various recordings, Cherney documented EQ and mic pre settings. "I knew we might use some of the rehearsal tapes from Amsterdam, so I used the same truck and I basically kept the same EQ and level settings for the live show," Cherney says. "The only thing that changed was the way I miked the hall and the ambience. But the thing that most ensures consistency is that it's the same band."

Cherney recorded Bonnie Raitt's Don Was-produced live album over six nights. Three shows in Portland, Oregon, at the Schnitzer Auditorium, were followed by three more at the Paramount Theater in Oakland, California, where the last two shows were videotaped. Recordings from those shows provided the raw material for the double live album, a PBS-TV special and a long-form video.

"I used David Hewitt's Remote Recording Services," recalls Cherney, adding that the recordings were entirely problem-free. "The only scary part was that I never really got a soundcheck—we recorded the first day we loaded in, and by the time we were hooked up and had signal everywhere, I basically got a line check, and that

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served as my soundcheck for all of the shows. At that point, I didn't change anything because I knew I was going to have to match these shows up."

Both the Rolling Stones and Bonnie Raitt sessions were recorded 48-track digital, more for convenience than for sound considerations. "On Bonnie Raitt's record everyone was playing a different instrument on every song. I wanted to be sure I didn't miss anything, so I assigned every instrument to a track and kept it open," explains Cherney. Cherney also printed eight tracks of ambience and audience miking onto DA-88s locked to the 48-track machines. "That allowed me to manipulate the size of the halls in the mix," says Cherney. "The Schnitzer Auditorium was little tighter-sounding than the Paramount, but I could match the ambience [of the two] by offsetting the DA-88, either inserting time delay or moving it forward."

Cherney also used a Spatializer on the Bonnie Raitt mixes in order to create the illusion that the listener is in the tenth row center seat. "Whether I pulled it off or not, I'll let other people decide," he comments. However, Cherney does permit himself one self-administered pat on the back. "I think that Bonnie's record is one of the best-sounding live records I've heard in a long, long time," he says. "I'm really happy with how it came out."

Despite the wide range of venues and circumstances, Cherney has no horror stories to tell. "All the shows went flawlessly, which is very surprising—I always think that's a miracle," he says. Based on his recent experiences in remote recording, Cherney's parting words are "You can get a great-sounding record wherever you record. Great music transcends any venue or any acoustic space, but you have to be ready, and that red light has to be on. You'd better get it, because that's your only chance."

SONY MUSIC STUDIOS—WORD-SPLITTING FOR FUN AND PROFIT

Brian McKenna and David Smith have seen increasing demand for the Sony Music Studios portable 22-bit recording system based on Sony PCM-800 modular digital multitracks (MDMs). By means of some "electronic skullduggery," 22-bit words are split into more manageable chunks and distributed over multiple tracks of the 16-bit MDMs. The word-splitting algorithms allow for 6-track recording in 20-bit format, but David Smith, audio director for Sony Music Studios, more commonly records 24-bit in 4-track mode (the extra two bits are recorded and read, but add nothing useful to the signal).

According to Brian McKenna, manager of audio operations, there is considerable excitement in the market for this new format. "As well as Sony clients, outside clients are calling because they have small jazz combos or demo projects for which this setup is extremely cost-effective," says McKenna. "It's really caught the interest of young jazz artists who don't have a huge budget."

More established clients for the new system include producer Steve Rathe of Murray Street Productions. Rathe, who has a reputation for pushing the envelope in high-technology recording and broadcast, produces the *Jazz From Lincoln Center* program led by Wynton Marsalis. At press time, Rathe was slated to use the Sony 22-bit setup to record two sessions a month for later broadcast on NPR.

According to Smith, the standard 22-bit recording package includes

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Sony's wide selection of high-quality microphones (with more than two dozen tube classics available by request), as many PCM-800s as necessary, and up to four Studer 962 4-bus consoles which, like the MDMs, can be ganged together in a modular fashion. Monitoring is typically via Genelec 1031 speakers, and the A/D converters (by far the most expensive items) are from dB Technologies. In 22-bit format the A/D converters offer 122 dB of dynamic range, hence the model number: AD 122. As Smith cheerfully puts it, "the most expensive A/D converter known to man combined with the least expensive digital tape recorder."

Smith has put together a wide range of economic yet extremely high-definition recording systems, typically for jazz and classical dates. Modularity "allows us to take all the best parts of the traditional recording medium and trim away all the very expensive, even prohibitive parts," says Smith. "We retain all the best features, but make it affordable and modular so we can go anywhere."

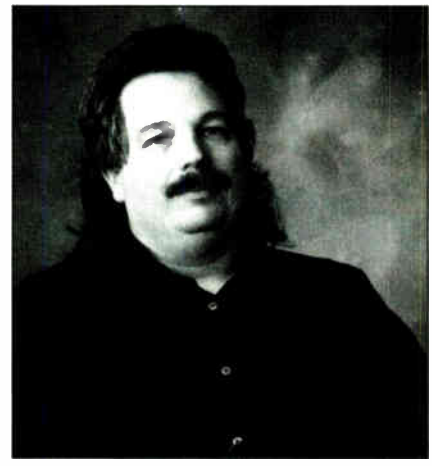
Modularity and compactness are essential, since the typical remote location is a "green room" isolated from the stage. "It's a technique that's been used in classical recording since the beginning," says Smith. "They don't use trucks or studios—they go into a dressing room or a storage room in the basement and set up down there. We're adapting that classical regimen for recording in small clubs and theaters."

RECORD PLANT REMOTE AT THE ROCK AND ROLL HALL OF FAME

When I caught up with Kooster McAllister, owner of the 1995 TEC Award-winning Record Plant Remote, he was winding down from a whirlwind schedule. Recent remote dates had included the Gipsy Kings in Washington; Better Than Ezra at Toad's Place in Newhaven; the band Live at the Merriweather Post Pavilion in Baltimore; the Pittsburgh Symphony Orchestra with Marvin Hamlisch; Reba McEntire at the Tennessee Center for the Performing Arts; the Metropolitan Opera in New York; and a show-and-tell stint in the Jacob Javits Convention Center parking lot during the October AES convention.

Pressed to pick a particularly memorable show, McAllister recalled the annual Rock and Roll Hall of Fame show, held last September in Cleveland. "It was the fastest seven hours of my life," says McAllister. "We were so busy in the truck, it just flew by."

According to McAllister, the schedule was extraordinarily aggressive for such a large show. The setup included a turntable stage, and the projected time onstage for each band was approximately 12 minutes, which meant that the stage crew had to work quickly to strike one band and set the next during the onstage band's abbreviated set. And though each of the individual bands were soundchecked during rehearsals (albeit completely out of sequence), when air time came there had never been a complete set change rehearsal: actually spinning the stage, striking one band, and getting the next band on. "We didn't have any idea if we would be able to keep up with the schedule," says McAllister, "but it went fairly well, which amazes me."



Kooster McAllister

Record Plant Remote was one of two primary audio trucks (the other being Remote Recording Services), each of which handled one side of the turntable stage. Music-only two-mixes from both trucks went direct to the audio booth in the Unitel video truck, where audience and announcements were added for broadcast. Unitel also mixed audio from a satellite stage set up for acoustic acts.

Record Plant Remote handled all of the stand-alone acts—John Mellencamp, Melissa Etheridge, Bruce Springsteen & the E Street Band, the Allman Brothers, Aretha Franklin, James Brown, P-Funk and Soul Asylum. "We went back to back from the Allman Bros., which was 55-plus inputs, to James Brown, which was again in the 50s or low 60s in inputs," recalls McAllister. The other truck, David Hewitt's Remote Recording Services, had the only slightly less complicated task of mixing the house band, Booker T & the MGs, and a slew of guests, some of whom augmented the MGs with an entire second band.

Miking onstage was handled by the stage crew and Clair Bros. "They had a massive system—it sounded amazing," says McAllister. P.A. mics were split to the trucks, and line checks served both trucks and FOH. Fast changeovers were effected with the help of McAllister's 54-input, 48-bus API console, which features a touch-screen computer that records and recalls all routing and configurations, and GML automation. "It's one of the later APIs, before the Legacy, and is an all-discrete console based on the 2520 op-amp," says McAllister. "It has all the features of a modern console combined with the sound of a classic."

McAllister's inventory of outboard gear is comprehensive and includes six dbx 160s, four dbx 160xs, and eight dbx 902s. High-end compressors include models from GML, Tube Tech, Summit, and Demeter. Gates are by Drawmer and Aphex, plus eight of the new API 235L gates. Reverbs include Lexicon 300, Lexicon 200, an H3000, two SPX900s, a REV7 and an SPX92. "Every piece was in use," says McAllister, noting that some were assigned to buses, some to the console's ten aux sends. Summit DCL 200s were used on vocals, and the entire two-mix went through a Tube Tech LCA2A on a very mild setting. "I always prefer to compress before it gets to the network—they can be a little bit heavy-handed when they compress stereo program," says McAllister. The two-mix also went through a pair of API 550A equalizers adding 2dB bumps at 10 kHz and 100 Hz, "just to give it that sort of loudness button." McAllister used the same overall EQ at Woodstock '94. "All the trucks had the API 550As, and we all put the same EQ on for consistency."

EFFANEL MUSIC MIXES WITH THE POPE IN CENTRAL PARK

According to Effanel Music owner Randy Ezratty, the initial production plans for the Pope's Sunday October 8 Papal visit and Mass at the Great Meadow in Central Park did not include a music-recording truck. But when show producers Joel Nuss and Patrick Stansfield found out about the full orchestra, the eight choirs, and the slate of high-profile performers, including Natalie Cole, Placido Domingo and Jon Secada, they insisted on a full-

PROTECTING YOUR HEARING

Editor's Note: Twelve years ago, **Mix** *co-founders David Schwartz and Penny Riker Jacob contacted the House Ear Institute in Los Angeles to discuss the possibility of creating a TEC Awards fund to help bring attention to issues surrounding hearing impairment and the recording industry. Ms. Charlie Lahaie, director of community outreach programs at House Ear, received the call and forged a relationship that has carried to the present day. We asked her, in this NAMM show issue, to speak to musicians about prevention of hearing loss. We encourage you to copy this article and pass it on to your seconds, your band mates and your friends.*

BY CHARLIE ENNIS LAHAIE

In 1987, an article in the *Los Angeles Times* told the world of Pete Townshend's battle with tinnitus and his hearing loss. In the last line of the article, Townshend said that the saddest circumstance of his hearing loss was not being able to hear his children speak to him. The high frequencies, where children's voices are pitched, are usually the first to be affected by noise-induced hearing loss.

The high frequencies are also where consonant sounds are perceived, so when they are lost, all speech becomes very difficult to understand. Other people have described the sensation as music "losing its color."

The 1987 Townshend article helped bring into the open a problem that had been widespread but largely ignored in the industry since the advent of amplified music: noise-induced hearing loss. Since that time, I have met hundreds of musicians who are concerned about the future of their ears. For some, the prognosis is bleak—true noise-induced hearing loss is irreversible. One positive side of the new openness, however, is that it is bringing to light a host of other hearing problems that can be successfully treated.

For example, a drummer recently came to the House Ear Clinic for some custom ER-15 ear plugs. The Institute is in the same building, so I met him and we had a short chat. While talking in a very quiet room, I realized that he could not hear me. He was unable to follow even a one-on-one conversation. I urged him to talk to a physician, but he was reluctant. He knew that he had a problem; he was having trouble following conversations in band meetings, and the word "what" peppered his speech. However, he assumed that his hearing loss was permanent, and he did not want a doctor telling him that his career was over.

I persisted, and after a year of nagging, he came to the clinic for a hearing test and a doctor's appointment. Much to his relief, it turned out that he had otosclerosis, a condition that affects the middle ear bones and is surgically correctable. He has had the surgery on one ear and was scheduled to have the second surgery before the end of 1995. Best of all, he has since recorded a new CD and is back on the road.

Another artist I met complained that he had had ringing in his ears for about 11 years. He, too, assumed that it was due to the demands of his music career. I strongly encouraged him to see a doctor for a professional opinion. Again, the news was positive: He had a condition called cholesteatoma—a bone growth in the middle ear. Because it was detected early, it was surgically correctable. Had he waited, he could have been deaf within two years, and the condition would have no longer been operable.

Not all hearing impairment besides nerve damage is correctable, but identifying the problem can still be critical in making decisions about your environment. Just the other day I spoke to an engineer who suffers from a condition called "recruitment." Recruitment occurs when the ear suffers damage, often

PHOTO BY BILL SCHWOB

due to noise exposure, which results in the perception of all sounds as loud. Something as ordinary as clanking dishes can be unbearable for a victim of recruitment.

The engineer I met had recently moved into a beautiful new home—wood floors, cathedral ceilings and a lot of windows opening out on a lovely view. It is hell for him. There is nothing to absorb the sound, so it reverberates throughout the house. The recruitment intensifies sounds to an intolerable level. The engineer has resorted to wearing ear plugs all the time just to make life bearable. For the long term, he is considering redoing the house.

These are three stories out of hundreds that illustrate the importance of protecting and treating your most valuable professional resource—your hearing. If you have a concern about your hearing, if you have ringing in your ears, or if you feel you are not hearing sound the way you used to, please see an otologist and an audiologist. These hearing professionals can give you an accurate evaluation of your condition. Your symptoms may be an indication of a problem totally unrelated to your work, or they may be easily corrected so that you can do your work better. At worst, you will know exactly what you are dealing with and what you can expect so that you can make appropriate decisions for your future.

HOW THE EAR WORKS

Hearing begins at the outer ear and ends at the brain. A sound in the environment produces vibrations in the air that are captured by the outer ear. The vibrations travel through the ear canal to the ear drum, a thin membrane stretched across the canal. The ear drum converts the sound waves to mechanical vibrations, which activate the ear bones. One of those bones—the stapes—acts as a piston to push against the fluids of the inner ear, creating vibrations that translate to nerve impulses.

The inner ear contains the snail-shaped hearing organ called the cochlea. Lining the spirals of the cochlea are more than 30,000 microscopic hair cells attached to nerve fibers. Hair cells respond to specific frequencies depending on where the cells are located in the cochlea; this separation allows for discrimination of speech sounds. The hair cells convert the mechanical vibration from the middle ear into

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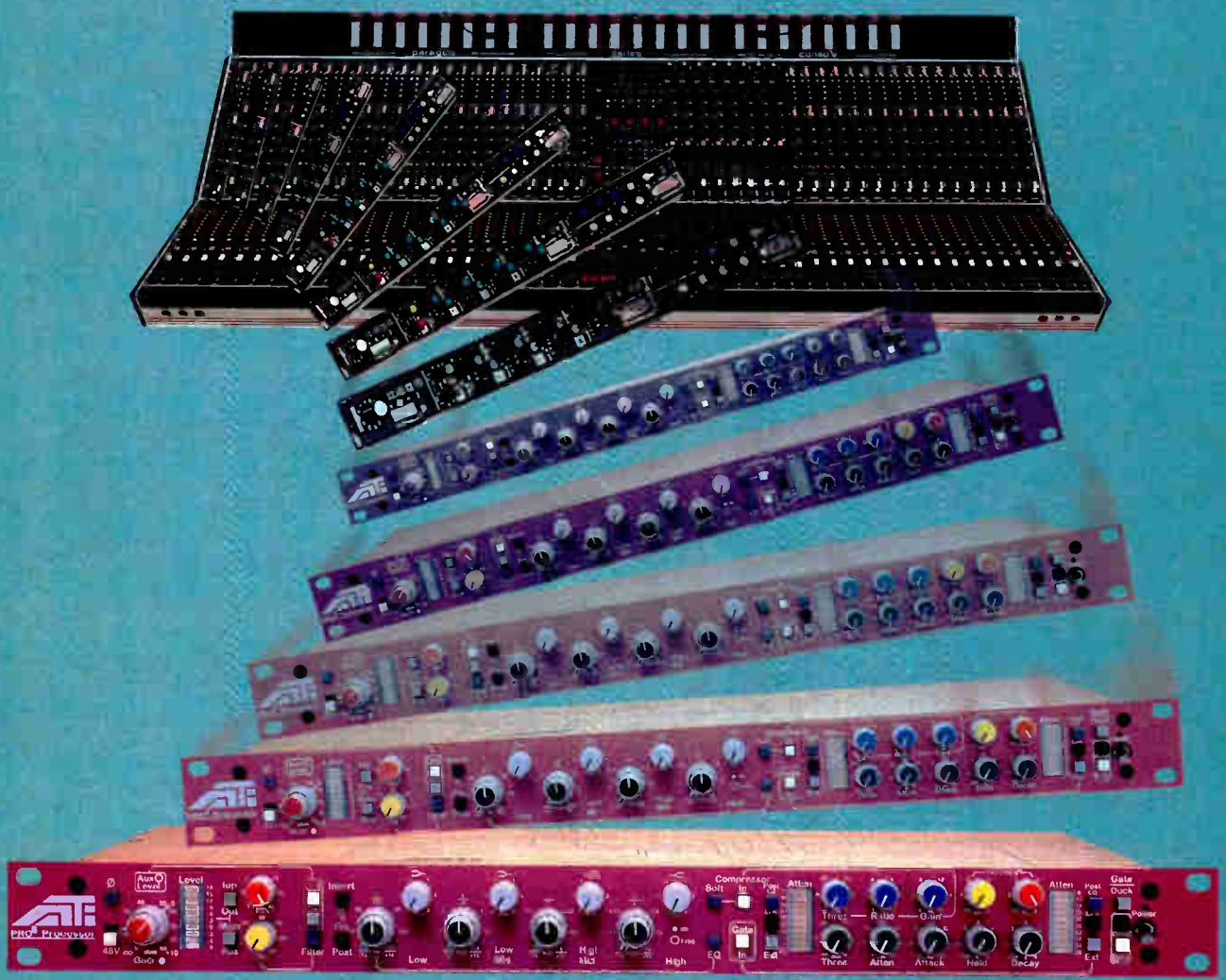

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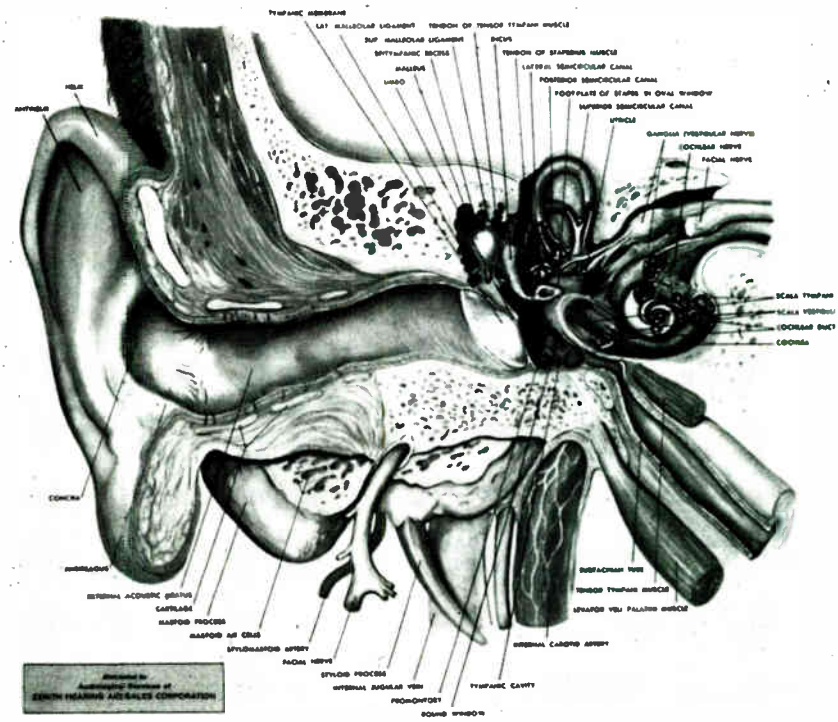
*Mike Lethby, *Audio Media Magazine*

electrical energy, which is then conducted by the hearing nerve to the brain, where the signal is interpreted as sound.

Usually, waves of sound pass over the tiny hair cells like the wind over blades of grass, so that they spring back into position after the sound waves pass. However, one loud blast of sound, or constant exposure to huge waves of sound, can push the hair cell too far, making recovery impossible. This damage occurs first in the high-frequency sensors in the large outer area of the cochlea, and then progresses through the turns in the cochlea. Once the cells die, contact with the hearing nerve fibers is broken, and a loss of perception for a particular frequency range results. The loss is permanent.

Any sound over 90 dB can cause hearing loss, and most people involved in professional audio listen to levels well over 90 dB on a regular basis. Of course, there are those in the business who have worked for a lifetime in this environment and have no hearing loss. There are also



CAUSES OF TINNITUS

by David W. Eames

It's 2:30 a.m., but Jim Nygaard isn't sleeping. He hears a loud ringing that never goes away. "Picture wearing a headset that pumps a low-frequency buzz—a 1k buzz, a 2.5k pure tone and an 8k buzz," he says. "Now turn the volume up to where you hear this at 90 to 95 dB. Now surgically implant the headset so that you may never take it off."

Nygaard finds he can no longer enjoy music. His career as a sound person is over—prematurely—and he now sells sound reinforcement equipment. If his customers can explain their problems to him adequately, he can correct them. But he must depend upon his customers' ears, because his own hearing no longer functions adequately.

Nygaard suffers from a condition that is becoming increasingly common among the general population, and among sound professionals in particular—tinnitus. The most common cause of tinnitus is prolonged exposure to excessive sound pressure levels. Nygaard believes his tinnitus is attributable to his work as an engineer for ZZ Top. In order to check components in the 60x60-foot, 150,000-watt sound wing, Nygaard often placed his ear directly in front of individual speakers.

High sound pressure levels can damage the tiny hairs which stimulate nerve endings in the ear that feed audio information to the brain. Because of the body's remarkable capacity to heal itself, damaged nerves will often recover over time, depending on the severity and duration of the original injury. But repeated exposure to excessive sound levels prevents the nerves from healing, and the loss of auditory function then becomes permanent.

There are makeshift treatments for tinnitus—masking devices, implants, hypnosis, even acupuncture—but there is no cure short of severing the eighth lateral (auditory) nerve: brain surgery from which the best possible result is total deafness! And this procedure is not even 100% successful, because, in some people, the tinnitus starts in the brain, behind the eighth lateral nerve. Tinnitus is with you for life and grows worse with age. Occasional ringing in the ears today can become the ever-present tone of the future.

"DEAFNESS WOULD BE A RELATIVELY DECENT CONDITION..."

Tinnitus is an occupational hazard for musicians and composers, as well. Most people know that Ludwig van Beethoven went deaf, but how many are aware that his deafness was preceded by tinnitus? In Martin Cooper's book, *Beethoven, The Last Decade*, the author observes that Beethoven was plagued by "incessant noises, ringing, whistling and rushing...earaches and headaches for the rest of his life."

Similarly, the Romantic composer Bedvrich Smetana wrote in his diary: "It is that fateful ringing of high-pitched tones in my ear which in 1874 announced the beginning of my deafness...That ringing in my head, that noise...that is worst of all. Deafness would be a relatively decent condition, if only all was quiet in my head. But the greatest torture is caused me by the almost continuous internal noise which goes on in my head and sometimes rises to a thunderous crashing."

Tinnitus can be compared to the sensory impressions that amputees report receiving from their phantom limbs—the damaged auditory mechanism may no

—CONTINUED ON PAGE 214

those who at age 30 have a noise notch at 4k. As yet, we don't know why some are injured by loud sounds and others are not. Until we know, no one—not even an otologist (ear specialist)—can look in your ear and tell whether you are at risk. For the time being, we must assume that everyone is at risk and that everyone needs to understand the danger and take precautions to protect their hearing.

ANY SOUND OVER 90 dB CAN CAUSE HEARING LOSS, AND MOST PEOPLE INVOLVED IN PROFESSIONAL AUDIO LISTEN TO LEVELS WELL OVER 90 dB ON A REGULAR BASIS.

PROTECTION OPTIONS

In an ideal world, you would work two to three hours, take a 20-minute break to rest your ears, and then go back and work some more. In the real world, most of you work long and hard hours, in an industry that is somewhat ungrateful and unforgiving. Eighteen-hour days are the norm, and the idea of a break can be a joke. I can't change the world, but I can offer some options that might get you through your days with some portion of your hearing intact.

I will start with film because it seems to be an area where hazards to hearing are increasing daily. Films are getting louder. Explosions, crashes and very loud special effects now dominate the screen. People have begun to complain about the two-hour exposure they suffer just watching the finished film. My greater concern, however, is for the engineers on the set and those of you in the studio who must listen to those sounds all day long. That constant exposure to loud noise poses real risks to your hearing.

Moreover, you are not safe just because the noise you deal with is primarily in the lower frequencies. There is a difference in the kind of damage that may occur, but the potential for damage is just as great. According to Dr. Aram Glorig, who did research for the House Ear Institute in the 1940s, if you are dealing with low-frequency sound at 110 dB, you could be damaging your middle-ear bones. I have had reports of engineers mixing at levels of 110 dB for 14-hour days. These are engineers who can attribute their hearing loss to one particular film they worked on.

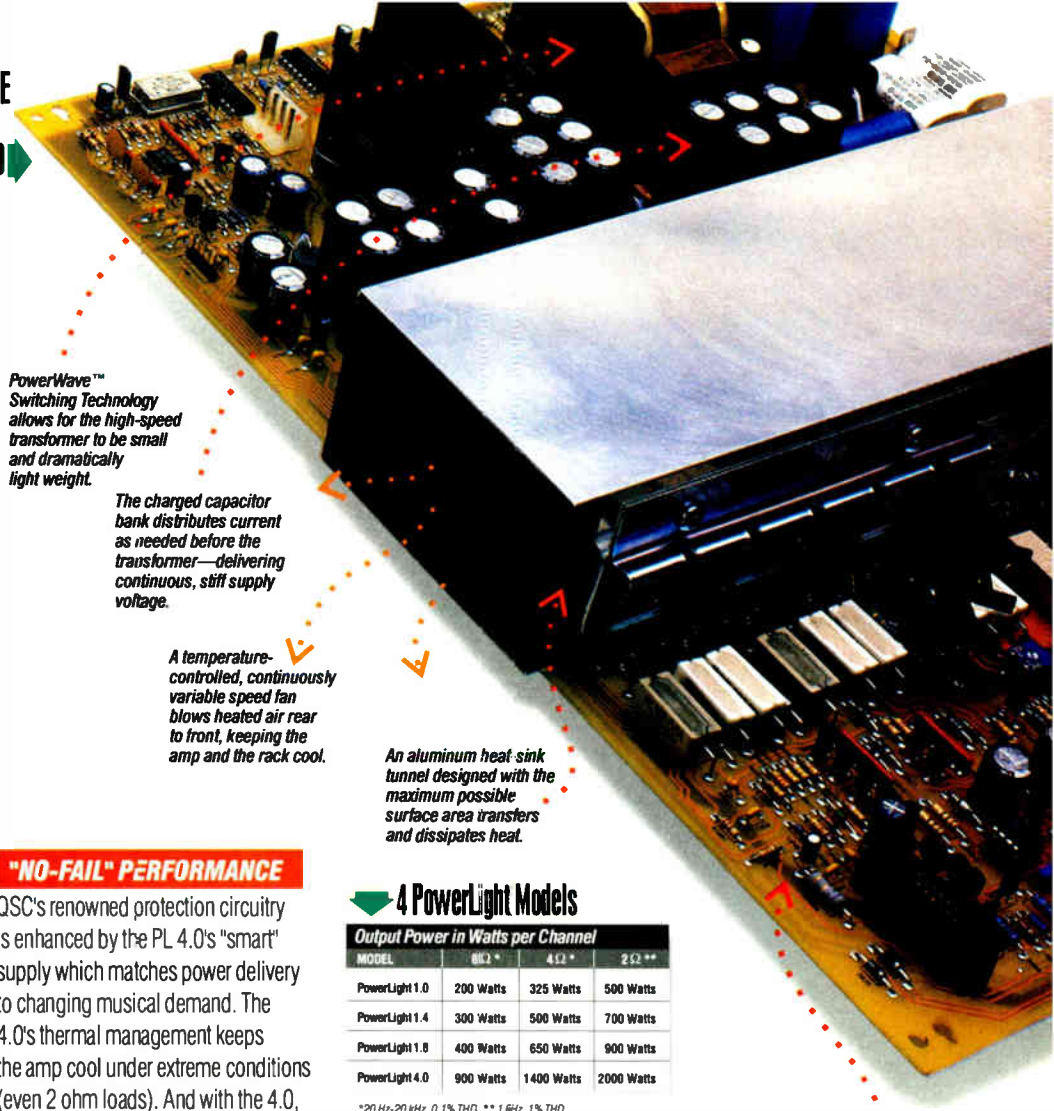
On a movie set, you can use foam plugs or mufflers. The foam plugs are fine for noncritical listening and provide attenuation between 25 and 31 dB. The mufflers offer a little better protection, and I have been told you can get an NRR rating of 41 dB with plugs and mufflers together. Howard Leight Industries in Santa Monica, Calif., has a full line of hearing protection products that can be used on the set. (The toll-free number for free samples and a catalog is 800/543-0121.) If you are purchasing these items for work and you are an independent contractor, you may be able to deduct the cost at tax time. If you work for a studio, you may be able to convince them it is in their best interest to purchase the item for you.

If you are mixing a film in the studio, the protection you require depends on what you are mixing: effects, dialog or music. The foam plugs work well while mixing effects, and the custom ER-15 or ER-25 plugs are recommended for dialog and music. The ER plugs are custom-molded to your ear and can be acquired from most hearing aid dispensers. They offer 15 dB or 25 dB of noise reduction across all frequencies and usually cost about $100 for one pair of plugs with one pair of filters. A second pair of filters usually runs another

—CONTINUED ON PAGE 215

The Best Sounding Amp Is Now The Most Powerful

PowerLight 4.0



The new PowerLight 4.0 introduces massive power to a series of amplifiers that have already become a benchmark for excellent audio performance and reliability. *PowerWave™ Switching Technology* (patent pending), at the heart of the PowerLights, is ***the power supply technology for the future***. *The 4.0 clearly demonstrates why...*

SUPERIOR AUDIO

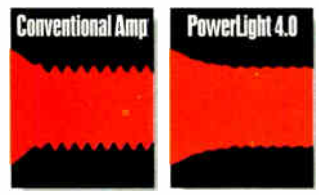
The 4.0 achieves remarkable audio quality because ***voltage supply to the output section is powerful and stiff***. There are virtually no sags following transients or long peak power demands. You won't hear typical modulation from AC ripple or garbling during clipping. The bass is ultra-clean and fat. Highs are pure and unstressed.

MAXIMUM EFFICIENCY

A PowerWave transformer "flys" at 115 kHz (2000 times the frequency of a conventional transformer). Waste heat from resistance is almost nil. The supply is 90% efficient! And the 4.0 features ***the latest three-step Class H linear output circuitry*** for maximum audio quality and efficiency.

"NO-FAIL" PERFORMANCE

QSC's renowned protection circuitry is enhanced by the PL 4.0's "smart" supply which matches power delivery to changing musical demand. The 4.0's thermal management keeps the amp cool under extreme conditions (even 2 ohm loads). And with the 4.0, ***EMI and RFI are absent***, making the amp safe for wireless mics.



Less power sag, less clipping intermodulation, more bass impact, cleaner transients...PowerLight.

INCOMPARABLE AMP

You won't see or hear another amp with the power and performance of the PowerLight 4.0. ***Call your QSC Dealer or QSC direct at 714-754-6175*** for complete details.

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Output Power in Watts per Channel

MODEL	8Ω *	4Ω *	2Ω **
PowerLight 1.0	200 Watts	325 Watts	500 Watts
PowerLight 1.4	300 Watts	500 Watts	700 Watts
PowerLight 1.8	400 Watts	650 Watts	900 Watts
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**20 Hz-20 kHz, 0.1% THD ** 1 kHz, 1% THD*

PowerLight 4.0 Key Features

- PowerWave™ Switching Technology
- Advanced Thermal Management System
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Three-step, Class H linear output circuitry insures less waste heat, less current demand and excellent signal-to-noise ratio.

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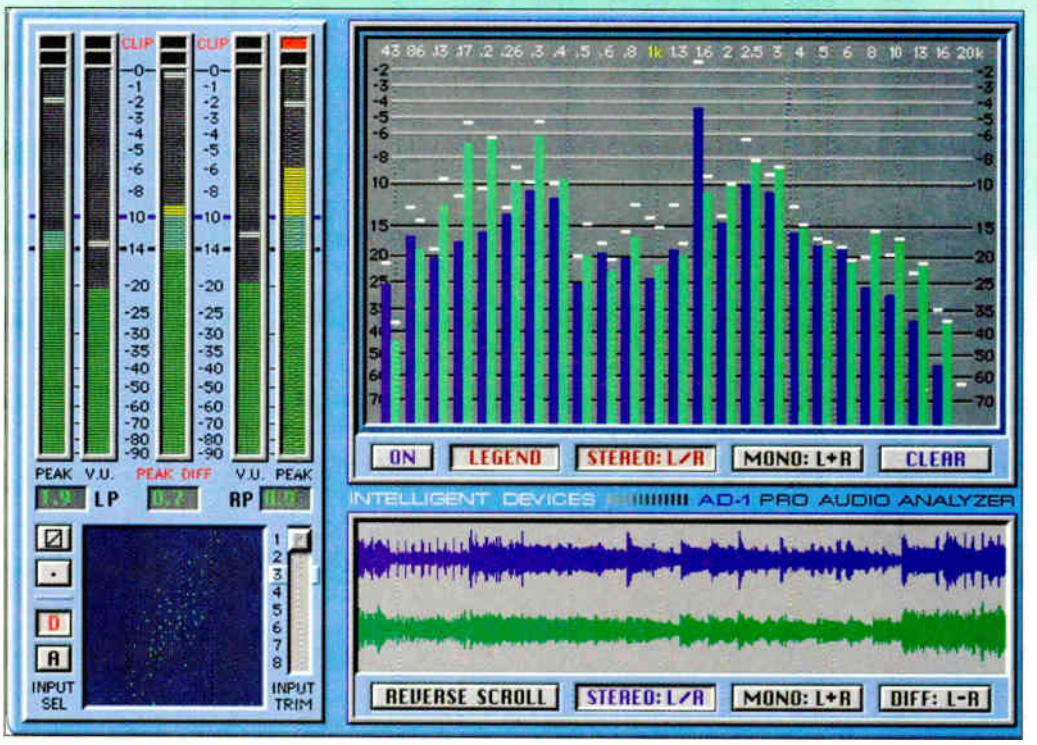
COMPUTER-BASED PRODUCTION

A REPORT FROM THE AES FLOOR



Intelligent Devices' AD-1 turns a Mac into a phase meter, spectrum analyzer and a level and waveform display.

If trade shows are reliable indicators of the health of an industry, then pro audio appears to be doing just fine. The exhibit floor at the 99th AES convention in New York City (October 6-9) was bustling, particularly on Saturday, when the aisles were packed. As has been typical of recent shows, the infiltration of computers into all areas of audio production was evident. Mac-based systems pioneered the market and continue to be the best recognized players in the field. But PC-based offerings are gaining ground both in the number of different systems and their professional capabilities.

With this wealth of technology on display, it was impossible to see everything, but here are some observations of some AES highlights in the world of computer-based audio recording, editing, processing and peripherals.

BY PHILIP DE LANCIE

DIGIDESIGN'S THIRD PARTY STRATEGY

Based on an unscientific Booth Busyness Index, Digidesign's (Menlo Park, Calif.) leading role in the lower end of the market continues unchallenged. And the company has been particularly successful in opening its software platforms such as Sound Designer II (SD II) and Pro Tools to third-party developers who create plug-ins (software modules that run under the host application, adding custom features).

The number of third-party "Development Partners" has grown substantially since last year's AES, as has the size of the booth Digidesign sets up for these developers to show off their wares. The booth featured 19 partners this year and was jammed throughout the show.

One interesting new aspect of Digidesign's plug-in approach is the fact that the ranks of Development Partners have been augmented not just by audio software houses but by companies with well-established names and reputations in traditional audio hardware. Focusrite (dist. by Group One Ltd, Farmingdale, N.Y.) for instance, was showing an EQ plug-in that emulates the look, and allegedly the sound, of its RED 2 parametric EQ. The $995 module, created jointly with Digidesign to run under TDM, should be shipping by now. Apogee's (Petaluma, Calif.) MasterTools ($795) TDM plug-in performs the company's UV22 encoding and includes a unique metering display showing the history of the signal receding in time. TC Electronic (Westlake Village, Calif.) offers the TC Tools Reverberation Package ($995), a TDM set based on programs from the company's TC M5000 reverb and TC 1210 Spatial Expander. And Lexicon (Waltham, Mass.) showed its NuVerb 20-bit reverb card ($1,795) along with a TDM module ($495).

Studer representative Bill Woods (left) and Bernie Grundman shake on Grundman's purchase of three Studer Editech Dyaxis II systems for his Los Angeles mastering facility.

Some familiar plug-in companies were found in the Development Partners booth as well. AnTares (Applegate, Calif.), formerly known as Jupiter Systems, showed its Infinity DSP looper, which has been enhanced with the addition of a Synthesis Looper tool, while an SD II and TDM plug-in called the Spectral Shaping Tool was developed to measure and calibrate audio listening environments. APB Tools from Germany showed a sophisticated SD II sound design plug-in called Eternal Machine I, allowing the creation of effects through dynamic manipulation of time, spectrum and pitch. SuperEdit 1.0 ($499) from Binari Sonori is one useful program that addresses the urgent need for improved handling of the large number of audio files used in most multimedia projects. The program performs batch processing—in the background—of various editing, naming, conversion and even plug-in processing tasks on SD II regions and a wide variety of sound-file formats including AIFF, QuickTime and .WAV.

Another audio file batch conversion program, called WaveConvert ($299), was released by Waves for PC and is due out soon on the Mac. Waves (Knoxville, Tenn.) also released StarterTools (starting at $250), a plug-in (native PowerPC, SD II or TDM) combining a 4-band paragraphic EQ with gating and compression/expansion. And the company was also showing pre-release versions of its forthcoming Version 2.0 plug-ins (Q-10, L1, C1 and S1), as well as the new WaveShells, which will allow allocation of processing power to multiple plug-ins on one or more chip (see "Audio & Multimedia" in the December '95 issue of *Mix*).

Other companies showing plug-ins included QSound Labs (Los Angeles), with offerings including QSYS/TDM, which incorporates "the essence" of the company's QSystemII (designed to "place individual sonic elements within an expanded sound field extending well beyond the speakers") and the QXpander stereo sound field expander for SD II. SynchroArts was on hand with a tool it hopes will revolutionize ADR (automatic dialog replacement). Designed for Pro Tools users in the audio post field, VocAlign ($1,495) maintains the audio content and pitch of a new (replacement) track while modifying its "energy profile" to align with that of an original (guide) track—no more excuses for bad lip-sync. Arboretum Systems unveiled the TDM version ($795) of its Hyperprism dynamic effects processor and previewed a PowerMac native version of Hyperprism 2.0. Intelligent Devices (Littleton, Colo.) bowed the AD-1, which displays level, spectral content, phase and waveform history and works as a TDM plug-in or as a stand-alone application on PowerMacs or Audiomedia II-equipped Macs.

The cottage industry of Digidesign-compatible plug-ins is spilling over into the sequencing software market as well. All four makers of the major Mac-based sequencers that allow importation of digital audio now support Pro Tools III and TDM. Opcode (Palo Alto, Calif.), for instance, allows real-time DSP processing with any TDM plug-in in the new mixer console window in Studio Vision Pro 3.0. The program also supports Apple's Sound Manager for recording on PowerMacs and incorporates new Audio-to-MIDI and MIDI-to-Audio features.

As for Digidesign itself, the company announced a new plug-in standard that it hopes to get off the ground, dubbed "Producer Plug-ins," for plug-ins designed to run entirely on the power of the CPUs in Mac or Windows machines without the dedicated DSP chips built into Digidesign hardware. Details of the new specification, which Digidesign plans to encourage other companies to sign on to, have yet to be fully worked out.

Digidesign also announced the Audiomedia III card, a PCI version of the popular NuBus Audiomedia II card. Audiomedia III will be available initially for Windows only (bundled with Session software) in February, with a Mac version to follow in the second quarter. Pro Tools software, meanwhile, will now be available separately from Pro Tools hardware, and will run with Audiomedia II or Session 8 hardware or on the built-in audio of a PowerMac. SD II will apparently not undergo any further evolution; some SD II features not currently found in Pro Tools will be added to the new unbundled version of that software. A new control surface for Pro Tools, ProControl, was shown with up to 32 faders (moving), touch screen and integrated transport control. Networking support was also announced for Pro Tools (no date given) via Ethernet, FDDI and AvidNet. AvidNet support will allow easier integration with Avid's (Tewksbury, Mass.) AudioStation 3.5 and AudioVision 3.5 products, both shown at the show, which can read and write Pro Tools sessions.

Sound This Legendary Only Comes Around Twice In A Lifetime.

Introducing the AKG Vintage TL. Not since the 1950's has a microphone so faithfully captured the warmth and character of the original AKG C12 mic. Now the legendary presence and openness are back, thanks to an acoustically perfect re-creation of the original C12 capsule. What's more, transformerless C414 circuitry allows the Vintage TL to exceed all of today's digital requirements. So you get the best of two legendary sounds, in one affordable mic. AKG. **It all comes back to the sound.**

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SADiE Octavia System

A/D converter, a modular design that simplifies upgrading the converter section as new converters become available.

Sony's (Montvale, N.J.) DAE-5000, a new integrated processing console and edit controller (starting at $39,900), can perform tape-based editing with PCM-1630/DMR-4000 or PCM-7030/50 (timecode DAT) machines as a source. Or it can handle nonlinear editing from PCM-9000 magneto-optical drives or standard SCSI-interfaced hard drives. (The pricing on the PCM-9000 is now in the $22,000 range, with media available in quantity for $88). The DAE-5000 has automated fader control, waveform editing and built in double-speed EQ (only two bands are fully parametric) and dynamics processing, as well as PQ editing. A built-in monochrome display is standard, as are connections for an external RGB monitor.

PREMASTERING DEVELOPMENTS

Digidesign's Development Partner strategy works because the company has a large enough installed base to make its platform attractive enough for third-party developers. That's a tougher sell for companies such as Studer and Sonic Solutions, who don't sell at all into the semi-pro market and thus have smaller numbers of installations. Their workstations tend to be more self-contained and more dependent on continued development from within. Studer (Menlo Park, Calif.), for instance, was showing a new CD Press module for Multimix 3.0 software for the Dyaxis II system. With a recommended CD recorder and the integrated Toast CD-DA software, the module allows Multimix to be used for final preparation and writing of an audio CD, including complete PQ code editing. The company also announced that Bernie Grundman Mastering had ordered three additional Dyaxis II systems.

Weiss (distributed by GPrime of New York City) was showing a new double-sampling EQ module for its 102 Series (which used to be distributed under the Harmonia Mundi name). The 102 Series 2-channel I/O and processor modules operate either as stand-alone hardware in a Weiss host rack or under remote control of either the PC-based Penguin interface (with full onscreen automation and both peak metering and FFT displays) or the modular Remote Control Desk. The company also added dithering options to its rackmount ANR noise-shaping unit. The units may now be ordered in two switchable versions, one with ANR and UV22, the other with ANR and SBM. Weiss also introduced the Gambit series 2-channel

Sonic Solutions (Novato, Calif.) announced several initiatives targeted at keeping on top of the latest developments in the evolution of the CD format. The company will integrate premastering for the new Blue Book (enhanced CD) standard into the Sonic System, with CD-R output. The company is augmenting its support for the White Book CD (normal-density MPEG-1 video) with the capability to create Version 2 discs that contain "light interactivity" (lists of user selectable options). Sonic Cinema, originally created for White Book (see "Audio & Multimedia," *Mix*, February '94), will also be extended with the ability to premaster the new high-density MPEG-2 video CD format tentatively settled on by Toshiba, Warner, Sony and Philips. Anticipating that the additional storage available on the new format will create a demand for a new high-density audio CD format, Sonic will offer a high-resolution option to its UltraSonic Processor-based systems that is capable of 24-bit I/O at 96 kHz.

Casting itself as Sonic's main challenger on the PC side of the market, Britain's Studio Audio was showing upgrades to its SADiE systems. The SADiE Master System ($15,995), now based on a Pentium processor, comes with two 2GB drives and writes to either DDP-formatted Exabyte tape (drive included), which is an increasingly popular glass mastering format at CD plants, or to CD-R (optional). The Exabyte tapes are error-checked as written and store TOC information at the end so it may be revised without rewriting the audio data. The system currently supports four channels crossfading to four other channels and features what is probably the industry's coolest interface for crossfade editing.

Due early this year, SADiE3 will double the number of available tracks as well as support background recording and simultaneous output to CD-R and Exabyte. Also planned are DSP allocation between tracks and processes, with the number of bands of EQ limited only by available processing power, and DSP processing on playback (in addition to the current system of writing new, processed files back to disk). Studio Audio has also begun to sign on third-party developers for plug-ins. A broadband de-noiser from CEDAR was announced at AES; time compression from SynchroArts and sound field expansion from QSound are also expected.

MULTITRACK PC-BASED SYSTEMS

In addition to running on the Master System and the SADiE Portable ($13,995), SADiE3 will also be the software for Octavia, a newly introduced multichannel editing system based on 8-channel I/O and processing modules that may be combined for up to 80-channel operation. The system is controlled through a main control panel and 8-channel fader panels as needed.

Octavia is coming in at the high end of a market that's headed toward increasing competition: multitrack workstations with processing controlled and/or performed by Intel-based machines. TimeLine's (Vista, Calif.) Studioframe, oriented toward the audio post market, was among such systems at the show. Version 6.2 features a variety of enhancements including support for removable hard drives, immediate waveform redraw and customizeable interface. TimeLine also announced support for the OMF interchange format and for a networked sound file server, both coming early this year.

Spectral (Woodinville, Wash.) showed Version 2.0 of its Prisma Music

audio workstation environment. Enhancements include a snap manager for lining up musical phrases and a track manager for swapping individual tracks in and out of an arrangement. DSP processes now allow pen draw of the waveform with automatic de-glitching and smoothing.

Innovative Quality Software (Louisville, Ky.) (IQS) showed a new digital audio workstation software product, SAW Plus ($999), which extends the company's Software Audio Workshop (SAW) to enable simultaneous playback of up to 16 mono or stereo tracks (32 tracks maximum) on any Windows-compatible sound card(s). It provides automatic live blending of different file formats (mono, stereo, 8-bit, 16-bit, etc.), live sample-rate conversion and supports user-assignable, multiple sound card outputs. Each track has controls for level, mute, solo, pan, effects patching and output assignments. SAW Plus contains several software-based processing tools including a 7-band "para-graphic" equalizer, noise gate, compressor, limiter and echo effects. The program also features "drag and drop" editing and includes SMPTE support.

Soundscape Technology (Westlake Village, Calif.) showed Version 1.17 of the Soundscape SSHDR1, a 16-bit multitrack hard-disk recording system starting at $3,250 for a 4-out system. The rackmount system is expandable up to 128 physical tracks. System interface and control is provided by Windows-based software featuring eight real-time parametric EQs per unit, non-destructive fades, fader automation and chase-lock synchronization.

Merging Technologies (San Diego, Calif.) announced the early '96 release of Pyramix Virtual Studio for Windows 95/Windows NT and demoed it at the show. The system plays, processes and mixes eight tracks from hard disk. Features include real-time mix automation

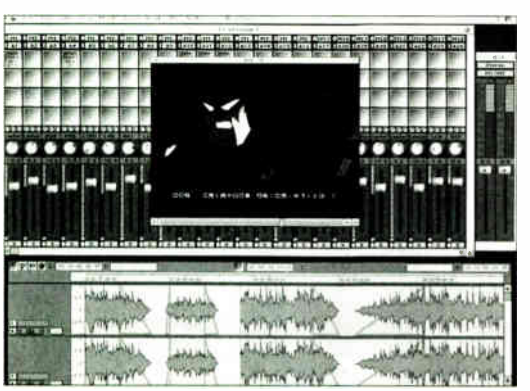
Spectral Prisma Music, Version 2.0

with memory of fader moves, mutes and solos. A CD-R mastering option supports single- and multisession CDs and conversion of markers into start IDs. And conversion capabilities are included for a variety of file formats (not including QuickTime), bit depth and sample rates.

AND NOW FOR SOMETHING COMPLETELY DIFFERENT...

If those virtual faders and waveform displays are all starting to blur together, watch for the debut this year of the Virtual Mixer from (appropriately enough) The Virtual Mixing Company. As shown at AES, the Virtual Mixer uses an on-screen display of a three-dimensional space to display the level and panning of channels on a remotely controlled (via MIDI) mixing console. The channels appear onscreen as spheres. Drag a sphere closer (downscreen) and the volume for that channel goes up; drag it right and the panning shifts right. Frequency is mapped as a top-to-bottom function so that bass and kick appear lower on screen than violins and cymbals. It sounds gimmicky, but after watching the system in action I began to feel that the interface really does have quite a bit of potential.

Finally, I had a chance to check out *Control*, the new CD-ROM mag from former *Mix* editor David Schwartz. The Mac/Windows hybrid turns out to be a pretty good way to spend some time. In particular, I enjoyed the Electronic Scrapbook feature on Les Paul, featuring audio and QuickTime video excerpts of performances over the years. ■



Sonic Solutions' Sonic Cinema program will include video CD premastering capability.

Mix's media & mastering editor, Phil De Lancie, is a mastering engineer and multimedia designer for Fantasy Records in Berkeley, Calif.

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Q Why does the Ultra-34 Automation Interface look like a patchbay?

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A It's a 3-part MIDI automation system consisting of the Ultra-34 Automation Interface (with 4-patch points per channel on the front and lots more technostuff inside), the UltraPilot™ Control Interface (looks like a fader pack but does much more), and Ultramix Pro™ software.

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ASSEMBLING THE SOUNDTRACK FOR MARTIN SCORSESE'S

CASINO

BY TOM KENNY

***GoodFellas* with Vegas glitz.** That was the early line on *Casino*. And although that assessment works in terms of the film's style and feel, it is not at all fair to the story or to its director, Martin Scorsese. Whereas *GoodFellas* established a more insular world, *Casino* is grand in scale, depicting a uniquely American human and cultural tragedy across a "paradise in the desert" backdrop. The Tangiers is the hottest hotel on the Strip, the characters become bigger than their surroundings, and the immensity, the vast landscape of the desert, is a constant reminder of the world outside the glamor and the scams. Nothing about this film is small, including the soundtrack.

Actually, the soundtrack, while dense and full, is not necessarily that big. Most of the casino scenes, shot on location in a working resort, The Riviera, are loaded with voice-over, dialog, group ADR, backgrounds and effects. And, of course, on top of that is the ever-present, Scorsese-selected (along with music consultant and friend Robbie Robertson) source music, more than 100 cues from the '70s and '80s weaving in and out of the montages and underneath the drama. As in *GoodFellas*, there is no score.

"The way *Casino* works is that there's sort of a hierarchy to the mix," explains supervising sound editor Skip Lievsay of C5 Inc. in New York. "We had voice-over at the pinnacle, and that was recorded 3-track with mics center-left-right so that it was not only the biggest voice in the picture, but literally bigger than anything else. Then music and dialog sort of play tag as the next most predominant sound. And then whenever it was appropriate for picture, we had a background or sound effect. It was actually very uncluttered, where we took away as much unnecessary information as possible. We try to work that way, so that what you're left with is the essence of the track."

The pared-back track works amazingly well in balancing the busy nature of the casino floor shots with the intimate moments between Ace Rothstein (Robert De Niro) and Ginger McKenna (Sharon Stone). But while the sound design and mix for the film are solid, Lievsay is the first to admit that there is nothing revolutionary in the tracks. What most interested him in this go-around with Scorsese (Lievsay also supervised every film from *After Hours* through *Age of Innocence*) was the process by which the soundtrack came together. Perhaps the most exciting change brought on by the technical revolution in sound-for-film is that there are no more established rules for putting together effects, music and dialog elements for a re-recording session. In Hollywood, each studio lot, each independent sound editing house, has experimented with more efficient and creative ways to bring first-

SHARON STONE

ALL PHOTOS BY PHILLIP CARUSO/UNIVERSAL CITY STUDIOS

MARTIN SCORSESE AND ROBERT DE NIRO

JOE PESCI

generation digital elements to the stage. And they've been doing the same thing for years in New York.

THE PROCESS

Scorsese and his longtime film editor Thelma Schoonmaker cut picture on a LightWorks system, often to the temp music tracks. The sound editing took place at C5 Inc., mostly on the Sonic System (Foley was edited on an Avid AudioVision), and the elements were brought 23 blocks up Broadway to the mix on the newly remodeled Stage F at Sound One, on a 60-input Neve VSP with Flying Faders. Because picture was not locked, a system was developed to allow for constantly updated, rapid changes on the final mix. In some senses, Lievsay says, they rocketed ahead technologically, and in other cases, he admits, they took two steps back. But for *this* picture, the process worked.

Dialog and some ADR were premixed at 21 reels, though the picture was eventually cut to 19 reels. While Schoonmaker and Scorsese went in and made picture changes on the sixth floor of the Brill Building, where Sound One is located, re-recording mixer Tom Fleischman began on effects premixes in Stage F, on the seventh floor. As soon as the film editors had reels ready, Fleischman switched over to finaling, and Lievsay and Reilly Steele took over effects premixing in Stage B, on the eighth floor. (To get an idea of the audio flow, see Fig. 1.)

"We tend to make our premixes very small and compact, with very few elements," Lievsay says. "All of our premixes for *Casino* were spread across a 48-track, only because we had a lot of voice-over and group ADR. So the premixed dialog, ADR and voice-over are on 1 to 24, and then eight channels each of backgrounds, effects and Foley were premixed separately from the Tascam DA-88s, then brought in on tracks 25-up of the 48-track for the final. Music, which wasn't premixed because it was all source cues, was played directly off the Sonic on the stage. We try to build our predubs with as much flair as possible, making them sound how we think the movie should sound. We can always go back and

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make fixes."

Because the LightWorks does not currently output change notes for the audio tracks, picture edits from the premix version to the final had to be rebalanced by eye and ear. "They took their premixes from the 3324 and dumped them back into the Sonic," Lievsay explains. "We then shipped Exabytes [Sonic backups] down to C5, and they took the new video, as well as the new guide track, and put that in the Sonic, too. We then resynched the premixes to the new version and did whatever fixes were necessary. The conformed premixes were taken on Exabyte back up to Sound One, and those were restored to a Sonic and dumped digitally back to the 3324. So the premixes never actually lost a generation. They stayed digital all the way.

"The final step of that conformation," Lievsay adds, "was that Tom would put up the premix, which had already been conformed and restored back to the 3324, and wherever there were gaps, the editors would take notes for whether it was new track or a fix. So if you couldn't jump in with a fix, he could always remix from the Sonic, and that's how he was able to patch up the 3324s without having to copy from machine to machine. It was elaborate, but it's the only way we could get it done. There was a tremendous amount of leg work by my crew and the people at Sound One, but even with no change notes, we could turn reels around completely within a couple of days."

THE MIX

Although Scorsese generally allows for six to eight weeks of mixing, a rather luxurious schedule in today's climate, he also turns in long movies. *Casino* is 19 reels and comes in at two hours, 50 minutes. And because picture was edited and voice-over was added or altered right up until the end, the entire picture, from temp to premix to final, was mixed out of order.

"[Mixing out of order] affects the way I work in two ways," says Fleischman, who first worked with Scorsese on temp dubs for *Raging Bull*, then finaled *King of Comedy* and everything thereafter. "Logistically, it's difficult to keep levels and processing consistent. For example, in *Casino*, on the voice-over I started with reel 4, then went to reel 9, then reel 14, then back to reel 2. If you start in reel 1 and go through the film in order, you achieve that particular type of equalization or whatever type of processing you're using, and keep it consistent throughout the film. By the time I got to the third reel of dialog, I had found it. But then when we finished and played it all through, there was a big difference between reel 3, which was one of the last reels we mixed, and reel 4, which was the first reel. Things were fairly inconsistent, and levels were all over the place.

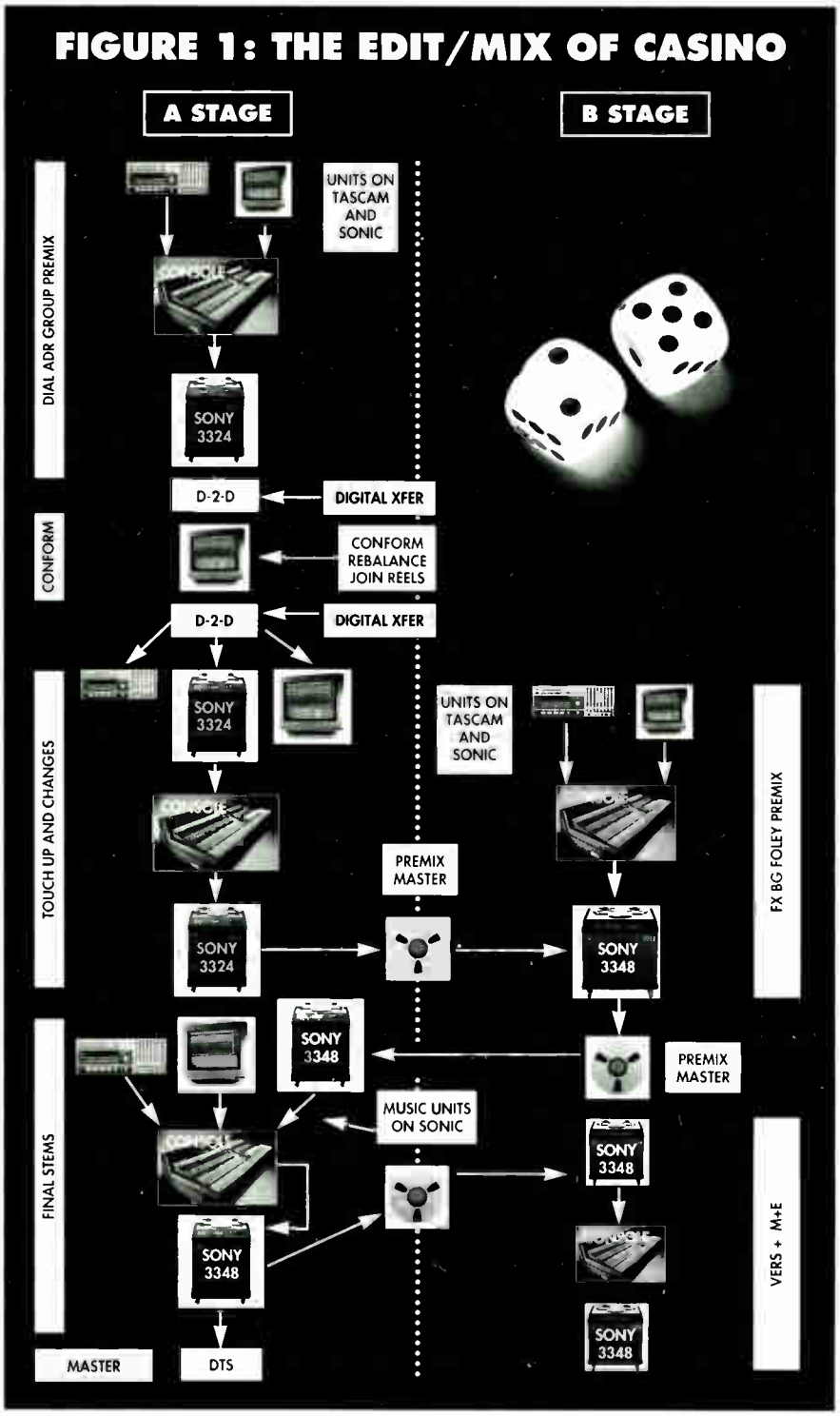
"Then the second problem is, stylistically, you try to achieve a build in the way things are put together and balanced," he continues. "Generally, I've found that that sort of naturally happens as you go along. It was very difficult to do that on this film because there was no way to really know what came before. You don't know where you were, so you don't know where you're going."

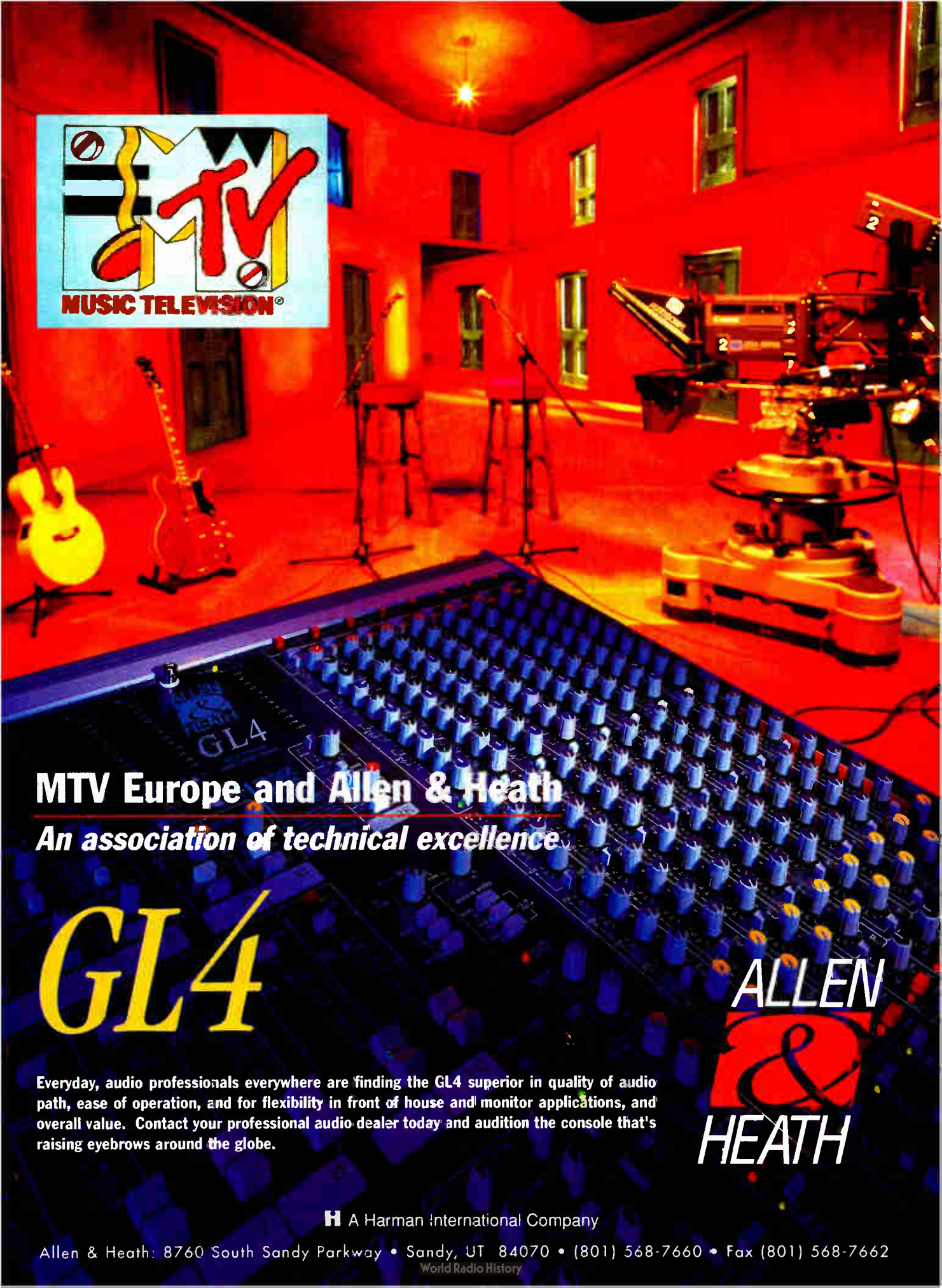
The first time the sound team saw the film front to back was at the first printmaster, which was where Fleischman adjusted overall levels and made the tracks consistent. The trick was in developing a system to keep the effects, dialog and music stems updated so that when adjustments were made after the printmaster, they didn't have to go in and redo the corrections as well. The premixes were played back from a single 48-track DASH machine;

the stems were on tracks 1 to 24 of a second 48-track, and the printmaster was made to tracks 25 to 30.

"Before we were working in digital," Fleischman says, "when we recorded all our predubs to 6-track mag, it was a pain to go in and change a premix because you had to take down the stems from the recorder, take the premix off the playback machine and put them up on the recorder, put all the elements up for that premix and make the correction. In doing the mix on digital tape, all our premixes—all the dialog, ADR, effects, Foley, backgrounds—were on one 48-track DASH machine, which we're able to record on. A lot had to be added after the predub—we were flying in effects at the final, new Foleys. So I would just punch into the premix, which was running on another recorder—I was playing back from it most of the time, but if I needed to take something apart or add to it, I had that capability without taking any-

FIGURE 1: THE EDIT/MIX OF CASINO





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thing down, without changing the console configuration. I just took whatever element I needed, put it in an unused fader, and added it into the premix, and that would follow through into the stem. We used that extensively. We got the idea on *Clockers*, but we made use of it in *Casino*. There were so many go-backs, so many things added, because we had predubbed before it was locked.

"The stems were on the first 24 tracks of the 48-track tape," he continues, "and we made the printmaster on 25 to 30 of the same tape. We had made a clone first of the stems, and as I was making adjustments to the overall levels in the printmaster, I would punch in to the channels that contained the stems and make the same adjustments. So when we finished that printmaster, all the levels in the original stems matched, which saved us a good number of headaches later on, when we knew we'd have to go back to touch those stems up. To have to go in to those and try to make those corrections [from the premixes] would have been way too time-consuming."

The most challenging scenes to mix, according to Fleischman, were the expository montage sequences at the beginning of the film, which were heavy on voice-over, dialog and music, all of them tightly woven into the visual and aural fabric. To make those work, however, he had to first find the "voice" that would pop through the relatively dense audio action.

Robert De Niro as Ace provides most of the VO, with a few segments from Joe Pesci. Most of the sessions were recorded 3-track, with a Neumann U87 in the center and a pair of Schoeps cardioids on each side (a few of the Pesci takes were actually mono, sent via DolbyFax from a last-minute session in L.A., so Fleischman used stereo synthesis to match it).

"Using multiple mics to make the voice-over bigger was Skip's idea, and we've done it on other films," Fleischman says. "But it's difficult for me as a mixer to deal with because every time the actor moves his head, the image shifts a little bit. And on Casino, there were so many sessions in so many different rooms that it got to be very difficult to deal with. Basically, I just tried to keep it consistent and clean. I wanted it to sound fuller, with more chest and more of the low-frequency portion of the voice, which you wouldn't normally pick up in a production dialog track.

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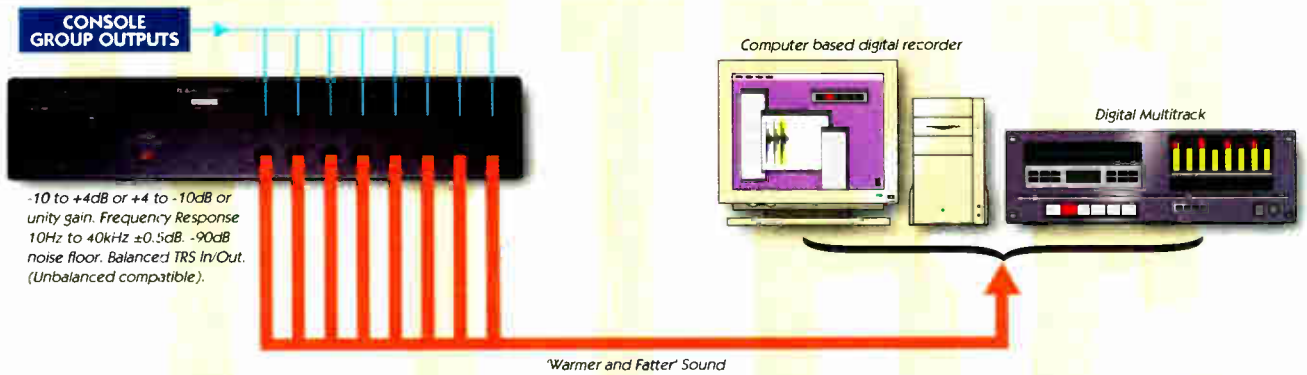
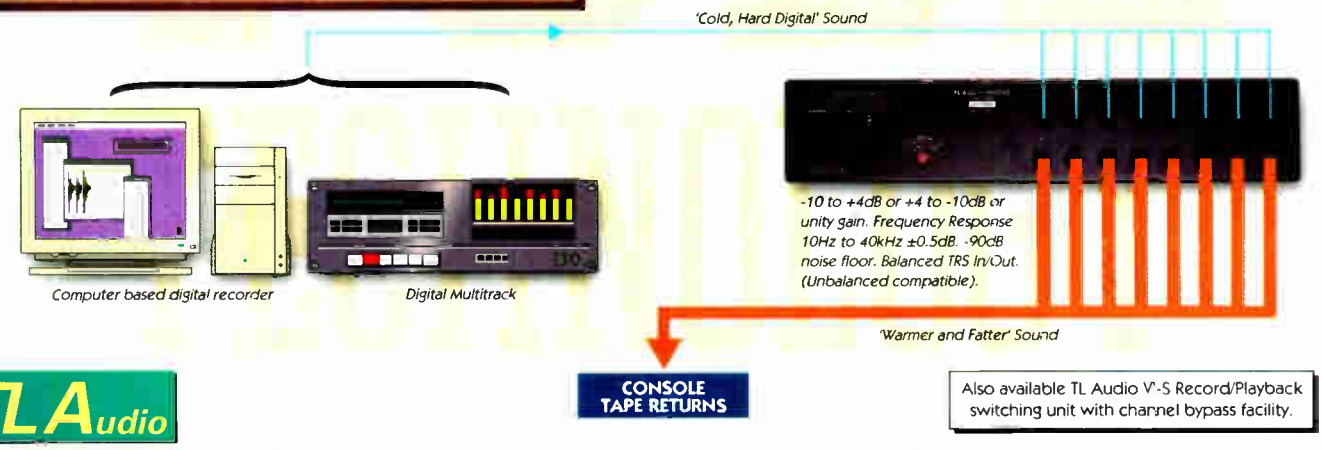


'WARMER & FATTER' MIXING



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"I didn't do much processing to the voice-over," he adds. "I gated it, a little bit of compression, some EQ just to even it out and beef up the low end and achieve as full-range a voice as I could get. I did play the side mics considerably lower than the center mic. The U87 in the center had a much fuller sound. In the analog version—DTS Stereo I think they call it—I essentially made it mono because the three mics were leaking into the surrounds. But in the digital version, it's spread all across the front."

WEAVING MUSIC IN AND OUT

"This mix was a lot like *GoodFellas* in that something was always leading the track—voice-over, dialog or music, not so much effects," Fleischman says. "It's all very tightly woven, and it's dense. It's wall-to-wall music, pretty much. We were careful about trying to make the music so it wasn't distracting, but it was difficult because nearly all the music has vocals. And Marty might have one syllable that he wants to hear."

As with *GoodFellas*, *Casino* has no traditional score. There are 98 tracked cues from CD or records, according to music editor Bobby Mackston, occupying two hours, seven minutes of the nearly three-hour film. (In one reel, music starts at 12 feet and goes from cue to cue to cue, right to the end of the reel.) Apparently, music consultant Robbie Robertson assembled a huge list of potential cues from the period, and Scorsese integrated his choices into the temp track.

First the cuts were transferred from CD or record to DAT with timecode. Those were then loaded into the LightWorks, where Scorsese would often cut to music. From the cut track, a timecode discontinuity list was generated, and then Mackston would go in and reassemble in the Sonic. Final tweaks and positionings were often made on the stage, where a full Sonic System contained all the music on hard drives for playack, but Scorsese has a strong sense of how he wants music to play in the final, and much of that was decided in the picture edit. It doesn't necessarily matter to him that he cut 12 seconds from the front half of the scene, he still wants the cymbal crash, or that one particular word, to fall at a specific point. So the music edit becomes a process of building bridges.

"He's very specific about where he wants certain sequences, or specific hits, to be against the image," Mackston says. "For the Stones' song 'Can't You Hear Me Knockin',' he cut picture to the way the song plays out. Then he makes the cuts where he wants to make the cuts, without really worrying about what that does to the guide track. But he still wants the drum to hit, and he still wants the lyric on this image. So you have to find ways to bridge all that.

"And that's where the workstations are invaluable," adds Mackston, an Avid aficionado till he was cajoled into editing on the Sonic for this film. "We're able to do time compression and expansion, or if we came across a spot where the intonation was slightly off, we could pitch it up to match. And with the Sonic, there's this crossfade window that gave us a lot of flexibility to be creative. Most systems are just linear—it's fade in and fade out. But here we were able to go from live to studio versions of Stones songs in a very full manner. Also, there was a lot of material that came from older sources—one that came off a 45—that had inherent byproducts of that technology. Using the Sonic, I could go in and clean up the pops and snaps."

(In case you were wondering, Mackston didn't just jump in on the Sonic and start editing. It is, after all, a

—CONTINUED ON PAGE 159

ORRIN KEEPNEWS

PASTMASTER

In the pantheon of modern jazz record producers, there are few whose accomplishments loom as large as those of Orrin Keepnews. The founder of Riverside Records in the '50s, Milestone Records in the '60s and Landmark Records in the '80s; producer of such jazz titans as Thelonious Monk, Bill Evans, Wes Montgomery, Sonny Rollins, "Cannonball" Adderley, Joe Henderson and McCoy Tyner; winner of Grammy Awards for both producing and for album notes; a noted author on jazz history; a longtime national trustee and guiding light of the National Academy of Recording Arts and Sciences...Keepnews appears to have seen, heard and done it all. Yet, well into his fifth decade as a producer, his pace has barely slowed. Today he is deeply involved in a growth industry of the '90s—jazz reissues on compact disc.

Since the late 1980s, Keepnews has headed up ambitious reissue programs for two major labels—BMG and MCA—restoring and recompiling classic jazz recordings from, respectively, the catalogs of RCA Victor and Decca Records. Early recordings of Louis Armstrong, Duke Ellington, Fats Waller and numerous others have been resurrected, sounding almost as clear and dynamic as they did on the bandstands of the '20s and '30s—thanks to the digital technology of the '90s and the careful guidance of a man who has studied those sounds for a lifetime.

Mix caught up with Keepnews at Fantasy Records in Berkeley, Calif., where he maintains an office, and asked him to shed some light on what it's like to record the masters of jazz—the second or third time around.

It seems to me that everything I ever heard on LP has been reissued at least three or four times by now. Have we reached the point of diminishing returns?

I think the answer to that is yes and no. There has been an incredible quantity of reissue in the past decade. The obvious initial reason is that when compact discs came into the world, and the hardware was established and there was a need for product, there were these two existing deep pockets of product with loyal fan bases: jazz and classical. So, there it was, and you didn't have the cost of recording. You retooled it for CD and presumably had wonderful catalog sales staring you in the face. So there's been a hell of a lot of reissues, but as far as I can tell, it doesn't tend to get done in any well-organized, long-term planning way. Whoever you're working for, they're always in a hurry. With most record companies, I've learned that when you start, you're already behind deadline.

But how many reissues do we need of a particular Duke Ellington record?

Ellington is a good example. It's been done a lot. First of all, as time goes by, the techniques

BY HILLEL RESNER

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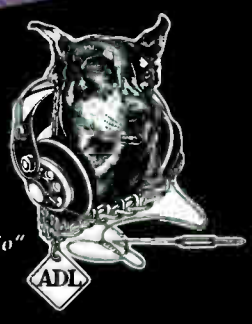

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involved get to be better understood by the people who are working with them. I've been working on reissues for 40 years one way or another. I started working on this current wave of reissues in about 1988; I do a much better job now in some respects than I did then.

I have reached a point where there are specific instances of my redoing things or creating a new package which has a lot of the content of an old package, and in a couple of instances, I welcomed it. I was better able, the technical approach to the material was better, and my knowledge of how to get at the best possible source material had improved.

There's a pretty late-in-the-game Duke Ellington project, an album that he did called *Far East Suite*. It was done in the late '60s. One of the people at BMG pointed out to me that, for some reason, this was one of the very few that after having been reissued, was now out of the catalog. Why didn't I look into doing something about bringing it back into the catalog?

So, I got tape on this, and there were some very interesting unissued alternate takes. The first recording of a magnificent Billy Strayhorn composition called "Isfahan" had been on this album. Take one was what they eventually issued, but there was a take two. To me, one of the greatest things in the world is to say, "Hey, people, you're now going to be able to listen to Johnny Hodges taking another crack at this great Strayhorn piece." But my engineer is listening to the 2-track master, and it was originally recorded in 4-track, and he says, "There's a lot of distortion here," and he starts fooling around, and he says the clarinet and the piano don't sound as good as they should. He finally came to the conclusion that the 2-track machine was not properly aligned back in 1967 when they did the mixdown.

And the released recording had the distortion?

Yeah. Not the kind of distortion that was going to knock you down and drive you into the ground, but here's a trained ear listening to it and saying, "Hey, this doesn't sound as good as it should." We went to the 4-track, and sure enough, it could be made to sound better.

If it had been any more complicated than that, I would not have attempted it. I'm not going to redo Ellington in any

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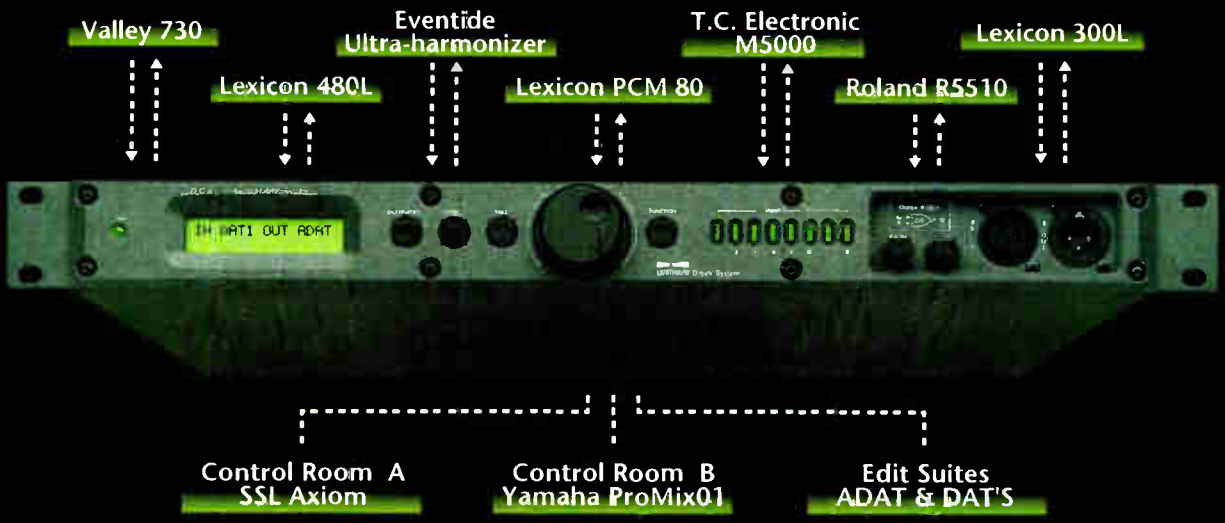

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major way, but it was 4-track. The band was stereo on two of the tracks. Bass and drums were on a third track. The respective soloists were on a fourth track. It was an easy mix to duplicate, so I was able to come out with something. That's the first time in my life I was able to work with Duke Ellington.

So there's an example of a repeat of sorts. Now, the Brunswick Duke Ellington stuff is owned by MCA, so it's available to me for the Decca reissues that I'm doing for GRP. Early on, when I started that reissue series, when stuff was being put out on MCA—before GRP got into the picture—I had put out two CDs of early Ellington material, Brunswick material. This is late '20s into early '30s stuff. Now, at that time, there wasn't even a proper turntable available, and in a lot of cases, we transferred from previous tape because we didn't really have the facility to work well from disc. Metal is almost nonexistent on these things.

I just don't trust, unless I absolutely have to, previous tape transfers, because among other things, you get stuck with what *was* the state-of-the-art. I don't want to be stuck with what passed for noise removal 20 years ago, because you can't superimpose today's technology on top of yesterday's. By far the best thing to do is, if you can't get original metal, to go to the best possible 78 rpm record. Go to the shellac. Well, among the assets that I hadn't properly discovered in advance, but I make great use of now, is the Institute of Jazz Studies—Dan Morgenstern's operation—which has a magnificent library and considers it part of its mission to make this available to companies that want to do reissues.

In these various projects, have you been working with a lot of different engineers, or a lot of the same people?

I consider it essential to work as much as possible with the same person or a limited group of people. I've been spoiled most of my life as a producer. I worked under circumstances where it's been possible for me to work with a given engineer over a long period of time, and that almost forgotten state of affairs where you're working for a record company and you work with the same people. The famous word "staff," which is hardly with us anymore. So, as a staff producer, working with staff engineers over the years, that's become very important to me. I'll come up with clichés like, "I don't

mind working in a strange studio, and I don't mind working with a strange engineer, but not both at the same time." Leave that one element that I'm familiar with.

I was able to settle in fairly early in the RCA situation with a wonderful engineer who I knew from NARAS. He was a trustee from the New York chapter for a long time, Paul Goodman. Paul had been a staff engineer at RCA Victor for a number of years, and every once in a while, obviously not with the pretape packages, but doing stuff from the '60s, let's say, we'd run into an album that we were getting ready to reissue where he had been the original engineer. Like he'd recorded Sonny Rollins for Victor in the '60s, and I reissued all of that stuff. I worked with him for a long time. He retired, and I probably have not worked with more than four engineers at RCA in the seven or eight years that I've been working there. The guy I'm working with at BMG now, Dennis Ferrante, is really good.

What's happened is, these guys have learned. They didn't start in the business with this knowledge. Most of these guys, I'm sure, are much too young to have dealt with turntables and 78 rpm, but they're good engineers, and they understand sound, and they understand music. I think it's incredibly important for the reissue producer and the engineer to be able to work up a rapport, because what we're doing is so interdependent, so dependent on one of us hearing something and feeling he knows the other guy well enough to say, "Hey, don't you think we ought to do that over again?" or "I think I missed something here." Reissue work has a tricky aspect to it. It's both detail work and concept work at the same time. I [worked on] 15 CDs worth of Fats Waller. Okay, I love it, but I assure you, there are times when you go kind of brain-dead working solidly on two or three CDs of the same artist and similar material.

Do you find that your lengthy experience in the studio enables you to communicate nuances about the process to the engineer? Does that have any value or place in reissue work, when you're working on new technology?

I think that one value of unrelated live recording experience is I spent enough years in the studio to be aware of the value of progress and the value of technical achievement, but also that that's not something that you're supposed to depend on 100 percent. There are limitations of technique, as opposed to the fact that the basic original content of the music is what you're really dealing with. So I've learned what you can and cannot get totally wrapped up in as far as noise-suppression, which has been extremely controversial, and it's something that I've had several different attitudes about. My attitudes have changed. My ability to work with those kind of systems has changed. The systems themselves have changed.

What de-noising system did you first use?

We were using Sonic Solutions. When I was first exposed to the Sonic Solutions process, the NoNOISE, I was absolutely knocked out by it.

One of the greatest things in the world is to say, "Hey, people, you're now going to be able to listen to Johnny Hodges taking another crack at this great Strayhorn piece."

Do you remember what project you first worked on?

I can tell you the project I first worked on, but more significant was the first time I ever heard [NoNOISE]. Because what happened was, before I was involved in this kind of reissue work, a good friend of mine had been working for some time at RCA. That's Ed Michel, who I think of as a protégé of mine. He broke into the business around 1960 at Riverside and is in the building here now doing work at Fantasy—putting their entire tape library on a database system, which will take him about a year-and-a-half. Ed called me one day from New York and said, "How would you like to do the liner notes for a Jellyroll Morton CD that I'm putting together?" At that stage, the concept of taking a whole record and putting it on CD was, "What? What are you talking about?"

You mean, why would you want to do that?

Yeah. And then he started telling me about this process, and I said, "I'd love to do those notes because I can crib them from the notes that I did when I reissued the same material for the same company in 1954!" So, he sent me a cassette, and I was listening to material that I was extremely familiar with—the Jellyroll Morton Red Hot Peppers material—and I was hearing it with this early NoNOISE applied to it.

Now, this is one of the things that's always made me have very little patience with the people who are supercritical of the process. "It disturbs this, and it disturbs that, and it does this or that to the highs..." It's true that those systems had, and undoubtedly still have, drawbacks and limitations, but the fact is that what was thrust at me in the first place was what NoNOISE was designed to do: By removing enough of the crud and the grit, by making it possible to go in there and dig out some of that low-end stuff that you never heard before, it was making the sound of those old records significantly more palatable to an audience that had grown up only listening to the music of the '70s, the '80s, now the '90s, who just aren't going to hear that stuff if you give it to them as it had been attempted for many years. You're giving it to them with a little lecture: "Don't mind all that crackle and rumble. Try to listen through to the great music underneath it." Well, when the music is less audible than the noise, the program is under the distraction, and you can't do that.

How did you start using the CEDAR system?

The BMG studios purchased CEDAR equipment, and as a matter of fact, at first I declined to use it, saying, let somebody else get the bugs out of it. Secondly, I don't want to get online with other producers and have to wait to use it, and I'm familiar with the Sonic system; I'm much more comfortable using it. But what happened was something needed to be cleaned up, and I wasn't going to send it to San Francisco, and there was CEDAR equipment down the hall, so I began to use it. I said, "Okay, I will give it a fair shot. I will do a whole project using it."

Can you compare the systems?

They're very similar in lots of ways, and the three functions that are involved are really basically de-clicking, de-crackling and de-hissing. There's not that much difference between the two, except that CEDAR works in real time a lot more, and therefore, it is studio-convenient in a lot of ways that NoNOISE isn't.

Depending on the medium that you're going from, what is the setup in the studio?

It's drastically different in the two places where I do my major work. At BMG [in New York], there are a couple of custom-built turntables. That one there may look like a Rekocut, but their maintenance guy has thoroughly custom-revamped it. So, in the studio, there is equipment for the purpose of being able to properly play metal parts; you then just transfer that to digital tape, and the noise removal is done on the digital tape. Now, one thing, of course, with the huge catalog of pretape material they have, is there's tremendous amounts of reissue work in all fields going on. So, clearly, it's a huge operation, and they're geared that way.

The MCA operation does a limited amount of reissue stuff, although there's a lot beyond the jazz things. They did a wonderful job with the Chess blues stuff, but they just never got a studio set up. They didn't necessarily have anybody all that equipped to be doing it, and I had become aware of a young collector living in the Santa Monica area—Steven Lasker—who had a turntable, which was an early revised 1968 variable-speed gem. The way that situation works out, not only for me, but for any other producers doing pretape reissue work at MCA, is Steven does the transfers in his home studio. MCA ships the metal parts directly to this guy's home, and he does the transfer work there.

Is he doing the transfers onto DAT?

Yes. He's been going onto DAT all the time. But no matter how you do it, this thing really divides itself into three stages. I work very differently at the two places, because the setup is totally different, but procedurally, it amounts to the same thing.

Step number one is transfer. You gather together your best possible source material, which is going to be metal parts or perhaps test pressings, perhaps shellac pressings that you've got to get from a source like the Institute. And in the case of Decca, one thing is that, in the 1940s, Decca owned World Transcription. There was a setup where everything that Decca recorded went over telephone lines, and acetate safety discs were made simultaneously so your source material was going to be wonderful to work from. The 1940s Decca stuff is usually not metal, but acetate masters, and this is where it's easy to get into alternate takes, because the alternate takes might be sitting there right on that same big fat 14-inch disc.

Step number two is de-noising that material. The CEDAR work is done at BMG studios, and the Sonic work is done at MCA studios.

Then I will rejoin the engineer, and we'll do whatever digital EQ'ing is indicated. We'll tidy it up, we'll double-check it. We'll make sure we do or don't want to change some of what's happened.

I take it Steven's doing almost nothing to the tracks when he's transferring.

This is the whole secret of transferring. As far as I'm concerned, it should be flat. It's a sensitive job, though. You're trying to make sure you're at the correct speed. You've got to avoid any kind of turntable rumble being introduced. You may run into a situation where you've got to make the value judgment to say, "We can't get it from this. This metal part is not going to give it to us." Ideally, nothing is done to the sound quality or even the noise quality of those situations. Among other things, the de-noising systems work much better using flat tape.

I don't trust previous tape transfers, because you get stuck with what was the state-of-the-art.

So, transferred programs are de-noised one way or another, and then in the final remastering stage, which is rechecking digital EQ, the engineer is working on the beginnings and endings, putting the spaces between them: the general job of assembling a master.

What kind of creative judgment calls do you find yourself making, and at what stage of the process in this wonderful world of digital reissues?

I'll start off by making the arbitrary decisions as to what, hopefully, the content is going to be. Sometimes, I may have to revise because something is unfindable or unusable, but basically, I'll decide what it is that's going to be in there. God knows, I am not familiar with every piece of music that I deal with. I have to admit that.

The truth comes out.

The truth comes out. I have not heard every single thing that was recorded throughout the '20s, '30s and '40s. There's some of it that I missed the first time around. What happens is I tend to order up more material than I'm going to be able to use. I anticipate attrition in one way or another. Something will be, perhaps, physically unusable. If I'm trying to give you the complete works of so and so, then I don't have that leeway. But if this is going to be a selection from or a sampling of, or if I'm doing a retrospective, any one of three things from that same session would do just as well to represent that period.

You're very active in the NARAS archive and preservation effort. Anything you want to say for the record about your feelings on the importance or the meaning of this?

I think that what's happened is, because apparently there's proven to be enough sales potential in this material, there's generally a more friendly attitude on the part of record companies toward the whole concept of preservation. I think initially there was almost an attitude of "Why is NARAS intruding and telling us what to do with our property?" But now there's a lot of transferring information to database that's going on with various companies. There is, as I say, a lot of preservation of tape. This isn't as organized and as universal as hopefully it will be, but I think there are pretty good relatively early signs, and frankly, I think the way you get records reissued in the first place is to deal to the acquisitory instincts of the company. If it's going to make a good bottom line, then they're going to do it, and if the stuff has value, then they're going to want to preserve it.

I'm not quarreling with that. Whatever we have to do to attract the attention of the record companies, fine. I don't expect them to do reissues or preservation for some obscure altruistic reason. It happens that the stuff is not only culturally good, but it's financially pretty good; let one subsidize the other. If success for reissues is valuable not only in and of itself—for presenting earlier music for people to be able to hear—but if it also leads to more attention to physical preservation, and I believe it is doing that, that's wonderful, too. ■

Hillel Resner is editor-in-chief/publisher of Mix. *He is a one-time producer of jazz reissues, and in his youth, was given the nickname "Gizzard" by Louis Armstrong.*

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MUSIC RECORDING IN THE GREAT NORTHWEST

BY DAN DALEY

The northwestern tier of states (or half-state, in California's case) has been the quiet man of music recording. Before Seattle's high profile over the past few years, one has to look back as far as the late 1960s for another heyday, that one centered around San Francisco's Acid Rock period. Colorado once gained steam as a backdrop and ambient chamber for country-rock songwriters who used the Rockies as a setting for songs—while staying within a couple hours' flying time of the Sunset Strip—in the 1970s.

However, the grunge boom in Seattle brought with it an establishment of sorts, with more studios than one might have realized at first glance. San Francisco is enjoying a boomlet of sorts with pop-in-punk attitude acts like Green Day. And while Denver's music scene kind of flat-lined in the '80s and '90s, it does have a fairly thriving commercial music scene. And after the rhinestone cowboys have long gone back to Hollywood, it still has the Rockies—the mountains and the team.

SEATTLE

Seattle's pop-music visibility makes it the appropriate place to begin any assessment of Northwest recording. And Bad Animals/Seattle, which opened in 1991 and is co-owned by Heart vocalists Ann and Nancy Wilson, is probably the facility to look at first. Despite its musical heritage, Bad Animals' business is split about 50-50 between music recording and audio post-production, according to studio president and co-owner Steve Lawson. "We may be an anomaly in that regard, doing an even mix of music and post," he says. "The post and commercial business swings a lot, and right now it's swinging toward the boutique production houses. But I expect it'll swing back in the future." Nonetheless, Lawson asserts that the studio's music recording business in 1995 was up 35 percent over the previous year, with acts like Pearl Jam, Soundgarden and Alice In Chains doing

PHOTO: TOM RIDER

Above: The Plant's rebuilt Studio A in Sausalito, Calif.; Right: Seattle's The Music Source

part or all of their records there. (Interestingly, Heart has done only two projects since the studio opened, both of which were done in-house.)

The less rosy side is that most of the music recording there, and in Seattle in general, is locally generated; the city has not become a Mecca for rock acts from farther afield. This means that personal studios have had a profound and continuing effect upon the state of the studio business, becoming the launching pads for newer acts, many of whom don't go into the city's larger studios until they have a major-label budget. And once in, they tend to block-book on a monthly basis, which is always a double-edged sword for studios.

"There's always the possibility that you have to turn away several clients when rooms are booked for that long," acknowledges Lawson, "and it's true that some stu-

dios get more dependent upon block-bookings. But on the other hand, it's not only a better revenue stream in the short run, but it also gives us the chance to have longer, more thorough maintenance periods in between those bookings. After three months, it takes awhile to get the nicotine stains off the pots."

As for the personal studios, Lawson is resigned to them taking some market share away, particularly because some of them are being started by members of the major acts that use his studio. Pearl Jam guitarist Stone Gossard, for example, recently opened up a personal recording facility for his own use and for hire. "It takes away some business from us," Lawson concedes. "But that's any artist's prerogative. And in the end, I think most of these acts will come back here for parts of their records in the future." In response, Lawson says, Bad Animals will attempt to expand its music business this year with a more intensive marketing effort, and will expand its post work—which increasingly includes film scoring with the Seattle Symphony—by adding two audio-for-video suites later in the year. With rates static, Lawson says, it makes sense to first expand the client base and the range of business before taking on additional capital expenses. "Rates these days won't pay for equipment; only new business can do that," he says. "We're remaining committed to the music side. But I'd be very nervous if we only had a music side. You need post to complement that in a market like this."

Clatter & Din represents what might be the next wave for Seattle, as post work continues to sweep up from California. Co-owner Peter Barnes, who opened the two-room facility in the spring of 1994 with partner Vince Werner, had been producing music at various studios in Seattle for 15 years, although he says he "missed out on the grunge thing. There was a period in which you couldn't cross the street without getting a record deal." But the grunge thing is indeed winding down, he says, and he, like a number of other facility owners in the area, sees post not only as a more reliable profit center but also as an improvement in quality of life. "I like to work in the daytime," he says. "But I still do some music. You never really stop liking the challenge of music recording."

Music Source, which has operated a studio in Seattle for 25 years, is closing down its for-hire facility and will reopen in owner Jim Wolfe's home. Music Source vice president of sales and marketing Julie Parkinson says it's not for lack of business, though. Rather, it's a consolidation, as rates remain mired and overhead costs associated with a sizable recording facility increase. Music recording has simply become too marginal from a profitability point of view, says Wolfe. "You can invest hundreds of thousands of dollars in gear for music recording, and it's never reflected in the rates. And even in post, the engineers and salespeople take up so much of the profit that you have less return than it seems. Then there's the time investment you have to put into running a facility that does both. It felt good to have Seattle's second largest facility, but the personal cost was not worth it. There are too many little studios charging what I charged 25 years ago."

Triad Studios' manager Lars Nefzger is equally blunt: "Project studios have definitely hurt commercial studios in this region. We're asked to compete dollar for dollar, and we just can't."

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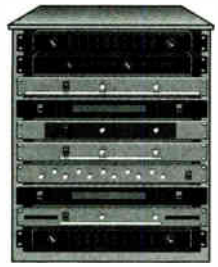

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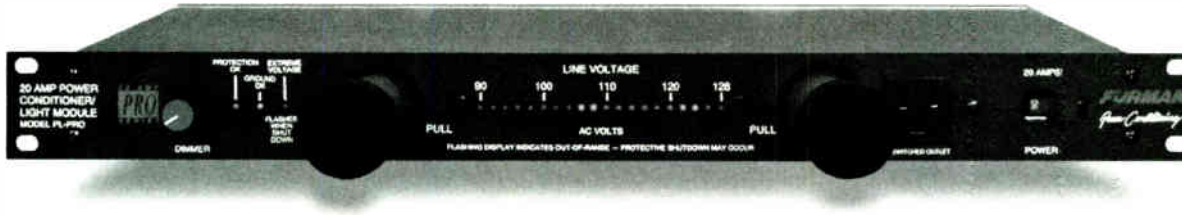

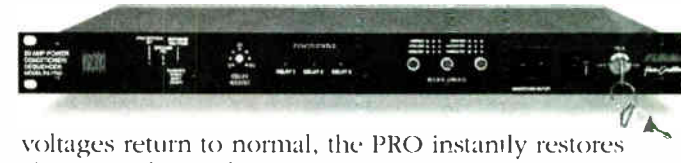

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Triad's business is primarily music recording, but Nefzger concedes that, aside from occasional sessions with major-label Seattle bands like Presidents of the United States, it's mainly local acts that book time. And the big-ticket acts are being pared down to a small core. "Grunge passed on about a year ago," he says. "Out of all the bands that were signed, maybe three or four have stuck. That cuts down on potential business for studios." The three-room facility, now 15 years old, is addressing post on a small scale, and its location in Redmond, a suburb of Seattle and home of Microsoft, provides access to some multimedia work. But, says Nefzger, "Post isn't a panacea, either. Their budgets have shrunk, and as a result, they're also going to project studios."

SAN FRANCISCO BAY AREA

San Francisco has been steadily regaining its stature as a recording center over the past several years. The flagship for the Bay Area is Sausalito's The Plant, which opened in 1972. Kim Lafleur, manager for the past five years at the four-room facility, says the studio's music-recording business has increased recently, in part due to a revivified Bay Area music scene, led by bands such as Green Day and Rancid. Rates are another story, as usual. "They've been the same as long as I've been here," says Lafleur.

The Plant relies heavily on long-term projects, each averaging six weeks. At press time, Metallica was locking out a completely rebuilt Studio A. Other than the physical renovation, Lafleur attributes the facility's strength to the long list of major acts that have chosen The Plant over the course of nearly 25 years, and to the studio's technical depth. And, she adds, there's the local scenery. "If you were in a band and had to choose between long-term recording in L.A. or in a place like Sausalito, which would you choose?" she asks.

Susan Skaggs, co-owner with Howard Johnston of Different Fur Recording, estimates that the studio's rates are on a par with what they were in 1978, a decade after the studio opened. Her card rate is currently $1,800 per day, with $1,500 or less usually more realistic. Still, the single-room facility has added new technology platforms to complement its SSL 4058E console over the years, including a Sonic Solutions system for CD premastering, which is rapidly becoming a value-added profit center for commercial and personal studios alike.

Different Fur's business is also mostly local and repeat, says Skaggs, fueled in part by the Bay Area's plethora of independent labels like Windham Hill and the aforementioned punk renaissance. There is also plenty of multimedia work from nearby Silicon Valley, but she'd prefer to maintain Different Fur's image as a home for music that requires acoustic space. "My experience tells me that each city is a center unto itself, like San Francisco or Seattle," observes Skaggs. "Read the credits on the back of CDs—artists like to record near their homes and families." On the other hand, the personal studio phenomenon is felt rather than seen, mainly via fewer phone calls for low-budget projects. "I used to really enjoy getting those calls," she says. Its effect is telling in the details: Instead of absorbing the cost of piano tuning for each session, as she had for years, she now charges $75 for the service.

A leading mastering house in the area has also seen static rates. George Horn, manager of the mastering department at Fantasy Studios in Berkeley, says there's been no increase in five years. The only real hike has come from the rejuvenation of vinyl product—a 21-inch lacquer master

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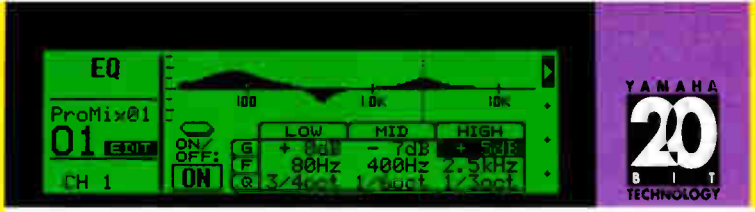

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ProMix 01 parametric eq gives you dozens of frequency centers in three overlapping bands, from a very low 32 Hz to a sparkling 18 kHz. Q is adjustable in 1/6th octave steps with low and high frequency shelf. A graphic LCD display shows the details of every move you make.

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Mixing is something like painting. Whether it's for a live audience or in the studio, equalization, or eq, is like the "palette and brushes" that let you adjust the shade and tint of each sound in your mix.

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Fundamentals and harmonics: the hues and tints of music.

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YAMAHA Smart Mixing

used to cost $40 per side; it now costs $140. "We feel squeezed," he says. "The question is, how much longer do we hold the rates where they are?"

Leo's, one of the largest pro audio dealerships in the Bay Area, started life as a music store and, like retailers across the country, evolved into a studio supply house as personal recording equipment came on the scene. "The sales base has grown phenomenally here," says sales manager Eric Sekigushi. "Even more after the ADAT price drop. We sell to larger studios, too. But I suspect that many of them are buying from mail-order." Clues like these suggest to Sekigushi that commercial studios are nervous. "It could mean the downfall of those kinds of studios," he says. "The musicians who used to work in them have ascended up the evolutionary ladder into their own MIDI-based studios."

Cutting Edge Audio Group was founded quite recently, in 1993, and as its name suggests, it came into being in response to a vast increase in personal recording activity. Co-owner Tom Richardson sees a more benign relationship between area studios of both types. "The smaller studios are getting work farmed out by the larger ones," he says. "And by selling workstations and other gear to personal studios, it leads us to the [studio] hubs for more sales." And personal studios in the area—whether in homes or offices—are increasingly fed by the multimedia business in the region, especially by content developers such as Broderbund, Electronic Arts and Sega. Still, Richardson says, large-console sales have slumped for him, with only two sold all year by November 1995, compared with a dozen the year before. "More low-cost consoles are being sold to personal and commercial studios as the budgets for all projects get lower," he says. "As a result, the traditional studio base is eroding, if it's not moving toward post. It's too dependent upon long-term clients. You can make decent-sounding records in bedrooms now. And 'decent' sound is what survives on radio anyway."

HEY, COLORADO...

Colorado had its first snowfall of this winter in October, but that wasn't the only chill felt in the thin local air. Larry Thompson used to play drums on so many records and commercials in Denver that he was put on staff at one studio for several years in the 1970s. Jingles dried up in the 1980s as most of the writing moved into personal production spaces. Electronic music hit drummers especially hard, and Thompson went on the road for a few years hoping to ride it out. It seemed promising for a moment, as guitar-driven, bluesy beer and truck commercials proliferated. But in the end, the only ones who got consistent work out of that were the guitar players.

"The musicians who were once session players [in Denver] are now in bands or out of it altogether," says Thompson, who still does both jingle and record dates. "There just aren't the same opportunities for musicians in the studio now. I haven't gotten a residual check in years." That last statement derives from the fact that in regional markets, as jingles dry up, so does the power of the A.F.M. local to support musicians. Thompson recalls when he heard a track he played on for a nonbroadcast video being used as a promo piece for a Denver network affiliate television station. He contacted the track's producer and alerted him. The station stonewalled them both—successfully. "The union was never really a player in the jingle business here," he says ruefully. "But it was even less effective once jingles began moving out of the studios. Even as far back as the '70s, synthesizers

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Alan Parsons & Stephen Court

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—Alan Parsons & Stephen Court

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were like a gun to the head. Either you worked at the rate that producers set, or you didn't work much."

"It's 90 percent commercials here, and I think that's the case in Denver in general," says Roxanne Ho, who manages the three-room Amek Mozart/Mackie facility Rocky Mountain Recorders. "We do several albums per year," says chief engineer Paul Vastola. "But the commercials are enough to keep us busy."

Another point of view, though, comes from Jim Jackson, owner of Time Capsule Recording in Denver. "We do nothing but music here, and we're turning away business," he exclaims. The single-room studio with a Tascam 3700 console and Tascam 24- and 16-track machines, has been doing a steady stream of local bands on both independent and national labels, including Island and Reprise. Jackson says business has increased at a rate of 20% per year since the studio opened in 1986 and that bookings go out two months in advance. His hourly rate of $40 for 24-track appeals to the lower independent budgets, but more importantly perhaps is that his market region is so extensive. "Try to find a studio in Nebraska, New Mexico or Wyoming," he says. "Denver may be considered the middle of nowhere, but they're coming here from a radius of 500 miles around."

Jackson adds that Denver's demographic is changing, with thousands of new residents coming in each month. The most visible increase is in post, as film studios do more production in the area and draw on local post facilities. "But we know we need to think about expanding this studio sometime next year, because all this activity is increasing the amount of music work coming to Denver. Music has big future here."

It's a long way from the days of producer/manager/impresario Jimmy Guercio's Caribou Ranch studio up in the mountains. But that facility burned itself out, literally—a fire destroyed it in the 1980s, and it has since been rebuilt as a private facility—and the Denver area overall seems to have reverted to a regional spot market. But the studios are actively reaching out to try to get some of the scattering post market, particularly ADR work, says Ho, while Jim Jackson remains buoyantly optimistic about the future of music there. And those mountains are still there, an alluring image to possibly another generation of wistful songwriters. Hopefully, ones who'll stick around and make their records there, too. ■

RICHARD BEGGS

DESIGNING AT HOME

After nearly 20 years working out of the old Kingston Trio studio in San Francisco's Columbus Tower, more popularly known as the Zoetrope building, Richard Beggs decided to come home. He had either mixed music or created sounds for some of the biggest films of the '70s and '80s, from *Apocalypse Now* to *Ghostbusters* to *Rain Man*. And although most of the film sound community associates him with directors Francis Coppola and Barry Levinson, he had reached a point in his career where he felt the time was right to bring his studio back to his home in S.F.'s Haight-Ashbury district.

"Francis hasn't done anything for about three years now, since *Dracula*," Beggs explains, "and the studio was being rented out to outside productions. It was no longer my place, and I'd lost the close personal investment in the operation. Plus, they were moving technologically in a direction different than I was—toward Digidesign and WaveFrame—and I figured that to remain competitive, I needed to have control over how I work."

The move home should by no means be construed as a severance of the relationship. Starting with *Apocalypse* (for which Beggs won an Oscar), through *One From the Heart*, *Rumblefish*, *The Cotton Club*, *Tucker* and *Godfather III*, Beggs and Coppola have been at the forefront of both innovative design work and technological advancements. They were among the first to work with automation, using a modified MCI quad board and recording moves to a separate 4-track mag dubber in the late '70s. Way back on *Apocalypse* in 1978, before SMPTE timecode, they used a primitive timing system called Minimag to interlock a 24-track on the dub stage.

But for years, Beggs has been called on to work outside Zoetrope, whether as a music mixer, as on the recent Kathryn Bigelow picture *Strange Days*, or as a sound designer, as on *A Little Princess*, the first major project out of his home. Although he claims to be conservative technologically and adheres to the motto "You use what it takes to get the job done," he admits that the recent advances in digital editing and modular digital multitracks helped make his relocation possible.

"The workstation choice for me came down to Digidesign and Sonic Solutions," Beggs says. "Each has its strong points, but I eventually went for the Sonic because of what I felt was the depth of engineering and the level of detail."

The 24x8 Sonic System (with new USP card on the way) is for editing, obviously, and for some internal mixing of effects. Much of the sound design takes place in an E-mu Systems E-IIIXP, with a Roland V50 keyboard controller and Max Optix 1.3-gigabyte MO drive. The outboard rack is relatively spare, housing a Lexicon 300, along with a Z Systems Sample Rate Converter and 8-position digital router ("a very handy device," Beggs says). The console is an Allen & Heath GS3V 32x8 with automation, and four Alesis ADATs fill up a flightcase rack. Monitoring is through Genelec 1031As.

Although many sound designers use terms like "palette" and "broad strokes" to describe their craft, Beggs is one of the few who can claim a master's in fine arts, having graduated from the California College of Arts and Crafts with a degree in painting. His canvases (many of them figurative, the larger ones more abstract, all with bold color work), fill the walls of his airy and light four-story home.

PHOTO: DAVID LEHRER

Beggs also has more than a passing interest in dance, having designed soundtracks (music and effects) for a couple of Bay Area troupes. He has designed, recorded and mixed three commissioned works for the internationally renowned Oakland Ballet, including *Our Town* (Charles Ives music, deconstructed by Beggs), and is in negotiations on a version of *The Secret Garden*.

Moving home has been a positive experience, Beggs says, for both comfort and the sense of independence. He generally works on about two pictures a year, along with the outside interests. Tentatively scheduled for 1996 is the new Barry Levinson film, *Sleepers*, an Alex Cox picture called *Waldo's Hawaiian Holiday* and sound design for Francis Coppola's return with *Jack*. And as an editorial postscript, it's too bad more people didn't see and hear *A Little Princess*; it's a wonderful track. ■

BY TOM KENNY

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SOUNDCHECK

AES: LIVE FROM NEW YORK

Few companies at the New York AES convention were showing truly innovative products for sound reinforcement; perhaps they were saving them for NAMM in January or NSCA in May. However, there were new and improved versions of many models that you may have been waiting to buy. Here are items of interest from 30 manufacturers that should keep SR pros up-to-date.

The quest for the live, resettable console of the future continues, with **Soundcraft** debuting the Broadway, a gleaming control surface that, using an "AES-24-like" protocol (don't get me going on this issue), communicates digitally with an analog "console-in-a-rack," similar to the Tactile Technologies con-

Mackie's 1202 VLZ odds all-balanced I/O, 3-band EQ and ten other upgrades to its top selling MS 1202.

QSC/Stage-Tec Cantus console

cept. **QSC** broke its "amps-only" image, and as a result of its alliance with German company Stage-Tec, is now offering The Cantus all-digital automated console. This combination assignable control surface and computer screen has a six-rackspace, 64-channel processor with 40-bit processing of 24-bit audio samples, expandable to 480 channels! Pricing on both consoles falls in the "If you have to ask..." category. Inquiring audio engineers could have spent an entire day in the QSC booth. Their "New Products &..." newsletter tells the story.

The most intriguing product at AES was the **Virtual Mixing Co.**'s 3-D visual display and control. The "Nintendo generation" won't be mixing on a control surface at all, but simply waving their hands in the air, while wearing VR gloves and goggles.

Mackie (Woodinville, Wash.) unveiled the 1202 VLZ ($429), the improved version of its renowned "Swiss Army Knife" mixer. New features borrowed from more expensive Mackies include Mid EQ for 3-band equalization, "Mute/Alt 3-4" switching, and 18dB-per-octave HPFs on the four mic inputs, which now have 60 dB of gain. There is a Control Room send with level control, and PFL Solo switches on each channel along with the now infamous "Rude Solo LED." There are balanced XLR main outs, with a 30dB switch for connecting to mic inputs. In fact, all ins and outs, except the RCAs, are balanced. Also shown was a 32-channel version of the new Mackie SR board ($2,299) featured in the October '95 *Mix*.

Aphex (Sun Valley, Calif.) unveiled a new version of its Expressor compressor/limiter ($749), model number 661, with Tubessence. This patented tube-hybrid circuit was first employed in the company's ST-107 tube mic-pre, which won the IEC Award for ancillary equipment. The new Expressor offers a choice of three compression curves: traditional hard- or soft-knee, and the

—CONTINUED ON PAGE 116

Soundcraft Broadway digitally controlled analog console

BY MARK FRINK

TOUR PROFILE: DAVID BOWIE & NINE INCH NAILS

PAIRING UP ON THE ROAD

David Bowie toured the U.S. last fall to support his newest album and Virgin Records debut *Outside*, the first collaboration between Bowie and producer Brian Eno since the '70s experimental releases *Low*, *Heroes* and *Lodger*. For the tour, which offered a complete musical departure from his commercial successes in the past, Bowie was joined by industrial rockers Nine Inch Nails, who after a one-hour set, combined forces with Bowie and his band in a unique transition set midshow. The six-week tour kicked off on September 14 in Hartford, Conn., and ended with a Halloween bash in Los Angeles.

Reznor and Bowie onstage at the Shoreline Amphitheater, Mountain View, Calif.

PHOTOS: STEVE JENNINGS

Bowie FOH engineer Steve Guest (L), and NIN FOH engineer Sean Beavan

Tour production and system design decisions were made by Peter Schwartz, music director and keyboardist for David Bowie. His biggest musical challenge was preserving the sonic concepts of the album; on the technical level, that meant deciding what to pre-sample and what to play live. Pre-production began in July and involved "sampling gobs and gobs of complex, heavily processed synth and guitar sounds, vocal effects, sound that couldn't possibly be re-created, or that you'd even want to re-create," says Schwartz. "I wanted to have a lot of original source material, especially for the ambient and rhythm loops, that really characterizes the music; stuff that would be impossible to synthesize, and if you tried to approximate it, it wouldn't replicate the vibe of the album truly." Schwartz also wanted to create a "musical backdrop" of ambient and rhythmic loops over which Bowie's band would play live.

What that translated into was more than 280 megabytes of samples. Schwartz decided to sample rather than record material to hard disk, for greater reliability on the road. The samples and additional synthesizers are sequenced using Vision software, running on a PowerBook 165 offstage. Onstage is a trackball and remote monitor and keyboard where Schwartz begins each song by hitting a letter—"S" for "Spaceboy," "H" for "Heart's Filthy Lesson," etc. Two Studio 5 interfaces route MIDI commands to samplers and Schwartz's live rig, which includes M1-Rs, a WaveStation keyboard, a K2000 and his prototype Prophecy synthesizer. The acts hit the road with P.A. equipment contracted by Electrotec, and additional equipment and sound provided by Maryland Sound.

After an opening set by Prick, Nine Inch Nails, led by singer Trent Reznor, emerged onstage. FOH mixing was handled by Sean Beavan, who has been working with the Nails since before they were signed. Beavan mixed on a 56-input Amek/Langley Recall desk, which he also

—CONTINUED ON PAGE 124

BY SARAH JONES

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THE FAMILY DOG RETURNS TO S.F.

Years ago, some now-nameless sage, when asked to define the "San Francisco Sound" of the late '60s, replied that it was really the feel of the ballrooms where the music occurred. There were passing similarities between the Dead, the Airplane, Quicksilver and Big Brother—loud guitars, long solos and a grounding in blues and folk—but their differences were more acute, and the Dead and the Airplane especially reveled in their eclecticism. But the ballrooms and auditoriums where the bands played had a unified feel because of the incredible open-minded spirit of the crowds who populated them, the devotion and creativity of light show and poster artists, and the desire on the part of the main promoters of the day—Bill Graham and Chet Helms—to make the concert experience as mind-blowing as possible. Helms, in particular, was in it to promote good times and good vibes, and the dances he and his organization, called the Family Dog, put on at the old Avalon Ballroom (on Van Ness Avenue) and later, at The Family Dog at the Great Highway (right off Ocean Beach) are fondly remembered both for the great music they presented and the familial feeling inside the venues.

PHOTO: JAY BLAKESBERG

Boots Hughston (L) and FOH mixer Dave Dennison

Helms has kept a fairly low profile since the Great Highway hall shut its doors a quarter-century ago. He emerged in the late '70s to put on two eclectic Tribal Stomp festivals—one successful show at Berkeley's Greek Theatre and a disastrous weekend at the Monterey Fairgrounds the following year. But he has largely devoted himself to running a San Francisco art gallery called Atelier Dore. He's also had his share of health problems, and last year some friends of his, including one of his longtime associates, Boots Hughston (former sax player for the HooDoo Rhythm Devils and a concert producer for many years) put on a benefit for Helms at the old Maritime Union Hall, in the shadow of the Bay Bridge. The dance was a roaring success, and it gave Boots the idea of putting on more shows there. Helms liked the idea, gave his blessing to using the Family Dog name again, and agreed to serve as an executive consultant for Boots' new Family Dog.

In late October, 30 years after the first Family Dog dance, Maritime Hall was filled to the rafters with dancing bodies, and the Brotherhood of Light splashed undulating psychedelic images on the walls and ceiling as the opening party stretched into the wee hours of the morning. What can you say about an evening where both "In-A-Gadda-Da-Vida" and "Whipping Post" were performed by their original artists? Well, the S.F. scene was known for its excesses, too. (Iron Butterfly seemed like a dull '60s cover band during their set, but Greg Allman and his solo band were amazing, reworking Allman Brothers favorites and dipping deep into the blues bag. Also on the bill were local favorites Zero, who had their most recent album picked up by A&M.)

Converting the union hall into a concert venue was an expensive and time-consuming process, but Boots had some of the top audio minds in the Bay Area helping out, and the results are impressive indeed. John Meyer of Meyer Sound Labs and Bay Area engineer Tom Flye were the first part of the team to check out the venue, and what they found was an incredibly live room: The hall has a capacity of about 2,300, with about 400 fixed wooden seats in the balcony and an open wood floor downstairs. (Boots says that some shows will also have seats on the floor.) It has hard painted plaster walls and a ceiling that slopes gently at the back. Before any acoustical work was done to the room, the decay time was six seconds in places, a potential nightmare for sound mixers.

Meyer returned to the hall shortly after his initial visit, this time with Ultra Sound's Don Pearson and engineer/live mixer Dave Dennison in tow. Between them, and aided by Meyer Sound associates Pete Soper, Jamie Anderson and Bob McCarthy, they devised some simple solutions to most of the acoustic problems and designed a top-flight sound system for the room.

Three days before the first Family Dog show, Dennison, who has worked as David Grisman's live and studio engineer for the past several years, gave me a tour of the hall, which was still very much under construction, and outlined some of the components of the sound system. "It's been great having Meyer and Pearson so involved," Dennison said. "John really wants it to sound great because he wants to use [the hall] for demo purposes. And Pearson was really instrumental in the wiring design; he was a very important part of the team." Dennison says the hanging stacks of the all-Meyer system consist of two MSL-4s on top of three TSW subwoofers, which are above two more MSL-4s and a single TSW. Beneath that array are two MSL-2s for downfill. The hanging center vocal fill comes from a single UPA2C. At stage level on each side are a pair 650P powered subwoofers and stage sidefills are MTS-4s, which Dennison says "are a new design of four-way powered speakers. The four-ways are an 18 and a 15 and 12 for the horn, and each has a separate amplifier; and it's self-powered: you plug it in with a twist lock

BY BLAIR JACKSON

and an input jack, and it chooses voltage from 90 to 240, so whatever you put into it, it's going to read. I took a beta version out on a Gyuto Monks tour earlier this year, and it was great." Monitor speakers include six USM "Stealth Monitors" and four UMs.

The main console, which sits at the front of the balcony, is a 40 into 8 into 4 model from ATL (Acoustic Technical Laboratory), a Japanese company that distributes Meyer products in Japan. ATL made several modifications to the layout of the board at the suggestion of MSL engineers, and Dennison professes to be more than satisfied with its performance—he previously used it on the Monks tour, too. The monitor board, which for the first show was manned by Pete Soper, is also an ATL. (Subsequently, Glenn Carrier and former Grateful Dead monitor engineer Harry Popick have worked the monitor board. Assisting Dennison at the FOH has been Michael Healy, the talented son of former Grateful Dead mixer Dan Healy.) Dennison was still in the process of nailing down his signal processing equipment when we spoke, but his arsenal already included Ashly EQs, Aphex compressors and gates, and a Yamaha SPX900 reverb. "I also have a TT patchbay for anybody who wants to come in with their own stuff," Dennison notes.

The Family Dog folks didn't do any serious structural work on the room, but they managed to deaden it somewhat by putting 30-foot light show/video screens on each of the side walls, backed by Fiberglas, and draping the front of the balcony and the balcony's rear wall with absorbent red curtain fabric, which also conceals more Fiberglas. A complete SIM system was installed shortly before the first show to "tune" the room, and it will remain in place indefinitely—in fact, Meyer has already held SIM classes there.

The existing stage was extended and built to include a narrow pit for video camera operators. Because there was no elevator in the building and the ballroom is on the third floor, the Family Dog paid to have a construction elevator attached to the outside of the structure. On a cosmetic level, the inside of the hall was spruced up considerably, and the Family Dog even bought new couches and other furniture for the downstairs hiring hall, which during the concert, was transformed into a sort of hippie bazaar, with T-shirt vendors and the like.

Boots says that when the Family Dog is in full swing, they hope to put on a few shows each month at the Maritime Hall, and when it's not hosting concerts, it reverts back to its real function—a gathering place for sailors. It might seem like a financially risky proposition, but Boots and his team sound like they're committed to making it work. And the huge opening night crowd certainly appeared to be happy with this admitted throwback to an earlier era. "I know that some people are going to be cynical about all this," Boots says, "and to them I say, 'Just watch. See what we do.'" If any cynics went opening night, they would have seen some of that old S.F. magic in action. ■

CHOICE EFFECTS OF TOURING ENGINEERS

Mix recently asked several live sound engineers to list their preferences for digital effects. Here's how they answered.

Robert "Cubby" Cully
(Phil Collins)
1. Lexicon PCM80 "Still finding new presets"
2. TC Electronics 2290 delay
3. Two-machine Lexicon 480 with V. 4.0
4. "Vocal Plate" and "Hall" presets for snares
5. Eventide H3000
6. AMS 1580 pitch change and chorus
7. AMS RMX16 reverb
8. Any Yamaha SPX device

Dave Kob
(Page & Plant, Chuck Peters, Mary Chapin Carpenter)
1. Lexicon PCM80 "Vocal Plate"
2. Lexicon PCM80 "ChorusToRvb"
3. Yamaha SPX990 "Wood Room"
4. Yamaha SPX990 "Vocal Plate"
5. Yamaha SPX990 "Wet Chorus"
6. "Roland 201 is an old favorite"

Jody Perpick (Bryan Adams)
1. Lexicon 480
2. TC Electronic M5000
3. Lexicon LXP-15
4. Loft "Flanger"

Trip Khalaf (Steely Dan)
1. Lexicon 300
2. Eventide H3500
3. Lexicon PCM80
4. Lexicon 480

Dan Heins (Garth Brooks)
1. TC Electronic M5000
2. Lexicon PCM80
3. Roland SDE-3000

Chuck Peters (Mary Chapin Carpenter)
1. Lexicon PCM80
2. Yamaha SPX990
3. "Roland 201 is an old favorite"

David Kuhn (Natalie Cole)
1. TC Electronic M5000
2. Yamaha SPX990
3. Lexicon PCM80
4. Roland SDE-330

Jim Yakabuski (Van Halen)
1. TC Electronic M5000
2. TC Electronic 2290
3. Yamaha SPX990

Grant McAree (k.d. lang)
1. TC Electronic M5000
2. Eventide H3000
3. Lexicon PCM70
4. Roland SDE-3000

Kevin Pruce (Bjork)
1. Lexicon PCM80
2. Lexicon PCM70
3. Yamaha SPX990
4. Roland SDE-3000

—FROM PAGE 112, AES: LIVE FROM NEW YORK

Easyrider" variable-ratio compression found in the ST-106 quad compressor. The patented HFX high-frequency expander opens up the highs by expanding above an adjustable crossover point. Also new from Aphex is the ST-108 ($349), a 2-channel version of the ST-106.

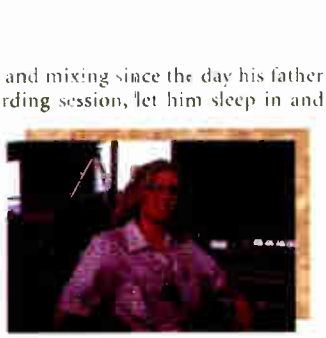
TC Electronic (Westlake Village, Calif.) announced a free software upgrade for the M5000 Digital Audio Mainframe. Version 2.0 increases the processing speed of critical parts of the reverb calculation by up to four times, attains greater density in the early part of the decay and produces a smoother "tail." Other enhancements are included, and it automatically ships to regis-

"I have a responsibility to every single person in that audience, to deliver the best sound they can possibly get."

Monty Lee Wilkes, FOH Engineer for Live
Talks about the mix, the music and the right equipment.

VIRTUAL ARRAY TECHNOLOGY | *world touring standard*

Monty has been focused on engineering and mixing since the day his father brought him along to an all-night recording session, let him sleep in and miss an algebra test the next day, and a week later dragged him into the high school principal's office *to tell the principal off* for refusing to credit Monty for a make-up test. His mastery of both the basics and the fine points of the craft has earned him the FOH spot with Live – and universal applause for the sound of the band's sold-out summer '95 tour.



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LEARNING THE CRAFT. I think the school of har knocks is the best school you can go to. That's when you get real world experience. Hooking up with band when they're young is good. Working for a soun company is a really good way to grow both technicall and emotionally. Being a system tech teaches you ho to troubleshoot, how to fix things fast when th pressure's on. Those sink or swim situations go a lon way to seasoning you, teaching you how to keep you head when all those around you are losing theirs.

CHOOSING A LOUDSPEAKER SYSTEM. I look fo well-defined midrange. Tight low end with a lot o impact – I like low end a lot. Consistency and coverag how it sounds going from a gymnasium to a theate How it roads, how it loads, how it stacks, how it flies. The Stadium Array System's midrange sounds s good, I'd wind up taking out far less frequencies o my room EQ than I would with other rigs. What th leads to is better definition everywhere – mor intelligible vocals, guitar solos that tend to stand ou quite nicely without tearing your face off. It doesn have to be just screaming over the top loud to hav impact and definition.

DELIVERING. The object is not just to have a pile o speakers roaring away. The object is to make sure tha sound gets to every seat, because the ticket buyer pay all of our salaries. When Live first hired me, w went into rooms as small as 600 seats. By the end w were playing rooms as large as 30,000 seats. I go t every section, I listen in just about every seat. I hav a responsibility to every single person in tha audience, to deliver the best sound they can possibl get. With the KF853's, we found ourselves gettin crystal clear vocals all the way up to the last row i the last balcony. Outdoors, Hershey Stadium, fo example, we nailed every single seat – all the way u to the far corners of the bleachers. It was excellent.

BACK TO BASICS. I'm very fortunate – I have pret much 100% creative freedom with Live. We use a lot effects. It's nice to have a lot of things in small quantities don't want the effects to be overbearing. They are there embellish, to help you paint your picture, not to be th show. It's fun sometimes to get rid of all your effect Right in the middle of production rehearsals, the ban decided to do a show at the Chameleon, a little tiny clu in Lancaster, Pennsylvania that they kind of cut the teeth in. I walked away from my 96 channels of all kind of crap to a 16 channel board, one delay and one r verb and said "Game on. Let's go, boys." It's nice to hav all the toys in the world, particularly when there's problem you need to fix. But that's not what makes breaks a mix.

For a complete transcript of our talk with Monty Lee Wilkes, and for more information on Virtual Array® Technology and the Stadium Array Series, contact EAW today.

tered owners. TC also announced a new 20-bit A-to-D and D-to-A converter card for the M5000, the ADA-2 ($1,229). Current owners can upgrade their machines ($409) by sending in their ADA-1 cards to TC.

BSS (Northridge, Calif.) was showing Version II of the DPR-901 dynamic equalizer ($1,549). A "split band" switch allows the 4-band device to be used as two 2-band devices. Sidechain monitoring allows engineers to listen to the sidechain filter. In other news, the Varicurve FPC-900 remote controller can now control delay times, band gains and mutes on the Omnidrive's outputs. Also at the booth was the FCS-916 mic pre/parametric EQ ($999). Its features include sweepable highpass and lowpass filters, four bands of parametric EQ, phantom power and 5-segment LED metering.

dbx (Sandy, Utah) unveiled its new 1066 compressor/limiter/expander ($549), a pro version of the infamous 166, based around the new "V2" VCA used in the 4-channel 1046 compressor. The back has both XLR and ¼-inch ins/outs, with selectable -10/+4 levels. Dual ¼-inch jacks allow send and return of the input to a sidechain processor without "Y" adapters. The compressor has defeatable OverEasy™ and an "auto" switch for program-dependent attack and release, which can also be adjusted manually. All front panel switches are backlit and colored; this is an attractive-looking piece.

dbx 1066 compressor/limiter/gate

Crane Song Ltd.'s (Superior, Wis.) STC-8 ($3,200) is a discrete, Class A stereo compressor and peak limiter that provides musically transparent gain control and is capable of emulating vintage equipment. An enhancement circuit creates "analog and tube-like" warmth. Four groups of optimized presets allow fast, easy setup on a variety of sounds. It can use program-dependent release and dynamic attack modification, as well as variable manual settings. Ex-Summit engineer Dave Hill has also created a very attractive front panel for this high-performance, next-generation comp/limiter.

Crane Song STC-8

Lexicon (Waltham, Mass.) has released the Dual Algorithm FX Card ($250), a PCMCIA card for the slot on the PCM80 that adds 250 new presets, using 25 new algorithms. Stereo reverb in series with stereo effects, reverb and effects in parallel, dual-mono in and stereo out and independent processing of the two channels are just some of the examples.

Eventide (Little Ferry, N.J.) won a TEC Award for its DSP-4000 Ultra-Harmonizer® a year ago. This year, it released Version 2 software, with an easier-to-use patch editor. It has more than 500 presets, loads 30% faster and includes 40 new effects modules.

Alesis (Los Angeles) released Version 2 software for its QuadraVerb II ($799), and owners can upgrade for $30. Dozens of new effects include sampling, hard and soft overdrive, triggered panning, phase inverter, triggered flange and a new stereo Leslie effect. Individual modules of multieffects can be bypassed. 100 user memories have been added, for a total of 300 programs.

Yamaha (Buena Park, Calif.), which won two 1995 TEC Awards for its PM3500 console and 02R digital mixer, had a crowd in its demo room to see the 02R. A last-minute addition, the ProR3, is a two-rackspace stereo reverb so new that the company didn't have pricing, even by press time. Looking a lot like a REV5, including the 3-band front panel EQ, it has stereo inputs and outputs on XLR and ¼-inch jacks. Using third-generation LSI DSP technology, it provides 20-bit linear A-D/D-A and 32-bit internal processing. It has 99 presets, plus 99 user memories.

Klark-Teknik (Mark IV Audio, Buchanan, Mich.) was showing the new DN-6000 Audio Analyser ($4,420), which performs both ⅓- and 1/12-octave real-time analysis. Recommended mics

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(not included) for greater accuracy are the KT 6051 and the B&K 4006. It has dual line-level inputs for stereo ⅓-octave analysis, with sum and difference display options. Its 32 memory settings can accumulate or overwrite. It has a connection for auto-EQ with the DN-3600 programable equalizer, plus a printer port. In Time mode, it can also perform RT60 (reverberation time) of up to 30 seconds, and L_{eq} (equivalent SPL) and L_{ed} (equivalent sound dose), with up to 180 measurements of up to one hour.

Sabine (Gainesville, Fla.) unveiled the ADF-2402 ($2,628), an improved version of the powerful ADF-2400. Filters can now be graphically moved from their displayed response curves. The RTA is quicker, with selectable peak-and-hold, and can generate pink noise. Sabine's famous FBX anti-feedback filters are set more quickly, due to a faster processor, and it has a brighter LCD screen. You can now zoom in on the display to look more closely at the curves. It also ships with Windows-based control software.

XTA Electronics (Farmingdale, N.Y.) was showing its new single-space DP-200 2-input, 4-output digital equalizer ($2,800). Each output has 8-band parametric equalization with -25dB to +15dB adjustment, ⅓-octave frequency centers and adjustable Q from 0.5 to 64. Two filters can be made shelving. In dual mode, there are 16 EQ filters for two outputs. It has up to 682 msec of delay, in 22-microsecond increments. Its dynamic range is greater than 103 dB, and it has 40 memory locations. Also available is the DP-202 ($2,000), a 2-in, 2-out device with eight filters per channel. Both can be controlled externally by XTA's AudioCore Windows software.

Rane (Mukilteo, Wash.) has a new computer-controlled EQ, the 2-channel, ⅓-octave RPE 228 ($1,249). Windows-compatible software ships with the unit, which has only "software" knobs and sliders. Besides 28 graphic filters, it has highpass and lowpass filters and input and output gain. A hardwire bypass engages when it loses power. Eight of 16 nonvolatile memories are selectable from contact closures on "Phoenix-style" terminal blocks on the rear.

White Instuments (Austin, Texas) presented its new DSP-5024 ($3,600), a multifunction signal processor. It can act as a crossover, delay, has 35 parametric EQ filters and an analog limiter, and is available in a Crown IQ-compatible version.

mounts molded into all four sides. Behind the front grille is a recessed, three-stage moisture and particle barrier, allowing the speakers to be used with confidence in hostile environments. The rotationally molded enclosures are made of recycled materials and are available in a wide variety of scratch-proof colors. Call for a wacky video that shows how indestructible they are.

Technomad WeatherTech loudspeaker

Expect more news coming out of this month's Winter NAMM, to be held January 18-21 in Anaheim, Calif. And don't forget about the Live Sound Workshop that takes place in the days before the show. See you there! ■

Mark Frink is Mix's sound reinforcement editor.

—FROM PAGE 113, DAVID BOWIE

used to automate mutes and MIDI effects; outboard gear included an Eventide H3000, a 3500 and Roland 330 echoes. During the transition set, when Bowie and his band joined Nine Inch Nails for a half-hour of combined Bowie/NIN tunes, Beavan was joined by Steve Guest, who began working with David Bowie during the *Sound+Vision* tour and now serves as his main FOH engineer. Guest mixed on a Yamaha PM4000, with an arsenal of effects that included a Summit tube compressor, a CP10, H3000, SPX900 and 990, Roland SDE-330, dbx 120X subharmonic synth and an old Electro Harmonix stomp box Frequency Analyzer (which is actually a ring modulator). The idea of mixing two acts simultaneously, by two engineers, had the potential for problems, but Guest and Beavan cooperated from the start, determining points where each would direct. "We communicated instantly on the audio level, in speaking about mixing and everything; we spoke the same language," says Guest. "The fact that we did work well together made the whole experience a lot more pleasurable." Beavan agrees. "I think we both approached it with the idea of just making the show great. Egos were never a part of it."

Meanwhile, monitor mixing was managed by Nine Inch Nails engineer Kurt Springer and Bowie engineer Mike Prowda. Springer used a 56-input Midas console for mixing NIN's stage monitors, while Prowda mixed on a PM4000. Like the FOH engineers, the monitor mixers had the challenge of mixing together during the transition; they had the added task of working simultaneously with NIN's wedge monitors and the Bowie band's in-ear monitors (TE6000s). Since only one band used stage monitors, there was significantly less clutter onstage and less bleed-through in the mics; however due to the difference in stage volume between the Nails and Bowie's band, some of the Bowie mix needed to be fed into NIN's monitors during the transition period, and the Nails mix in turn would sometimes feedback into the Bowie mics.

Instrumentation varied throughout the combined set. First Bowie joined the Nails, for a version of Bowie's "Scary Monsters." On the next tune, Bowie's guitarist, Carlos Alomar, joined in. The third song again featured Bowie and NIN; then Bowie's entire group entered for the fourth

song. And for the final song in the set, only Trent Reznor remained with Bowie and his band; during that song, equipment was being moved offstage. Reznor then exited, leaving Bowie and his musicians to continue with their set, which was based mostly on material from the theatrical *Outside* album, with a few early songs and two or three hits scattered here and there.

The mixing of this set was straightforward, no surprises, reflecting the stripped-down visual show. Effects included a PCM70 and 224XL on vocals, SPX990 and Aphex 612 gates on drums, Drawmer 241 compressors and a Summit TLA100 tube compressor (on vocals for Bowie who, like Reznor, sings into a Beta 58).

Overall, concert production presented many engineering as well as artistic challenges. Nevertheless, the mixers, along with the FOH engineers, production team and performers worked together and pulled the show off. "There was no animosity, no weirdness," says Prowda. "Everybody had a very positive, professional attitude." ■

Sarah Jones is Mix*'s editorial assistant.*

STAGE MONITORS

CHOOSING A SYSTEM

One unique aspect of the Bowie/Nine Inch Nails tour was the fact that NIN chose stage monitors, while David Bowie's band used in-ear monitors. Reasons for their decisions varied, but the most significant issues were choosing between a more detailed mix and reduced hearing damage vs. the excitement of powerful stage volume and direct feedback from the crowd.

Bowie monitor mixer Mike Prowda has been working with in-ear monitors since 1991 and was asked to bring his experience to the Bowie tour. Often, when he introduces in-ear monitors to the musicians, "there's a bit of resistance," which he attributes to humans being creatures of habit, "and then as the tour progresses, they'll start running up to me—'Where are my ear monitors?'—it's like I've seen this turnaround. So there's an adjustment period. But there's other stuff you gain. So you might lose a little of that crowd feel, but then you gain detail and articulation—if that's what you're looking for."

Then, there's the volume issue. When presented with the in-ear monitors, music director Peter Schwartz was "very skeptical at first, but so far, so good. It's tough—do I want to feel air blowing and listen at a loud volume, or do I want to have a sound that's maybe less exciting to listen to but that I can control the volume of—it's a real trade-off."

For Nine Inch Nails, the excitement their hard-edged show generates is synergistic; for them, the performance intensity fed by direct crowd interaction and loud stage volume outweighs the benefits in-ear monitoring provides. "That's the main thing for the guys, just that immediacy of hearing the crowd, and not hearing it through a microphone, but hearing it through your own ears," says NIN FOH Sean Beavan. "And that's what an NIN show is all about; the energy, that catharsis for the kids. Everybody enjoys meeting the darker side of their soul." ■

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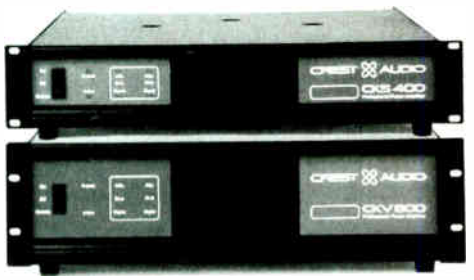

CREST CKS AND CKV SERIES

The CKS and CKV Series from Crest Audio (Paramus, NJ) are designed specifically for sound contractors. The six-model CKS Series, ideal for low-impedance applications, ranges from 50 to 1,400 watts RMS per channel; the CKV Series is designed for high-impedance (constant-voltage) systems and includes seven models, from 50 to 1,200 WRMS per channel at 70.7 volts. The amplifiers are part of Crest's Power Processing System, which expands the amplifier's functionality by including signal processing, network and load-monitoring functions.

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EV R-SERIES WIRELESS MIC SYSTEMS

New from Electro-Voice (Buchanan, MI) are the R-Series wireless microphone and instrument systems. Configurations include handheld, lavalier, headset and instrument cable transmitters, paired with diversity or nondiversity receivers. The handheld version includes EV's new N/D157B element, which uses a proprietary neodymium technology; separate on/off and mute switches reduce the possibility of accidental interruption during use. The lavalier features an omnidirectional condenser, and the headset features a high-output unidirectional condenser. All three bodypack transmitters provide a two-color LED readout and oversized on/mute/off switch. The receivers are housed in a metal chassis to reduce RF interference and contain 2-to-1 companding circuitry to reduce noise and extend dynamic range.

Circle 213 on Reader Service Card

PRODUCTION SERVICES LS2

The LS2 system from Production Services (Middlesbrough, UK) is part of the Laboratory Series of sound reinforcement products. A compact, two-box "arena system," the LS2 handles over 3 kilowatts RMS, 6 kilowatts program power, and SPLs in excess of 135 dB. The four-way system consists of two 18-inch subs, two 15-inch drivers, two 10-inch drivers and a 2-inch exit compression driver. The enclosures are birch plywood with internal bracing; each cabinet is supplied with a removable-wheel pallet that fits into the front of the cabinet when not in use.

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MASQUE SOUND CA-100 CABLE TESTER

Masque Sound and Recording Corp. (Moonachie, NJ) offers the CA-100 battery-powered continuity tester for two- and three-conductor audio cables, with a 21-LED array that displays wiring configuration of cables and adapters. The CA-100 tests 3-pin XLR, ¼inch TRS, RCA, TT, banana and MIDI cable configurations. The unit is powered by three C-type batteries, with an auto power-off function.

Circle 215 on Reader Service Card

FENDER MX SERIES

Fender (Scottsdale, AZ) offers the MX-5200 Series consoles, available in 16-, 24- or 32-input configurations, each with four submasters, stereo main masters and mono sum outputs, with six sends (two stage monitor and four auxiliary). An open-ended architecture allows custom configuration. Other features include a high-powered headphone amplifier, two 2-band fully parametric EQs and sweepable 12dB/octave high-pass and lowpass filters.

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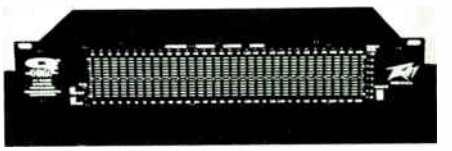


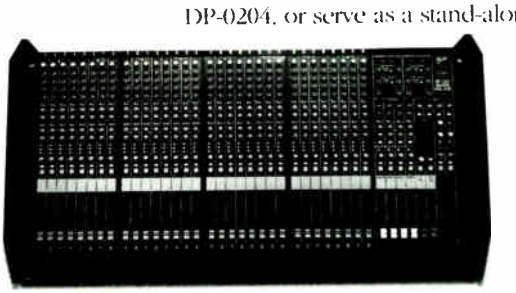
PEAVEY 31-BAND GRAPHIC EQ

The Q™ 431 from Peavey Electronics (Meridian, MS) is a two-rackspace, 31-band mono ⅓-octave graphic equalizer for live sound and studio applications. Features include constant-Q filtering, which ensures discrete band-level adjustments; a lowcut filter with LED; a bypass switch with LED; and independent overall gain control. The unit is housed in a rugged, all-metal chassis with a sturdily mounted circuit board and easily serviceable components.

Circle 217 on Reader Service Card

TOA DACSYS II

TOA (South San Francisco, CA) introduces the DACsys II line of software-based audio control products. The line includes digital processing units and a matrix/mixer, compatible with Macintosh or PC. The DP-0204 is a 2-in, 4-out single-rack processor, with controls that include filtering (all- and bandpass, notch and crossover), signal delay, polarity reversal, compression/limiting and EQ (parametric, or ⅔- or ⅓-octave graphic) functions. The unit is equipped with both AES/EBU and analog inputs and outputs; A/D converters are 20-bit. Up to 16 presets can be programmed, stored and edited via the PC interface. The DP-0202 offers two outputs; the companion DX-0808 matrix/mixer (which also can be computer-controlled) combines, splits, routes and attenuates incoming signals; it can be combined with the DP-0202 or DP-0204, or serve as a stand-alone unit.



New Sound Reinforcement Products

TECHNOMAD WEATHERTECH LOUDSPEAKERS

Technomad Inc. (Petaluma, CA) announces its new WeatherTech™ line of high-performance, weather- and water-resistant loudspeakers. Combining military road case technology with acoustic innovations, Technomad has designed cabinets that are impact-, UV light-, fire- and shotgun-blast resistant; splinter-proof; and watertight when the protective lid is attached. Acoustic components include ferrofluid Radian high-frequency and midrange drivers, with EV DL15X and X150-A bass drivers. Speakers lock together when stacked and are available in a variety of custom colors; other options include precision-contour EQ systems, fully-recessed grip handles, D-ring flypoints and a weather-resistant, full-face grille.

Circle 218 on Reader Service Card

EAW MX8000

Now shipping is the MX8000 Close Coupled Network Processor from Eastern Acoustic Works (Whitinsville, MA). The MX8000 is the first in a new generation of EAW speaker processors that integrates analog and digital processing, under networkable digital control. Functions include peak and RMS limiters, phase compensation and parametric EQ on each frequency band, subwoofer excursion control, HF EQ and a four-way active crossover using EAW's system-coupled asymmetrical fourth-order filters. A digital delay on each frequency band has ultra-fine 5.208 microsecond adjustments to allow driver time-alignment, and a maximum delay of 384 milliseconds for system synchronization. A remote control allows operation from PCs.

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JBL DSC280 LOUDSPEAKER CONTROLLER

The JBL (Northridge, CA) DSC280 digital loudspeaker system controller provides DSP functions for speaker control, including crossover, EQ and time alignment. The DSC280 is designed to provide two-way, three-way and four-way active crossover capability, configured as independent highpass and lowpass filters with programmable Bessel, Butterworth or Linkwitz-Riley response and 12dB, 18dB or 24dB/octave slope. Two fully adjustable parametric EQs each offer bell-shaped, low-shelving or high-shelving response curves and have a range of 15 to 16k Hz. The onboard digital delay is adjustable in 11-microsecond increments, up to 650 ms. A front panel display allows editing of all parameters, as well as management of 60 user-programmable memory locations; the DSC280 is remote-controllable via MIDI commands.

YORKVILLE ELITE POWERED SUBWOOFER

The élite EPW is an active subwoofer system from Yorkville (Niagara Falls, NY). The high-output system has a built-in 700-watt amplifier driving two 350W, 10-inch cast-frame transducers; maximum SPL is 131 dB. Speaker and line-level inputs and adjustable-Q low-frequency profile control match the subwoofer to any full-range system. The enclosure is constructed of ¾-inch poplar plywood with internal bracing, with a built-in stand adapter and courtesy jacks for satellite speakers. List is $1,079.

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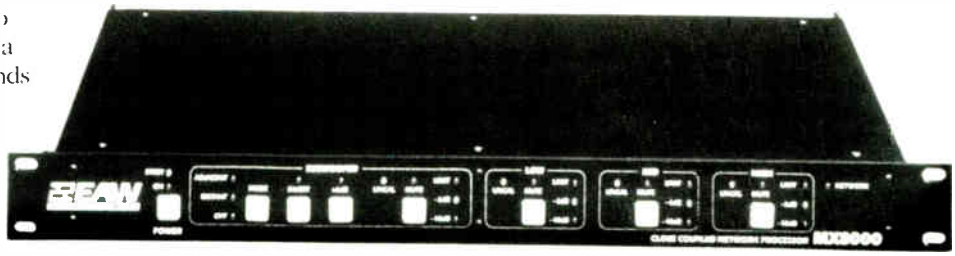
BEYERDYNAMIC U 600 UHF SYSTEM

The U 600 from Beyerdynamic (Farmingdale, NY) is the newest in a line of UHF radio systems. A half-rackspace, synthesized true-diversity unit, the system can operate up to four banks of 16 frequencies each per TV channel. The "grip" tone signaling system locks channels exclusively to the associated transmitter, limiting interference; the transmitter's LCD screen displays both receiver and transmitter parameters. Also available is a Windows interface that allows control and monitoring of up to 16 mic channels simultaneously, with a subdisplay monitoring RF power against time, enabling the user to determine optimal antenna positions. The TS 600 bodypack transmitter has 16 switchable frequencies, with an LCD screen for channel identification. A 9V battery provides approximately 12 hours of operating time.

Circle 221 on Reader Service Card



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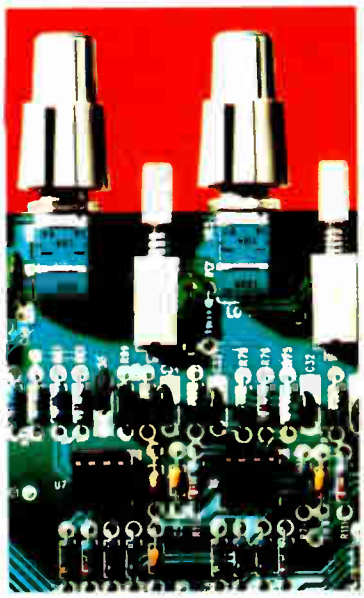

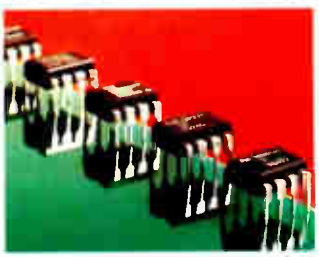

CREST CONSOLES Breaking sound barriers

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Shure Beta 87

HANDHELD VOCAL MICS

Making the Right Choice

Whether in rock, rap, country, R&B, folk or blues, vocals are usually the most critical aspect of any live concert performance, yet the time that many performers (and engineers) spend evaluating and selecting mics is virtually zero. If the guitar player spends $2,500 on a vintage Strat and the keys setup costs $10,000, then why is the vocalist settling for a $99 mic? Additionally, handheld vocal mics differ widely from studio mics by imposing performance requirements beyond "the right sound." These criteria range from feedback rejection and resistance to road abuse/moisture/sweat, to handling noise and having an unobtrusive finish for on-camera or stage applications. So the selection process for these mics becomes more involved than a mere listening test.

Audix OM5

To complicate the issue, seemingly simple factors—such as polar response—become important considerations in live performance when comparing the need for a "tight" cardioid image (for isolation from loud on-stage sources) vs. the requirement of a performer who moves around a lot in front of the mic and needs a wider pickup pattern. In such cases, the mic's off-axis response becomes paramount.


Shure VP 88 and 88D

Today's live vocal mics are truly better than ever. And this is not merely marketing hype—after all, I haven't heard of any mad dashes to use mid-'50s or mid-'60s models. (Of course, if you want a vintage look with modern performance, Shure's 55SH Series II is the hands-down winner.)

The following section includes some relatively recent professional models, listed alphabetically, to consider for your next gig. Although not mentioned specifically, all are low-impedance mics, include a stand adapter and, thankfully, are all wired pin 2 hot (positive pressure on diaphragm produces a positive voltage on pin 2). At least mic manufacturers can adhere to a standard.

We intentionally omitted frequency-response specs with the mic descriptions. Most mic manufacturers include such information but delete any determinants—such as ±3 dB—with their data, and reading a "20 to 20k Hz" spec that doesn't mention it's -15 dB at either end of the spectrum isn't of much use to anyone. Besides, nearly all handheld vocal mics include presence peaks and/or rising top-end response to bring vocals "out," and such characteristics (which may be desirable in many applications) defy the old adage of "flatter is better."


AKG Acoustics C 535 EB

AKG

The top model in AKG's (Northridge, CA) Tri-Power series of dynamic vocal microphones, the D3900 ($239) shares many of the refinements of the Tri-Power line, such as

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a triangular grip and a Moving Magnet Suspension system to reduce handling and vibration noise. The D3900 has a hypercardioid pattern and features recessed switches for bass roll-off and treble boost, allowing the D3900's response to be tailored to the performer's voice. The mic is also available as the D3800 ($199), a similar model without frequency contouring.

Also in the Tri-Power series is the C5900, a hypercardioid condenser model priced at $449. The C5900 features three user-selectable bass response curves, a three-point elastomer suspension for improved shock isolation and a prepolarized backplate condenser capsule with a gold-sputtered diaphragm. As with other models in the Tri-Power series, the C5900 has a non-roll triangular body and a four-layer pop filter with a shock absorbing basket to protect from the impact of a direct drop.

Another AKG condenser model is the C535 EB. Housed in a traditional (non-triangular) body and priced at $499, the C535 EB has a cardioid pattern and features a unique four-position bass roll-off/output level switch. The latter provides two bass roll-off curves (plus "flat" response) and a choice of -42dBm or -56dBm output levels.

AUDIO-TECHNICA

The ATM61HE ($270) is the top-of-the-line handheld dynamic mic from Audio-Technica (Stow, OH). The mic's high-output hypercardioid capsule features a neodymium magnet structure with an almi-chromate coating. Its double-dome diaphragm is said to ensure smooth highs while maintaining high sensitivity and fast transient response. A patented floating-diaphragm design and double-isolated element housing reduce handling and shock noise.

Audio-Technica's ATM873R ($225) condenser mic is shipped with a hypercardioid capsule and accepts optional interchangeable screw-in elements that convert the unit for cardioid, subcardioid or omnidirectional pickup applications. Its low-mass, 2-micron, gold-vaporized diaphragm is said to increase transient reproduction and extend the mic's frequency response, while reducing distortion.

AUDIX

Many mic manufacturers use neodymium magnets to achieve high output, yet Audix (Lake Forest, CA) took a different approach, using a proprietary VLM-type C (Very Low Mass) capsule in the development of its current line of dynamic mics. The OM5 ($329) is a hypercardioid, high-output (-68dB sensitivity) dynamic design. Another Audix hypercardioid dynamic, the top-end OM7 ($359) was developed with the exact opposite of the "hotter is better" concept. With a sensitivity specification of -78 dB (10 dB less than the OM5), the OM7 relies more on console or mic preamps for boosting gain. The OM7 combines its VLM-type C capsule with a transformerless design to provide smooth frequency response out to 21 kHz and a maximum SPL of 144 dB.

BENSON AUDIO LABS

A new company debuting at this month's NAMM show is Benson Audio

Labs of Hoffman Estates, IL. Available in a black matte finish, the company's ND90 ($349.90) is a dynamic design, featuring an internally shock-mounted hypercardioid capsule that combines a neodymium magnet and a low-mass mylar diaphragm for improved sensitivity. A recessed on/off switch is standard. Benson's BA30 ($169.90), a dynamic design, features a mylar ultralow-mass diaphragm, but uses an alnico magnetic structure and has a cardioid pickup pattern.


Beyerdynamic's TG-X 60

BEYERDYNAMIC

The top vocal model in the TourGroup™ series from Beyerdynamic Inc. (Hicksville, NY) is the TG-X 60. Retailing at $399, the TG-X 60 is a hypercardioid dynamic model in a black matte, all-aluminum housing. The TG-X 60 has a low-mass Macrolon® diaphragm for a smooth response; and an external shock-absorbing rubber ring and internal stucture-borne noise attenuation system reduce handling noise and protect the capsule from road abuse. The mic is also available in a switched version, model TG-X 61.

Also in the TourGroup series is the M88 TG ($399), a hypercardioid dynamic mic which is identical to Beyer's classic M88, but has a more robust, rugged basket assembly and is finished in black to match the other mics in the TG series.

Beyer's MCE 81, retailing at $299, features a condenser capsule and a cardioid polar response. The MCE 81's internal capsule shock-mounting substantially attenuates handling noise or stand vibrations, while its Multistage™ pop filter cuts breath and wind noise.

CROWN

Perhaps best known for its groundbreaking PZM™ and SASS™ microphone technology, Crown (Elkhart, IN) also offers a full line of live performance vocal mics. Its top-of-the-line CM-310A ($269, including foam windscreen) is a condenser cardioid design with a DIP switch inside the mic handle for selecting either flat or rising high-end response. Its patented Differoid® design uses noise-canceling technology to reject background noise and to discriminate against distant sources, such as stage monitors and loud instruments, while leaving the vocal source unaffected for higher gain-before-feedback levels. Crown's 200A ($219) cardioid condenser model offers similar performance to the CM-310A, but lacks the Differoid features and selectable response curves.

ELECTRO-VOICE

The top model in the Electro-Voice (Buchanan, MI) N/DYM III® series, the N/D857B ($540) is a supercardioid dynamic design, using a neodymium magnet structure for high output. A compliant suspension system combined with AcoustiDYM™ provides exceptionally low handling noise, while a unique acoustical path corrector maintains uniform polar response. An 80Hz, recessed bass roll-off switch is standard, as is a Warm-Grip™ handle and shock-absorbing rubber ring around the basket assembly.


Electro-Voice MC500

New to EV's MC series is the MC500 ($100), a dynamic cardioid mic featuring a Memraflex™ grille that springs back to shape if dropped or struck. A silent on/off switch is mounted on the collar of the mic, to reduce the chance of unintentional interruption during performance. The mic ships in a hard-shell road case, and like the N/D857B, the MC500 also has a Warm-Grip™ handle.


Crown CM-310A


Microtech Gefell M910

MICROTECH GEFELL

Who says a vocal mic needs to look like every other vocal mic on the block? Distributed by G Prime of New York City, Microtech Gefell's M900 (cardioid) and M910 (hypercardioid) are vocal microphones featuring large-diameter, new-design condenser capsules and transformerless electronics. Recessed into the mic body are -10dB attenuation and bass roll-off switches. The mics retail at $995/each, including wood storage case.

NEUMANN

Neumann handheld vocal mics? Available for several years now are the KMS140 ($1,495) and KMS150 ($1,495) from Neumann/USA (Old Lyme, CT). Finished in matte black, these mics do not have foam pop filters, but instead, use several layers of metal wire gauze for breath supression. These acoustic filters combine with the mics' transformerless, high-loadability amplifer to provide virtual immunity to pop and breath noise overload. Two recessed switches offer control of sensitivity (-10 dB) and LF roll-off.


Neumann KMS140

PEAVEY

Part of the Diamond Series from Peavey (Meridian, MS) is the PVM™ 880 ($349), a dynamic vocal mic featuring a high-

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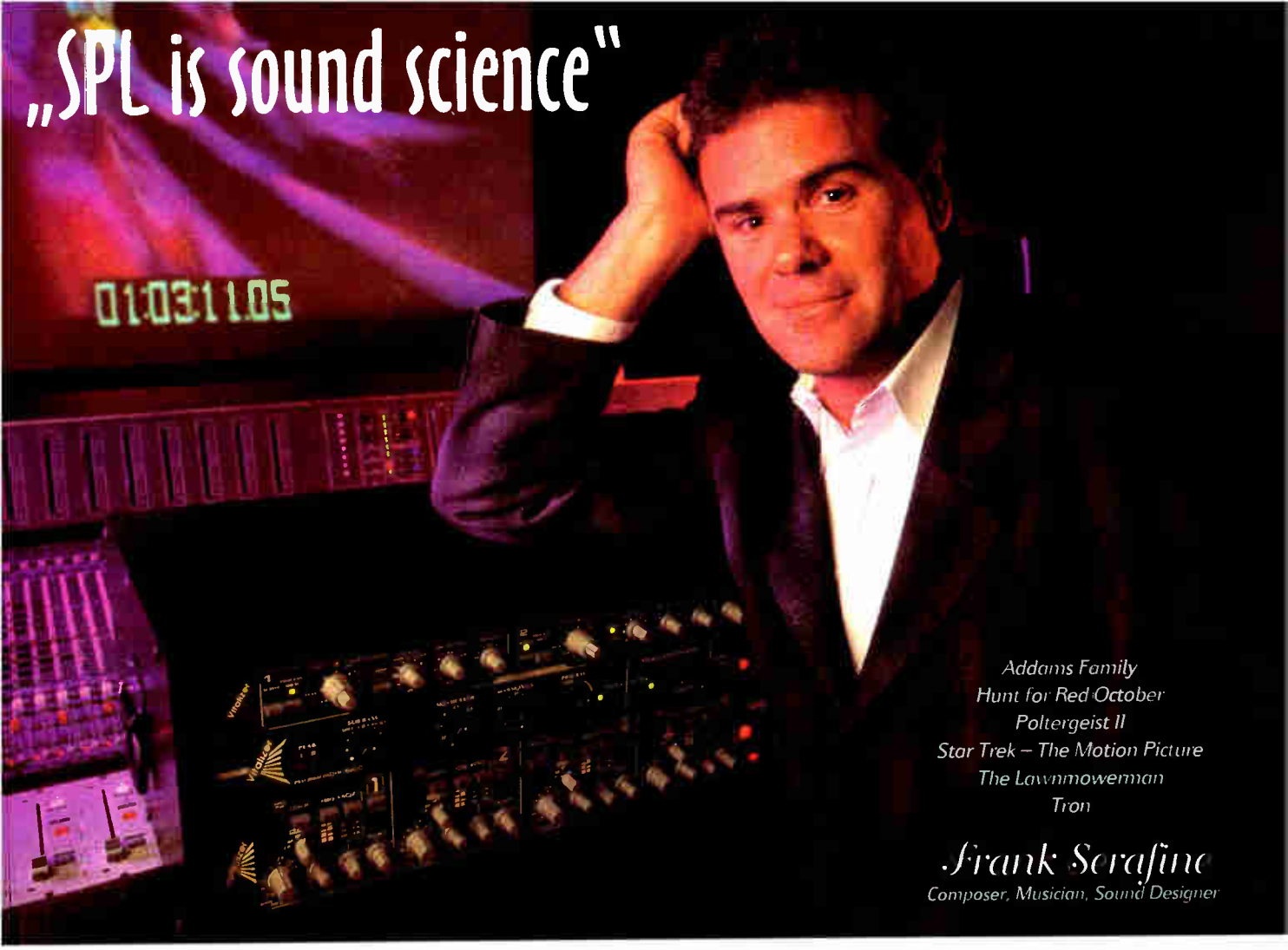

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New Product: The new EQ MAGIX includes the technology of VITALIZER and OPTIMIZER in an outboard EQ unit. It combines these with a high performance microphone preamplifier and a dual channel output stage. The EQ MAGIX comes in a professional RF-proof chassis with a stunning metalwork finish.

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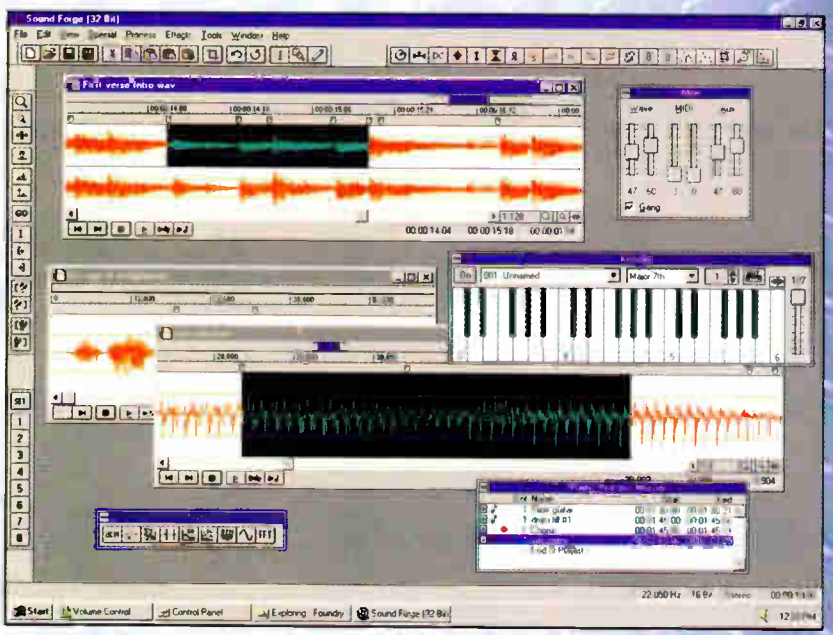
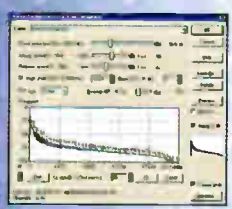
We've Strengthened Our Cast

Sonic Foundry's Sound Forge™ 3.0, full-featured sound editing intended for musicians, sound designers, and multimedia developers using the Windows™ platform. Sound Forge offers editing, audio-processing effects, creation of loops and regions, and generation of playlists. An expandable plug-in architecture tailors Sound Forge to any application. Both a 16 Bit version (Windows 3.1 or Windows for Workgroups™ 3.11) version and a 32 Bit version (Windows 95™ or Windows NT™) are included.

1995 TEC AWARDS NOMINEE



Noise Reduction Plug-in



Now there's no need to slave away filtering noisy recordings. Sonic Foundry's Noise Reduction plug-in is designed to automatically remove background noise such as tape hiss and electrical hum. Click Removal is also included, allowing you to eliminate clicks and pops automatically.

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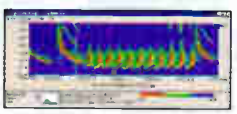
Spectrum Analysis Plug-in

And if you need to identify that particular frequency component, you'll find the Spectrum Analysis plug-in a great addition. Spectrum Analysis includes Spectrum Graph and Sonogram display for easy frequency (or pitch) identification.



Batch Converter Plug-in

The Sonic Foundry Batch Converter Plug-in is a time saving utility for those needing to convert tens, hundreds, or even thousands of sound files to different formats automatically. All plug-ins require Sound Forge 3.0.

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Sound Forge XP, a general purpose sound editor, provides the same easy to use interface found in the professional edition. Sound Forge XP is intended for sound designers, multimedia developers, and hobbyists requiring a powerful yet affordable sound editor.

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output neodymium/iron/boron magnet structure. The mic's amorphous diamond-coated diaphragm provides a combination of stiffness and light weight, for performance that is designed to mimic that of a condenser capsule. For protection from handling noise and road abuse, the capsule is held by a new, twin-tuned electro-mechanical shock mounting system. Essentially similar to the 880, the PVM 835 ($349) has a cardioid polar response and has a flatter low-end response for those users who don't need bass emphasis. The prices for both mics include a hardshell case, external windscreen and 20-foot mic cable.

Sennheiser MD 431I

SENNHEISER

The K6 modular microphone system from Sennheiser USA (Old Lyme, CT) is based on either the K6 powering module (1.5V AA battery or 48V phantom powered) or the K6P (phantom only) module, both of which contain condenser electronics and a recessed LF roll-off switch. A number of optional studio, broadcast and lavalier capsules can be fitted to either power module, but most interesting to live sound pros is the ME65, which incorporates a supercardioid element, a large mesh windscreen for pop supression and an elastomer suspension to reduce handling noise. Retail price of the K6/ME65 package is $580.

The second generation of Sennheiser's successful MD-431 live performance microphone is the MD-431 II. This dynamic design features a supercardioid response pattern, steel mesh grille, shock-suspended capsule with internal humbucking coil, and a noiseless, magnetic reed on/off switch recessed into the handle. The MD-431 II retails for $495.

SHURE

The flagship of Shure's (Evanston, IL) line of live performance microphones, the Beta 87 is a condenser design that retains its supercardioid pattern throughout its frequency range. An advanced capsule shock-mounting system protects from mechanical shocks and handling noise, while a hardened steel grille resists denting and incorporates a three-layer pop filter. Retail is $434.

Shure's popular Beta 58 ($266) is a supercardioid dynamic mic featuring a neodymium/iron/boron magnet structure for high output and improved signal-to-noise ratio. Its rugged, hardened-steel ball is finished in matte chrome and includes an integral pop filter for breath and vocal blast supression. Inside are a humbucking coil (to protect from electromagnetic hum fields) and an LF roll-off to reduce boominess caused by proximity effect.

SONY

The S780 from Sony (Montvale, NJ) is a cardioid dynamic mic featuring an alnico magnet with edgewise winding of its copper-clad aluminum voice coil for extended HF performance. The capsule is mounted within a resilient body structure to minimize handling noise and reduce shock impacts. Retail is $350. Designed for instrumental and vocal use, Sony's S740 ($245) is also a dynamic cardioid mic that shares many of the S780's features but lacks the extended HF response. ■

Sony's S780

NEW PRODUCTS

KURZWEIL K2500 SERIES

Kurzweil Music Systems (Cerritos, CA) adds the K2500, a 76-note, semi-weighted keyboard, and the K2500X, an 88-note, fully weighted keyboard to its new 2500 Production Station Series. All 2500 Series instruments are based on a 68340 CPU processor and feature true 48-note polyphony, a large illuminated 64x240-pixel front panel display, 32-track sequencing and 60 internal DSP functions arranged in 31 algorithms. Memory includes up to 28 MB of internal ROM sounds; sample RAM is expandable to 128 MB.

Circle 226 on Reader Service Card

RETROSPEC JUICE BOX

The Juice Box is an all-tube direct box from Retrospec (Shandaken, NY). The box boasts a distortion spec of 0.05%, due to a transformerless design and Class A circuitry. Flexible gain-adjustment controls allow -20dB, 0dB and +20dB settings, with a "Vari" adjustment control sweeping between 0 and +20 dB. Transient response is greater than 1 microsecond, noise is better than 90 dB.

Circle 227 on Reader Service Card

DYNAUDIO BM15

Now shipping is the BM15 close-field reference monitor from Dynaudio Acoustics (distributed by AXI, Rockland, MA). A 10-inch bass driver is driven by the 4-inch voice coil used in the M4; the tweeter is a modified Esotec. The BM15 handles 250 watts per channel (RMS), with peak power handling at 1,000 W. New enclosure production techniques are said to maintain quality while significantly reducing cost.

Circle 228 on Reader Service Card

PASSPORT RHAPSODY

Passport Systems (Half Moon Bay, CA) releases Rhapsody, mid-level music notation/printing software. Available for Windows, on either CD-ROM or floppy disk, Rhapsody features 32 staves, extraction of parts, global transposition and playback of repeats and endings. Music can either be played in real time with a MIDI keyboard or entered step-by-step using a mouse or QWERTY keyboard. Additional features include translation of MIDI files to sheet music, drag-and-drop editing and text entry. Retail is $249; MusicTime owners can upgrade for $69.

Circle 229 on Reader Service Card

FREESTYLE FOR WINDOWS

Cambridge, MA-based Mark of the Unicorn now offers its FreeStyle sequencing software for Windows. FreeStyle combines composition-based sequencing and instant music notation. Its musically intuitive environment does away with conventional sequencing tracking concepts and is instead based on metaphors such as Ensembles, Players, Takes, Selections and Arrangements. Features include a WYSIWYG page view for accurate editing and print- previews, and graphic and notation editing. Street price is less than $200.

Circle 230 on Reader Service Card

EARTHWORKS OM1

Earthworks (Milford, NH) introduces the OM1, an omnidirectional condenser mic with a bandwidth that is said to be 3 to 30k Hz. The OM1 specs include a maximum SPL of 140 dB and a flat, uncolored frequency response that is ideal for studio recording, sampling or test/measurement applications. Retail is $399.

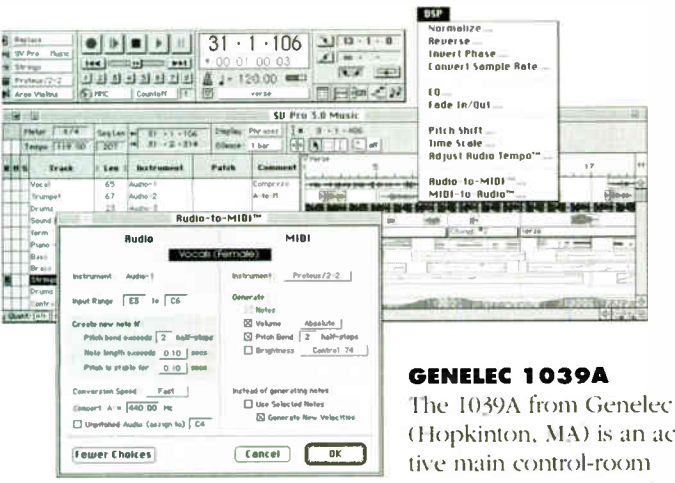
Circle 231 on Reader Service Card

AKG SURROUND HEADPHONES

AKG (Northridge, CA) debuts its K 290 Surround headphones, designed to support virtually any type of surround sound system. The K 290 actively supports four channels of surround, using four transducers; the front two transducers are for the stereo channels and the rear two for surround channels, with the center channel output through both front transducers. An optional K 290 Surround Switchbox switches between the headphone and loudspeaker system at the push of a button, matches headphone to speaker volume and can drive an additional pair of headphones.

Circle 232 on Reader Service Card

NEW PRODUCTS



OPCODE STUDIO VISION PRO

Opcode Systems (Palo Alto, CA) releases Studio Vision Pro 3.0, an upgraded version of its TEC Award-winning software. Integrating Mac-based MIDI sequencing with digital audio recording/editing control. Version 3.0 adds numerous features, including audio-to-MIDI and MIDI-to-audio conversion, time compression/expansion and pitch-shift plug-ins, up to 256 channels of mixing and compatibility with Digidesign's Pro Tools and TDM. Retail is $995; an upgrade from SVP 2.0 is $129.

Circle 233 on Reader Service Card

GENELEC 1039A

The 1039A from Genelec (Hopkinton, MA) is an active main control-room monitor system consisting of two 320-liter enclosures and two 7U racks to house the amplification system, active crossovers and protection circuitry. The monitors can be flush- or soffitt-mounted, or free-standing, and can produce sound pressure levels in excess of 126 dB. The system features Genelec's proprietary Directivity Control Waveguide technology, which matches the frequency response and directivity of the drivers at crossover point and is said to provide smoother frequency response and improved imaging.

Circle 234 on Reader Service Card

OSC METRO 3

OSC (San Francisco) releases the newest generation of its Metro sequencing software, Metro 3, with a completely overhauled, user-configurable graphical editing interface and new features such as groove quantization, 960 pulse-per-quarter-note variable clock resolution and noncontiguous track selection. In addition, the software includes support for OMS, Galaxy and MIDI Time Piece. Suggested retail price for Metro 3 is $275; a bundle with OSC's Deck II costs $549.

Circle 235 on Reader Service Card

SPECTRAL PRISMA UPGRADE

Spectral Inc. (Woodinville, WA) unveils enhancements for its Prisma Music digital audio workstation. Prisma 2.0 includes a new Snap Manager, Track Manager and improved mixer automation. In the new version, single lines can be composed from multiple takes, instruments can be swapped in and out of arrangements, and fade editing functions are improved. New DSP features include pen drawing of the waveform with automatic deglitching and smoothing. The upgrade is free to current users.

Circle 236 on Reader Service Card

AARDVARK AARDSCAPE

The AardScape processor from Aardvark (Ann Arbor, MI) gives digital recordings an "analog sound." The standalone, rack-unit processor re-creates analog ambience in a digital environment. Separate controls adjust characteristics such as brilliance, saturation and warmth.

Circle 237 on Reader Service Card

ACE PHASE/POLARITY CHECKER

ACE Products Enterprises (Petaluma, CA) introduces the APA-P1 Audio Phase/Polarity Tester, a two-unit system including battery-pow- ered, hand-held generator and detector units. The generator sends full-frequency signals. The detector displays phase/polarity with red and green LED displays. The complete system is priced at $352 and is packaged in a hinged wooden case.

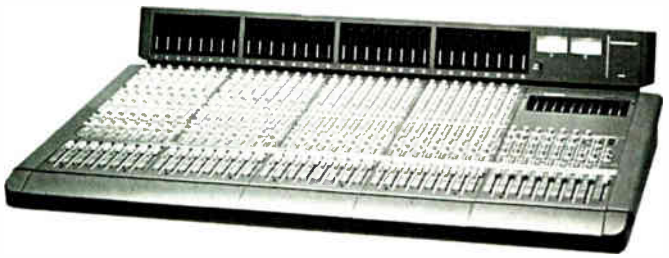
Circle 238 on Reader Service Card

POWER TECHNOLOGY DSP/FX

Turn your PC into a versatile, flexible digital audio effects processor with the DSP/FX effects processing system from Power Technology (Brisbane, CA). DSP/FX offers 32-bit DSP effects with screen-based control of all parameters via a hardware card and PC/Windows-based software. The Algorithm Visualization feature displays parameters and controls of available processing, which includes stereo pitch shifting, reverb, chorus/flanging, EQ and multitap stereo delay algorithms. The DSP/FX offers full MIDI compatibility and analog I/O; an AES/EBU and S/PDIF interface is optional, and multiple cards can be added for additional DSP power.

Circle 239 on Reader Service Card

New Products



TASCAM M2600 MKII

The M2600 MkII is the successor to Tascam's (Montebello, CA) M2600 console line. The MkII, available in 16-, 24- or 32-channel configurations, offers the same features as the 2600 line, with additions including a meter bridge (optional), switchable -10dBV/ +4dBm signal levels for tape in and group/direct outs, and insert automation capability. The full 4-band EQ circuitry has been refined and the op-amps re-engineered, allowing for greater transparency. Trim control range has been increased by 2 dB, improving signal-to-noise. Suggested prices start at $3,199 for the MkII/16, plus $849 for optional meter bridge.

Circle 240 on Reader Service Card

OVER QUALITY KE-922 EQ

ADgear (dist. by George Massenburg Labs, Van Nuys, CA) introduces the Over Quality KE-922, a 2-channel, 6-band parametric equalizer. The KE-922 features four peaking bands, as well as high- and low-shelving bands, and is built with all-discrete components, including ADgear's DOP-210A op amps powered by +28VDC. Input level controls and low-cut filters accommodate a wide range of source material; an exclusive "filters mix" function allows effects from only chosen filters sent to output.

Circle 241 on Reader Service Card

SYMBOLIC SOUND KYMA

Symbolic Sound Corp. (Champaign, IL) introduces the Kyma sound design workstation. Kyma allows users to develop sounds graphically on a Macintosh or Windows-compatible system and process the sounds in real time on the Kyma multiprocessor DSP hardware accelerator. The interface is icon-based, with drag-and-drop editing features; the system includes features such as MIDI input/output, algorithmic assembly of sounds (using Kyma's scripting language) and multiformat record/playback capability. Sounds can be synthesized using analog-style, additive, RE, GA and granular synthesis.

Circle 242 on Reader Service Card

VESTAX HDR-8

Vestax (Fairfield, CA) offers the HDR-8 ($2,495), a stand-alone 8-track disk recorder in a rack chassis. Standard are internal digital mixing (with pan, gain, 2-band parametric EQ and two sends/returns accessible via MIDI), 18-bit A/Ds, 20-bit D/As, MIDI SPP or MTC sync and Windows control software (Mac due soon). Up to four tracks can be recorded simultaneously, using S/PDIF digital I/O and the two analog ¼-inch balanced inputs (four with the $190 AD-2 card). Also optional are AES/EBU I/O, SCSI interface, SMPTE sync, remote control and a digital multi-effects board.

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HOT OFF THE SHELF

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DEMETER VTCL-2A

TUBE COMPRESSOR/LIMITER

Slip a piece of tube equipment into an audio signal chain and you change the sound. Whether it changes for better or worse is a subject of debate that rages as intensely as the merits of digital vs. analog recording. I've been dedicated to digital recording since the release of Sony's PCM-F1, yet my favorite format is still analog 15 ips tape with Dolby SR. But there are obvious sonic benefits of tube processing.

The two most important places to use tube technology are mic preamps and compressor/limiters. Demeter makes both, and the VTCL-2a ($2,095) 2-channel tube compressor/limiter is a fine example of today's resurgence of tube technology.

Once the VTCL-2a is out of the box, the difference between current tube devices and vintage gear is evident. Connect the VTCL-2a, and it's clear that interfacing is one of its strong suits: balanced XLR, ¼-inch TRS and TT connectors for each input and output. For each input and output, there is also a switch for changing the XLR polarity between pin 2 and pin 3 hot. This makes it simple to accommodate equipment from manufacturers who, after many years, refuse to adhere to the IEC pin 2 hot standard.

The simplicity of the front panel reflects the simplicity of the circuit design inside. Each channel has Input Gain (with overload LED), Attack, Threshold, Release and Output Gain controls, plus a Bypass switch. A VU meter for each channel is switchable to show input or output levels, or gain reduction. Demeter has thoughtfully included a switch that changes the meter range from normal to -10 dB to facilitate metering of lower-level signals. Finally, there is the power switch and a stereo link switch for true stereo or dual-mono operation.

It strikes me as peculiar that a number of tube compressor/limiters have no ratio control. Operationally, this results in the settings and interaction of the input gain and threshold controls becoming the critical determinants in defining compression ratio. The VTCL-2a is simple to operate, and the easiest way to set it up was by ear, cross-referenced to gain reduction metering. Fortunately, the unit is easy to use, as the bare-bones manual consists of two pages stapled together.

The VTCL-2a uses an opto-isolator for the gain element in each channel, along with five tubes in the signal paths to get that "tube warmth": a GE 12BH7 and a Sovtek 12AX7 for each channel, plus an RCA 12AT7.

Tube compressors generally have, to my ear, a "squishier" sound than solid-state ones, which I find more capable of "transparency." This makes tube compressors great for some applications and less-suited for others. The Demeter exhibits this property, but to a lesser degree than several British tube compressors I have used.

My first session with the VTCL-2a was *Every New Day*, a live album for singer/songwriter Caren Armstrong recorded at Strings, a private listening room near the offices of *Mix*. During the show, Armstrong only needed microphones for her voice and guitar, while her two sidemen, Robert Powell and Joe Craven, worked their way through numerous and sundry instruments: guitar, mandolin, violin, lap steel, pedal steel, bass, violin case, "mouth hat," bongos and assorted percussion. Almost every microphone passed through a tube on the way to the ADATs, either in the microphone, the preamp or the compressor/limiter. This was a unique opportunity to gather a lot of information and do direct comparisons between a number of tube devices. (I also tried Demeter's $1,850 VTMP-2 stereo mic preamp for this recording, and it proved to be an exceptional unit: clean, warm and quiet, even at high gain settings.) I found the VTCL-2a to be less colored than the other tube compressors I was using, and it was more capable of subtlety.

During the recording, the VTCL-2a was used in dual-mono mode for Craven's mandolin and violin (which was strung with cello strings and tuned an octave down). Mandolin is one of those instruments that benefits from the squishiness of tube compressors, and, with the VTCL-2a set to a fast attack and a fairly low threshold, it sounded splendid—crisp but not edgy, even but retaining dynamic feeling. I had questions about how well it would perform on the violin, which tends to be extremely sensitive to compression, but,

BY LARRY THE O

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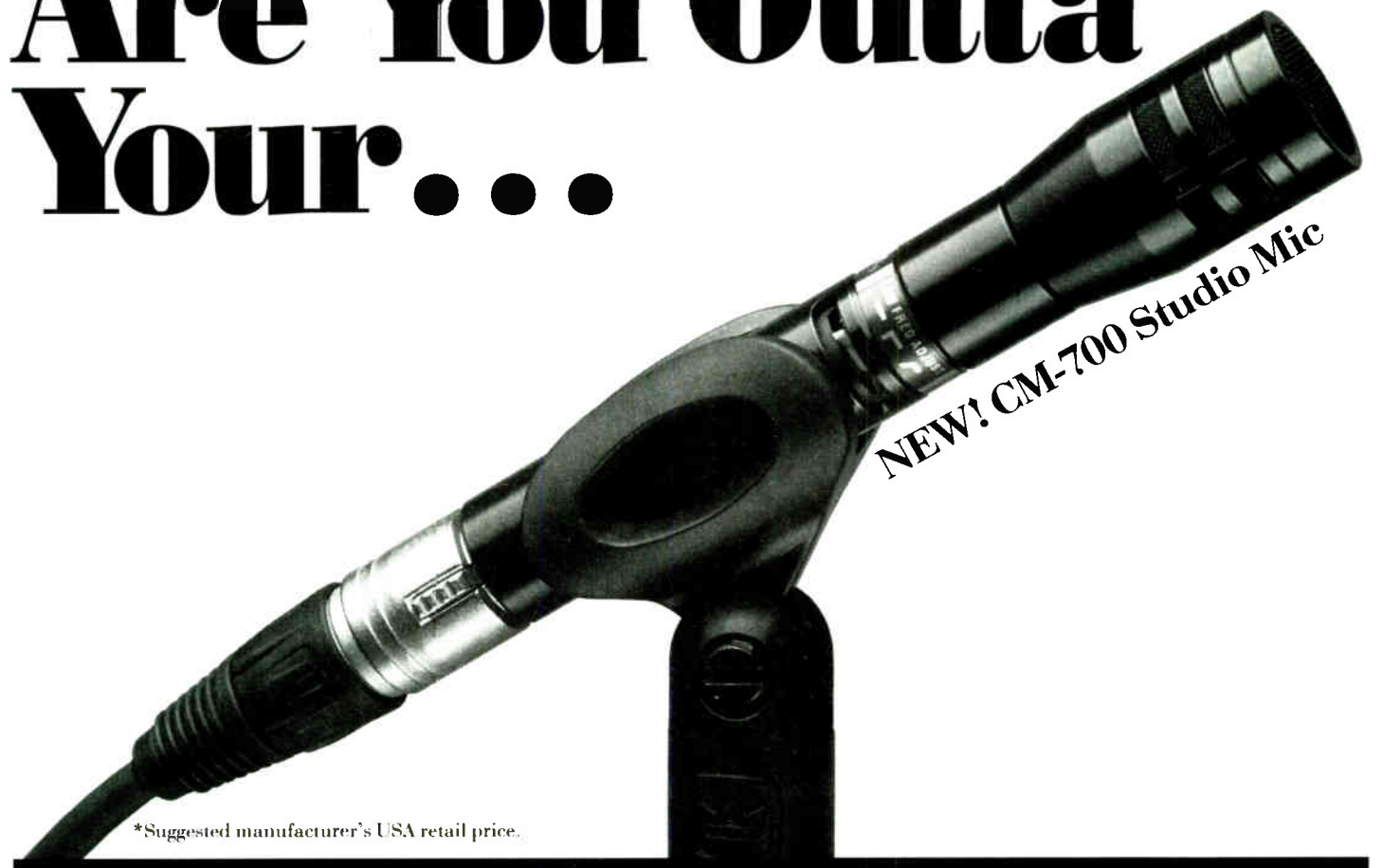

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setting the attack slower and the threshold higher than the mandolin channel, the VTCL-2a smoothed out "hot" notes and level variations from Craven's stage movements without destroying the violin's fragile dynamics.

The VTCL-2a also saw heavy use during mixing. There was only one overdub for the album—a bass part on the title tune. Setting the VTCL-2a to a fast attack and a fairly low threshold resulted in a beautiful, full-bodied, round tone with a soft attack. Armstrong and I were both delighted with the smoothness of the sound and how it supported the guitar. Several other instruments were processed through the VTCL-2a during the mixing, with the most notable success being the pedal steel, which, like the violin, gained evenness without sacrificing dynamics.

After the success of the VTCL-2a on Armstrong's album, I ventured to try it in another context. I needed to transfer dialog recorded on the set of a video shoot for LucasArts' upcoming game, Rebel Assault 2,™ for which I provided sound design and supervising dialog. Production dialog is notoriously difficult to handle, with level variations being a prime component. Unfortunately, the VTCL-2a's squishiness did not work out so well in this situation. Even on very mild compression settings, the dialog ended up sounding too compressed. A wailing vocalist in a pop recording would have sounded killer with the same setup, however.

Tube compressors have their strengths and weaknesses, and the VTCL-2a is no exception. It took me awhile to get a feel for the controls and develop the touch for setting it to obtain a desired result, but after that it came very easily, and I could quickly hear what it would work for and what it wouldn't. For musical applications, I have not heard a cleaner, warmer and better-behaved tube compressor than the VTCL-2a. High-quality tube equipment does not come cheap, and you want to be sure before you plunk down the big bucks. In my opinion, there's just no doubt about the VTCL-2a.

Demeter Amplification, 2912 Colorado Avenue #204, Santa Monica, CA 90404; 310/829-4383. ■

Larry the O operates as a performing musician, engineer and producer under the rubric Toys In the Attic. He spends his days as a sound designer at LucasArts Entertainment.

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REAMP

TAPE RECORDER-TO-INSTRUMENT-AMP INTERFACE

REAMP is a new product that is so simple in concept and so practical in application that I can't believe no one manufactured it before now. It's also so inexpensive that everyone with a tape recorder will be able to afford one or two. Essentially, REAMP is a properly impedance-matched interface between the tape recorder and an instrument amplifier. What does this mean? REAMP allows the user to play something already recorded on tape back through an instrument amplifier. The creative possibilities abound, but before we discuss applications, let's look at the box itself.

REAMP is about the size and shape of the popular Countryman direct box. Because it is passive, there are no batteries to change, and it is RF-protected. On the input side is a ground lift switch and a female XLR +4dBu connector in which to plug your tape track output. On the output side is a volume trim pot (yes, it goes up to 11) and a ¼-inch jack for connection to an amp.

As you can imagine, there are many applications for a box of this type. It means that you don't have to make a commitment to a sound before you record your guitar tracks. Just record direct and figure it out later. How many times have the other musicians sat around while the engineer and producer tried to figure out the best tone for the track? Why experiment on the musicians' time? The energy of the performance is one of the most important things you want to capture on tape. Now you can spend time doing creative experiments with different amps and mic technique without burning out the players. You might also record a direct guitar during tracking just to have more flexibility with tone and imaging during mixdown.

If isolation/leakage during tracking in the studio is a problem, or if high volume in a late-night session in a home studio is unacceptable, then REAMP is the solution. Record the instrument direct and then re-record it with REAMP at a more convenient time or play it back "live" during mixdown.

You don't have to limit the REAMP to guitars, as any instrument recorded on tape could be played back in the studio during mixdown or re-recorded back to tape for that live feel. This not only applies to synthesized tracks emulating real instruments but even to drums, organs, electric pianos or any sound where you might want a different ambience. Why should a recording studio go unused during a mix session, when it could be used as a live chamber?

On a recent Aerosmith tour, the band recorded a concert for a new live album. The remote truck engineer was unable to achieve the proper tone from the bass player's live rig and recorded a direct bass track as a safety. Later, they REAMP'd the direct track through the bass player's studio rig and were able to retain all of the energy and punch of the live performance using the original tracks. REAMP has been successfully used by several other well-known groups and engineers such as the Rolling Stones, Steve Vai, Chris Isaak, Andy Johns and Matt Wallace.

REAMP was originally conceived by engineer John Cuniberti for sessions with guitar wizard Joe Satriani. It definitely has a place in the engineer's toolkit along with outboard preamps and direct boxes. I know that I can make better projects with this item. Because it is fairly new to the marketplace and may be hard to find, contact AXI at 617/982-2626 or call John direct at 510/530-2402. REAMP sells for $299. ■

BY BOB HODAS

Based in the San Francisco area, Bob Hodas is an acoustical consultant and recording engineer whose credits include Windham Hill Records, the Doobie Brothers, the Village People and Mickey Hart.

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YAMAHA 02R

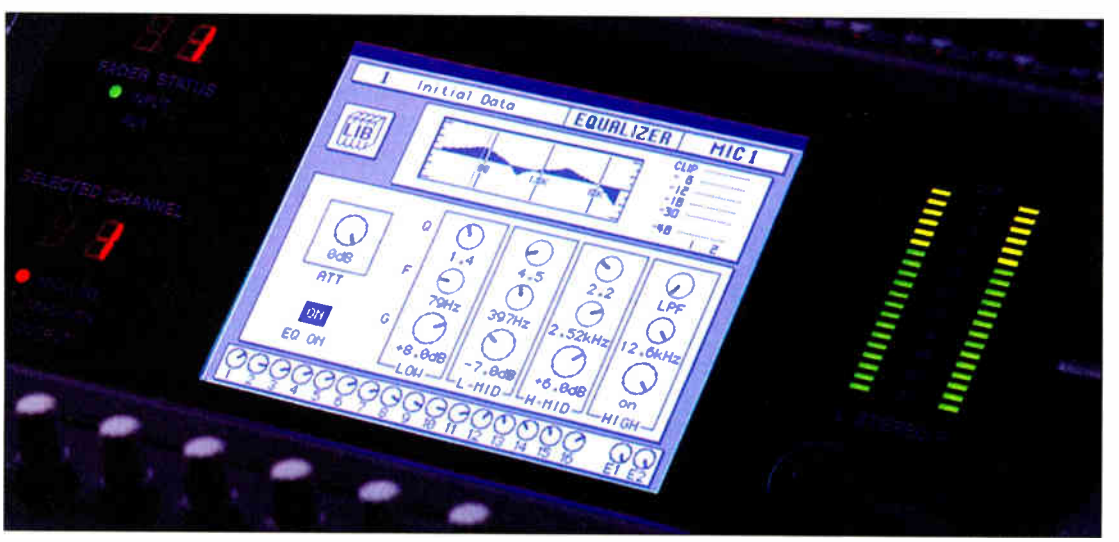
DIGITAL RECORDING CONSOLE

The successful transition from analog to digital production poses a number of challenges, not the least of which is cost. Until now, the silicon replication of complex mixing and processing functions has come at a high price. But at a cost of just $8,699 for a 40-input 8-bus, all-digital console, with full EQ and onboard automation, dynamics and reverb, the much-anticipated Yamaha 02R is destined for use in applications throughout the recording, broadcast and post-production industries. Although it has a couple of minor flaws—almost all necessitated to achieve cost-savings—the 02R is one of the most exciting pieces of technology I have come across in years.

Internally, 02R's 32-bit DSP technology and RISC CPUs provide enhanced processing precision and internal dynamic range. The system can run at 44.1 or 48kHz sample rates, and word clock inputs and outputs enable the 02R either to slave from or act as a master sync source for external digital systems. All digital inputs can handle a full 24-bit word; outputs can be run either full-capacity or down-sampled, using user-selectable filtering, to 16-bit precision for direct connection to DATs, CD-Rs and other devices.

In 02R's basic configuration, the 40 inputs comprise 24 analog sources and 16 digital, routing to eight multitrack buses, 16 direct outputs, eight auxiliary (foldback effects) sends, plus the master L/R mix. The 16 direct signals can be just that—post-fader outputs for connecting to a tape machine while a separate stereo mix is being created. In reality, these two designations are often identical (think about it), although it does depend on how the 02R will be set up. With the increasing use of ADATs, DA-88s and other forms of modular multitracks, we are normally listening through the tape machine; sources routed to it appear on channel returns that are mixed onto the master stereo buses. In this way, the distinctions between tracking, overdubbing and mixing become blurred; in reality, we make the transition from live sources to off-tape replay as our tracks become filled.

The 02R's front panel is clear and well-laid-out. It offers a lower bank of 16 mono channel faders, four stereo-channel faders and a stereo master—all with long-throw (100mm) servo-controlled moving faders. Above the mono faders are rotary controls that normally control levels from the 16 tape-machine returns, but which can be used for additional analog or digital sources. At the press of a button, the long-throw moving faders controlling levels in the lower bank can be swapped with the upper row of rotary controls, allowing more conventional control of signal levels connected to those source inputs. Press the



The high-resolution, 4x6-inch backlit LCD is bright and angled for optimal viewing.

SYSTEM CONFIGURATION AND USER INTERFACE

In essence, Yamaha has taken the basic functionality of a 40x8x2 console, stirred in elements from the groundbreaking ProMix 01, added an extremely flexible input/output layout based on plug-in modules and housed the entire creation in a frame approximately the size of the older DMC-1000 console. In-

BY MEL LAMBERT

SSHDR1

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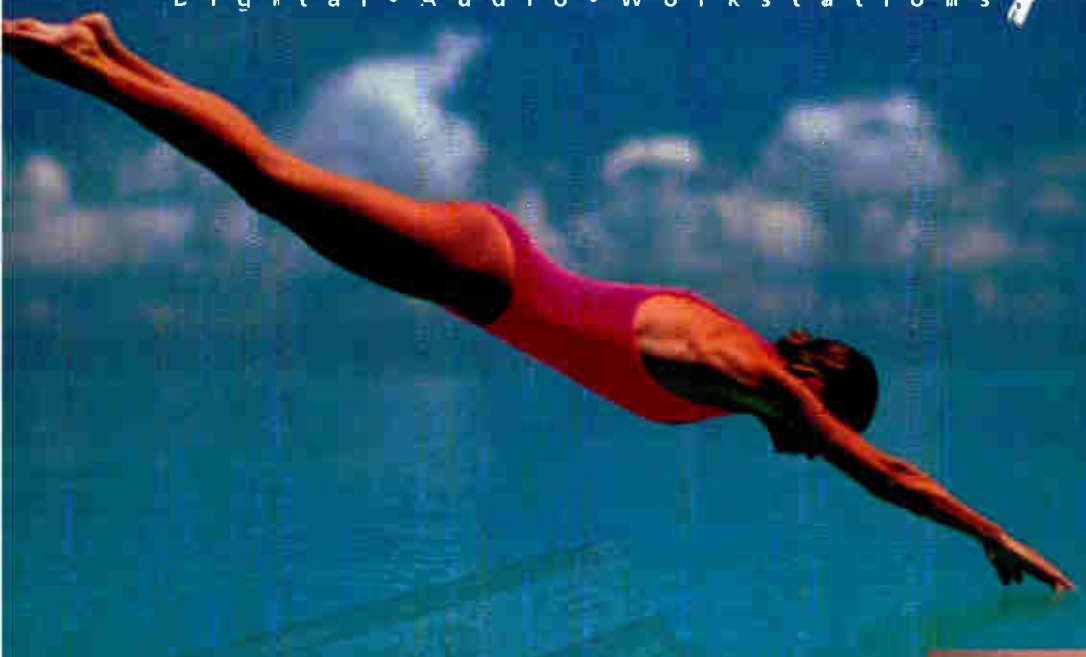

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Alan Howarth, Sound Designer on such films as Halloween, Stargate, The Mask.

In this age of global communications good new travels fast... especially in this industry. Talk to any of our users (there are over 2000) and they'll all tell you the same thing. Soundscape's SSHDR1 has the creative tools to improve productivity, the software is incredibly fast and reliable and saved them a great deal of time and money. This is why more and more of the worlds top professionals in sound design and motion picture editing are changing to Soundscape and the PC for their audio editing. From dialog replacement and foley recording to that blockbuster movie soundtrack the SSHDR1 has some of the fastest and most powerful editing features available.

Is your existing Digital Audio editor expandable from 8 to 128 tracks, with real time editing while chasing time code and have fully parametric EQ? Does it give you 18 bit dynamic range and volume contours generated in real time, with professional I/O and audio quality uncompromised by noise from your computer. With glitchless audio scrubbing for accurate editing and perfect placement of sound effects. Soundscape offers all of this at a price much lower than you would expect.

"Love it - Love it - Love it - Love it - Love it !!! Great box, I've got two of them and session after session I rely on my Soundscapes to deliver the pristine sound that our clients demand. It vari-syncs and chases video like a hound dog and believe-it-or-not the owners manual is intelligable. And HEY!! - just do it... buy one!!!!!" *Sunny Lake, Cybersound NYC, sound designer/producer for numerous commercials, records and films.*

We've had the pleasure of using Soundscape for sound editing on 'Ace Ventura: When Nature Calls' and 'The Nutty Professor' and found it to be very smooth, very fast and very reliable. Soundscape is the only intelligent choice for your next digital editing workstation.
Odin Benitez, Randall Guth, Dimension Sound (Burbank).

It's affordable-it's modular-it's expandable-it's got crash proof reliability!!! We have 3 x 16 track systems at the studio, and we've used the SSHDR1 on almost every project that's come through the facility. Soundscape is fast becoming one of the top systems around in digital audio post production here as well as around the world. Keep it up, guys!"
Frank Serafina, Sound designer on Star Trek, Virtuosity, Lawnmower man, VR5, Hunt for Red October.

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button again and the moving faders return to channel sources.

In the center of the console is a backlit, 320x240-pixel graphic LCD screen that forms the heart of the 02R's control scheme. When a particular channel is selected via a SEL button, the screen displays all settings, including EQ profile, dynamic slopes and envelope, I/O assignments and more. To the right, a Virtual Control panel contains master controls for the output-bus routing, odd/even panning, 4-band EQ, plus aux send assignment and level control. At the top of the console are gain trims for the various analog input sources, plus phantom-voltage switches, pads and phase invert for the first eight channels.

The 02R's large display screen provides 12-segment metering for all input channels, as well as for bus outputs and aux send levels. Signals can be metered at several points in the signal path, including pre-EQ, post-EQ or post-fader. A meter peak-hold facility is also provided. The main control room output signal is metered via a dedicated pair of 21-segment bar graph meters, mounted alongside the display screen. An optional meter bridge ($1,299) provides switchable monitoring of input signals, bus outputs and the master mix, in addition to various system displays.

For a typical session, we might use the first 24 channels for live sources—16 mono sources for studio mics, for example, plus four stereo/2-channel inputs—and the remaining 16 for tape machine returns from a pair of digital multitracks whose outputs are being mixed to the L/R stereo output. Multitrack routing will be across eight output buses and/or the 16 direct outputs, dependent upon the required results.

INPUT/OUTPUT FLEXIBILITY: ANALOG OR DIGITAL

On the 02R's rear panel are the various ports that connect the internals to the outside world. To save costs, the first eight inputs are provided with balanced XLRs and phantom power, plus balanced/TRS jacks (the "B" input) and insert patch points, while the next eight offer just balanced TRS jacks. In addition, a neat configuration of four interface slots enables users to customize their requirements. As shipped, the 02R will handle just 24 analog inputs; by plugging in extra interface modules, the 02R can be hooked up to a variety of analog and digital I/O formats.

The optional modules are reasonably inexpensive. The CD8-TD I/O card ($299) handles direct connection for eight channels of Tascam TDIF-1-format (DA-88) digital I/Os; the CD8-AT ($299) offers the same functions for Alesis ODI (ADAT Lightpipe); the CD8-AE ($359) handles eight channels (four pairs) of AES/EBU-format signals; and the CD8-Y ($299) accommodates eight channels of Yamaha's proprietary Y2 digital format. Finally, the CD8-AD ($759) provides eight additional channels of A-to-D and D-A conversion, for users who want to provide a full 40 channels of analog inputs (in live sound applications, for example, or to accommodate larger-format sessions). The CD8-CS interface kit, priced at $999, plugs between two I/O slots and allows multiple 02Rs to be cascaded together to provide additional inputs.

It's easy to see that for around $10,000, you can put together an "erector-set" 02R that offers up to 24 simultaneous analog inputs for tracking, 32 simultaneous ADAT/DA-88 digital inputs for mixdown, eight buses, eight aux sends and plenty of stereo and direct outputs.

By populating one, two or the maximum of four interface slots, the 02R can be set up to handle a maximum of 32

digital sources from DA-88s, ADATs or Y2-compatible devices. The only restriction on maximum I/O configuration stems from the fact that the A-to-D/D-to-A and AES/EBU-format modules are twice as large as the ODI/TDIF/Y2 units. Otherwise, you simply populate the four slots with modules that suit your hardware configuration, and away you go!

All aux sends can be selected pre/post-fader; sends 7 and 8 directly connect to a pair of internal digital reverb and DSP modules that offer the type of effects you would expect from an outboard such as Yamaha's SPX series, or something similar. In addition, sends 1/2, 3/4 and 5/6 can be set up as stereo sends if necessary.

For monitoring and interfacing with external 2-track analog/digital playback machines, the 02R offers two pairs of analog inputs (on TRS and RCA phono connections), plus three stereo inputs (one AES/EBU- and two consumer S/PDIF-compatible formats). For added flexibility, two of the digital inputs can be routed to channels 17/18 and 19/20.

INTERNAL EQ AND DYNAMICS CONTROL

In terms of internal signal processing, the 02R is embarrassingly well-equipped. Each of the 40 input channels features full 4-band parametric EQ and dynamics; the two effects returns offer EQ but no dynamics. All system parameters can be stored as snapshots within memory and/or off-loaded to an external Mac/PC as MIDI-based data or via a higher-speed RS-422 serial port. All four bands of EQ are identical and extend from 21 Hz through 20.1 kHz in ½-octave steps; cut/boost is ±18 dB in 0.5dB steps, with Q/bandwidth adjustable from 0.1 to 10. The upper and lower bands can also be set up as shelves rather than peak/dip, to provide, respectively, low- and high-pass filters, with 12dB/octave slopes. Channels can also be linked for stereo operation.

Effects controls include RT60, HF decay, diffusion, pre-delay, density, low/highpass, reverb delay and reverb balance.

The dynamics section provides five modes: compression, gating, ducking, expansion and combined compression/limiting; adjustable parameters include threshold, ratio, output gain, knee, attack and release times. Channels can also be linked and/or driven from separate key inputs. Dynamic sections are provided for each input channel, as well as the eight bus and stereo outputs.

In addition, each channel can be set up with individual delay of up to 60 ms, to compensate for mic placement separation, or to correct MIDI processing delays. The console's built-in effects section provided on Aux 7 and Aux 8 is extremely comprehensive, with individual control of RT60, HF decay, diffusion, pre-delay, density, low/highpass, reverb delay and reverb balance.

All EQ, dynamics and effects settings can be saved in a nonvolatile library. A total of 40 EQ, 40 dynamics and 40 effects settings are included within the library as factory presets; the user is provided with another 88-odd programmable areas per function.

SYSTEM AUTOMATION: SNAPSHOT PLUS DYNAMIC FUNCTIONS

In addition to the internal registers that hold factory and user systems snapshots, all fader movements—including aux sends—plus channel on/off, panning and EQ can be automated against external timecode (all species/rates are accommodated), or MIDI Time Code (MTC). The automation is extremely intuitive, once you master the fact that two basic modes are provided: Absolute (all moves correspond to actual fader positions) and Relative, in which previously written data is trimmed as required.

A total of 64 Scene Memories can be stor-ed as snapshots of all fader and parameter settings. Snapshots can be relocated off-line to a different timecode or MTC value. A Fader Recall Safe function lets the user specify which faders are immune to snapshot recall, leaving them unaffected for real-time automation. Up to four fader and four mute groups can be set up easily.

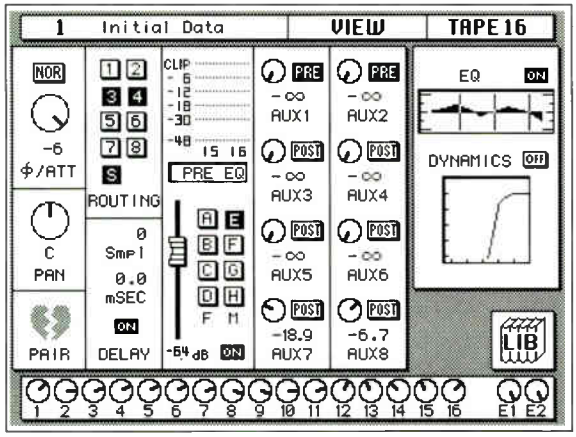
The 02R ships with 512 KB of internal RAM, which should be sufficient to handle even the most complex mix. For more demanding applications—a live event, for example, with multiple timecode-based changes, or an extended mix—more memory can be added in 1MB increments, up to 2.5 MB.

Also available from Yamaha within the near future will be a Mac-based utility, 02R Project Manager, that includes a comprehensive project manager and editor, librarian and remote-control utility. The program, written in Opcode's MAX programming language, will enable several mixers to be controlled as a single, multichannel digital mixing system. MIDI control is also possible.

SUBJECTIVE ASSESSMENTS

All analog mic/line inputs feature what Yamaha describes as a new design of 20-bit, 64-times oversampled A-to-D converters. They do, indeed, sound great, with extended linearity down to the noise floor. The parametric EQ is also very smooth-sounding and flexible to use—it's also completely silent, even when selecting extreme settings and then sweeping them across a broad range. Simply hit a SEL key and that channel's setting becomes live. With four full-range bands available, finding just the right amount of processing is a breeze; the graphics display also lets you see what the resultant response curve looks like, as well as the cumulative effect and interaction of multiband EQ adjustments. The graphical display redraws instantly as adjustments are made.

As a test, I dialed in full 18dB cut at around 1 kHz on one band, and full boost at the same frequency on another; using the EQ in/out key, it was possible to monitor the overall effect. With a variety of program and test materials running through the 02R, I couldn't hear a difference when EQ was in or out, and the two bands exactly canceled on another! This also says something for the precision with which you can set up notches and other signal manipulations



Input Status screen

in the digital frequency domain.

The dynamics section is also easy to set up and adjust; a visual display and corresponding gain-reduction meter lets you see instantly what is happening to the input and output signal of the channel/output being manipulated.

The 02R's feature-rich automation is easy to master, although the selection of which tracks are armed and which are in relative update mode takes a bit of getting used to. Also, the moving-faders are not as smooth as those we might be used to on admittedly more expensive systems; the overall sonic results, however, were always acceptable. Certainly, the ability to automate fader moves, grouping, I/O configurations, EQs, pans, aux sends, digital effects and a variety of other console parameters is something we can all get used to very quickly.

Pressing Recall brings back an entire mixer configuration in a fraction of a second. Scene Memories can be recalled either manually, via a MIDI Program Change message, or referenced to timecode as part of an automated mix. An Undo function enables the most recent Scene Memory store or recall operation to be reversed, thereby allowing

the previous data to be recovered.

It is obvious that the 02R was designed to provide a simple and intuitive user interface, and one that is both fast and easy to operate. The use of long-throw motorized faders, a Virtual Channel module and a large graphical display screen should provide a relatively painless transition from conventional "one-control-per-function" designs to the types of assignability, reduced front-panel size and instant reset that the 02R can offer.

What's missing? Level on the eight buses is controlled via the 02R's datawheel, which is more cumbersome than simply having a set of eight bus faders at one's disposal. I would also like to have seen a set of transport controls that could be set up to output standard 9-pin commands for controlling audio and video decks from the 02R. As it is, the console's automation chases timecode from an external source and maintains frame accuracy. And though this was clearly done for economic reasons, as mentioned earlier, the lack of XLR connections on inputs 9 through 24 may require a bit of custom wiring in some applications.

All in all, the 02R digital recording console is a truly remarkable piece of technology. For around $10,000 in a typical project-studio configuration, you can have an all-digital 40-channel/eight-bus mixer with 16 direct outs, eight aux sends, total automated control, moving faders, parametric EQ, dynamics and internal reverb/special effects. What more could you ask for?

Yamaha Corporation of America, Digital Products Group, 6600 Orangethorpe Avenue, Buena Park, CA 90622; 714/522-9011; fax 714/739-2680. ■

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

ALESIS QUADRAVERB 2 VERSION 2.0

With the introduction of its Version 2.0 software, the Alesis QuadraVerb 2 multi-effects processor acquires a host of new capabilities including stereo sampling, overdrive distortion, triggered panning (with Doppler effect), triggered flanging, a new stereo Leslie effect and a phase inverter. A new EPROM provides 100 additional RAM slots for storing your custom programs, and comes pre-loaded with factory programs. Additionally, the user interface, which was already outstanding, has been improved in some areas, making programming the unit even faster and easier. The new software adds to the value of what is clearly Alesis' most professional multi-effects box to date. Let's take a brief review of the original QuadraVerb 2 before we examine what the Version 2.0 update brings to the table in more detail.

The ability to comprehensively program effects algorithms (i.e., change the order of and routing between the various effects blocks that constitute a multi-effect program) is nothing new. The DigiTech TSR-24 gave effects-box jockeys this power a couple of years ago, pre-empting higher-end units. But the QuadraVerb 2 refines the paradigm with its very elegant user interface and an awesome LCD that provides a clear and detailed block diagram of signal flow between its eight Effects Blocks.

Minor problems do exist with the unit's user interface. When editing the routing to/from a particular Effect Block in a multi-effect, the routing to the other Effect Blocks becomes temporarily hidden in the LCD, forcing you to rely on your memory. Also, while scrolling a parameter's value up or down with the value/enter knob, it is all too easy to press the knob—which bumps you to a different parameter (changing its value until you stop scrolling) on another page. The value/enter knob's scroll rate is also somewhat unpredictable. As you turn the knob faster, it jumps from a crawl to warp speed with no apparent middle ground. These niggles aside, the Q2's user interface sets a new standard for ease of programming.

Like many multi-effects boxes in its price range, the Q2's individual effects are of varying quality. The biggest surprise is in the refined character of its main reverb programs, which deliver smooth, clear and quite realistic ambiences. Chorus, flange and phaser programs are sweet; delays (including multitaps) are clean. Various equalizers and filters are provided to further tailor accompanying effects. Those looking for a slip into the bizarre can try out the Q2's ring modulator and resonator effects. On the down side, the pitch shifter is primitive and imparts a noticeable delay and chipmunky timbre to the processed signal. And the unmodulated detuner sounds a bit phasy.

The QuadraVerb 2 can provide mono, stereo or dual-mono (discrete) effects. The unit also furnishes comprehensive, real-time control of effect parameters via MIDI commands, allowing up to eight modulation routings per program. Two EIAJ fiber-optic connectors are provided on the rear panel, allowing the Q2 to both send and receive digital audio in proprietary Alesis multichannel format. That is, any two tracks from a single ADAT can be sent to the Q2's L/R inputs, and the Q2's L/R outputs can be sent to two different tracks (on a different ADAT, if desired).

Version 1.05 software (released a little over a year ago) lent several new features to the Q2, including MIDI clock control of Tap Tempo delay times, a write-protect function to safeguard user programs, and some enhancements of the Q2's internal generators used—as an alternative to MIDI control—for modulating the audio input signal. The latter includes a new Ramp Local Generator that can be programmed to increase or decrease a parameter's value at a static rate when audio input signals exceed a user-specified threshold—useful for, among other things, automatically fading an effect in or out.

This brings us to Version 2.0, available to V.1.xx QuadraVerb 2 owners in the form of a $30 upgrade kit from Alesis. The kit contains an EPROM (thankfully, the EPROM it replaces is socketed!), a floppy disk containing a MIDI SysEx dump of the new factory programs (saved as a standard MIDI file), a 20-page addendum to the original owner's manual, new program charts and a helpful quick-reference guide.

Besides offering 100 additional programs, V.2.0 replaces

BY MICHAEL COOPER

so much for conventional wisdom...

No, it probably isn't on the rider...yet! But the new Tour Series from Fender Pro Audio soon will be, and for reasons your clients will understand the minute they hear them.

Introducing real world-class concert sound equipment, that doesn't make you mortgage your world to pay for it. From a single pair of cabinets on stands, to small industrial/AV systems, to a full scale concert rig, the Tour Series will impress even your most demanding critics and clients-without emptying your wallet. Combining performance, flexibility, and common sense real-world design, the Tour Series doesn't skimp on features either.

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Fender

TANNOY

System 6 NFM II

A 6.5 inch Dual Concentric with Tulip HF wave guide forms the heart of the System 6 NFM II providing a reference single point source monitor in a more compact enclosure than ever before. Every aspect of design fully complements the drive unit's capability. The rigid cabinet with carefully contoured baffle and trim minimizes diffraction and the high quality minimalist DMT crossover and gold-plated Bi-Wire terminal panel optimize the signal path. Pin-point stereo accuracy with wide frequency response, good power handling and sensitivity make this an ideal nearfield monitor

PBM Series II
Reference Monitors

The PBM II Series is the industry standard for reference monitors. They feature advanced technologies such as variable thickness injection molded cones with nitrile rubber surrounds and the highest quality components including polypropylene capacitors and carefully selected indicators. 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 4" polymide soft dome ferro-fluid cooled tweeter providing extended bandwidth for extremely precise sonically-balanced monitoring
- Designed for nearfield use, the PBM 5 II cabinets are produced from high density medite for minimal resonance and features an anti-diffraction radiused front baffle design

PBM 6.5 II

- Transportable and extremely powerful, the PBM 6.5 II is the ideal monitor for almost any project production environment
- 6.5" lowfrequency driver and 3/4" tweeter are fed by a completely redesigned hardwired 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 medite 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 drown 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 4Ω when bridged to mono
PA-1400 weighs 16 lbs. is 15" deep and takes 2 standard rack spaces. Delivers 1400 watts into 4Ω when bridged to mono
PA-1800 weighs 17 lbs., is 17" deep and takes two rack spaces. Delivers 1800 watts into 4Ω 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, rivaling 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 tightly spring loaded, lock into place with confidence and are large enough to accomodate even the biggest fingers. The faders and knobs have a tight, 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
- Has 4 mono channels, each with discrete front end mic preamp/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 "tool kit", drum or effects sends submixer, 8-track monitor mixer

CR-1604 16-Channel Mic-LineMixer

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 understandable 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 "bonk". 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 kick 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

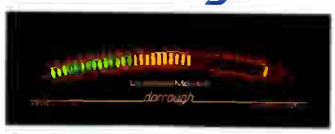
DTTO-1604

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" x 2" x 6", 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 opt on as well

BEHRINGER

MDX 1000 Autocom
Automatic Compressor/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 Composer
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 "chatter" 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 five applications. Servobalanced inputs and outputs. Operating level switchable from -10dB to +4dB

PEQ305 Studio Parametric
The Musical Equalizer

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about half of the original 200. The new programs, like the original ones, are of generally excellent quality and are above-average in terms of real-world usefulness. Loading the new programs from the upgrade kit's floppy disk is simple. Basically, you import the MIDI File into your sequencer, then play the "sequence" so that the SysEx data ports over to the Q2 (via a MIDI cable). Of course, all new Q2s ship with the new software and programs pre-installed.

V.2.0 implements sampling—up to 5 seconds in mono and 2.7 seconds in stereo. If you're using ADATs, you can sample without leaving the digital domain by busing audio tracks into the Q2's ADAT optical interface. Sampling (via either analog or digital inputs) is 16-bit Sigma-Delta with 128x oversampling at 48kHz sampling rate.

Recording and playback of a sample can be triggered either manually via the front panel value/enter button, by sending the Q2 a MIDI note or an above-threshold analog or digital audio input signal, or from either of the unit's two footswitch jacks. Three playback choices are offered, including triggering the sample once, looping it indefinitely (until another option is selected) or looping it for only as long as the trigger source is detected. Additionally, a sample's playback start and end points can be truncated nondestructively in 0.1ms increments. At a 48kHz sampling rate, this is equivalent to a 4.8-sample resolution, which is more than adequate for most applications.

The Q2 samples cleanly and quietly. However, a bug in V.2.0 sometimes starts playback of the sample from an arbitrary mid-point, plays it to the end and then loops to the beginning portion which was "missed." When playback is intentionally looped, the Q2 often introduces amplitude glitches or temporarily drops out one side of a stereo sample altogether. V.2.1 software, available by the time you read this, should correct these problems. It will be free to V.2.0 users.

Another minor gripe: initiating any of several specific front panel prompts will inadvertently erase the contents of the sample buffer. Most of these accidental aborts can be avoided by following certain programming protocols, but erasure can occur as a result of something as simple as pressing the unit's bypass or program buttons. And, as is usually the case with such devices, the sample is also volatile on power-down.

On a brighter note, V.2.0 also offers a wild new triggered panning effect that, when its parameters are adjusted to their extremes, will make even the most iron-stomached engineer carsick. The effect includes a Doppler parameter, which shifts the pitch of the signal as it pans across the stereo field. Equally effective are the new mono and stereo triggered flanging effects, which can be adjusted from a subtle down-the-garden-hose type sound to an incredibly deep jet flange. The sound of all flanger effects has been enhanced in V.2.0 with the option of negative (i.e., inverted phase) values for the feedback parameter.

V.2.0's phase inverter simply shifts the phase of the input signal 180°. Aside from the obvious applications (e.g., flipping an out-of-phase signal in multiple-miking situations), the inverter can be used to widen a mono image, add a simple phaser effect to mono tracks, etc.

Soft and hard overdrive effects are also new to V.2.0. When used in strict moderation, these effects can add a nice

edge to electric guitar. However, like all other digital distortion I've heard, using generous amounts will turn your creamy axe into an angry horde of bees trapped in tin foil.

As mentioned earlier, V.2.0 adds several new tools to your programming toolchest, making life a lot easier. You can now copy and paste Effect Blocks (including all parameter settings) into a different user program, precluding the need for redundant programming. You can also bypass an individual Effect Block within a program without killing the entire multi-effect. But perhaps the hippest new feature allows you to audition a program before you overwrite it with an unrelated program that you've edited. Version 1.xx allowed you to see the destination program's title; now you can also hear it before you send it to the grave.

The QuadraVerb 2's list price remains $799, offering very good value for the money. V.2.0 brings a host of new sounds and features and improved ease of use to the unit. At $30, the V.2.0 upgrade kit is dirt cheap and well worth it. Power up!

More from: Alesis, 3630 Holdrege Ave., Los Angeles, CA 90016; 310/558-4530; fax 310/836-9192. ■

Michael Cooper is a producer, engineer and owner of Michael Cooper Recording in Eugene, Oregon.

—FROM PAGE 91, CASINO

rather deep architecture. Lievsay lent him an ace assistant, Todd Milner, and Mackston says, "Todd's the best. He was with me day and night, all the way through, and he did all the loading. I told him that if he ever left town, I'd give him a job. I'd never worked on the Sonic before, and he was there to tell me what buttons to push.")

The fact that it was all 2-track source material made the edit slightly more challenging, as it wasn't always easy to find appropriate in and out points once the original material had been modified. "Score is different in that it's been created and timed specifically to images and emotional content," Mackston says. "Someone looked at it, spotted it, they know where the dialog is, they know where they have to be out. With track cues, you have an element that may have the feel you want for the scene, but it needs to be sculpted to fit the action. You're kind of scoring it by finding the right places to make an edit work. Obviously, if there are picture changes with score, you have to modify it to fit, but it's already been scored for emotional content and length, so it's just a matter of determining where to make it fit the cut. I find cutting track music much more challenging."

You know music is going to play a large role in a Scorsese soundtrack, but you also know that picture is paramount, perhaps more so than for any American director working today. The camera, and the edit, determine what's important in the track—the close-up of the dice hitting the table or a swish-pan from a dealer to the player making the bet. "These are not effects-heavy pictures," Lievsay says. "You can tell what sounds need to be emphasized, and he almost never uses a close-up without a discrete, distinct sound. So you know for some of those close-ups you need something big. He's doing the same thing with picture that we're doing with audio, where you have the big scene, then he zooms in for a close-up on a certain word. The idea is that you're in a big environment and can still be pulled in for something very intimate. That's really the best way to get the most mileage out of a track." ■

Tom Kenny is a Mix *associate editor.*

GROOVE TUBES

MODEL THREE TUBE MICROPHONE

Over the years, vacuum tube condenser microphones have been the choice of studio pros, especially for vocal miking. There's a certain aura about vintage tube mics. But even with the finest gear, diaphragms grow brittle with age, capacitors begin leaking, and finding original replacement tubes can be difficult. And even in poor condition, the asking prices for vintage tube mics border on the astronomical. Meanwhile, some modern and reissue tube mics sport price tags in the $4,000 to $8,000 range.

Several years ago, Groove Tubes Audio began producing high-quality tube mics that were affordable to the average recordist. The company's latest product, the Model Three (MD3), improves substantially on its predecessors, while staying at a down-to-earth $1,795 ($2,195 with power supply, heavy-duty shockmount and cable).

From an aesthetic viewpoint, the black-wrinkle finish and chrome grille of the 8.5-inch mic body have more in common with the RCA 44 or 77 than the industrial look of earlier Groove Tubes mics. Inside, a 1-inch-diameter capsule with a gold evaporated coating on its 3-micron, hand-tensioned Mylar diaphragm is the first clue that this is a serious mic.

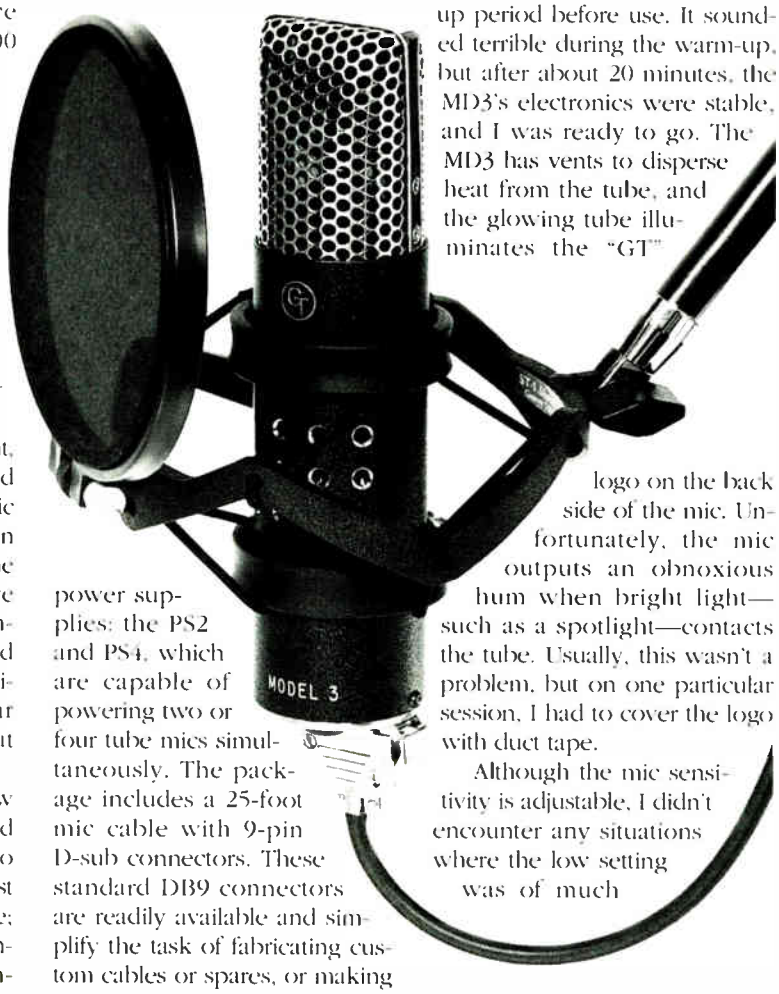
In a separate chamber, below the capsule, a specially selected 12AT7 dual-triode provides two stages of amplification. The first amplifies the condenser capsule; the second triode acts as a cathode follower to lower the impedance and reduce the turns ratio of the output transformer to 4:1. According to the company, this avoids the need to use the 30:1 turns ratio transformers typically used in condenser mics, for improved clarity and better transient response.

The MD3 offers three response patterns: cardioid, subcardioid and omnidirectional. On the underside of the mic, a 20-position (2 dB per click) switch allows adjusting the sensitivity from -28 dB to -48 dB.

The PS-1 power supply is a rugged, brick-sized box with a multipin mic input connector and an XLR output jack. Groove Tubes also makes two other power supplies: the PS2 and PS4, which are capable of powering two or four tube mics simultaneously. The package includes a 25-foot mic cable with 9-pin D-sub connectors. These standard DB9 connectors are readily available and simplify the task of fabricating custom cables or spares, or making repairs if the cable is damaged or cut.

The mic securely locks into the ST1 shockmount. Two foam inserts (included) allow it to be used with small-diameter mics ranging from 0.75 to 1.70 inches, as well as 1.70- to 2.25-inch large-barrel mics. Over a period of months, the ST1 proved to be highly useful in reducing any vibration noise short of a direct hit by a 105mm artillery round. Another nice touch is a pop filter screen that clips on the front of the ST1.

As with many tube mics, the MD3 requires a nominal warm-up period before use. It sounded terrible during the warm-up, but after about 20 minutes, the MD3's electronics were stable, and I was ready to go. The MD3 has vents to disperse heat from the tube, and the glowing tube illuminates the "GT" logo on the back side of the mic. Unfortunately, the mic outputs an obnoxious hum when bright light—such as a spotlight—contacts the tube. Usually, this wasn't a problem, but on one particular session, I had to cover the logo with duct tape.



Although the mic sensitivity is adjustable, I didn't encounter any situations where the low setting was of much use. In any case, the electronics' noise floor is lowest with a maximum sensitivity setting, and I didn't need to change it.

I began my tests on female

BY GEORGE PETERSEN

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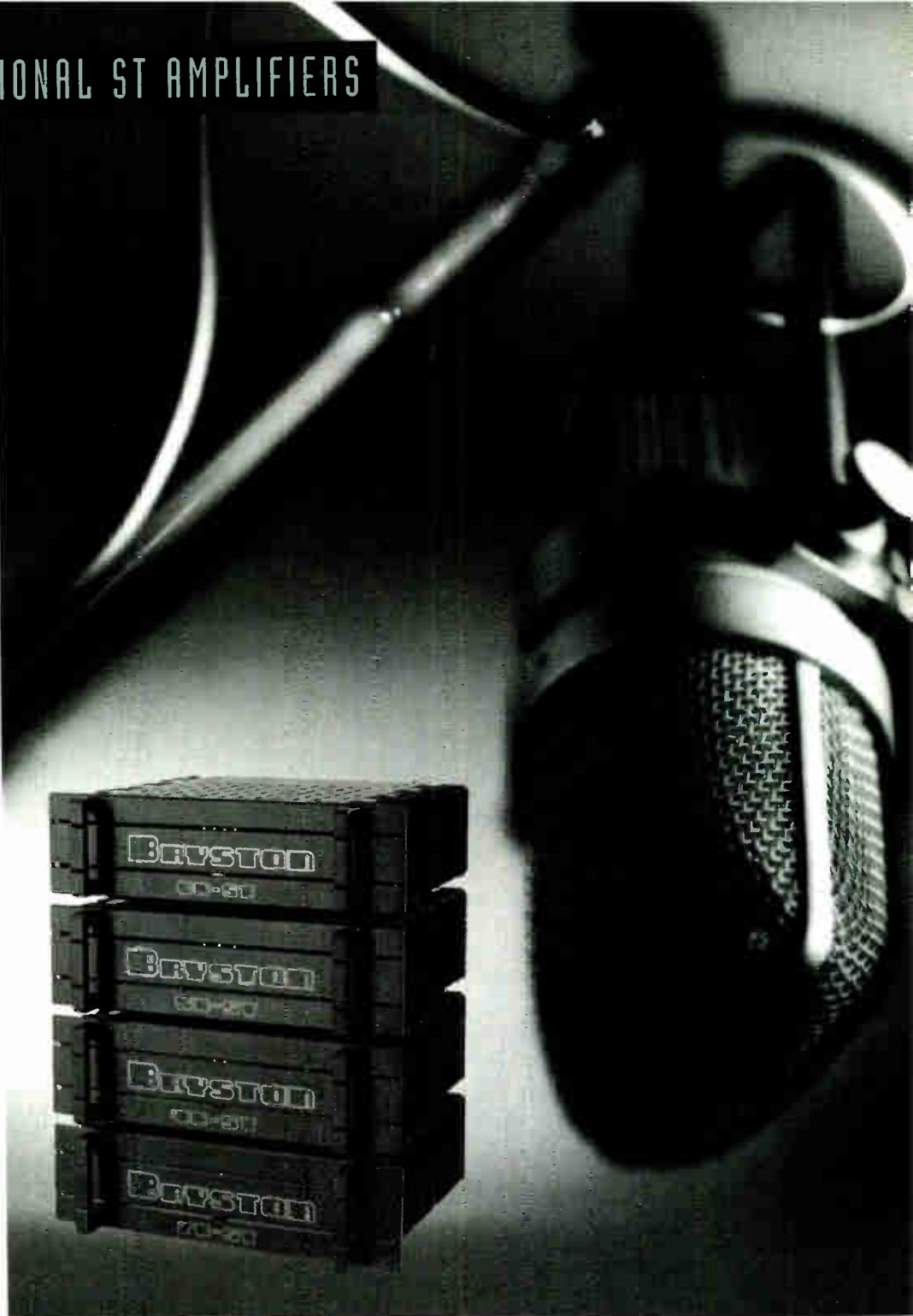

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vocals, with the capsule set in the cardioid position. Once properly set up (high sensitivity, long warm-up), the MD3 seemed very big, with a sound that accurately reflected the tonal quality of the voice. I also was impressed with the MD3 on male lead vocals, which sounded rich and full. On background vocals, including female, male and mixed groups, the MD3 provided a silky—yet nonsibilant—top-end character that was exactly what I was looking for. And the MD3 off-axis response in the cardioid setting was smooth.

In cardioid mode, the MD3 accurately put out what came in, without excessive bass boost due to proximity effect. As an engineer, this is what I like; however, if you or the performer needs that proximity boost, you'll have to try another mic. Speaking of bass, the MD3's internal pop filtering was effective in stopping unwanted breath noises, and I only needed to use the external filter on a couple occasions.

I also used the MD3 in a variety of instrumental applications, including sax, trumpet and trombone overdubs, as well as acoustic guitars, violin and dulcimer. The results were mixed. On the stringed instruments, I wished the MD3 offered a little more bite, along the lines of a small-diaphragm condenser. However, I was pleased with it on horns and reeds, as it provided a smooth counterpart to the edginess that such instruments often have. The mic handles SPLs as high as 130 dB, and with the sensitivity control at its -20dB setting, it could handle 150 dB. But there was no problem with the 130dB level, even with close-miked trumpets.

Although I liked the MD3's performance in the cardioid setting, I was not enamored with the mic in the omni or subcardioid positions. In omni, the MD3 exhibits a less-than-flattering bump in the 7kHz range. My advice is to leave the mic at the cardioid setting, where it really shines.

It's not always easy to describe the "sound" of a mic, but sonically, the MD3 comes off very similar to Sony's classic C37a tube mic, with perhaps just a hint of the fullness of an AKG C-12 thrown in. Priced around $2,000, the MD3 is an affordable alternative for anyone seeking a solid, quality studio tool.

Groove Tubes Audio, 12866 Foothill Blvd., Sylmar, CA 91342; 818/361-4500; fax 818/365-9884. ■

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BY TOM KENNY

POST·SCRIPT

SOUND FOR FILM

POPS AND TONES FOREVER

by Larry Blake

I don't know what got into me at the end of last year, but my last three columns in 1995 were a bit outspoken, even for me. I try to refrain from either complimenting or criticizing specific companies; there are enough people doing the same things right or wrong that I can usually go an entire column without mentioning a trademark. Although the points that I have been trying to get across have required me to name names (not that I have ever taken the equivalent of the film sound *omertà*), I'm always fearful of hurting people or of being seen as sucking up to anyone.

It's in this spirit that I hereby offer my opinions on a very propellor-heady and potentially snooze-inducing subject: the use of sync pops and test tones in making movies today.

In mixing for feature films, I try to limit my use of 35mm mag film only to contractual delivery items such as printmasters and stereo music and effects elements, in spite of the fact that everything that is *heard* by the U.S. moviegoing public on my films is from digital multitrack masters. Regardless of the timecoded nature of my sound editing and mixing, sync always comes from the 1 kHz pop that ends up on the 35mm stereo optical track negative. Every sync decision that I and my colleagues make is referenced to that one film frame (1.25 30 fps timecode frames). First, let's more clearly define the location of the head pop with regard to standard Hollywood practice.

The "Picture Start" frame of the head leader is considered to be 0*n*:00:00:00 nondrop timecode (the hour number, *n*, matching the reel number) or 00-00+00 feet/frames. Thus, the head pop will be at 0*n*:00:06:00 (0009+00), with the first frame of picture at 0*n*:00:08:00 (0012+00). All of this is pretty clear until

you realize that some diligence and care are necessary to make sure that what you see is what you get. Let me explain:

If your start mark, as transferred to videotape for sound editing, is not exactly at the hour start (thus throwing off the timecode locations of the pop and the first frame of picture), then any sound effect that you cut visually against that timecoded videotape will be out of sync by that difference once the pop is placed at the 9-foot point. You might get lucky with the dialog track, since during the mix you will probably be using the pop from your original cut track, although in this instance the sync would be a bit soft *visually*. The only way to correct this is to start using offsets on your recorder and playback machines, a process that can be incredibly confusing and frustrating. Oh, what a tangled web telecine weaves when first it ignores sound editor pleas.

Therefore, it is essential that the first field in which the "picture start" frame is visible is the first field of the reel hour number, followed six seconds later by the pop and eight seconds later by the first frame of picture. Furthermore, the "picture start" frame should be an "A" frame, spanning two fields beginning on field one. DO NOT let the telecine facility tell you that it can't be done (I've been doing this since 1989) or that you have no right to demand field-accurate perfection. Even if a telecine transfer is one field off, show them your written spec and bounce the transfer back. You should confine your use of offsets *only* to the creative sliding of tracks or when conforming mixes; they should never be used as a substitute for sloppy craftsmanship in dealing with the film/video film obstacle course.

If everything has faced north and all the footage counts equal their intended timecode addresses, you're ready to make 35mm mag copies from your timecoded masters. You need to be aware that your physical start mark that you placed on the mag record head when you, using your chase synchronizer, bestowed a mythical on-the-hour timecode value to your mag track, won't neces-

—CONTINUED ON PAGE 167

FACILITY SPOTLIGHT

DIGITAL SOUND AND PICTURE

by Tom Kenny

The film sound community is not known for its bold leaps into new ways of working. Despite the fact that many independent editorial houses have purchased workstations and removed Moviolas, tried-and-true working methods are generally the order of the day.

PHOTOS LEE SALEM

Above: At Digital Sound and Picture in Los Angeles, John and Nancy Ross are pictured next to their new T2 Technology M4000 automated mixing system, located on their new video projection and 35mm film projection mixing stage; left: Foley stage with artists Catherine Harper and Ossama Khuluki.

Sure, Pro Tools and other systems packed in flight cases are now regularly brought in to dubbing stages, and when facilities put in new rooms, using up real estate to house the mag dubbers is not even considered. But to continually stay on the bleeding edge of technology and new ways of working, it often makes sense to buy into *first*-gener-

—CONTINUED ON PAGE 169

AUDIOTRACKS' DIGITAL DAILIES

STREAMLINED AUDIO POST FOR "NIXON"

By Mel Lambert

Computer-based editing of motion pictures brings with it dramatic advantages and disadvantages, depending on your particular viewpoint. For picture editors, random access means speed, and it offers the ability to try a number of different sequences before deciding on the final cut. But for the audio team

—CONTINUED ON PAGE 170

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—FROM PAGE 164, SOUND FOR FILM

sarily be correct. Puzzled? Let me say this another way: You have to make sure that the way your timecode synchronizer regards the start of the film frame is taken into account when you place the start mark on the record head. Thus, the pop will be exactly nine feet after said start mark (which is a piece of tape with marks to center over the head) and need not be moved once the track is "popped."

Popping a track involves cranking up the gain on a mag head reader "squawk box" while tapping the area around the pop to find the precise track area spanning four perforations (no more, no less) that make up the frame of the pop. That frame is placed at 0009+00 on the sprocketed synchronizer, and then the film is wound back to find the correct start mark nine feet earlier.

I have used some timecode synchronizers that require placement of the leading edge of the start mark over the mag machine's record head gap, and others need the trailing edge to be over the gap. (Both of these methods are, of course, two perforations off from the standard film practice of centering the start mark on the record head.) Because you will always pop the track (right?), technically there's no need for a start mark or a compulsively perfect one. I just think this is another way you can practice your craft so that you reduce the chance for error down the line.

Some more hints with regard to pops: Always make sure that the recorder and playback machine are up to speed when recording the pop, and always use one and only one pop source (the dialog A track) during the final mix and printmastering. This will avoid the classic two-frame pop-that-thinks-its-a-tone problem when combining a couple of slightly out-of-sync pops. Four perfs, no more, no less.

Although nobody will doubt the need for head pops to be accurate, tail pops are often regarded merely as an indicator that the reel has ended, rather than a reliable guide in checking the sync established by the head pop. By the way, tail pops are three feet after the Last Frame of Picture (LFOP; aka LFOA for...Action). When I say three feet, I mean *exactly* three feet, such that if the LFOP is 937+02, the tail pop should be at 940+02. This is becoming more and more critical with the use of nonresolved transfers in crucial stages, the most common one being the transfer of the picture editor's work track from a nonlinear editing system to a non-timecoded DAT that is then loaded into a workstation.

In the old days of mag sound editing, the 35mm work track would be transferred 1:1 to another piece of 35mm stripe and would be within a perforation of the length of the original. The newfangled method described above can result in errors of greater than a frame in the course of a 2,000-foot double reel. Whether such a sync error is detectable is irrelevant; I'm a firm believer in the old adage that if you keep a critical eye on the small details, the big ones will take care of themselves.

Opening up another can of worms, I hasten to add that sync of individual shots these days in nonlinear editing systems is often a bit dicey. This lack of attention to Craft is endemic of so many "improvements" in technology. The production track's sync relationship in days of yore was established by a clapstick and careful coding of picture and work track, and you could be pretty sure that each shot was in sync. Now, with the picture/sound relationship often created by someone reading a blurry timecode slate in a telecine room at 4:15 in the morning, shit happens. You no longer can rely on phasing to the work track.

One issue regarding tail pops that has puzzled me is that some people question their use on the last reel. "The public might hear it," the chorus says. If the film indeed ends and the dowser stays open, with the picture and sound full up, a measly sync pop isn't going to reduce any more suspension of disbelief than the visible end leader and the speaker-shattering sound of the tail leader blasting over the optical sound head. Not to mention the lights being on and the projectionist/ticket taker/janitor picking up the trash (which is why they're not in the booth to properly end the film).

The most important point is that the last reel needs a tail pop throughout the editing, premixing, and final mixing stages no less than the others. Tail pops should be placed on every track in a workstation, and they're especially helpful when conforming to edits in the picture cut. Listen up, mixers, this is why you need to put tail pops on *every* premix; it isn't too tough to mute all tracks but one when laying down the head and tail pops.

Now, the tones.

The basic reason that we should take care in creating reference alignment tones is that we are creating a Rosetta Stone to aid in deciphering the audio. In analog recordings, this boils down to letting us know how the physical properties of both the recording head and the mag stock relate to how the EQ and bias were set up on the recorder.

Standard practice on 35mm mag has evolved to include level reference tone and pink noise at the head of each roll. On Dolby A-Type encoded material (which these days is usually just printmasters, SR thankfully lording over the world of premixes and final mixes), the level tone at the head of each reel should be the distinctive Dolby warble that announces the presence of A-Type encoding. (For this reason, I don't use 1 kHz for level reference at the head of A-Type material.) The sequence at the head of SR-encoded material is usually pink noise, SR noise and 1 kHz. The exact order of these three varies from studio to studio, although a friend told me recently of the solid reasons why his studio uses pink/SR noise/1 kHz: the SR noise reduction is turned off while recording the pink noise, turned on (plus the setup mode) to record SR noise, and then the setup mode is turned off, with encoding still on, to record the 1k tone. This sequence not only assures that your reference EQ adjustment—pink noise—will not be NR-encoded, it also leaves the recorder with the encoding *in*.

I hope that this doesn't confuse anyone, because this flies in the face of standard engineering practice of *not* recording tones with noise reduction encoding in. Indeed, this is a procedure that you should always adhere to with regard to pink noise and to low- and high-frequency tones that you will be using to reproduce EQ adjustments. With SR, you can get by with recording the 1kHz tone with NR in because it will pass it through unscathed; this is *not* the case with A-Type!

In addition to the pink/SR noise/1k sequence at the head of each reel, I always try to include a separate roll containing a more extensive tone sweep, plus short loops of level reference tone and pink noise. The tone sweep usually includes 40 Hz and 100 Hz, for precise, repeatable adjustment of low-frequency EQ (where real-time analyzers are a bit squirrely with pink noise), plus 1 kHz, 3 kHz and 10 kHz, and then pink noise. The more tones the better on this roll, and if you want to include a continous tone sweep or a full-frequency "pink tone," then do so. It can't hurt. But always, always use pink noise

for mag film purposes; this is the industry standard. It should be recorded at -15 VU.

Length of tones: For three-track mag, each tone at the head of each reel should be no less than 30 feet long, and you should print more when creating 4- or 6-track material. With regard to multitrack (analog or digital) premix or final mix rolls, I find it very helpful, at the head of reel 1, to have two minutes of 1 kHz because this facilitates a check on all 24 (or 48) tracks getting to where they need to go without the Button Devil or the Patchcord Devil getting in the way.

Along these lines, I will also stagger the tone start on multitracks so that left and Lt channels begin at 00:56:00:00, center channels two seconds later, right/Rt channels four seconds later, surround channels six seconds later, etc. This way, when making a printmaster I can solo each stem and see that the entire playback/recording monitor path—dubber outputs, board inputs, board outputs, encoder inputs, encoder ouputs, recorder inputs, recorder outputs, and monitor inputs—is properly patched and at 0 VU. This same approach should be taken with your workstation files. At the head or tail of each reel, there should be a sequence of 1kHz tones at your 0 VU reference level, which can aid transfer personnel in knowing that the workstation outputs are at unity gain and are going where they should.

Once these tones have been laid down on your film or multitrack masters, they should be carried with that material as long as no further change (level, EQ, etc.) has been made in the program. A common example of this issue occurs when a D-1 videotape master is made from 2-track, matrix-encoded printmasters. In addition to 1kHz level tone at -20 dBfs, the format specification of most studios requires printing 100 Hz and 10 kHz (and sometimes even pink noise) onto the archival digital videotape master. Wouldn't you know it, virtually every time I have butted in on a film of mine being transferred to tape, the guys in the machine room are laying down fresh new tones on the head of the videotapes. Every time, they say, "This is what we always do," and I have to explain that copying the tones from the master is the only way of ensuring that the EQ and phase relationships in the master are preserved and documented.

Thus, to recap the moral stated above, you should: a) make sure that your mag or multitrack masters have a complete set of tones on them, b) find out when and where your film will be transferred to videotape, and c) try to be there to make sure that everything is done properly.

We're all pretty clear on the fact that one should align reproduce level and EQ to mirror the original recording. What you should be aware of is, when making an analog copy, whether or not the recorder itself should be aligned to a master "bible" reproduce EQ roll or to the tones from the source material. (Granted, what I'm about to describe is becoming more and more infrequent, but I think the fundamentals still apply.)

You *must* align tones from the source if you will be either intercutting (on the same physical unit) new recordings with the original or, of course, if you punch in to the original recording. In addition to standard azimuth and EQ adjustments, if you really want to do it *right*, you need to check head height adjustments. And, of course, punching in requires that you know exactly how the original recording was biased. (Yet another example of an area where documentation usually fails. Also remember to write down on the head leader the reference fluxivity, EQ characteristic, and which channels azimuth was adjusted to.)

The role of tones in analog recording is easily understood, but I continue to be asked why I put a complete set of tones on digital multitrack tapes, and not simply 1 kHz. I wish I had nickel for every time someone let me in on the fact that there is no EQ adjustment on digital machines. *Really?* When last I checked, no matter how all-digital a facility was, sound still had to be transferred to analog tape (mag or multitrack) at some point, and without a guide as to what the digital recorder considered to be flat, there's no way of verifying whether a transfer is done properly unless you have a complete set of tones. There is simply no reason not to print this material on archival master material such as stems or printmasters.

And last, but not least, production mixers should always remember to provide a complete set of tones. (A shockingly high percentage of films enter post with nothing more than the internal Nagra tone printed as a reference.) I find it optimal to record a complete set on the first day of shooting and then again on the last day. Thus, when transferring the selected takes into the workstation for editing, the ¼-inch machine

can be aligned to the first day's roll, and then verified with the last to see whether there was any drift or damage to the machine. (There shouldn't be.) This tone set (Nagra tone, 1 kHz, 100 Hz and 10 kHz, plus pink noise) should be printed at -8 modulometer on the Nagra, which corresponds to 0 VU. Because most production consoles don't have pink noise, I would suggest that mixers invest about $75 in getting a small portable one.

Tell me your favorite sync pop/tone horror stories by writing to PO Box 24609, New Orleans, LA 70184; Fax 504/488-5139, or via the Internet: swelltone@aol.com. ■

Larry Blake is a sound editor/re-recording mixer who lives in New Orleans for reasons too numerous to mention, although having the French Quarter eight minutes away would be near the top of his list.

—FROM PAGE 165, DIGITAL SOUND & PICTURE

ation equipment, which is precisely the theory behind the development and rapid growth of Digital Sound & Picture in Los Angeles.

When we last checked in with John Ross, who co-owns DS&P with his wife, Nancy, it was September 1991, and their year-old facility was outfitted with five DAWN editing systems and a few Sound Tools stations; they were talking about a local area network. Do Re Mi at that time could be called, literally, a garage operation, and Ross was one of the first to buy in. Digidesign, at that point, was a new kid on the low-cost block. A year later, the Rosses bought a Euphonix CSII, installing a two-operator version for the "IV room" that was one of the first digitally controlled analog boards in L.A.

"I've always been one to look at the first version of a new technology," Ross says. "I like to be in on the early development, working with the manufacturer to bring out options we'd like to see. And it's worked out well for us so far."

Today, Digital Sound & Picture runs 22 8-channel DAWN systems on a local area network, with files and sounds accessible from any of the 15 edit bays or three main dub stages. Two 32-track Pro Tools III workstations (running with SampleCell on a TDM bus with 24 outputs), along with six stations housing Sound Accelerator and five SampleCell cards (StudioVision front end), are used for much of the actual designing of effects.

A 3,500-square-foot expansion completed in October 1995 added the third dub stage, six edit bays and a Foley/ADR room, where voice and Foley are recorded directly into the DAWN. In keeping with the new-technology commitment, the dub stage was outfitted with a two-position Tactile Technologies M4000 console with moving faders automation. The other two mix stages house custom two-position and three-position Euphonix boards, with multiformat buses and monitor matrix. At the 1995 AES convention in New York, Euphonix introduced its film version of the CS2000. Ross had "chained together" three independent boards two years earlier so that he could have the traditional Hollywood dialog-music-effects positions.

Each of the stages and all of the edit bays have access, via the LAN, to an extensive effects library. A Gefen Music Systems M&E Organizer, coupled with two 300-CD jukebox players, holds all the available commercial libraries. But DS&P also burns its own effects CD-ROMs, both specific to individual shows and in various genres, such as action-adventure, complete with metal hits, screeches, glass breaking and the like. Those are typically local to the individual stage for instantaneous retrieval, with discs loaded and removed as needed.

Although DS&P seems as technically advanced as any facility in town, and Ross is as technically astute as any facility owner (to the point that he does most of the maintenance), what excites him is not so much the gear as what the gear allows, which is a new way of working. Flexibility is his mantra, and his goal as a supervisor/mixer is to provide filmmakers with options, options, options.

"Directors are getting used to flexibility, and they're starting to demand it," Ross says. "We work in a slightly unique way here, and once that certain type of director discovers that they can have options, they tend to enjoy it and then need it. David Lynch is doing a new movie here, and he loves to work in a way that he can create on the spot, at the mix. A person of his nature would be stifled in the classic predub-etch-it-in-stone-and-move-on kind of world.

"Of course, if they don't want to take the time on the stage, they don't have to," he adds. "The units are there. They're hung. They're cut as they would be for a traditional show. And if you choose to mix by hitting Go, that's an option. If you choose to take it further and actually play around with the elements, that's also an option."

Random access and sound design at the mix is the way Ross prefers to work. While most of Hollywood has loaded up on DA-88s, at the end of the day, as Ross says, they're still a multitrack. And to offset an element, you would still need to bounce it around, and that's a physical process. To drop a music cue from reel 1 into reel 10 is still a physical process.

"We do mix back to DA-88s as our stems, and that becomes our master at that point in time," Ross explains. "But on the dub stage, everything is hung off of hard disk. There is just so much more flexibility to do a picture change, or move or substitute events. You can do unique mixing moves firing out of RAM. For example, if you want to make an explosion spread out of the center channel in a normal Dolby-style show, you can copy an 'instrument' of all the sounds that make up the explosion, duplicate that, pan one of the instruments right, pan one of the instruments left, slightly detune them, and all of a sudden your explosion is coming at equal volume out of all four speaker sources. It gives you more impact but the same overall energy going to your film optical. Those tricks are impossible to do off-the-cuff in a normal analog environment.

"Or if you want to make the BGs a lot bigger because the producer feels they're playing too small, you can just copy them, duplicate them, offset them, mix up the tracks a bit more and keep layering them until they're a montage of sound. It's more than just an editing tool. It becomes part of making the sound for the picture work—and whatever that entails."

In five short years, DS&P has grown from John and Nancy Ross to a staff of 40. And bigger projects have come in. The facility handles editorial and mix duties for a steady stream of Showtime movies, and just recently they picked up 22 episodes of Sam Raimi's *Hercules: The Legendary Journeys*, 22 episodes of Raimi's *Xena*, and 13 episodes of *American Gothic*, also by Raimi, and involving ISDN links (they have Dolby Fax and EDNet) to North Carolina for ADR. But the big projects, the ones that could help catapult them into big-budget features, were the editorial and DTS mixes for New Line Cinema's *Now and Then*, starring Demi Moore and Melanie Griffith, and the editorial and Dolby Digital mix for *It Takes Two*, starring Steve Guttenberg and Kirstie Alley. Already they've picked up the edit and mix for the Leslie Nielsen spoof *Spy Hard* and the edit/mix for Cinergi's *Amanda*.

The future? We'd love to offer some form of picture-editing options so that we have facilities for a picture editor to be online with the LAN—pulling their own temp effects, downloading EDLs and interfacing more on a one-to-one basis with the sound company," Ross says. "It's a profile that actually existed in Hollywood many years ago. But when the boutique companies came up with their own specialties, these processes grew apart. I think we can get back to that environment, and it doesn't necessarily have to be housed in the same place. Through the use of high-speed ISDN lines, you can be part of a local area *community*, if you want to think of it that way." ■

—FROM PAGE 165, AUDIO POST FOR "NIXON"

waiting for the edited reels, disk-based video editing can be a nightmare.

At the heart of the dilemma is the often compromised quality of audio tracks used during the video-editing process. With disk storage at a premium, savage data-compression might easily cause sonic degradation. The source for picture in-load to the disk-storage arrays is likely to be a U-matic, Beta SP or even S-VHS work reel, which offers a less-than-optimum soundtrack quality. When this cut track is turned over to the supervising sound editor, it is often distorted, which makes the process of deciding which sound elements to replace, and which can be used from the work track, all the more problematic.

AudioTracks, a member of the Soundelux Group of companies based in Hollywood, may have come up with a better way. During pre-production of Oliver Stone's *Nixon*, concern was expressed about maintaining digital-quality audio through the various editing stages. Following a series of meetings between Ixtlan, Stone's production company, AudioTracks and Encore Video, a technique was developed to ensure that first-generation audio was retained during the picture-editing process. The resultant methodology, according to insider sources working on the picture, also helped save at least a week of transfer and sound editing.

As Kim Waugh, president of AudioTracks, explains, the Digital Dailies process uses "off-the-shelf components from Avid Technology, plus a high degree of quality control during the digital transfer of timecode DATs."

The process is indeed elegant. Production dailies are delivered on DAT, Nagra•D or ¼-inch analog to AudioTracks after the day's shoot is complete. AudioTracks transfers D-to-D or digitizes the sound to Avid Film Composer bins, listing roll, scene, take, audio timecode and any other appropriate data. The audio is then sent, via a 4-gigabyte removable hard drive (RMAG), to nearby Encore Video, a film-to-tape facility that digitizes the picture to the existing RMAG bins using Avid's Media Recorder telecine negative-to-disk transfer system. The digitized audio and picture files can then be taken on RMAG to the production company's editorial department for auto-sync and picture editing. *Nixon* is said to be the first feature film to exploit the advantages of the Digital Dailies process.

"The advantages of working with digital dailies are immediate," Waugh says. "The process guarantees that the picture editor's soundtrack remains first-generation without the analog degradation inherent in using mag stripe and videotape. Moreover, this process puts the [audio-to-picture] synchronization process back in the hands of the picture department—where it belongs—and is done directly within

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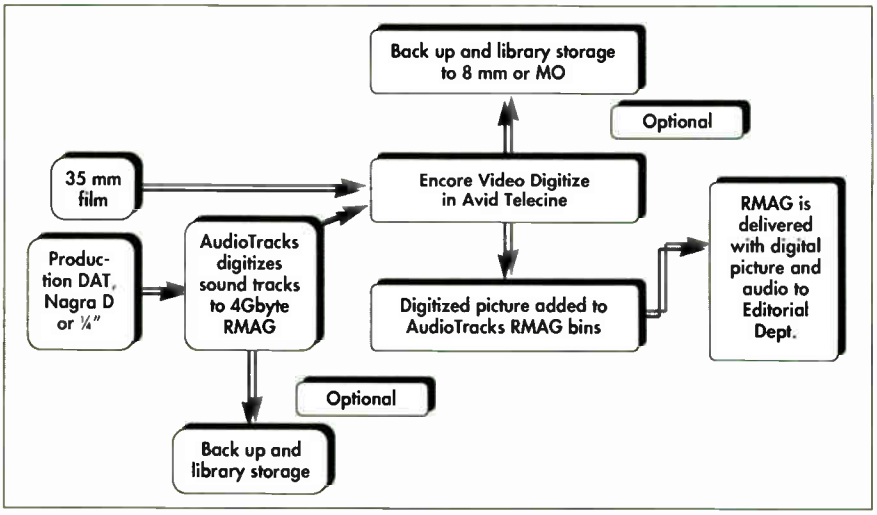
the Avid Film Composer system." Waugh says the costs involved are comparable to the traditional analog process.

"The benefits in post-production are significant," adds *Nixon* post-production supervisor Bill Brown, whose credits include Stone's *JFK* (an Oscar nominee for sound), *Natural Born Killers*, and John Hughes' *Ferris Bueller's Day Off* (Golden Reel Award nominee). "The Digital Dailies process guarantees that there is a digital path through post-production. It also eliminates the steps that pollute the audio, namely putting audio onto videotape. We know that the audio exported from the Avid Film Composer system is digital-quality and could, in a pinch, be used for a temp mix."



AudioTracks' Digital Dailies flow chart

From previous projects with Stone, Brown recalls that sound quality on the work print posed several problems. "We edited *Doors* on the EditDroid, and *JFK* using four offline U-matic video decks, with analog audio tracks. Bad sound! For *Natural Born Killers* and *Heaven and Earth* we used a Light Works system, which, because we inloaded picture from a ½-inch telecine transfer, produced less-than-perfect sound quality. But with this new direct transfer process, we can retain optimal-quality audio right through picture editing." (Avid provides full-bandwidth audio via its 44.1kHz, non-compressed sample rate.)

Brian Berdan, picture editor on *Nixon*, agrees with Brown's assessment. "Digital Dailies beats any other process I've used," he says. "It's great to know that the sound quality is first-generation." During the 62-day production, Stone often used several cameras per take. "But only one sound transfer is needed for each scene, regardless of the number of different camera positions, since I could sync each take to its digital production sound file prior to editing."

Having prepared a first cut on Film Composer, Berdan turned over sound files to AudioTracks' transfer department, where they were consolidated from RMAG onto the Avid AudioVision drives, and the cut sequence imported from OMFI-file format to AudioVision format for the sound editorial team. "Because we were working with first-generation digital copies of the production tracks," recalls Chris Hogan, who

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served as dialog editor on *Nixon*. "I could tell straight away what tracks we might need to replace and what we could use right off the work print. In the past, we might have had to spend a lot of time simply pulling transfers from DAT or ¼-inch, so that we could determine for ourselves what elements were usable and what weren't."

Re-conforming the edited work track is also greatly simplified because of Avid's use of OMF data to tag each of the timecode-related edit points created by Film Composer. "Editorial houses can take those OMF files," says Eric Livengood, Avid's application editors manager, "and use them directly in AudioVision and similar systems to lay off checkerboarded reels for dialog editing. It saves a lot of time on a dialog-heavy movie like *Nixon*."

Further information from AudioTracks, 7060 Hollywood Boulevard, Suite 711, Hollywood, CA 90028; 213/463-3855; fax 213/463-3972. ■

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

WORKSTATIONS IN EVERYDAY USE, PART 3

by Loren Alldrin

This month, we continue our spotlight on popular digital audio workstations and the people who use them every day. We'll look at the Akai DR8, Fostex Foundation 2000, Roland DM800 and Spectral AudioPrisma systems, learning how these tools are used in applications that run the gamut from 30-second toy spots to blockbuster movies.

FOSTEX FOUNDATION 2000

SOUNDSTORM, BURBANK

No stranger to the world of tape-based recording, Fostex entered the realm of digital audio workstations with the Foundation 2000 about two years ago. Foundation 2000 uses a dedicated controller/recorder approach, so it requires no host computer. The system's controller includes a video-style jog wheel for scrubbing audio, touch-sensitive electroluminescent screen and familiar tape-style transport controls. Users can add an external monitor to increase the viewing area of the controller's display. The Foundation system offers 16 tracks of real-time playback, with two tracks (or "voices") available at each of the eight outputs. A/D and D/A conversion is at 18-bit resolution, allowing the Foundation 2000 to deliver uncompromised sonic quality.

The basic Foundation 2000 system, which includes the controller and recorder, offers eight analog inputs and outputs, eight channels of digital I/O, an 8-channel ADAT Lightpipe output and numerous sync/machine control interfaces. The entry-level 2000RE system starts at around $9,000; a fully loaded system, including such options as digital submixing, DSP boards and moving-

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fader controller, costs upward of $40,000.

Soundstorm, in Burbank, Calif., has done audio post for some major motion pictures in recent years, including *Batman Forever*, *Clear and Present Danger*, *The Fugitive*, *Under Siege* and many others. With about 20 Foundations online in editing rooms, transfer suites, dub stages and design stations, sound editor Jay Nierenberg says Soundstorm has made a "complete commitment" to the system.

"We did a lot of research, looking into every other system available," Nierenberg says. "We were a film-editing facility—if we were going to commit to a system, we wanted it to make sense to film editors. Foundation has a jog wheel that feels like a synchronizer; it has a touchscreen in the middle. It's not like using a computer; it's like using an edit controller, which is exactly what we were going for. If you've worked on film for ten years, you don't want to sit at a computer and edit. Sometimes, with computer-based systems, it seems like you're expending more energy toward operating the computer than doing the actual editing. And the scrub on the Foundation is the best I've heard on any system. It's like scrubbing mag in a synchronizer. The more you zoom in, the finer the scrub is.

"Another issue was price," Nierenberg continues. "The Fostex was by far the least expensive system for us to get into. And though Foundation may be behind some systems in terms of all the bells and whistles, it's got just about every function that you need. We did *Batman Forever* almost exclusively on the Foundation 2000, and that was a *huge* soundtrack. It has passed the test in terms of being able to handle big jobs.

"Foundation is a stand-alone system, which works in our case. We didn't need to buy 20 or 30 computers to run the workstations—I look at that as a good thing. Sometimes, a computer is just another peripheral that needs a bunch of maintenance. A lot of the people here have used other systems, and Foundation is by far their favorite," Nierenberg concludes. "It's a very elegant system."

ROLAND DM-800
COMPOUND, NEW YORK CITY

Roland's DM-800 is unique among digital audio workstations, in that it's a completely self-contained unit that weighs a scant 12 pounds. The DM-800 will record up to eight tracks at a time to two SCSI hard drives, and it comes standard with four outputs (expandable to eight). The DM-800 also offers 11 faders; pan, EQ and input gain knobs; an LCD screen; data entry wheel; and numerous dedicated buttons for transport, editing and locate functions. All editing functions are controlled from the unit's front panel, though you can attach an external NTSC or RGB monitor and keyboard. An automated mixer section remembers gain, EQ and pan changes for each digital audio event used in a given project; time compression and pitch correction algorithms are also available. An optional digital interface allows the DM-800 to swap tracks with ADAT or DTRS digital multitrack recorders. The basic DM-800 unit ($6,295) comes without internal hard drives; you can install your own SCSI drives or order a DM-800 with two 500MB drives installed ($7,595).

Compound, a New York-based sound design company, uses the DM-800 to post sound and music for TV, feature films, record production and jingles. Recent projects include sound design for the independent film *The Brothers McMullen*, the Jimmy McBride "cab driver" spots for MTV and the recent rockumentary tribute to Marvin Gaye. Owner/founder Scott Pittinsky found the DM-800 to be the perfect tool to allow him to compete in a tough market.

"I was out to create a small, well-designed studio to compete with the big guys here in New York," Pittinsky says. "The question was, how do you sound as good, work as fast and be able to bill at some reasonable rates when competing with people with huge consoles and large decks? The key to doing this was to find some really cool new tools. With the DM-800, I was able to build a little 'engine' to produce quality-sounding results fast.

"The DM-800 has changed the way I create sound for feature films," he continues. "Since I don't have a Foley group, I've started taking the DM-800 on location to record eight channels of 'Foley.' I bring the results back, tighten up the edits and add other elements. For jingles, I'll design a loop in-house, take the DM-800 out to track a guitar or vocal, come back and edit, head out to record another guitar, whatever. Then I go to a studio and run the tracks back out to a SMPTE-striped multitrack in multiple passes. When the client comes in, he or she hears a jingle that sounds like it was tracked in some really big 'A' room somewhere, when it was really assembled in my little studio. The DM-800 keeps me really efficient.

"The DM-800 sounds amazing," Pittinsky says. "When people hear the playback, they keep asking me, 'Where did you track this?' Fidelity was a major selling point for me. It's a small machine, but it sounds really big. The interface was also important—I wanted dedicated controls, and I don't like the idea of hauling a computer around. Because of its size, the DM-800 is great for moving from studio to studio. Essentially, the DM-800 is my multitrack. The bonus is, it has an amazingly fast and powerful editor onboard."

SPECTRAL AUDIOPRISMA
SEVENTH LEVEL, LOS ANGELES

Spectral is becoming a recognizable name in the mid-priced DAW market, thanks in part to the success of their affordable AudioPrisma system ($4,495). Basic hardware consists of a single board that installs into any 386 or better PC. Internal and external SCSI interface ports are standard; the board offers Spectral's own SMDAI digital interface as well as standard AES/EBU and S/PDIF digital I/O. SMPTE and MIDI support are standard. Spectral offers several external hardware options, including outboard 2- and 8-channel A/D-D/A converters with I/O metering, digital audio format converters, and time-

code/RS-422 serial breakout box. Spectral also offers a complete turnkey solution—AudioEngine—which offers up to 16 tracks of playback and numerous DSP and I/O options.

The AudioPrisma system ships with two completely different software front-ends—Prismatica, the "general purpose" interface geared toward audio post, and Prisma Music, an interface more suited to multitrack music production. AudioPrisma offers 96 virtual tracks, with up to 12 active tracks playing back in real time. Nondestructive functions include numerous edit tools, fade (200 variations), crossfade, EQ, forward and reverse scrubbing, and varispeed playback. Destructive editing functions include time compression and expansion, pitch shift, gain adjustment, normalization and reverse playback.

Seventh Level, a Los Angeles-based company that provides audio and other content for interactive CD-ROM titles, recently took delivery of its sixth Spectral system. Seventh Level recorded, edited and mixed audio for the award-winning *Monty Python's Complete Waste of Time* interactive CD-ROM, as well as the more recent *Battle Beast*. Works in progress include a Disney CD-ROM based on characters from *The Lion King* and an interactive title from producer extraordinaire Quincy Jones.

Chief audio engineer Paul Ray says, "The Prismatica system is taking the place of anything we would do on a multitrack. We often have to sync dialog, effects and music together, and it's a great environment for being able to pull files, slide them around, and make level and EQ changes. Then we can mix down internally and come up with a variety of mixes. Many of our products are localized to other countries, and we are able to do M&E [music and effects] tracks separate from the dialog. This cuts *way* down on the time to redo a project for localization.

"With interactive, everything is kept in very small files," Ray continues. "*Monty Python*, for example, had more than 4,700 files. With software engineers constantly changing this or that, the ability to get in and make a change immediately is a great thing. This is one reason I love the Spectral system—I can pull up a project easily, make a change, and go back to what I was doing. The automation in the mixer is also real handy. I can go back a month later, play a mix, drop in changes, and send the whole thing back out again.

"The Spectral's main strong point is its sound—the overall sound quality is excellent," says Ray. "The system's flexibility is very good, as is its interfacing with Windows. The equipment is sturdy as well—I've never had a system go down, and I've shipped them all the way to Germany. It's easy to use, with a small learning curve. I've never had a problem getting people to immediately understand the Spectral system. That's no small feat."

AKAI DR8
BUON NATALIE

For those who want the raw editing power and speed of a hard drive-based system with the familiar look and feel of a digital multitrack, Akai offers the DR series of recorders. The DR line includes 4-, 8- and 16-track models; all units offer familiar tape-style transport controls, jog/shuttle knob for precise cueing, auto-locate points, and numerous editing features. Units can be purchased with an internal SCSI hard drive; optional SCSI interfaces are available for attaching external drives.

The DR8 (8-channel, $3,495) offers a built-in 16-channel mixer with auto-mix

control over level, pan and two effects sends per channel. The 16-track DR16 ($4,995) offers MIDI control of its internal mix functions, as well as an optional 4-band digital EQ board. Both DR8 and DR16 offer a VGA output board option that displays all mix and edit functions on a standard VGA monitor. Other options for the DR8 and DR16 include an external remote record/edit/mix controller or mix interface, Alesis Lightpipe-compatible digital I/O board and serial RS-422 interface. With optional sync boards installed, the DR8/DR16 will lock to MIDI clock, MIDI Time Code, SMPTE and bi-phase; an RD-422 board allows Akai recorders to emulate a Sony VTR for integration into professional video studios. Future plans for the DR16 include a special SCSI interface to communicate with a host computer for enhanced capabilities.

Angelo Natalie, owner of "one-man jingle house" Buon Natalie, recently supplemented his MIDI studio with the DR8. Primarily a MIDI post-scoring studio, Buon Natalie's primary market is in providing music, voice-over and effects for 30-second toy spots. Recent clients include Lionel Happiness Express, Creepy Crawlers, Zoo Ball, Harley Davidson Power Gloves and others.

"Buying the DR8 really came down to a choice between it and a tape-based system," says Natalie. "Being a MIDI programmer, I hate waiting for tape to rewind, for things to lock up. The painless, seamless locking of the DR8 has me so spoiled! I also looked at Mac-based systems; I didn't want to invest in something that might be defunct shortly, since Apple won't be making the NuBus Macs any more. Frankly, the expense of some of the other systems was prohibitive. For the money, the DR8 had the features that I needed. I'm able to slip, move, copy and paste tracks—all right onboard. The DR8 also has a great selection of inputs and outputs. The five-take feature is really nice as well, allowing you to lay down five takes and commit to one later."

Natalie has the optional SMPTE card installed in his DR8 and does most of his post-scoring to a VHS dub with SMPTE LTC and visual timecode window. "When I'm building up tracks, I put the DR8 in MIDI Machine Control mode so it's being controlled by the sequencer," he says. "When I click on a marker point in Performer, the DR8 is right there—something that just doesn't happen with tape. For the mix stage, I drop back to SMPTE lock and sync everything to the dub. I was ready to spring for a digital multitrack," Natalie concludes, "but I went for the DR8 instead. I'm glad I did." ■

Loren Alldrin is a freelance audio engineer, producer and studio owner.

POSTINGS

Crawford Audio Services in Atlanta took delivery of the first Euphonix CS2000F film console, an 80-fader, two-position model. The two-operator configuration includes two 40-input, 28-mix-bus sections, along with a Digital Studio Controller. The console also ships in three-operator versions...**Music Annex Audio Post-Production**, more commonly known in the San Francisco Bay Area as "Green Street," recently opened SoundLab, an offline audio suite based around a Digidesign Pro Tools III system and the Sony PCM-800 8-track digital recorder...**Henninger Nashville**, a wholly owned subsidiary of Henninger Media Services, acquired Elite Post of Nashville last fall...**The Saul Zaentz Film Center** in Berkeley, Calif., recently re-

—CONTINUED ON PAGE 212

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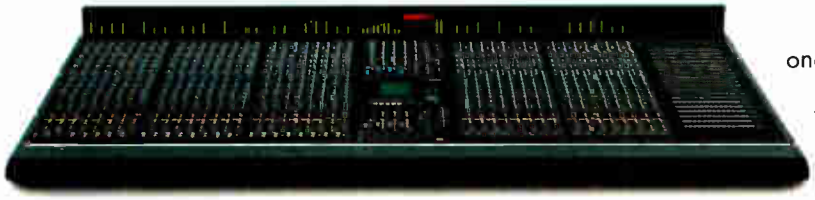

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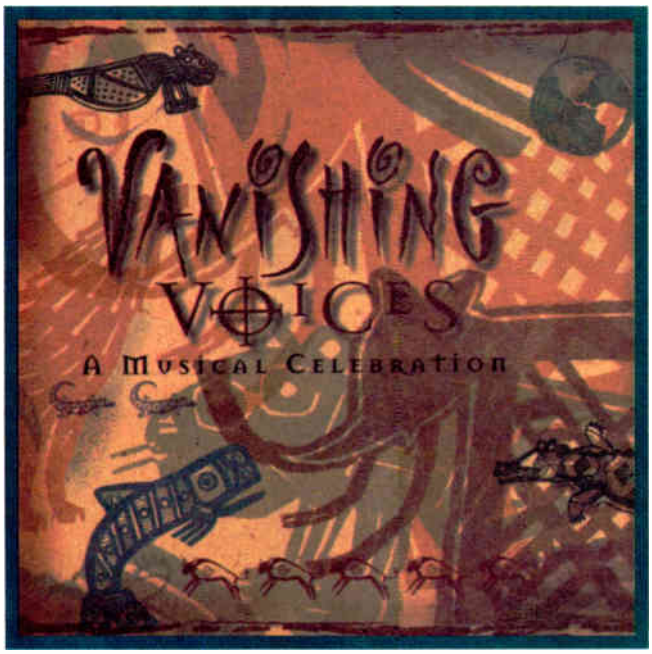
BY BLAIR JACKSON

RECORDING NOTES

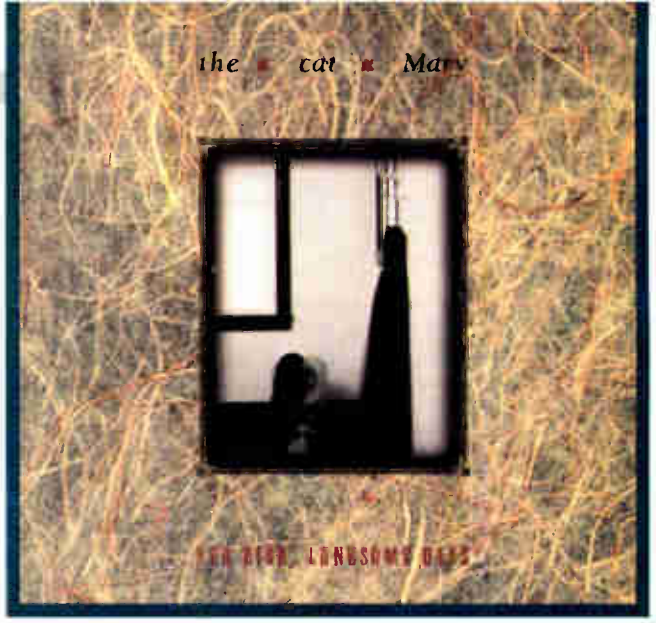
OFF THE BEATEN TRACK: SIX COOL RELEASES

Jane Kelly Williams: *Tapping the Wheel* (Parachute/Mercury). On her fine major-label debut, singer-songwriter Jane Kelly Williams has succeeded in carving out a nice niche for herself. Although obviously influenced by Rickie Lee Jones, Williams has her own expressive vision, and her songs, at once highly personal but also accessible, exude a warmth that is both pleasing and inviting. It's a great-sounding record, thanks in large part to the skillful production/engineering of Ben Wisch, who's probably best known for the excellent albums he's made with Marc Cohn.

A native of Georgia, Williams had been living in the rectory of St. Paul-St. Andrew Methodist Church in New York City, helping care for the minister's children, preparing music for church services and working on her own music on the side. Wisch liked what he heard in Williams' demos, and "when it came time to do the record, we were looking for a way to do it inexpensively, and she talked to the people at the church and we really liked the vibe there—the wood and the old quality of the church," Wisch says. "The main room we recorded in was a very small room on the third floor, an old, funky storage room that we cleaned out and set up some equipment in. We also did some recording in the sanctuary—the songs that were done on piano were done in that room—but it was too much work to keep moving the equipment back and forth, and we couldn't just leave it set up in the big room." The drums were recorded in another small, wood-walled room, next door to the main tracking space, using just four mics.

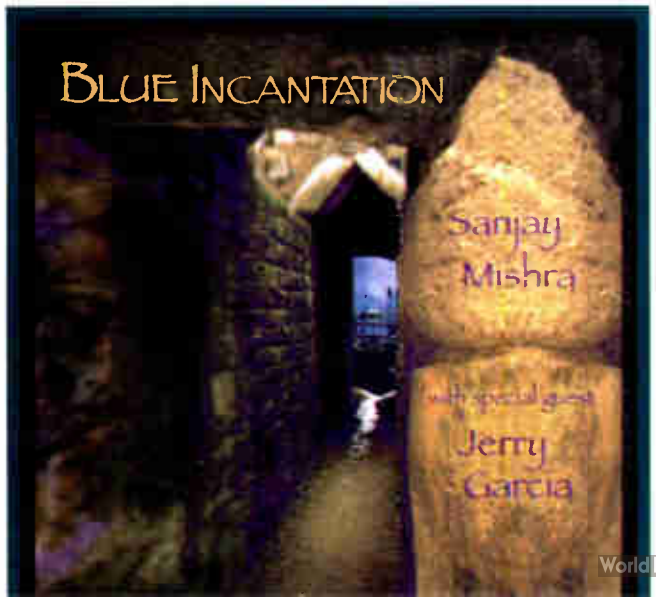


"Our basic setup was two ADATs—three when we mixed—and a Mackie 32 by 8 board, although I used some API and Neve mic preamps, and I went direct to tape on everything," Wisch continues. "The quality might not be quite what you'd get from super-high-end digital machines, but the advantages financially so far outweigh the disadvantages.



You spend three weeks in a room with a couple of ADATs, and it costs almost nothing, and it still sounds really good. As opposed to spending over a thousand dollars a day in a studio." (That said, I should note that when I talked to Wisch, he was working at Dreamland Studios in upstate New York, and he certainly has no plans to forsake professional studios. The Williams project happened to have a small budget.)

Wisch worked without a control room, using headphones to monitor during performances and a pair of NS-10s for playbacks. Williams already had three excellent supporting musicians working with her—guitarist Marc Schulman, percussionist Everett Bradley and acoustic bassist Dave Richards—and for this project she added a nicely understated drummer, Shawn Pelton, and a couple of other spot players. The sessions took place at the church over the course of three weeks, with some additional overdub work and the mix done at the SSL-equipped Quad Recording in Manhattan. Some of the songs were recorded live with Williams, Richards and Pelton laying down the basic tracks, and then the other players brought in separately. Others were constructed track by track, building on Williams' performance. "Because this was sort of Jane's first outing, we thought it was important to focus on her and get that nailed and then work everybody else around her to a certain extent," Wisch says. He used an AKG 451 on Williams' vocal and guitar.



It's not clear to me what sort of radio format Williams' music might find a home on, but someone this talented rarely goes unnoticed too long. And it seems as though everything Ben Wisch does is worth checking out—he has great ears and impeccable taste.

Sanjay Mishra: *Blue Incantation* (Raindog Records). This album arrived on my desk the week that Jerry Garcia died, an eerie coincidence since it features Garcia's guitar on three songs, representing some of his last work in the studio. That will probably be the album's selling point for many people, but those who buy the CD to hear Garcia are in for another treat when they listen

to the rest of the record. The India-born Sanjay (as everyone calls him) is a superb writer and guitarist, with a brilliant melodic sense and the ability to coax a clear, bell-like tone from his Godin axe. He has training in both the Indian and Western classical traditions (he's a Peabody Conservatory graduate) and played jazz for a while after his formal education. *Blue Incantation* brings his varied influences together in a seamless album of highly evocative instrumentals.

A part of Sanjay's life that doesn't appear in his official bio is the period in the early and mid-'70s when he and the widely respected BBC engineer known simply as Miti played in a Calcutta cover band devoted mainly to the Grateful Dead, The Band and the Allman Brothers. "The Grateful Dead were huge in Calcutta," says Miti, who engineered portions of Sanjay's album, and mixed the entire project at Sheffield Audiolabs. "There were a lot of hippies coming through in the late '60s and early '70s, and when they ran out of money they'd sell their tapes, and somehow they found their way into our living rooms or on our beaches or in our mountains with little cassette recorders. *Europe '72* was the album we heard the most. But we had *Mars Hotel*, *Blues for Allah*. We knew every guitar line and every hi-hat," he adds with a laugh.

Fast forward 20 years. Miti has been in England for many years, Sanjay in Washington D.C., studying and playing music and doing work for Greenpeace. One day in 1994, he gets a call from Greenpeace asking if he would meet with a filmmaker named Deborah Koons Garcia, who is looking for some literature on the environment. "I had no idea who she was," Sanjay says, picking up the story. "So I look out the window at the appointed time, and there's Jerry Garcia walking in with her. Before I could recover, she says, 'Hi, I'm Deborah, this is my husband, Jerry.'"

"We sat around, and we had a wonderful conversation about the environment. I was trying to keep the music out of it. I told him I knew who he was and that I liked the Grateful Dead, but I didn't tell him I used to play Grateful Dead music. I gave Deborah a lot of literature to take with her, and I felt bad I didn't have anything for Jerry, but I happened to have a copy of my first CD [*Crossings*], so I said, 'Here's a very small, humble little gift. It's nothing. If you get a moment…' He said, 'No, no, no, don't say it's nothing. You have a CD—You're not nothing.' He slid it into his pocket, gave me a big grin, and walked out. I thought, 'Well, that's that. Wow, after all these years I got to meet Jerry Garcia!'"

As fate would have it, that *wasn't* that. The next day, when Sanjay called Deborah, Jerry answered the phone, and he was effusive in his praise for the CD he'd been given. He and Sanjay talked at length the next day, and in the course of their conversation, Garcia offered to play on the album Sanjay had just begun working on at Bias Recording in Virginia (with Jim Robeson and Heidi Gerber engineering). "He was so incredibly encouraging," Sanjay says. "I said, 'You tell me any studio in the world and I'll book it.' He said, 'How about my studio?' [the Dead's Club Front in San Rafael, Calif.] I said, 'I'll pay for everything.' He said, 'No way, this one's on me. Just bring some tape.'"

Sanjay kept working on the record at Bias with a small group of players, and wrote a few tunes that he hoped to play with Garcia. He sent Garcia some work tapes and then, in December of 1994, on the afternoon before a Dead show in Oakland, the two met at Club Front for an afternoon of recording. Sanjay remembers, "I showed up with tape, and he laughed when he saw me and said, 'Sanjay, you know we *do* have tape here in the Wild West.' He'd

—CONTINUED ON PAGE 185

USE READER SERVICE CARD FOR MORE INFO

ROY ORBISON'S "ONLY THE LONELY"

By Blair Jackson

Although today there is considerable interest in the rockabilly music that the great Texas singer and songwriter Roy Orbison recorded for Memphis' Sun Records in the mid-'50s, the fact is, by 1958, Orbison's career was going nowhere fast. "Ooby Dooby" was a freak hit in '56, but when he moved to Nashville shortly after that, his focus changed somewhat, and he concentrated on writing songs for Acuff-Rose Publishing (eventually landing the hit "Claudette," named after his wife, for the Everly Brothers).

By the winter of 1959, Orbison had recorded a couple of songs for RCA, but none found much public acceptance. When a young engineer named Bill Porter came on board at RCA's Nashville studios that March, one of his early assignments was to cut a pair of tunes with Orbison—"Paper Boy" and "With the Bug"—but this time RCA chose not to put out the single at all. The company was set to release Orbison from his contract, but his producer/manager Fred Foster convinced the label to give him another shot. In a move that was quite unusual for the day, Foster had Orbison recut the songs in slightly different arrangements, and this time RCA decided to release the 45. Alas, it proved to be yet another disappointment for Orbison and the label.

"Then, Fred and Roy got in a conversation about changing arrangements and doing things differently, so Fred called in Anita Kerr to do some charts," Bill Porter remembers. "She had her singers, which was a pretty famous group, and she was also a great arranger—I'd say half the RCA sessions and maybe a third of the Monument work were Anita Kerr arrangements. So we did this song 'Uptown' [with Kerr and company], and that actually helped re-establish Roy—it made it up to 72 on the charts, and we were on our way."

Porter was doing most of his work in RCA Studio B, a small to medium-sized room with acoustics Porter describes as "pretty bad." (So bad, in fact, that in 1960, Porter went out and bought some Fiberglas panels, which he cut into triangles and hung from the ceiling at different heights in a successful attempt to control the sound in the room better. These became known in-house as Porter's Pyramids, and variations on that idea are still employed in some studios and concert halls to this day.) Shortly after Porter began working at RCA, he helped install a new custom console that RCA engineers had built in New York. "It was a hand-made board, done their way, but using Langevin preamps," Porter says. "It was a very good console, with 12 inputs and three output buses. Microphones 1, 2 and 3 were permanently wired to bus 1, and [mics] 10, 11 and 12 were permanently wired to bus 3. Inputs 7, 8 and 9 could be switched between 1, 2, 3, or 1 and 3, for a phantom center. Then, bus 2, which was microphones 4, 5 and 6, could be switched to either bus 1 or bus 2. I used that basically for the featured artist, so if he or she didn't play an instrument I was locked in with ten inputs only.

"I modified the tape machines [Ampex 300s] myself, because RCA had them set up so that second bus was split 3 dB down to tracks 1 and 2 on the tape machine. What happened, though, was if you tried to hear a good mono sound, the featured artist stood out too much, and at that time, mono was still the big thing, and stereo was secondary. So I modified the inputs on the tape machine so the signal was down more like 2 dB. Then, when you heard it monaurally, the mix was just about right. The stereo [mix] suffered somewhat, but I didn't tell [RCA] New York I'd done this because if they found out you'd modified anything they chewed you out real good.

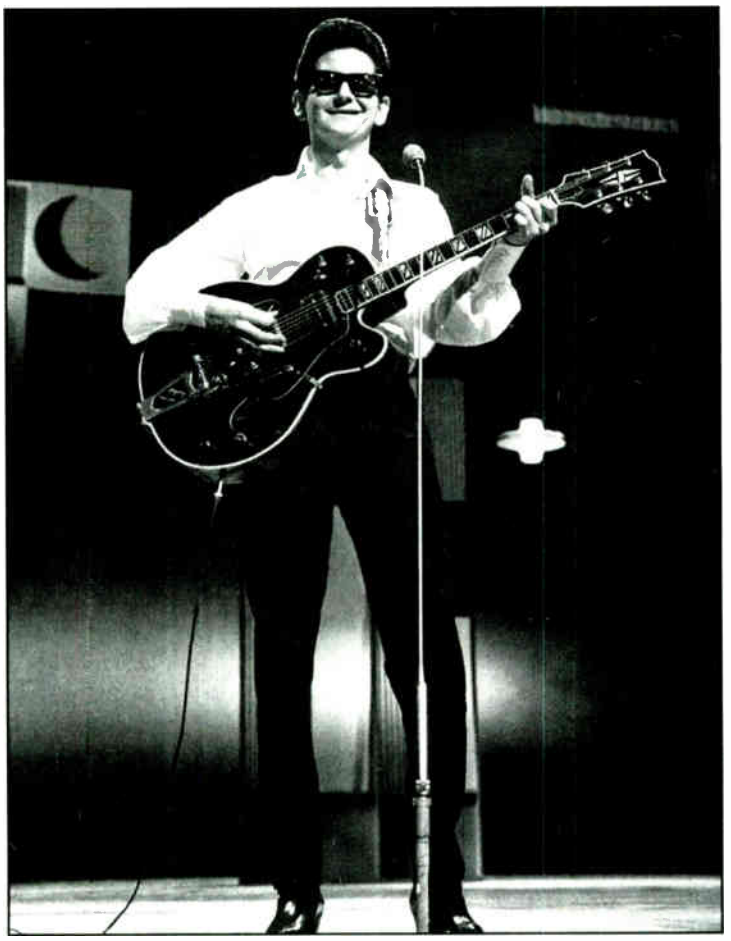


PHOTO: MICHAEL OCHS ARCHIVE

"Everything was done direct to the 2-track mix; nothing was overdubbed. The normal Roy Orbison session would be one or maybe two songs in a three-hour session. Sometimes Fred would go half an hour overtime to get a second song, which was exactly the case with 'Pretty Woman' and the B-side.

"Anyway," Porter continues, returning to the story, "RCA had released 'Uptown,' and it was starting to make some kind of noise. One day, Roy called Fred Foster and me into the studio and said, 'I want you to hear this song.' Here was Orbison playing acoustic guitar, singing this new song—'Only the Lonely'—and two guys over to his left were sort of mouthing the words, but you couldn't hear them. Roy finished the song, and he said '*That's* the sound I want,' and he tilted his head toward the two guys. One of them was Joe Melson, who co-wrote a lot of tunes with Roy, and was also an artist himself on the Hickory label. Anyway, Fred said, 'What sound?' Roy said, 'What they're singing!' I said, 'I don't hear any singing,' and Fred said, 'I don't either.' So I walked over there, and they started the tune again

and these guys are literally whispering the words. I said, 'My God, how am I going to get that on tape?' Fred laughed and said, 'Well, Bill, you got about a week and a half to figure it out!' As you know, if you open up a microphone a lot, everything pours in. So I thought about it and thought about it, and when it came time to do the session, I talked to all the players—which consisted of strings, piano, bass, drums, acoustic guitar, electric guitar, background vocals—and I said, 'Guys, play as softly as you possibly can,' and I asked the singers to sing as loud as they possibly could while still getting across that feeling they were after.

"My normal way of doing a mix is to start with the rhythm section and build a basic platform—piano, bass, drums, guitar—and then I will feature horns or strings or background voices next, and then the featured artist. In this case, I started with those background vocals as the main source, and mixed everything down from that. If you listen to that song, you notice the drums and everything sound almost a little dead, and that's because I had everyone play soft and then did what I did with the vocals. That sound on the vocals really became the Orbison trademark, and it helped establish who he was."

Porter says that in those days, Orbison's voice was "very, very thin, so I put a tape slap back from the 3-track machine to his voice on the middle channel, and I made it so it was enough to let his voice stand out, but you didn't notice the slap too much. If you listen to 'Only the Lonely,' on the words there 'I can tak-k-k-k-e' you can hear it easily. As Roy's voice got stronger and stronger, I used less and less [slap], and eventually I stopped using it altogether, because he could stand out in the mixes—and sometimes those were pretty dense arrangements." Porter used a Neumann U47 on Orbison's lead vocal. "I've had people tell me I was one of the first engineers to use all condenser microphones," Porter adds. "I used to use KM56s, KM54s on the drums, U47s, U48s, M49s, stuff like that."

After "Only the Lonely," Orbison (aided by Foster and Porter) had a streak of hits from 1960-1964 that included "Blue Angel," "Running Scared," "Crying," "Candyman," "Dream Baby," "In Dreams," "Mean Woman Blues," "It's Over" and "Oh, Pretty Woman." He was also wildly popular in Britain, even touring with The Beatles at one point. Orbison's next career high point came in 1980, when he hit the charts again with

"That Lovin' You Feelin' Again," a duet with Emmylou Harris recorded for the soundtrack of a lame film called *Roadie*. Two years later, Van Halen had a hit with a cover of "Oh, Pretty Woman," and shortly after that, Orbison's own version struck Gold when it became the title song for Julia Roberts' breakthrough film. In the late '80s, Orbison gained more wide exposure when he joined Tom Petty, Jeff Lynne, Bob Dylan and George Harrison to make the smash record *Traveling Wilburys Vol. 1*. He then cut an album produced by Lynne and featuring what would turn out to be his final hit, "You Got It," written by Orbison, Lynne and Petty. Around that time he also taped an HBO music special, *A Black & White Night*, that featured Orbison playing with some of his greatest admirers, including Bruce Springsteen, Elvis Costello, Bonnie Raitt and many others. Orbison died of a heart attack in 1988, and the posthumous Lynne-produced album, *Mystery Girl*, became the singer's highest-charting album ever. At least he went out on top.

Bill Porter went on to record many of the Everly Brothers' greatest hits (more on that in another column), all of Elvis' best Nashville material and dozens of other artists through the years. Today Porter lives in Louisville, and he wants the world to know that he's still working and available for engineering, production and audio consultation work. He can be reached at Captain Audio Productions, P.O. Box 99501, Louisville, KY 40269. He's a true legend in our business and a raconteur extraordinaire! ■

—FROM PAGE 182, SIX COOL RELEASES

been kidding. 'Man, you told me to bring tape!' He got a kick out of that."

Although Garcia was tired from touring and had a bad cold, he managed to lay down tracks on three songs, playing with Sanjay and a guide track with bass and tabla on it in the big recording room at Club Front. Grateful Dead engineers John Cutler and Jeffrey Norman handled the tech end, recording on Studer multitracks with SR through a Neve VR console. Sanjay's guitar was recorded direct. Garcia, playing one of his custom Doug Irwin axes "through old Crate and Zoom effects which were the source of endless problems," Sanjay notes, did four passes on two of the tunes, and nailed the beautiful song "Clouds" in just one take.

"We were doing it in sections," Sanjay says, "and I'd tell him there's going to be a flute over here and a guitar solo over there. He was very good at it. He understood exactly what I wanted. I guess that's what 30 years of his experience did. I had the titles, and I told him what I was trying to say with the piece. He's a very creative guy. He'd instantly react to stuff."

By this time, Sanjay had told Miti of his meeting with Garcia and asked if he would help cut the record and do the mix. "Sanjay sent me some timecoded DATs of Jerry's solos, which he'd done several passes on, and then I comped them here [in England] on a Sonic Solutions system and then sent the tape back to him and he put them back on the multitrack as one continuous track," Miti says. "It was really fun. Obviously I know Jerry's playing, so I tried to put myself in his mind, I suppose. Usually, the first take was the best, and most of what you hear is from each first take, with bits and pieces from the other tracks." Miti also recorded a pair of Sanjay's solo guitar pieces for the record.

Talking about the overall sonics on the record, Sanjay notes, "I like the feeling of space in a record. I wanted the notes to be able to breathe and sort of disappear into the vapor a little bit. I think Jerry enjoyed that a lot, and he

felt like there was a lot of space for him. I could only trust Miti with engineering this because he knew me so well."

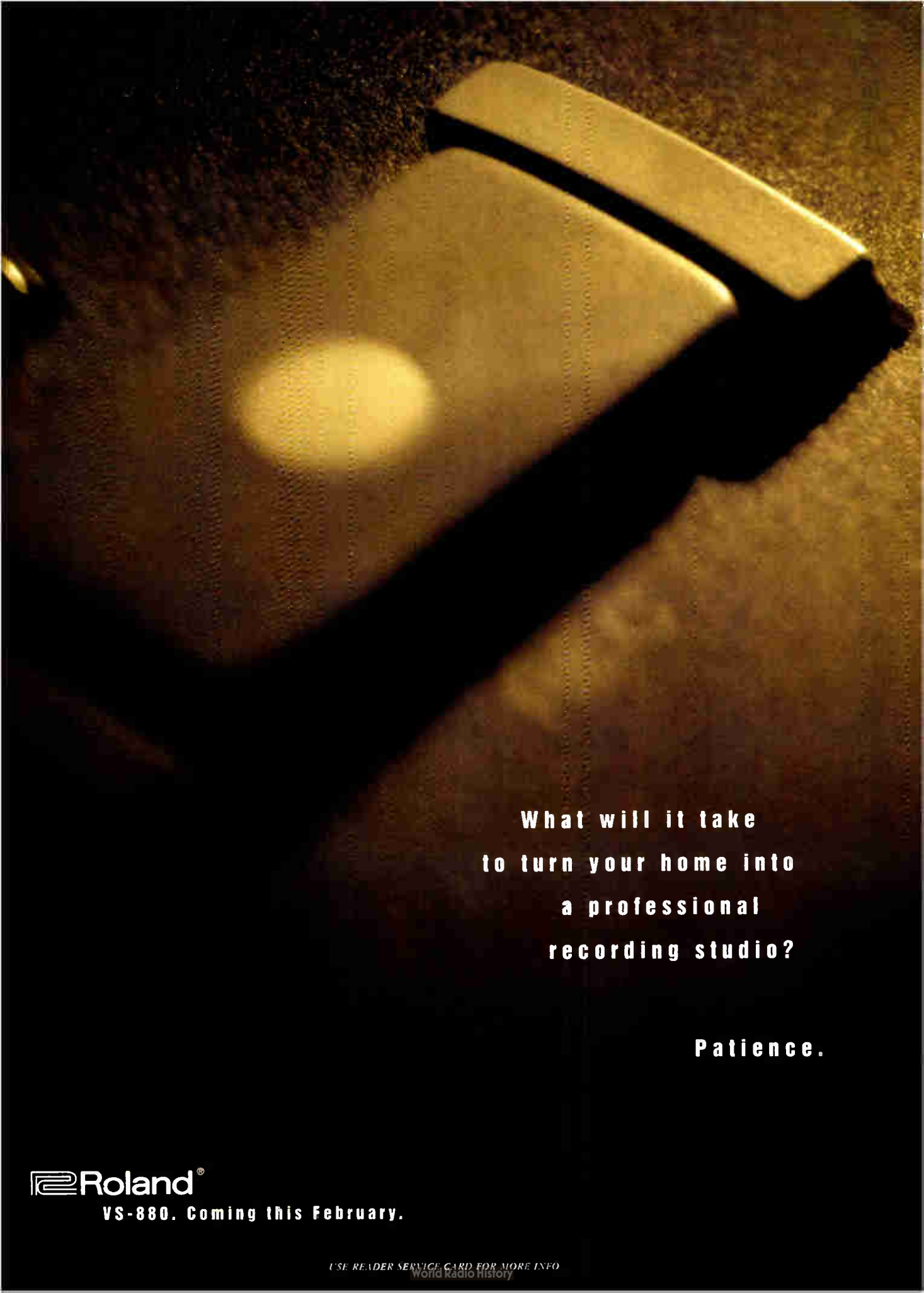
Miti mixed the disc "on the SSL at Sheffield on Otari multitracks with SR, which I really like the sound of," he says. "There's very little instrumentation, so there was a lot of space, especially on 'Clouds,' so it was quite easy to get a nice reverb—the main one was a PCM70 on a custom setting that I worked out off a preset. Otherwise, there aren't a lot of effects on it."

Sanjay sent Garcia a test pressing of the CD, but he never got to hear Garcia's opinion of the finished product—Garcia died of a heart attack August 9. However, Deborah assured Sanjay that Jerry had listened to and enjoyed the CD shortly before he died. "I was so honored that he even thought my music was worth a listen," Sanjay says. "But to then play on my music, and to play so beautifully, was beyond anything I could have expected."

James Donnellan, Thomas Bocci and Bill Robe: *Vanishing Voices* (Blue Planet Records). Cynics beware: *Vanishing Voices* is, according to the notes in the beautiful booklet accompanying this CD, "a musical celebration of endangered animals, birds and natural habitats living on our planet. Their unique sounds have been woven into a tapestry of indigenous rhythms and melodies from around the world reflecting the flow of Nature's energy." What we have here are 12 instrumental pieces meant to evoke different ecosystems (Northern New World, Australasian Region, Oceania, etc.), and blending generally light and unfailingly pleasant acoustic textures (with a few electric instruments and MIDI keyboards) with subtly used field recordings of habitats and animals, ranging from the bald eagle and bison to the humpback whale and silvery gibbon.

The driving force behind the project is James Donnellan who, under the name Jay Lewis, achieved fame and fortune as a session player and occasional producer, working with the likes of Gary Wright, Danny O'Keefe, Johnny Cash and Art Garfunkel. Most of the music was composed and recorded at Donnellan's Headstrong Studio, with Donnellan doing his own engineering.

"I live on a little lake in the Santa Monica Mountains, and there's an oversized two-car garage structure unattached to the house that became Headstrong Studio," Donnellan relates. "It's nothing that you would think is any-



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thing special, although great care was taken putting it together, so it works really well. I have a Dynamix console (a little British console) 32x8, and all the preamps are 2016 chips—Jim Williamson did all the upgrades. Everything's been modified out and just gutted, so it's basically a straight-line operation. It's wired at the patchbay for up to 32, so sometimes I use two 1-inch 16-tracks, sometimes I use a 2-inch 24-track, sometimes I use a digital machine—whatever seems appropriate. I keep one MS-16 Tascam 1-inch, which Jim Williamson re-chipped and re-capped for me, and it specs out incredibly. It's a wonderful machine. So I use that, and then on *Voices* I used it in conjunction with a DA-88, a time-code DAT machine, and we also used an Akai DR-4 [hard disk 4-track digital] near the end, locked up with the 16."

The studio is all control room except for an overdub booth. The console faces into a corner, like it was the cross-beam of an A. The monitors are hemisphere speakers he built himself: "six-and-a-halves with Dynaudio ¾-inch tweeters and triad-powered subwoofers. What I most want in a recording is a clean signal path," he says. "I like good mics, good mic pre's, good cables." Among Donnellan's favorite mics are some modified AKG 414s, a Mylab DC96 and the AKG 460. "I'm not a huge tube mic fan in the vein of 'Oh, it has a tube, it must be good,'" he says, "but a C-12 has always been a wonderful mic for me."

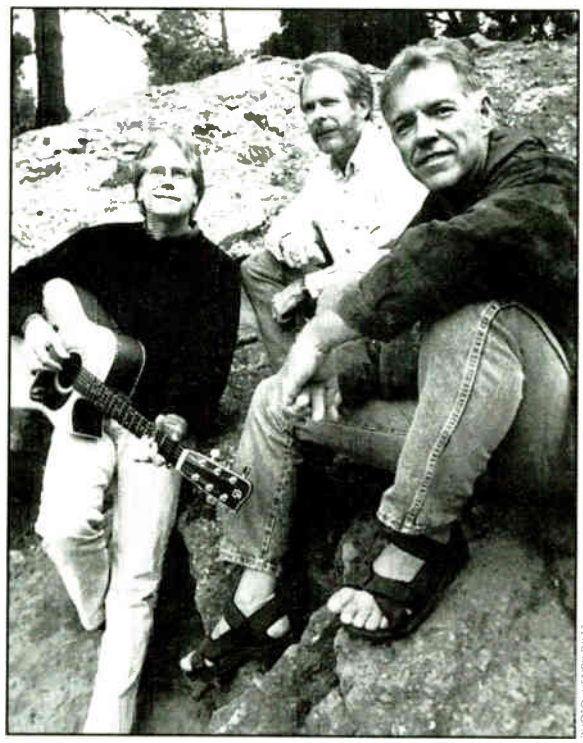

PHOTO: HENRY DILTZ

***Vanishing Voices* creators (L to R), Thomas Bocci, Bill Robe and James Donnellan**

Donnellan describes the construction of the record this way: "We assembled a library of individual sounds, ambient sounds, and then cleaned them up and got them real pristine. We made three or four two-hour DATs of that material [much of it supplied by Gary Holland, who has worked with Jacques Cousteau, among others]. "At the same time, we were watching nature films with the particular animals doing what they do and listening to what was on there and getting a vibe for it, and then playing guitar with it or whatever. In some cases, we just sat down and played, thinking about that. In other cases we went away and wrote something and

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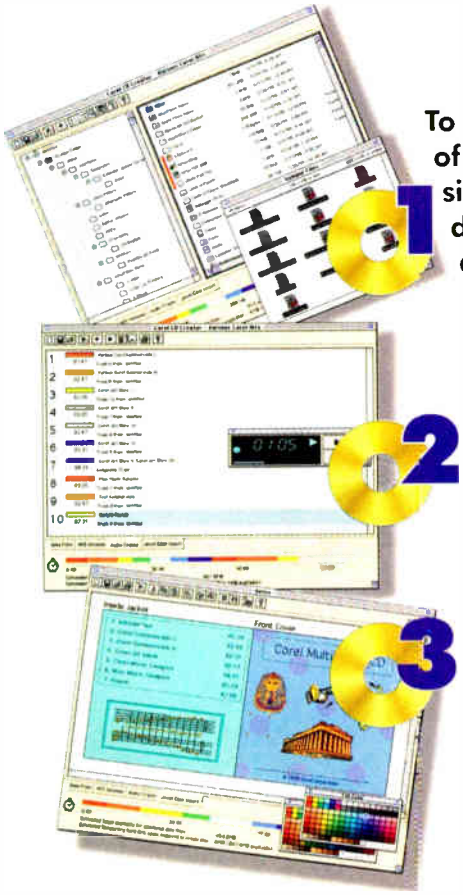

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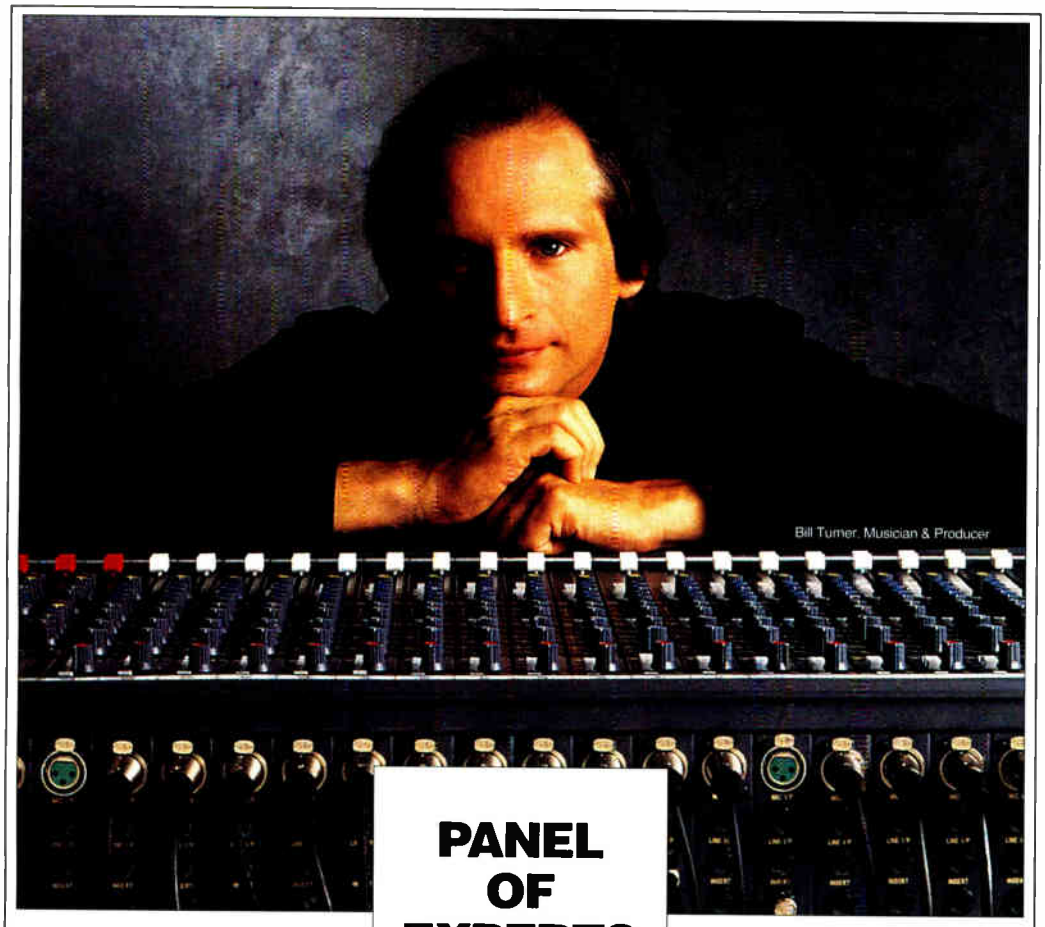

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then came back and recorded it." Donnellan's musical partners on the project were fellow guitarist Thomas Bocci and percussionist Bill Robe.

Different regions and animals suggested different working methods. For instance, "On the first cut of the album ["Closer to the Sun"] we actually sampled some eagles out of one of Gary's recordings, and I added them to a keyboard sound so that as I played the patch, the eagles sang different notes. That was one pass. One key would be wing flaps, one would be a cry, another would be lower sounds." On another track, featuring bison sounds, "We used four different separate recordings of bison running—one in mono, one in stereo, another that was close-up and one other. Then we layered in a desert wind, a couple of birds, a little thunder. All those were done individually and fine-tuned to create the feel we were looking for."

Donnellan and his fellow musicians intend *Vanishing Voices* to be just the first in a long series of thematic CDs dealing with different aspects of the natural world. Looking down the road, Donnellan hopes to compose a song cycle about growing things and the natural forces of energy, and another dealing with concepts like color and sound. "Whatever I do," he notes, "it will always be musical, it will always be flowing, and it will always be emotional."

The Bottle Rockets: *The Brooklyn Side* (Tag Recordings). The Missouri-based Bottle Rockets have been building a following for the past few years on the strength of a strong live show and two independent album releases, the most recent of which, *The Brooklyn Side*, was picked up for distribution by the new Atlantic Records subsidiary, Tag. What first intrigued me about the group was that the principal singer/songwriter and guitarist, Brian Henneman, played lead guitar on Wilco's fabulous debut album, *A.M.* (see *Mix*, July 1995). Then, when Wilco and the Bottle Rockets came through San Francisco together last summer, I was blown away by the Rockets, and Henneman's guitar pyrotechnics in particular. This guy is one of rock's great raw talents—a compelling songwriter with a strong social conscience, and a real noise-meister guitarist in the Neil Young-Bruce Springsteen tradition.

The Brooklyn Side doesn't quite capture the group's live energy, but it does serve as a good introduction to the group, which besides Henneman, includes guitarist Tom Parr, bassist

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PHOTO BRAD MILLER

The Bottle Rockets (L to R), Tom Parr, Tom Ray, Brian Henneman, Mark Ortmann

Tom Ray and drummer Mark Ortmann. The record was produced by Eric "Roscoe" Ambel, the one-time leader of the Del Lords and founding guitar player of Joan Jett & The Blackhearts, and engineered by Albert Caiati at Coyote Recording Studio in the Williamsburg section of Brooklyn, N.Y. That's a long way to go for a band from Festus, Missouri.

"I do a lot of my work at Coyote," Ambel says. "It's a place that grew from a rehearsal studio and an 8-track into something much bigger. When I first came to New York from Los Angeles, I was shocked there weren't more rooms that were set up for recording rock 'n' roll bands. Coyote is specifically set up for that." Ambel says he worked on the design of the room, and that three months before the Bottle Rockets came into the studio, Jim Falconer designed a new control room for the facility.

"The record was cut on an MCI 528 console that had been in Atlantic Studios," Ambel says. "We used a lot of outboard mic pre's and EQs—APIs, a couple of Demeters, some Jensen-Hardys, some Neves—directly to tape. I have a lot of guitar equipment myself—vintage guitars and amps, and a lot of what we did for this record was 'casting' by song: 'Okay, this song will be a Strat and a Deluxe.'" Ambel says the main room is a great rock 'n' roll space, and there are options for as many as five isolation booths. The setting is homey, to say the least: There are couches and lamps in the tracking room itself, which was a huge garage originally.

The album was mixed to ½-inch on an Otari 5050 with Dolby SR. The studio has since upgraded to a Sony 3036 board with 16 API mic pre's in it and also purchased "a beautiful Ampex ATR102, this 2-track from the '70s, totally refurbished," Ambel says.

Not surprisingly, Ambel and the Rockets decided to cut the album essentially live. "What I like to do a lot of times is go for keeper tracks on everything—guitars, bass and drums—and have the singer singing. Then, what I've found works the best for me is as soon as we find a take that we like, immediately I have the vocalist sing it three or four times with a minimum amount of coaching. Someone like Whitney Houston is an actor, and she can *conjure* the emotion anytime, I suppose, but for guys in a rock 'n' roll band, you're never as deep into that tune as you are right when you cut it. The first time I did that was on the Nils Lofgren *Crooked Line* album that I produced, and I've been doing it pretty much exclusively that way since. Ninety-five percent of the time, if you go to make a comp from those tracks that were sung right when the track was done, you'll find what you need."

Ambel and Caiati have worked together on several projects over the years and have developed similar likes and dislikes in the studio. Ambel notes, "I don't like a lot of reverb, and I really don't like the sound of a fader moving. There are moves in our mixes, but with guitars I'm usually using more than one amp, and I'm usually using several different microphones. I'll mic one with a 57 and the other with a 421 or an RE-20, and then we've been using these Reswell Ribbon mics for a blend. Also,

for the Bottle Rockets' record we had a vocal mic—the Geffel tube mic—set up in Brian's guitar area and we accidentally left it on one time, and then after that we used that track. Instead of pushing up a solo we'd turn on one of these extra mics to fatten the sound.

"I also usually use no reverb on drums," he continues. "I find that room mics work really good down low, so a lot of times I'm using these cheap Radio Shack PZMs on the floor, like ten feet in front of the kick drum. Then we use compression on those room mics to make sort of a poor man's Calrec."

For *The Brooklyn Side*, the band rehearsed for two or three days, honing the material, and then the whole record was tracked and mixed in just 11 days. Ambel and Caiati mixed on the MCI, using the Neve 2254 stereo compressor. "Since then I've bought a Manley stereo tube compressor—an LA2-type—and I love that," Ambel adds.

The record originally came out in the fall of '94 on East Side Digital, but when interest in the band increased during the first half of '95, they snagged the major label deal and have been touring almost nonstop since. If they come to your town, by all means check 'em out.

The Cat Mary: *Her High, Lonesome Days* (OMG Records). The Orchard Music Group is a new label under the direction of engineer/producer Richard Dashut, whose work with Fleetwood Mac and Lindsey Buckingham over the past 20 years constitutes some of the best-sounding records ever made in the pop idiom. So it should come as no surprise that OMG's first release features a strong, slightly idiosyncratic singer/songwriter/guitarist, Andrew Markham, and impeccable engineering and production by Julie Last (profiled in *Mix* a couple of years ago for her work on Rickie Lee Jones' *Traffic In Paradise* LP). With a sturdy, soulful voice that falls somewhere between Lyle Lovett and Danny O'Keefe, a knack for writing strong hooks, and a lyric style that mixes poetry with a novelist's eye for fine detail, Markham is a force to be reckoned with. He's not afraid to be literary (as on the lengthy title track, a spoken-word piece with brilliant, moody musical accompaniment); he's not afraid to be clever; and he's an exquisitely tasteful and talented guitar player.

"When I'm asked to describe [my music]," he says, "I try to at least have a little fun with it, since it's such an absurd, reductive process—calling it 'Southern art rock' or 'acid western swing.' It's our post-modern approach to pigeon-holing, and as dumb as those labels are, they're about as accurate as any other pigeon-hole."

"Andy's an amazing writer and musician, and he sort of came out of nowhere," offers Julie Last. "He has very high lyrical standards, and he's a great player with a wealth of ideas. At the same time, he's really open to other people's ideas. It was just a joy to work with him."

The album was recorded at OMG's recently completed studio, which is part of the fledgling company's corporate offices in Thousand Oaks, near L.A. "I gravitate toward and have a great love and respect for acoustic sounds in a nice-sounding room," Last says. "It's a Westlake-designed room, and the front half is wood and the back half is rug; we worked mainly on the wood. For a lot of the more acoustic songs, we used a pair of B&K's in a stereo XY, or a 251. With Andy's touch it was easy to get a good sound, because he's such a good player. Any engineer will tell you that a good player makes your job easier."

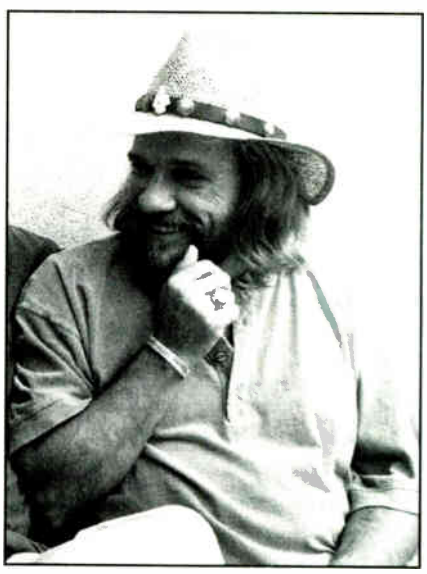
The album was cut on ADATs and a Mackie console, and Last confesses, "I went into it very skeptical because all my background has been analog, but I was amazed. It was clean, and the punching capabilities were far beyond anything you can do with analog. We went through some Neve preamps to warm it up, and we tried to use tube mics whenever possible. It turned out to be a good combination."

Last continues, "We cut basic tracks with the trio [which also includes percussionist George Sluppick and versatile bassist Christian Stratton] and then ended up redoing most of the vocals. Then we layered tons of guitar parts. Andy has a [Roland] guitar synth, so a lot of the more unusual sounds on the record are things he played on his guitar through the synth."

The record masterfully blends acoustic and some electric textures to create interesting sonic milieus for the vivid characters that Markham sketches in his songs. As on *Traffic In Paradise*, Last found that she could rely on a combo of room miking on some of the acoustic instruments, and judiciously applied processing (mainly AMS and Eventide 2016) to create the spacious ambiences she and Markham were looking for. Last did the mix at Sony Studios in L.A. on a Sony board with API EQs and GML automation. "Actually, when we first went there, the mixes sounded different to me [than they had on the Mackie] and it threw me a little," she says. "The roughs we'd done were real punchy and clear, and when we went to the new place, it was a bit of a struggle to get back to that." Still, the complexity of the mix made automation a necessity, and Last says she is more than satisfied with the end result.

Whether the record finds a wide audience or not is anybody's guess (maybe this one is Markham's *Astral Weeks*, with the commercial record still up the road), but aspiring engineers would do well to investigate this disc—it's recording at its finest.

Little Wolf Band: *Dream Song* (Triloka). This CD can be viewed somewhat as an extension of Robbie Robertson's excellent 1994 album, *Music for the Native Americans*. Once again, the focus is on Native American spiritual



Jim Wilson of the Little Wolf Band

themes, and some of the same musicians and singers appear on both albums, most notably songwriter/programmer/producer Jim Wilson (the driving force behind *Dream Song*) and singers Priscilla Coolidge and Laura Coolidge-Satterfield. (Robertson does not appear on *Dream Song*, but his influence on the album's sonics is apparent.) As the title implies, much of this music has a dream-like quality, as chants and songs rise and fade in and out of Wilson's ethereal electronic soundscapes. It's a moody and moving song cycle designed to capture some of the feeling of old Native American prayers and ceremonies, but in a more modern musical context.

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Wilson says he began work on this project back in 1987, "and actually, some of the music on Robbie's album dates back that far, too. 'Coyote Dance' [which appears in different versions on both Robertson's record and *Dream Song*] was written back then. Most of the tracks [on my version] are the original tracks, then Robbie took those and edited them in a different way and added overdubs for his album. 'Song for the Journey' was a traditional song that Robbie and I both liked, but we sort of ran out of time and never got a chance to work on it, so when I made this album, I went back to it. The Coolidges came out, and we worked on the arrangements and vocals.

"'Coyote Dance' started with 16 or 18 tracks of live drums," Wilson continues. "Then Dave Pickell, a programmer who lives in Vancouver, and I worked on it, taking the live drum tracks and making a MIDI tempo map to follow it. Then we started programming or sequencing on top of the live track, which is sort of an unusual way to do it." Most of the album was layered in a similar manner, though occasionally with the synth bed coming first, "and generally the bass, if it's on there at all, was the last thing to go on," Wilson says. "I usually do a reference bass [on a keyboard], but so often, the music changes considerably when you do overdubs, and the bass is important for tying it all together."

Wilson used two different studios over the course of the project: Some of the earlier material was cut at Blue Wave Studios in Vancouver with Steve Smith engineering. At the time, Blue Wave was an analog 24-track room with an MCI console. But the majority of the tunes were recorded at Stepbridge Studios in Santa Fe, a short drive north of Wilson's home in Albuquerque. Tim Stroh, the engineer/owner of Stepbridge, ran the SSL for those sessions. Other equipment at the highly regarded Stepbridge include Otari and Alesis ADAT multitracks, Tannoy, Yamaha and JBL monitors, Neve and API mic preamps and a large selection of outboard gear and Neumann, AKG, Micro-Tech, Shure and other microphones. (More recently, Wilson has aligned himself with a new Albuquerque facility called Santa Fe Center Studios, which is equipped with a fully automated Amek Einstein console in Control Room A, a Mackie in Room B, and a large complement of Fostex recorders and top outboard gear.)

Still, much of Wilson's work happens at home using computers and sequencers. He is, for instance, a huge fan of Pro Tools, which he says he uses "almost like a sampler. It's great for putting songs together; it's a wonderful way to work. I think it's thought of primarily as a post-production tool, but I use it all the time. I'll take loops or bits of programs and things that I have, throw them onto Pro Tools and offset them and do various things with them, and in the process sometimes find out where it locks in together to make a different kind of groove, and then sampling that and restructuring it from there."

It's precisely this mixture of technology used in interesting ways coupled with a reverence for and understanding of the ideas and traditions of a pre-machine-age culture, that makes Wilson's fusion so intriguing. Wilson hopes to make another album around Native American themes sometime this year, but in the meantime, he can also be heard on the recently released ambient/world beat CD *Transcendence* (also on Triloka), by a group called Tulku, which includes Wilson, Jai Uttal and others. "It's got a lot more influences [than *Dream Song*]," Wilson says, "including African and Tahitian music. It's quite different, but hopefully as interesting." ■

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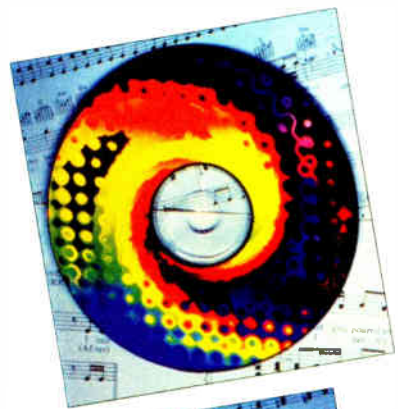
TAPE & DISC NEWS

PRERECORDED MUSIC SALES

The prerecorded music market continues to grow, according to figures released by the Recording Industry Association of America on net shipments in the first half of 1995. Overall volume rose 1.8% over the same period in 1994, with the value of the shipments (calculated at list price) rising 8.5%. CD units rose 12.6%, and vinyl was up 11.1%, while cassettes, which had been holding steady, slipped 14.6%. In announcing the figures, the RIAA noted that 60% of sales occur in the second half of the year. The trade group also estimated that its members (primarily the six major labels) account for 85% of U.S. prerecorded music sales, down from 95% a few years back, which suggests that independent labels are becoming an increasingly important force in the market.

DMI OPENS ANAHEIM PLANT

Disc Manufacturing Inc. has moved its West Coast CD replication facilities to a new location in Anaheim, Calif. Capable of producing 140,000 discs per day, the new facility triples DMI's West Coast capacity. DMI expects 75% of its volume in the CD-ROM business, with the rest in CD-Audio. Noting that the CD-ROM market is growing at about 150% annually, the company says that half of the plant's 220,000 square feet will be available for future expansion as needed.



NIMBUS FIGHTS PIRACY WITH HOLOGRAPHICS

A new holographic technique co-developed by Nimbus Manufacturing and Applied Holographics is being touted to the record industry by Nimbus as a solution to the nagging problem of worldwide CD piracy. The 3-Di•D technology is offered by Nimbus in two applications: Edge-to-Edge, which covers the entire disc surface, and Security Band, where the hologram is restricted to either the inner or outer band of the disc. Nimbus says the process has no effect on either the data capacity of a disc or its reflectivity. The process is available now to Nimbus' replication customers and will be offered for licensing to other replicators in the future.

BY PHILIP DE LANCIE

NEW SAKI HEAD DESIGN FOR SLAVES

Saki Magnetics is introducing a new line of ferrite recording heads for high-speed duplication slaves. The WK Series heads were designed for higher-speed slaves such as those recently introduced by Lyrec (128:1) and Tapematic (160:1). According to Saki, the WK heads offer more high-frequency headroom and better high-level frequency response, and may be used with either ferric or chrome tape formulations.

REWRITABLE CD GAINS MOMENTUM

Recordable CD has become more and more commonplace over the last couple of years for professional audio, CD-ROM production and desktop archiving applications. But CD-R is a "write-once" technology, which has limited usefulness in situations where true rewritability is needed. On the other hand, erasable CDs, known as CD-E, have been on the horizon for some time now without making it to market. That may soon change if recent moves by hardware manufacturers are any indication. A group of ten major players, including Sony, IBM and Matsushita, have endorsed a CD-E standard proposed by Philips.

The standard specifies that CD-E drives support existing CD platforms, read and write CD-Rs, and read CD-ROMs. By themselves, however, the specifications cannot ensure cross-compatibility because, according to Philips, minor modifications in the electronics of CD-ROM drives will be required for the drives to read CD-Es. That means the owners of existing CD-ROM drives will be out of luck when it comes to reading CD-Es. The companies did not give a date when they expect to see CD-E drives on the market.

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though Philips said a couple of years ago that introduction of the new technology would likely be sometime in 1996.

OTARI BOWS DIGITAL BIN

Otari Corporation announced the introduction of the DP-103 Digital Master, a digital master reproducer for high-speed audio cassette duplication. The bin uses removable hard drives to transfer data at 16-times real time into the system's RAM. The drives may be loaded from DAT while duplication is in progress, or loaded offline with an additional input unit. The DP-103, operated from a touch-screen controller/status display, is fully compatible with Otari DP-70 and DP-90 Series slave recorders and may be modified to run with other slave types.

SPLICES

GE Plastics (Pittsfield, MA) has initiated a CD-buyback program to expand recycling in the replication industry...**Cedar Audio** (Cambridge, UK) has introduced Auto-De-Hiss, a software package based on the company's DH-1 de-hisser technology, for 20-bit real-time de-hissing of audio material. Priced at $12,800, the software runs on any PC outfitted with Cedar's new ProDSP/R-20 processing board...**Emerald Technology** (Lincoln, NE) has added to its line of CD-packaging equipment with the CD4500. The machine shares the same motion linkage and piece-handling features as the fully automated CD8000 but uses an electro-pneumatic drive (as opposed to the CD8000's servo feedback electric drive) and requires operator assistance for jewel box feeding. The CD4500 operates at 45 parts per minute...**Telex** (Minneapolis, MN) has replaced its Copyette line of in-cassette duplicators with the Copyette EH Series, which includes erase heads. The series operates at 16-times speed and includes mono and stereo models, with either single-copy or three-copy capability...The Model 3100 fully automatic case pack-

Nimbus Records (Wales) installed a SADiE disc-editing system.

er, operating at speeds of up to 30 cases per minute, has been introduced by **Schroeder Machines** of East Syracuse, NY...**Quantum Leap** (Coral Gables, FL) has introduced *Sound Source*, a CD-ROM including a variety of sound conversion, QuickTime and MIDI utilities for both Windows and Macintosh computers...**Studio Audio** (Cambridge, UK) has announced the recent sales of two SADiE disc-editing systems in Wales, one to **Nimbus Records** in Monmouth, the other to **Nimbus Manufacturing** in nearby Cwmbran...**Gauss** (Sun Valley, CA) has announced several recent installations of its MAX digital bin system, including **World Media Group** in Indianapolis, IN, Nujoom **Al-Jazeera** in Riyadh, Saudi Arabia, and **Prasad Digi** Audio in Bangalore, India. Sister company Electro Sound reports sales of a Series 9000 high-speed duplicating system to **Wo Hing Audio Video Company** in Quangdong, China and of audio cassette loaders to **Lahari-Karnat** in Bangalore, India...**Versadyne** (Campbell, CA) delivered a 1000 Series high-speed system to the **Jose Chavez Rubio** facility in Pachuca, Mexico, and a follow-up order from the same company for six additional slaves. A 1000 Series system was also sold to **Moon Valley Cassette** in Phoenix, AZ...Ferrite replacement heads for KABA real-time cassette duplicating decks have been ordered from **Saki Magnetics** (Calabasas, CA) by **Tapemasters** (Dallas, TX), **By Hand Productions** (Albuquerque, NM) and **Tesco Productions** (Omaha, NE)...**Otari** (Foster City, CA) reports the sale of a turnkey automated videocassette loading system incorporating four VL352 loaders to the Texas facilities of **Vaughn Communications**...**Allied Digital Technologies** announced the signing of a five-year contract for video duplicating with Anchor Bay Entertainment, a subsidiary of Handleman Co. Allied also added a 66,000-square-foot fulfillment center to its Clinton, TN plant...Hollywood, CA's **Future Disc Systems** has been selected by MCA to master the

WALTER SILVER/BOSTON

Jonathan Wyner of M Works

company's forthcoming Heavy-Vinyl series of classic LPs. Future Disc also noted receipt of its 100th Gold/Platinum album award, this one from Motown for the *Boyz II Men II* album...Joe Gastwirt of **OceanView Digital Mastering** (Los Angeles) used the Model One HDCD Processor from **Pacific Microsonics** (Berkeley, CA) in mastering Neil Young's *Mirror Ball* CD...At **M Works** (Cambridge, MA) Jonathan Wyner mastered the latest CD from Aimee Mann, as well as reissues from Odetta and Woody Herman...In Pasadena, CA, Robert Vosgien of **CMS Digital Mastering** mastered new albums from Earth, Wind & Fire and Fourplay...Erick Labson at MCA's Music Media Studios in North Hollywood, CA, mastered two projects for Motown: *Boyz II Men—The Remix Collection* and *Inner City Blues—The Music of Marvin Gaye*...**Digital Domain** (New York City) was the site of mastering projects for Sunnyside Records, for Bill Crofut and Chris Brubeck, and for Sierra Records...The sixth annual AIDS benefit sampler from San Francisco radio station KKSF, including songs from Seal, Simply Red, Joe Sample and George Winston, was mastered at **Rocket Lab** in San Francisco. Other recent mastering jobs at Rocket include a David Grisman/Martin Taylor project and the Roots of the Grateful Dead collection, called *The Music Never Stopped*...At Trutone in Hackensack, NJ, Phil Austin mastered projects for the Select, Matador and RMM labels, while David Radin worked on an Eddie Palmieri project for RMM...**Airshow**'s David Glasser mastered projects including Byron Berline for Sugar Hill and Ramblin' Jack Elliot for Red House at the Springfield, VA, facility...**Immortal Productions** of Canton, OH, mastered albums for Stone Angel and Tin Huey.■

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COAST To

L.A. GRAPEVINE

by Maureen Droney

I missed out on traveling to Italy this year but got an Italian vibe when I visited the **House of Blues Studios**, in the Encino Hills high above L.A. Originally owned by Tito Jackson, the facility has the look of a Mediterranean villa. A narrow, winding road leads up to the peak of a view-drenched hill, where the studio shares space with an office and a number of microphone-ready rooms. Inside, furnishings are of the mixed-media and hand-painted style featured in the House of Blues clubs. Outside is an inviting pool, complete with juice bar and barbecue. Across the shady drive is a rec room filled with exercise gear, pinball machines and a pool table. Serene ponds filled with fish complete the picture. Yeah, I think I could live here!

After a welcome from HOB staffer Lisa Ferrecchia, studio manager Gary Belz and staff engineer Howard

—CONTINUED ON PAGE 208

Sunset Sound recently refurbished its Studio 2, including the room's vintage 96-channel Neve 8088, equipped with Flying Faders. Pictured with the board in Studio 2 are studio president Paul Camarata, Neve expert Fred Hill and studio manager Craig Hubler.

PHOTO: ELIZABETH ANNAS/EPHOTOSENSATIONS

NY METRO REPORT

by Dan Daley

The old joke among New York jingle session players was that they were so good they could phone their parts in. It was a remark heard when six or seven of them were gathered around the console at one of the then-numerous Manhattan recording studios that drew

PHOTO: KIERAN CONNELLY

Tony Bennett cut his latest Columbia release, Here's to the Ladies, (celebrating the leading ladies of song) in Studio A at New York's Clinton Recording. Pictured are (L to R) bassist Doug Richeson, pianist Ralph Sharon, engineer Joel Moss, drummer Clayton Cameron, second engineer Troy Halderson, conductor Jorge Calandrelli, Bennett and producer David Kahne.

the bulk of their revenues from commercial audio production.

That was 15 years ago. Musicians don't gather around consoles nearly as often in advertising sessions anymore, due to the simple fact that there are now fewer musicians and studios that specialize in freelance production of jingles. The personal recording phenomenon has led studio musicians into their own personal caves, where they compose and arrange as well as play on jingles. Jingles are then taken to the more elaborate in-house studios in the larger music companies themselves, often bypassing the traditional for-hire studio.

But the notion of phoning the parts in has evolved from punch line to reality. Manny's Music is in the process of setting up an ISDN codec kiosk at its West

—CONTINUED ON PAGE 211

COAST

SESSIONS & STUDIO NEWS

NORTHWEST

Robert Lang Studios in Seattle was busy last fall with sessions for **Afghan Whigs**, **The Posies**, **Bush** and the **Presidents of The United States of America.** Lang also reports that new songs from the last **Nirvana** sessions, which took place in his studios a year ago, should see the light of day on a box set slated for year-end release... American Recording artist **Nivek Ogre** of Skinny Puppy spent a few months at Seattle's **Soundhouse Recording** writing and recording his solo album entitled *W.E.L.T.* with producer/engineer **Mark Walk** and assistant **Scott Crane**. Producer **Steve Mack** was also in the studio remixing some songs from **Ann Hudspeth**'s

With the construction of a new tracking room, Seattle's Bear Creek Studio has doubled in size. Since its completion in August, the 2000-square-foot room has hosted sessions with Afghan Whigs, Jeff Simmons, Eyvind Kang, Wayne Horvitz, Love Battery and the Seattle Symphony Orchestra. Equipment includes a Trident TSM 32x24, a Studer A800 MkIII and custom 4-way Altecs. A new control room will be constructed in the spring in collaboration with designer Vincent Van Haaff.

new project. **John Nevins** assisted...Portland, OR, studio **White Horse** reports sessions with Capitol rockers **Everclear**, tracking and mixing an upcoming release with engineer **Dave Friedlander**. Sub Pop artist **Eric Matthews** was also in mixing his new release, *Heavy in Here*, with engineer **Tony Lash**...**Roy Rogers** and his band recently completed basics for Rogers' new album at **Studio D Recording** in Sausalito, CA. Record Plant owner **Arnie Fragar** engineered with **Larry Brewer** assisting...Recent

PHOTO: CAHABLES PETERSON

Pictured in Bad Animals/Seattle's Studio X are (L to R) Kim Thayil, Krist Novoselic, Johnny Cash and Shawn Kinney, who joined up to record a cover of Willie Nelson's "Time of the Preacher" for* Twisted Willie, *a "non-tribute" to Willie Nelson out this month on Justice Records. The track was produced by Randall Jamail and engineered by John Dunlevy, assisted by John Burton.

sessions at **Crow Recording Studio** (Seattle) included overdubs and mixing on **King Sunny Ade**'s new Mesa Blue Moon/Atlantic release, *E Dide*. **Andy Frankel** produced and **John Nelson** mixed...**Bill Wray** produced tracks for **Joli Valenti & Co.** at Record Two Mendocino in Mendocino, CA. Lewis Demetri engineered...Recent projects at **Room One Recording** in Tacoma, WA, included **Rorschach Test** tracking and mixing a single for DC Records...

—CONTINUED ON PAGE 206

PHOTO: CHRISTEN POCOCK

Hard rocking quirkmeisters M.I.R.V. mixed their* Feeding Time on Monkey Island *LP in the new facilities of San Francisco's Coast Recorders. Pictured (L to R) are singer/guitarist Bryan "The Great Kehorusso" Kehoe, bassist Craig McFarland, singer/guitarist Mirv and engineers Craig Sylvie and Chris Haynes.

—FROM PAGE 205, SESSIONS & STUDIO NEWS

SOUTHERN CALIFORNIA

Wes Kidd and **Mark Trombino** co-produced the Capitol debut of **Jimmy Eat World** at **Sound City** in Van Nuys and **Big Fish** in San Diego. Trombino engineered with **Jeff Sheehan** assisting. The record was mixed in Capitol's Studio C...**Dave Jerden** mixed **The Hazies** EMI debut at **Scream Studios** in Studio City. The album was produced by **Frank Aversa**. **Michael Wagener** was also in mixing BMG artists **Accept**. Both sessions were assisted by **Douglas Trantow**...Engineer **Kevin "K.D." Davis** and assistant **Joe "Voodoo" Warlick** recently mixed multiple projects in **Encore**'s Studio B in Burbank, including **Jessie Powell** for MCA/Silas; **Spice 1** for Jive; and **Something for the People** for the Warner Bros. soundtrack to *Thin Line Between Love and Hate*...**Benny Carter** recorded and mixed his new album *Song Book* in Studio A at Hollywood's **Group IV Recording**, joined by artists including Joe Williams, Kenny Rankin, Peggy Lee and Carmen Bradford. **Ed Berger** produced for Music Masters and **Angel Balestier** engineered. Group IV formed a new partnership, welcoming **Pulse Productions** to its studio complex. Former Fem 2 Fem lead singer **Michelle Crispin** recently completed her first solo effort for Pulse, produced by **Joe Tortorici** and engineered by **Eric Cowden**...Spawn of Satan speed-metallers **Slayer** were in Studio A at **Hollywood Sound Recorders**, overdubbing and mixing with **Dave Sardy**, engineer **Greg Gordon** and assistant **Bryan Davis**...Producer **Livio Harris** and mixer **Rob Chiarelli** remixed **Melieck Britt**'s single "I'm the Only Player" for Elektra. **Ryan Arnold** assisted...Outburst recording artist **Domino** tracked and mixed his upcoming album at **Skip Saylor Recording**. The self-produced project was engineered by **Rod Michaels**, **Tulio Torrinello** and **Chris Puram**, with **Jason Mauza** assisting...

NORTHEAST

High Wire Records hip hop act **Trife** recorded their new album, *So What*, at **Cotton Hill Studios** in Albany, NY, with co-producer **Eddie Heelan** and engineer **Robert Turchick**...Producer/remixer **Satoshi Tomiie** mixed the cut "Happy Sad" for Atlantic artists **Pizzicato 5** at **Mystic Recording** in Staten Island, NY. **Steve Barkan** engineered, assisted by **Brenda Ferry**... New York's **Room With a View** is two years old and going strong: Recent sessions in the mix room have included single remixes by **Chuckie Thompson** for Motown diva **Diana Ross** and Arista Records dynamo **Deborah Cox**, with **Tony Maserati** at the board. **Tom Lord-Alge** recently turned out new singles for Epic hipsters **Echobelly** and worked with producer **Lou Giordano** on material for the **Goo Goo Dolls**...At **Sweetfish Recording** (Argyle, NY) **Doug Ford** recorded Capitol's **Sparkle Horse** and remixed projects for **C-Toe** and **Half Step**...**Will Downing** recorded songs from his latest release, *Moods*, at Mixed Impressions Recording in New York. Downing co-produced with **Rex Rideout**, and **Aman Malik** engineered...**Fighting Gravity** mixed a Bob Records release at **Bias Recording Company** (Springfield, VA) with **John Alagia** producing and **Bob Dawson** engineering...**Kathie Lee Gifford** was in **The Edison** studios in New York recording vocals for her Warner Bros. *Rock n' Tots* series of children's albums with producers **Danny Kee** and **Jim Ed Norman** and engineer **Eric Prestidge**...Windham Hill founder and studio owner **Will Ackerman** produced a classical guitar record by **Ray Williams** at **Imaginary Road Studios** in Brattleboro, VT. The studio also hosted mixing and editing for *The Chant of Christmas Midnight*, the debut release on Imagi-

PHOTO: ANDY PASTORE

Matador recording artists Kustomized took a break from working on their upcoming third release, The Vanishing Point, at Zippah Recording in Brookline, Mass. Pictured back row (L to R) are bandmembers Ed Yazigian, Peter Prescott and Malcolm Travis. In front of Zippah's 36-channel custom Neve are co-producers Brian Charles and Pete Weiss.

nary Road Records...**NRBQ** was in **The Make Believe Ballroom** in West Shokan, NY, with **John Sebastian**, recording tracks for Polystar Records artist **Takako Minekawa**. **Tom Mark** engineered...**Peter Wolf** and his band the **House Party Five** raised some roofs in New England this past fall. With **Tom Soares** they recorded vocals and overdubs for Wolf's upcoming Warner Bros. release at Boston's **Sound Techniques** (assisted by Dave Kirkpatrick and Ted Paduck). The party continued at **Normandy Sound** (Warren, RI), where the record was mixed...

NORTH CENTRAL

Producer **Gary Hines** and the Grammy-winning **Sounds of Blackness** were in Studio A at **Flyte Tyme** (Minneapolis) recording and mixing with engineer **Jeff Taylor**. The song, "Quiet Strength," will be featured on tribute album to Civil Rights pioneer Rosa Parks...Producer **Brian Anderson** was at **Smart Studios** (Madison, WI) tracking and mixing the Atlantic Records debut of **The Gufs**...**Mike Konopka** of **ThunderTone Audio** (Deerfield, IL) recorded a live show featuring champion acoustic guitar finger pickers including **Jeff Friedlander** and **Muriel Anderson** at the Woodstock, IL, Opera House for a Dog On Fire release...

SOUTHEAST

It was an international fall at Miami's **Criteria Recording Studios**: Brazilian singer **Roberto Carlos** tracked vocals and mixed (using two SSL rooms simultaneously) with producer **Mauro Mata**, engineers **Ted Stein** and **Edu de Oliveria** and assistants **Steve Robillard** and **Chris Carroll**. **Julio Iglesias** (the second hardest-working man in showbiz) was also in completing versions of his

Rocker Dwight Twilley (left) was at L.A. studio DigiPrep working on XXI, a retrospective of his career to date that includes two new songs. The album is slated for a March release on The Right Stuff label. Shown with Twilley are (L to R) Cheryl Pawelski (A&R), Keith Chagnon (consultant), label president Tom Cartwright and engineer and studio co-owner Dan Hersch.

PHOTO: RON WOLFSON

current LP in French, Portuguese, Italian and English. Engineer **Carlos Alvarez** manned the SSL 4096G+ for producers including **Fernando Adour** (Portuguese) and **Peter Asher** (English). **Robillard** and **Keith Rose** assisted...**Keith Gattis** tracked for RCA at Nashville's **Sound Emporium Studios** with producer **Norro Wilson** and engineers **Dave Sinko** and **Ken Hutton**...Producer/engineer **David Norman** was in **International Recording** in Warner Robins, GA, working on the new **Smack** release for Joy Bang Records. Studio owner **Dwayne Boswell** assisted...

SOUTHWEST

Prescott Curly Wolf recorded a Mecury release at **Arlyn Studios** in Austin, TX, with producer **Dave McNair** and engineer **Stuart Sullivan**. **Magneto USA** were also in recording for **Hollywood Records** with producer **Rob Seidenberg** and engineer **Larry Greenhill**...**Willie Nelson** produced his own sessions at **Pedernales Studio** in Spicewood, TX, with engineer **Joe Gracey**. The **Doc Pointer Band** (with co-producer **Cathy Weed**) and Blacktop artist **W.C. Clark** (produced by **Hammond Scott** and **Mark Kazanoff**) were also in. Both sessions were engineered by **Larry Greenhill**...

STUDIO NEWS

New York's **Right Track Recording** installed an **AT&T DISQ Digital Mixer Core**, which extends digital mixing capabilities to the studio's 100-input SSL 4000 G Series console...**Soundhouse** in Toronto recently installed a 64-channel **Lafont Chroma LCRS** console, which includes Uptown 990 automation... **Javelina Studios** in Nashville ordered an **API Legacy** console, one of the largest yet built, offering a total of 102 channels to the mixing buses...**AstralTech** in Montreal installed four Lafont consoles...**SyncroSound Recording** in Nashville was redesigned to be a **Dolby Surround** studio. **Jim Hilson** of San Francisco-based Dolby Labs supervised installation of the Dolby encoder/decoder and rear/center speaker components. The system is used primarily for film and television work...**Bernie Grundman Mastering** of Hollywood, CA, purchased three additional **Studer Editech Dyaxis II** systems... **Serafine Sound** in Venice, CA, installed a **Penny & Giles MM16 MIDI Management System**...San Francisco's **Robert Berke Sound** recently installed the first of the new **Otari Status** consoles...**The Blue Room Studios** in San Francisco installed a **Mackie 24·8** 8-bus and three **ADATs**...Hip hop studio **One Little Indian** in El Cerrito, CA, acquired a pair of **KRK 13000B** mid-field monitors. ■

—FROM PAGE 204, L.A. GRAPEVINE

Willing gave me the tour. Besides the control room, there are two main tracking spaces, two iso booths, and the aforementioned rooms in the house that are available if needed. The control room houses a 44-channel API console (550 A EQs, and 44 additional inputs if needed) with Neve Flying Faders, two Studer 24-tracks and a Studer 2-track. Highlights of the large outboard rack include AMS reverb and delay, a TC 2290, Massenberg, Pultec and Lang EQs, Neve 1272 and 33609 units, a pair of Neve 1073s and an SSL stereo compressor. Primarily designed as a tracking and overdub room, House of Blues Studios also features a large selection of microphones—your basic standbys, old tube C-12s and U47s, and newer designs like B&K 4011s and a Schoeps MK26. Given the live-band renaissance in L.A., this studio is a welcome addition to the various Class A rooms in town. Additional gear includes a highly-touted Yamaha acoustic C-7 and a Hammond B-3 with a Leslie that includes guitar inputs (for that heavily requested George Harrison sound).

Recent clients at the House of Blues Studios include Counting Crows, Taj Mahal, Jimmy Ripp, and producers and/or engineers T-Bone Burnett, Rob Jacobs, John Porter, Steve Lindsay, Greg Jassey and Joe Walsh. Kicking me out on the day of my tour were Jellyfish, in with Nashville producer/engineer Brad Jones. Oh, and staff engineer Howard Willing just came off the charts with a Number One on R&Bsters Mokenstef.

The parent company is also bringing in a fair amount of work. Besides running the popular club on Sunset in Hollywood, the House of Blues is going "vertical"—releasing records (a joint venture with BMG), making videos, handling publishing and doing in-house artist development.

Sunset Sound in Hollywood has finished its refurbishment of Studio 2, with the centerpiece, a vintage 96-channel Neve 8088, fitted with Flying Faders. While the console's modules were being cleaned and modified in Nashville, the control room and recording areas underwent a careful remodeling, with the staff intent on upholding Studio 2's reputation as one of Holly-

wood's classic recording rooms. Major effort went into preserving the sound of the room where Andy Johns recorded "Stairway to Heaven" for Led Zeppelin, and the client list of recording greats includes La Streisand, Harry Connick Jr., Neil Young, Tom Petty, Miles Davis and work on numerous soundtracks, including *Days of Thunder*, *The Firm* and *Dick Tracy*. The renovation of the control room was kept to a cosmetic overhaul under the auspices of George Augspurger, who left his original custom JBL mains system intact. The acoustics in the performance area were also preserved, keeping the 30-year-old vinyl tile floor but adding new lighting, ash-laminated paneling, and a third, larger iso room.

The console refurbishing was supervised by Fred Hill, president of FC Hill & Associates in Nashville. The process is long and painstaking, including a visual inspection of each module and a thorough mechanical check of all components. Then all aluminum and tantalum capacitors, and all audio switching relays, are replaced. The entire module then gets cleaned and lubed, and daughter boards are tested. After any faulty transistors, caps or other components are replaced, the modules get tested from all inputs to all outputs, using an automated test sequence. Finally, the test results are printed out and handed to the studio along with the completed modules. Hill came out to L.A. to help with the onsite install, which was handled by Sunset's chief engineer (and all-around great guy) Mick Higgins.

Studio manager Craig Hubler tells us, "We were successful in keeping the acoustics that our clients love, while upgrading and updating the decor. And Fred Hill did a terrific job on the console. When people see it, they say it looks like it just came out of the factory—like brand-new. This board is unique—it was one of the last three big-frame 8068s that Rupert Neve built. As a matter of fact, when we told him which one we had, he even knew the serial number off the top of his head!"

Sunset Sound's president, Paul Camarata, adds, "The project took longer than we thought, but now we're back online with what we consider to be one of the best-sounding consoles in Los Angeles."

We chatted with the always-fascinating Buddy Brundo, owner of Conway Studios, who believes that the top recording facilities in Los Angeles are entering a new round of competitive pressure for audio excellence. Conway is also in the process of adding a renovated console to its Studio A. The Neve VR 72 has extensive modifications to improve the sound, with new VCAs, new summing and insert sections, improved shielding and a higher power-supply voltage for increased headroom. Mods are being done by John Musgrave, and Buddy is so pleased with the system improvements that he plans to offer the package for sale to outside studios with VRs. As you may know, Conway was one of the first studio complexes to feature control rooms with windows to the outside world, but Studio A had been the only Conway room without a view. That's changed now: A new 8x10 picture window overlooks the lush tropical gardens that make up Conway's grounds.

Ensconced in Conway's Focusrite room has been Lyle Lovett, co-producing his sessions with Billy Williams. Nathanial Kunkel is engineering. (No Julia sightings, though she and Lovett are rumored to be dating again—I know it's tacky, but I just had to ask.) And Neve Studio B has been locked out by Lionel Ritchie for months now, with producer James Carmichael and engineers Cal Harris, Fred Law and Milton Chan.

Other recent Conway sessions include Motley Crüe, produced by Scott Humphrey and engineered by Steve Macmillan; The Breeders, produced by Kim Deal; and the enigmatic Beck. "It's been a great year," Buddy says. "1995 has been Conway's best year since '91." But the real news is that Buddy is now the "Southern Pacific Division National Formula Atlantic Champion." The cars he drives to achieve that title are open wheel, go 170 mph and are only one level below Indy 500 cars. He may be an ace, but Charlene Skeffington, Conway's studio manager, says, "You won't catch me driving with him!"

We spoke to engineer & major techie Charlie Watts, who, with partner Chris Schold, has started up a new company called Mondophonix. They've taken over Kent Duncan's old Kendun mastering room to focus on mastering, premastering and any sort of production requiring high-quality audio. Watts' main workstation is a Sonic Solutions system, featuring 8-in and 16-out. It seems like Sonic has become the de facto audio mastering standard, and Mondophonix is set up to cut all current CD standards.

Watts tells us he tried out a lot of A-to-D and D-to-A converters, finally settling on the TC M5000. Analog gear at Mondophonix includes an Ampex 102 2-track, Avalon EQ and compressors,

GML EQs and a custom Harrison 48-in MR-2 for projects requiring multichannel capability. Watts, who was featured in this column last April for his pioneering work with Warner Bros. Interactive, has also worked with The Ventures, Brownstone, Chuck Jones Films, Jose Feliciano, Vesta Williams and ELP. Future plans include ISDN work and internet audio services. ■

Thanks to Mr. X, who provided research this month. Fax your L.A. news to Maureen Droney at 818/346-3062.

NASHVILLE SKYLINE

by Dan Daley

Nashville-area studios are attempting to put together the city's first official studio organization. Two meetings have been held, one in September and one in October, eliciting attendance from a combined 50 or so facilities in the area. Tentatively entitled the Nashville Association of Professional Recording Studios (NAPRS), the organization initially considered including the word "commercial" in the name but decided instead to be as comprehensive as possible.

"This is not going to turn into a HARP," says Preston Sullivan, manager of Sixteenth Avenue Sound and a member of the NAPRS steering committee. "Keeping out project studios is not what this is all about. Anyone who does business within the bounds of zoning regulations—and those vary from locality to locality—is welcome."

The intentions of the association that most studios seem to agree with cover items like promoting Nashville-area studios on a national and international level, establishing a technical dialog for digital platforms and educating owners and managers about developments in the industry. Dino Elefante, co-owner of Sound Kitchen in Williamson County, also points out that a unified studio presence could draw support from a municipal perspective that isn't truly aware of studio contributions to Nashville. "We figured that, combined, the area studios bring in between $150 and $200 million a year in revenues," he says. "That's a tremendous contribution to the tax base. The educational aspect is also critical, since Nashville operates very differently from L.A. or New York. Before I got here [from Los Angeles], I didn't know what a Cue-8 box was."

Topics that received less than unanimous support are items like establishing uniform cancellation policies, which some propose should be consistent throughout Nashville; others are not so sure. "You can talk about cancellation policies, but I wouldn't impose them across the board on my clients," says Milan Bogdan, general manager at Emerald Recording, who attended the second NAPRS meeting. "We can't control cancellations if an artist gets sick or has to do an important performance at the last minute. But I like the other proposals, like being able to discuss technical issues. And I have no problem with project studios. Some of them are pretty darn good. But I see a more limited role for this organization than others might, because of the way Nashville traditionally works," he adds, referring to the complex web of relationships between studios, producers, labels and engineers.

Most studios seemed optimistic about the concept but differed about its mandate. Steve Tolson, manager at Masterfonics, says he likes the idea of an open forum, but balked at citywide policies for things like referrals between studios. "It's hard to keep a balance between studio referrals," he says. "We've had instances in the past where it wasn't returned in kind." Preston Sullivan stressed that no final decisions have been made regarding any aspects of the organization, that everything was on the table. "The thing is to not be negative about anything," he says, "we want to emphasize the positive."

New Studios: **Seventeen Grand** opened in September on the site of the former Nightingale Studios. The one-room studio building is owned by former Woodland principals Jake Nicely and Dave Cline and sports a Neve VR-60 Legend with Flying Faders, and Studer D827 digital, 827 analog and Mitsubishi X-850 digital multitracks. Recent clients include Allison Krause and Branson fiddler Shoji Tabuchi. Nicely and Cline left Woodland in a legal dispute that terminated their relationship with the studio. Former Nightingale owner Joe Bogan has taken over Centerstage, the former Warner Bros. studio.

October Studio opened on the site of Steve's Durr's former studio Imagine. The contrast between Durr's vintage API and October's SSL 4058 E/G with Total Recall is striking, offset by a tasteful interior decor scheme. The studio maintains Durr's small-room acoustical

approach. Co-owner Eric Haymes, who also owns Salt Mine Studio in Brentwood, says that style is becoming as important to Nashville recording as substance has been. "We saw a demand growing for studios that not only have the equipment that engineers and producers want, but a more creative ambience, as well," he says.

Robert "Tabby" Crabb and Dominick Mammanna have opened **Flatwood Studio** near Lebanon, 29 miles east of Music Row. The pair started production at their former studio, Cool Springs in Washington, D.C., but found that a Nashville record deal requires a Nashville presence. The studio's technology is a mix of old and new: MCI 428B console married to ADATs but with a large (1,000 square feet) tracking room. With all the attention being paid to Williamson County studios, what's the East like? "We've got Bradley's Barn out here, Charlie Daniels has a real nice studio in Mt. Juliet; there's more going on here than you might have thought," says Crabb, who designs all the studio door handles out of acoustic guitar necks. Their ambition? "To be the best little studio in Nashville." ■

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—FROM PAGE 204, NY METRO

48th Street store to give musicians a chance to try long-distance overdubs. The kiosk will be connected to the Fairfield, Conn., home studio of Dave Immer, the ISDN consultant for Manny's and its sister company AudioTechniques. "This is something the voice-over guys have been doing for a while," says Immer, who also writes, arranges and plays on jingles from his home studio, Digifon. "All that needs to happen to complete the cycle is for the musicians and singers to get online."

The millisecond time delays inherent in mid-priced codecs like the CDQ 220 from Musicam (formerly CCS) are less of an issue over the short distances within New York and the surrounding area. Immer says it's a matter of time before jingles are done almost completely from satellite facilities. This, he adds, will be another plateau in the evolutionary cycle that began with MIDI and that has put pressures on New York studios that have watched jingle work—once the most consistently lucrative revenue source in New York—dry to a trickle. "There'll always be a need for physical space in doing jingles," Immer says, "but what will change in the future is that the amount of space needed will shrink, and there'll be fewer facilities. That's already happening. What it will evolve into I think will be something I call the 'distributed studio.' A wide-area production facility that will be the center of all these satellite studios in jingles."

Longtime New York session guitarist Jeff Layton has had his own jingle production company, now called JLSA Music, for six years. "[Commercial agencies don't] perceive me as a session guitar player anymore; now I'm a composer and arranger and producer," he says of the trend. "Right now, I need to go to larger studios that have truly real-time codecs like the 3D2 system for the finals. The codec I'm getting has a 12:1 data compression ratio and has a delay that increases as distance does. But once people like myself get true real-time capability, and we can send final masters over the Internet as AIFF files—something we're looking into now—then that could be yet another nail in the studio coffin in New York. [Personal studios] have certainly left them holding the bag more than a few times over the years."

As the prices of codecs come down—and Doug Cook at AudioTechniques expects them to drop even further in the next year—the main impediment to the proliferation of telephone connectivity has been RBOC NYNEX, which has drawn repeated criticism from high-tech companies in the region for its poor response to ISDN technology. "That's been the big headache up until now," Layton says. (Ironically, Layton played on a commercial for NYNEX for ISDN service, but when he called the NYNEX number for ISDN connection, he found that there were people there who didn't even know what ISDN was.) "We've been saying that ISDN has stood for 'I Still Don't kNow' as far as NYNEX has been concerned," Doug Cook adds. NYNEX is getting better, however, says Immer, who has been working with the RBOC for four years doing professional audio implementations in the New York area. "NYNEX hasn't been as aggressive as some of the other RBOCs, like Pac Bell and Bell Atlantic, in marketing and following up on ISDN," he says. "But it's moving a lot faster now. And it's definitely having its effect on the jingle business in New York." ■

—FROM PAGE 178, POSTINGS

furbished Stage 3 and added its second Otari Premiere mixing console. The board is equipped with 72 main channels (frame-accurate automated A/B input switching doubles that), 24 auxiliary ins and 32 monitor returns, along with DiskMix 3/film moving-fader automation and Otari's proprietary Virtual Monitor System. Also, **4MC Film Sound**, Burbank, which won a Best Sound Emmy Award (staff re-recording engineer Patrick Cyccone, with independents Jim Williams and Ed Suski) this year for the mini-series *Buffalo Girls*, mixed the special on an 88-input Premiere at their facility...Dave Weathers' **Miles O'Fun** (West L.A.), which works on *Murder One*, *NYPD Blue* and *Chicago Hope*, took delivery of four Fairlight MFX3 Mini systems...**Visual Music and Sound** opened as an audio/video post-production facility in Minneapolis, basing the audio wing around Studer Editech's PostTrio with the Plug-and-Play option (3.5-inch magneto-optical)...Renowned multimedia production company **Seventh Level** (North Hollywood) has installed its fifth Spectral Prisma/Prismatica PC-based record/editing system...Timeline (Vista, CA) recently sold StudioFrame DAW systems in Europe, including to independents **Rodney Glenn** and **Peter Joly** in London, where they used them on the films *Othello* and *Twelve Monkeys*, respectively; to **De Lane Lea Sound Centre** in SoHo; and to the **National Film & Television School**, London...As part of its "Genesis Project," which sounds like something out of *Star Trek III* but is actually NBC's code name for the upgrade of its production facilities at "30 Rock" in New York in preparation for the Olympics, the network installed an NVision NV3512SA Synchronous Routing System, NV3512TC Timecode Routing System and a 256-squared Grass Valley SMS-7000 master video router...**Matchframe Video** in Burbank has added a third audio suite, along with a new Foley pit. Like Room B, the new C has an Otari Concept I and 16-channel Pro Tools III system, with KRK monitoring...Personnel moves: **Gloria Borders**, who won an Oscar for her work on *Terminator 2* and a nomination for *Forrest Gump*, has been named vice president and general manager of Skywalker Sound in San Rafael, Calif...Award-winning radio producer/engineer **Stewart Sloke** has left Waves Sound Recorders and joined Paul & Walt Worldwide (Hollywood) as senior producer/engineer...**Joe Macre**, whose background includes composition, along with post-production and live mixing, has joined Video Post & Transfer in Dallas...Todd-AO East (NYC) hired three-time Golden Reel winner and two-time Gemini Award winner **Frank Morrone** to its re-recording arsenal...Peter Nusbaum has joined the audio staff at Tell-A-Vision Post in Hollywood...Project Notes: From Pinewood Sound in Vancouver comes news of work on the films *Bordello of Blood* and *Happy Gilmore* for Universal, along with dailies transfers for *Carpool*, starring Tom Arnold...**Enterprise Post** in Burbank picked up the Foley work for the TV series *Chicago Hope*; the facility also does Foley for *NYPD Blue* and *Murder One*, and has added the mix for *Lands End*, to be handled by Andre Perreault and T.W. Davis...Recent sound design work at Bad Animals in Seattle has ranged from a "Couch Potato" PSA for PBS, with voice-over by Gregory Peck, to the Piper CD-ROM for Splash Studios, to scoring work on 17 episodes of "Disney's Sing Me a Story With Belle." ■

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—FROM PAGE 73, TINNITUS

longer respond correctly to real sounds, but instead will transmit false sounds. In some instances of tinnitus, actual sounds are perceived. For example, some people hear the sound of blood flowing through their own veins and arteries. Tinnitus can also result from a tumor that places pressure on the eighth lateral nerve. In a common variant of tinnitus, the perception of sound is produced by normal hair cells in the cochlea rubbing up against damaged hair cells. In a rare variation, objective tinnitus, the victim's tinnitus can be heard by other people up to four feet away; typically this is heard as a low-pitched or clicking sound.

The sensation of an incessant ringing sound is both frightening and maddening. Those experiencing tinnitus often believe they are going insane or have a potentially fatal medical condition. Depression is common among tinnitus sufferers, and sometimes leads to suicide. Less serious psychological effects include irritability, impatience and fits of temper.

"I had a much more mellow disposition before tinnitus," says Nygaard. "I have kids, and it is so important to be patient with them. This maddening ringing in my ears makes the smallest annoyance hard to ignore."

TWO PERCENT OF THE POPULATION AFFLICTED

Depending on how one defines the disease, between 0.5% and 2% of the population suffer from tinnitus. Those who hear at least one unceasing tone at an auditory level at or exceeding normal speech make up the 0.5%. If one includes all those who experience tinnitus symptoms, but not all the time or at lower auditory levels more like a whisper, the number swells to 2%.

So many factors can cause tinnitus that one expert has quipped that there are only two conditions with which tinnitus is *not* associated. One cause of tinnitus is the use of ototoxic drugs: drugs that adversely effect hearing or balance. Ototoxic drugs cause disruption of the nerve impulses going to the brain, resulting in "sensorineural hearing loss."

The most common ototoxic drug is aspirin. Ibuprofen or acetaminophen can be substituted as an analgesic, but there are unconfirmed reports that ibuprofen may also be a factor in sensorineural hearing loss. Among the other ototoxic drugs are a number of antibiotics—kanomycin, erythromycin, vancomycin, neomycin, deoxycyclinix, chloramphenicol and streptomycin. Whenever your physician prescribes any drug, ask whether that drug has any ototoxic effects.

Other causes of tinnitus include such mundane conditions as a build up of ear wax or fluid in the middle ear. Tinnitus is also associated with migraine, hypertension, fever, diabetes and zinc deficiency. New Years Eve revelers should remember that tinnitus frequently accompanies a hangover.

But by far, the leading preventable cause of tinnitus is prolonged or extreme exposure to high sound pressure levels. Tinnitus rarely begins immediately upon exposure, though proximity to an exploding bomb can induce it. Jim Nygaard first began experiencing his tinnitus symptoms two years after he began working with ZZ Top. He realized at the time that he was harming his hearing, but he expected it would just become less sensitive—a fallacy shared by many audio people. "If I would have realized the ways that hearing impairment can affect your life, I would have used protection for all high sound pressure levels," he says now.

When Nygaard was putting his ears to speaker cabinets, only foam plugs and sonic valves were widely available for hearing protection. Today, flat-level attenuators are available to maintain the integrity of the sound while protecting the listeners hearing. There is no longer any excuse for not using hearing protection. Protect yourself now—while there is still time! ■

David Eames is president of Precision Audiotronics, a company devoted to the hearing protection of sound and music professionals. Eames has been invited to speak at many colleges and universities on the subjects of hearing loss and hearing protection.

—FROM PAGE 74, PROTECTING YOUR HEARING

$45. I know many engineers and artists who are using the ER plugs with great success. They report that there is a short adjustment period, but beyond that, the plugs are so helpful that they no longer work without them.

Those working in live sound have similar concerns. The ER-15 or ER-25 plugs can provide protection without inhibiting your work. Many live sound engineers wear foam plugs for the setup, hoping to avoid feedback accidents. Once the equipment has been set, they switch to ER-15 plugs for setting levels. The soundcheck is generally performed without plugs to ensure a true reading, but plugs should be put in as soon as possible.

Live sound venues create an additional sound level consideration—the effect on the audience. If an engineer sets the level upward of 100 dB, the audience will be exposed to that level for two hours or more. It remains unclear at this point who will be held responsible if an audience member suffers permanent hearing damage at a concert. There are cases on record of individuals who suffered permanent hearing damage from a one-time exposure to loud sound and who have sued the sound reinforcement company, the artist and the venue.

Some other general suggestions for a long, healthy life for your hearing include simply taking care of yourself. Your body and your ears both need rest and care. Give your ears a break periodically throughout the day. Ear fatigue is a very real condition and is best treated with rest. By rest, I mean 20 minutes of true quiet, not a quick break to listen to music or play pinball or video games. Also, cut down on cigarette smoking, caffeine and drug and alcohol consumption. All of these elements can distort your perception of sound.

OSHA GUIDELINES

Guidelines for noise exposure in the workplace have been in existence since the Occupational Safety and Health Administration (OSHA) developed recommended sound level criteria based on research done in the 1940s by Dr. Glorig of the House Ear Institute. Unfortunately, music professionals rarely embrace these guidelines because they lack specific attention to the complexities of music monitoring. Unlike most industrial noise, music has peaks and valleys, which makes quantifying levels and establishing consistent guidelines difficult. However, for many in the music industry, sounds above 85 dB are a fairly consistent part of the work environment, and sound over 85 dB for more than eight hours in any industry is potentially damaging to your hearing.

OSHA's primary goal is to create and maintain a safe work environment; sanctions for noncompliance are their last choice. They can do a consultation at your workplace and help the studio meet compliance without any risk of being fined. Still, many employers in the industry are reluctant to "open this can of worms." If you are meeting resistance at your place of employment and you are a union member, the union may intercede on your behalf. You are also within your rights to file a formal, anonymous complaint to OSHA. In 1994, A&M Studios in Los Angeles was cited by OSHA. A portion of their compliance agreement included baseline hearing tests, custom ER-15 ear plugs and educational information on hearing conservation to all employees. More and more employers are protecting themselves by offering these options to staff.

THE BOTTOM LINE

Every day at the House Ear Institute I receive letters and phone calls from musicians, engineers and consumers regarding different questions about hearing, work environments and hearing protection. Those inquiries have been growing steadily over the past 12 years. Part of the increase is due to a greater awareness of the problem, but part of the increase is due to a corresponding increase in sound, resulting in more problems and therefore more concerns.

Technology in the pro audio field has progressed by leaps and bounds in the last decade. The sound being produced is louder than it has ever been. It is also cleaner, though, which helps disguise heightened sound levels and the dangers they can create.

Technology is changing, for better or worse, depending on your point of view. One thing, however, remains the same: your ears. The ear's ability to process sound and its susceptibility to harmful input does not alter to match the technology. And unlike speakers, mixing boards and computers, once your ears are damaged by sound, no technology can fix them. ■

Charlie Ennis Labaie is director of public relations and community outreach for the House Ear Institute.

AD INDEX & READER SERVICE PAGE

PAGE	READER SERVICE NUMBER	ADVERTISER
88	001	Aardvark Computer Systems
54	002	Acoustical Solutions
59	003	Acoustic Sciences Corporation (ASC)
88	004	Acoustic Systems
208	005	Advance Recording Products
26-27	006	Akai
78	007	AKG
1FC	008	Alesis (Q2)
6-7	009	Alesis (ADAT XT)
87	010	Allen & Heath
9	011	Ampex
93	012	Anthony DeMaria Labs
25	013	Aphex Systems
62	014	API Audio Products
145	015	API Audio Products #2
173	016	Applied Research & Technology (ART)
89	017	Ashly
144	018	ATM Fly-Ware
174	019	Audiomation Systems
35	020	Audio-Technica
72	021	Audio Toys (ATI)
37	022	Avid Technology
124	023	Azden
23	024	BAG END Loudspeakers
156-157	025	B & H Photo-Video
186	026	Bellari
63	027	beyerdynamic
207	028	Big Mo
161	029	Bryston
153	030	Burlington A/V Recording Media
137	031	CAIG Laboratories
176	032	Cal Switch
209	033	Caruso Music
126	034	Carver
210	035	Conservatory of Recording Arts & Sciences
189	036	Corel Corporation
129	037	Crest Audio
61	038	Crown
143	039	Crown #2
58	040	CTI Audio
201	041	The DAT Store
43	042	dbx Professional Products
96	043	Demeter Amplification
14-15	-	Digidesign
64-65	-	Digidesign #2
178	044	Disc Makers
41	045	Dolby
196	046	Drawmer
38-39	047	Duracell USA
162	048	EAR Professional Audio/Video
54	049	Earthworks
117	050	Eastern Acoustic Works (EAW)
114	051	Electro-Voice (EV)
166	052	E-mu Systems
147	053	Ensoniq
55	054	Euphonix
211	055	Europadisk
21	056	Eventide
155	057	Fender
158	058	Ferrofluidics
84	059	Fostex
159	060	Full Sail Center for the Recording Arts
103	061	Furman Sound
22	062	Garwood Communications
68	063	GBH Mobile
91	064	GENELEC/QMI
200	065	Gepco
184	066	Gold Line
176	067	Grandma's Music & Sound
191	068	Groove Tubes Audio
17	069	Hafler
133	070	The John Hardy Company
162	071	Harris
74	072	The Hollywood Edge
169	073	Hughes & Kettner
206	074	IIR Exhibitions Pte. Ltd.
86	075	Institute of Audio Research
BC	-	JBL Professional
202	076	KABA Research & Development
85	077	Kart-a-Bag
171	078	Kurzweil Music Systems
192	079	L & M Music
209	080	Leo's Professional Audio
163	081	Lexicon
95	082	Lighthouse Systems
95	083	Lightwave Systems
121	084	Littlite/CAE
69	-	Los Angeles Recording Workshop
144	085	MacBEAT
10-11	086	Mackie (1202VLZ)
80-81	087	Mackie (Ultramix)
59	088	Manley Laboratories
168	089	Markertek Video Supply
132	090	Maxell
99	091	MCA Records Nashville/Solid State Logic
168	092	Megatrax
123	093	Meyer Sound
215	094	The Microphone Company
24	095	Micro Technology Unlimited (MTU)
212	096	Mix Bookshelf
203	097	Mix Español
195	098	Mix Master Directory
108	099	Mobile Fidelity Sound Lab
188	100	Musicam/CCS Audio Products
13	101	Neumann/USA
30-31	102	Optifile/Sascom Marketing
105	103	Otari
175	104	Otari #2
51	105	Peavey Electronics
52-53	106	Peavey Electronics
66	107	Pelonis Sound & Acoustics
60	108	PreSonus Audio Electronics
120	109	ProSound & Stage Lighting
207	110	QCA
75	111	QSC Audio Products
94	112	Quintessential Sound
102	113	Rane
201	114	The Recording Workshop
191	115	Rhythm City
214	116	Rich Music
109	117	Rock & Rhythm
200	118	Rocket Lab
46-47	119	Roland (DM-800)
187	120	Roland (VS-880)
125	121	Sabine
94	122	SAE Digital Mastering
192	123	SAS Industries
96	124	Selco Products
44	125	Sennheiser
151	126	Simon Systems Engineering
1	-	Solid State Logic (SSL)
150	-	Solid State Logic (SSL) #2
136	127	Sonic Foundry
1BC	128	Sonic Solutions
18-19	-	Sony
179	-	Soundcraft
118	129	Sound Ideas
149	130	Soundscape
202	131	Speir Music
29	132	Spirit
135	133	SPL
107	134	Stanford Research Systems
177	135	Steadi Systems
193	136	Steinberg/Jones
208	137	Strings & Things
3	138	Studer Professional Audio Equipment
32-33	139	Studio Audio Digital Equipment (SADiE)
184	140	Studio Consultants
141	141	Studio Techniques
111	142	Sweetwater Sound
190	143	Switchcraft/Raytheon Co.
2	144	Tannoy
56-57	145	Tascam
45	146	t.c. electronic
121	147	Technomad
90	148	TL Audio/Sascom Marketing
185	149	The Toy Specialists
104	150	Tube Works
197	151	21st Century Media
68	152	Thoroughbred
194	153	Uncle's Stereo
109	154	Vac Rac/AXI
172	155	Vestax Musical Electronics
42	156	Village Recorders
182	157	Waves
186	158	West L.A. Music
119	159	Whirlwind
210	160	Whisper Room
215	161	World Records
106	162	Yamaha
199	163	Yorkville

—FROM PAGE 31, TRUTH AND CONSEQUENCES

litically radical friends tell me they're displacing native populations, and I should not be working for them. My client tells me my friends are wrong. I choose to believe the client. I may be fooling myself, but on the other hand, I'm not losing any sleep over it.

For those of us who have mortgages/families/payrolls/loans/insurance (check all appropriate boxes), giving up a lucrative gig because we don't agree with the client or the product is very hard. Scruples, as a friend of mine likes to say, are expensive.

But what's the alternative? What happens if we don't exercise any judgment over what passes through our hands? Perhaps the people at whom we aim these messages are smart and are able to sort out helpful messages from harmful ones based on their content, disregarding the slickness of the delivery media. Perhaps there is a bridge over the East River I could convince you to make a down payment on. The danger of having no moral compass anywhere in the creation of content is that as media get more pervasive and more persuasive, you can end up with an anarchic, valueless society where things are only prized for their glitz or shock value.

As a society, we face some momentous decisions, some of which have been brought on by technology. We have increased human lifespan, but how are we going to take care of vast numbers of elderly people—who, not too long from now, will include all of us? In the wired age, when infinite perfect copies can be made of anything by anyone, how do we protect the rights of people who create things, and thus keep rewarding them for creativity—and avoid jeopardizing our entire industry? Today, large portions of the world accept the precepts of the free-market economy, yet how do we keep these new capitalist states from degenerating into medieval fiefdoms, where organized crime-style brutality and intimidation are filling the vacuum created by the lack of centralized government? We as producers of the messages that persuade people have a tremendous opportunity—and even a responsibility—to help the *right* messages get across. We can help promote tolerance, cooperation, knowledge and respect, and we can tell people whose messages are hate, ignorance, exploitation and violence that we won't help them. Or we can simply stick with the "it-don't-matter-what-happens-to-you-long-as-I-got-mine" attitude of the '80s.

For some of us, because we are more flexible or have fewer financial obligations, making business choices based on personal morality is easier than for others. But even if you feel that it's your right, or your "responsibility," to take on all clients and treat them equally, it's important to keep in mind that all of your actions *do* have consequences. The better you are at what you do, the more effect you may have. If you don't care, or think the consequences are trivial, you're entitled to that. If you figure, like the song says, "If I don't do it, somebody else will," that's your decision, too. But when it comes to doing something you know to be wrong, by saying "I don't have a choice," you've just made one.

With all of the pressures on us to be the best, the fastest, it's hard to turn down paying work, no matter how revolting it may seem.

• • •

Don't panic. "Insider Audio" isn't going to be preaching to you every month. When the editors of *Mix* asked me to take over this column from the capable hands of Ken Pohlmann, they told me I could write about anything I wanted. There are plenty of cool things to write about in the audio industry, and even after 17 years of doing so, I'm still finding new ones. Just don't be surprised if once in a while I need to get something off my chest—like this month's column, or the one I wrote for last September's issue (to which the response was very gratifying). And if a character named Otis T. Grumpmeyer happens by with a few little things to say, well, you might want to send the children out of the room.

For those of you who don't know me, allow me a brief introduction. I've been involved with audio since the late '60s, and I come to it from many angles: I have a classical music degree (on the bassoon, if you must know), have been playing rock and jazz since I was a kid, have composed for everything from percussion quartet to symphony orchestra, and have also directed quite a bit of professional musical theater; I've done live sound for clubs and concert halls; been a full-time radio engineer; run a recording studio in the Third World; sold trumpet spit-valve corks from behind the counter in a music store; studied electronic music before there were synthesizers; designed, written and marketed computer-music software; produced several CDs for a big important music-library service (hanging on my wall, framed, is a check from them—in the amount of 4¢); and written several hundred articles and a small shelfful of books. I wrote a MIDI column for a few years for *Recording Engineer/Producer*, and a music technology column for *Piano & Keyboard*, and I have contributed regularly to *Mix*'s sister publication, *Electronic Musician*, pretty much since it started. I'm probably best known as a major-league MIDI freak, and I've served on the executive board of the MIDI Manufacturers Association for three terms. These days, I write scores for films (my particular passion is historical documentaries) using mostly MIDI instruments, do consulting and documentation for a variety of companies in the audio/video/multimedia/computer arenas and serve on the faculty of the Sound Recording Technology program at the University of Massachusetts, Lowell. I'm medium height, slightly overweight, hate wearing suits, and have been mistaken at various points in my life for Bob Dylan, Steve Gadd and Jerry Garcia. My political views should be pretty obvious from the first part of this column.

Whereas most of the trade press is concerned either with gear or with particular people using that gear, what I hope to do with this column is to talk less specifically and more generally about the interface between humans and technology—to write about technology as it affects people, and about how people can use technology for creative ends. If that sounds a little vague, it's deliberate—it leaves me lots of options. Perhaps more important, it gives you some opportunity, too. I want to hear from readers about what your concerns are, and maybe help you find ways to deal with them. I look forward to all of these challenges, and more. ■

Paul D. Lehrman, our new "Insider Audio" columnist, is all of the above, and more—more or less.

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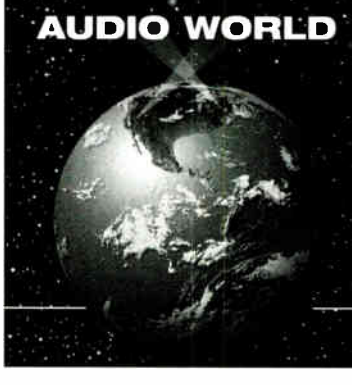

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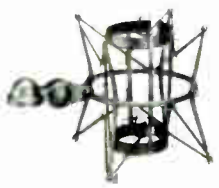

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Miscellaneous

Classified Ad Deadlines

February 15, '96 deadline for APRIL '96 issue

March 15, '96 deadline for MAY '96 issue

April 15, '96 deadline for JUNE '96 issue

Call Robin Boyce
(800) 544-5530

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Text rate: $100 per inch; eight (8) lines per inch (approximately 27-32 character spaces per line); one-inch minimum. $10 per bold line. Each space and punctuation mark counts as a character. $100 minimum charge for each ad placed.

Enhancements: $10 black border, $15 for a grey-screened background, $25 for a reverse, $25 for Post Office box service. Charges are based on a per-insertion basis.

Display rate: $125 per inch (1" minimum/half-page maximum). Display Classified advertising must be camera-ready, sized to MIX column widths and specs. Frequency discount rates available; call for information.

Closing: Fifteenth of the month, six weeks prior to the cover date (ex: April issue closing is February 15). Ads received after closing will be held for the next month unless otherwise stated. Cancellations will not be accepted after the closing date. Copy changes and cancellations must be submitted in writing.

Other requirements: Full street address (PO boxes aren't sufficient) and phone numbers must accompany all requests. All words to be bold should be underlined. Copy must be typed or printed legibly in standard upper/lower case. Publishers are not responsible for errors due to poor copy. Arrangement of characters may be altered in typesetting process due to space. The publishers are not liable for the contents of advertisements.

The small print: No stated or implied discounts allowed on new equipment sales. Publishers reserve the right to refuse or discontinue any ad deemed inappropriate.

Send coupon payment to: **Mix Magazine Classifieds: Attn: Robin Boyce, 6400 Hollis St., #12, Emeryville, CA 94608, tel. (800) 544-5530 or (510) 653-3307; fax (510) 653-8171. Payment must be included with copy: check, Visa, MasterCard, or American Express accepted. Sorry, no billing or credit available.**

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- ❑ Recording Services & Repairs
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- ❑ Video Equipment
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FEEDBACK

INSPIRATION AND ASPIRATIONS

I just got around to my October issue and am very pleased and inspired reading all the interviews with film composers. Being a musician as well as an engineer, these articles provided a close look at a very important viewpoint, besides fueling my aspirations in this area. Thanks.

Matt Barkan
KWQC Television
Davenport, Iowa

MUCH UNDO ABOUT SOMETHING

I am writing to accept Ed Cherney's "request" to get some automation system designer and have him mix a song (November '95 *Mix*). As the chief programmer for Flying Faders, I've been lucky enough to spend time with several great mix engineers, many of whom have directly influenced the way Flying Faders works. Oddly enough, I actually enjoy hearing different perspectives and then synthesizing them into "my" automation system.

In addition, I have one correction to your truly impressive comparison of automation systems. You list that Flying Faders has 0 undo levels. Actually, Flying Faders has the most sophisticated undo system of all the systems you listed. In addition to being able to undo, step by step, right back to an empty mix, you can have several mixes in memory at once, each of which can be completely independent or based on another mix, and each of which you can separately edit and undo. In addition, anything you undo can be "redone" if you decide you liked it after all. Furthermore, you can copy and splice data from any versions of any two mixes and create a new mix. I worked *beau coup* late nights to make all that business work, so I'm afraid I couldn't let that go by uncorrected.

Ron Goodman
Santa Cruz, Calif.

SMALL IS BEAUTIFUL

I am writing just to let you know that I enjoy reading your magazine every month and that it is the first magazine to "disappear" from our studio each month. I own a small rehearsal studio and sound reinforcement company (and work full-time somewhere else) and enjoy reading the articles on live sound. Unfortunately, it is difficult to relate to some of the articles generally because they apply to much bigger productions than would come out of my company. It is nice to see a system with 250 speaker cabinets and 100 power amps and how it was hooked up, but it does not (and probably never will) apply to me (and maybe a lot of other small companies). It would be nice to see more articles that relate to smaller systems, smaller companies and how they perform certain tasks. An article by an expert in the field who can lend advice to people in my position would be helpful. Profiling a small company once in a while would be a good idea also. Anyway, keep up the good work.

Jay Robinson, VP
Rock Garden Studios

POWERED UP

The October issue of *Mix* reported on the change in the 1996 National Electrical Code, Article 530-G, "Separately Derived Systems with 60 Volts to Ground." This concept was well-documented when it was proposed to the NEC and solves a continuing problem in the real world of audio and video production. However, there is a "Catch-22" in the application of these devices. Article 530 is titled, "Motion Picture and Television Studios and Similar Locations." The Scope (Article 530-1) states:

The requirements of this article shall apply to television studios and motion picture studios using either film or electronic cameras, except as provided in Section 520-1, and exchanges, factories, laboratories, stages or a portion of the building in which film or tape more than ¾ inch (22 mm) in width is exposed, developed, printed, cut, edited, rewound, repaired or stored.

A strict interpretation of the code could relegate this system to only motion picture and television applications. Its use in a large concert venue, church sound system or recording studio is dependent on the interpretation by the local authority (the electrical inspector), who may well determine that this equipment is only permitted in TV and film applications as that is where it now appears in the code.

Between the USITT, AES and EIA, a good cross-section of the industry should now be able to bring the sound section of the code up to date. We would also hope that other interested organizations and individuals will participate in drafting proposed changes. The NEC comes out every three years, and proposals for the 1999 National Electric Code are due on November 8, 1996. The audio and recording industry must realize that they write the code. The NEC only publishes what we in the industry have told them.

In the meantime, anyone who runs into an inspector who interprets the 1996 code as I have stated, should contact the National Fire Protection Association, publishers of the NEC, and request a formal interpretation. Or, they can contact any of the members of the NEC Panel 15 for an informal interpretation. In many cases, the local inspector will accept the informal interpretation.

Richard D. Thompson
Thompson Associates
Van Nuys, Calif.

Richard: Thanks for your letter. Your points are well-taken. However, it should be noted to our readers that the National Electrical Code is a set of guidelines—not law—and local communities are free to adopt the code as their own, or develop their own interpretations of the code, which sometimes are stricter than the guidelines presented by the NEC. In any case, readers who have an active interest in the content of the 1999 NEC are encouraged to become involved now. For more information, contact NFPA at 1 Batterymarch Park, Quincy, MA 02269—George Petersen ■

Send Feedback to Mix, *6400 Hollis St. #12, Emeryville, CA 94608; fax (510) 653-5142; or 74673.3672@compuserve.com*

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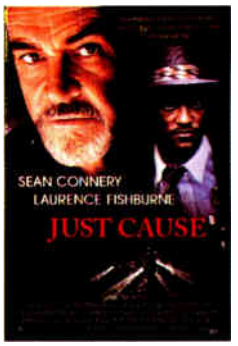

Just Cause Sonic System dialog and background editing supervised by Michael Kirchberger, 20 bit music editing by Tom Drescher Wonder Dog Music

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Bullets Over Broadway, Hoop Dreams, Just Cause, Pret-a-Porter, The Jungle Book, Apollo 13—what do they have in common? The Sonic System—of course!—because it delivers power and speed for dialog, music, and effects editing for film and video. Our new UltraSonic Processor provides up to 16 channels with full DSP on a single board making multitrack work streamlined and affordable.

Beatles Live at the BBC editing, NoNOISE and premastering by Peter Mew, Abbey Road

Restore priceless recordings for a release

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Star Trek CD-ROM editing by Mark Waldrep Pacific Coast Sound Work

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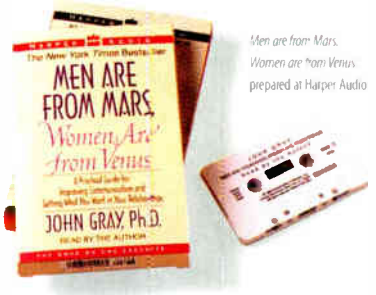
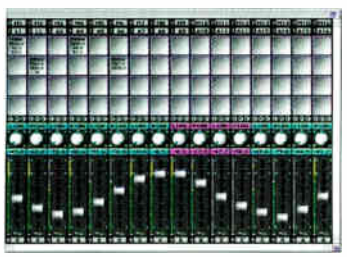


Men are from Mars, Women are from Venus prepared at Harper Audio



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MediaNet: The Digital Media Workgroup's Data-Bahn

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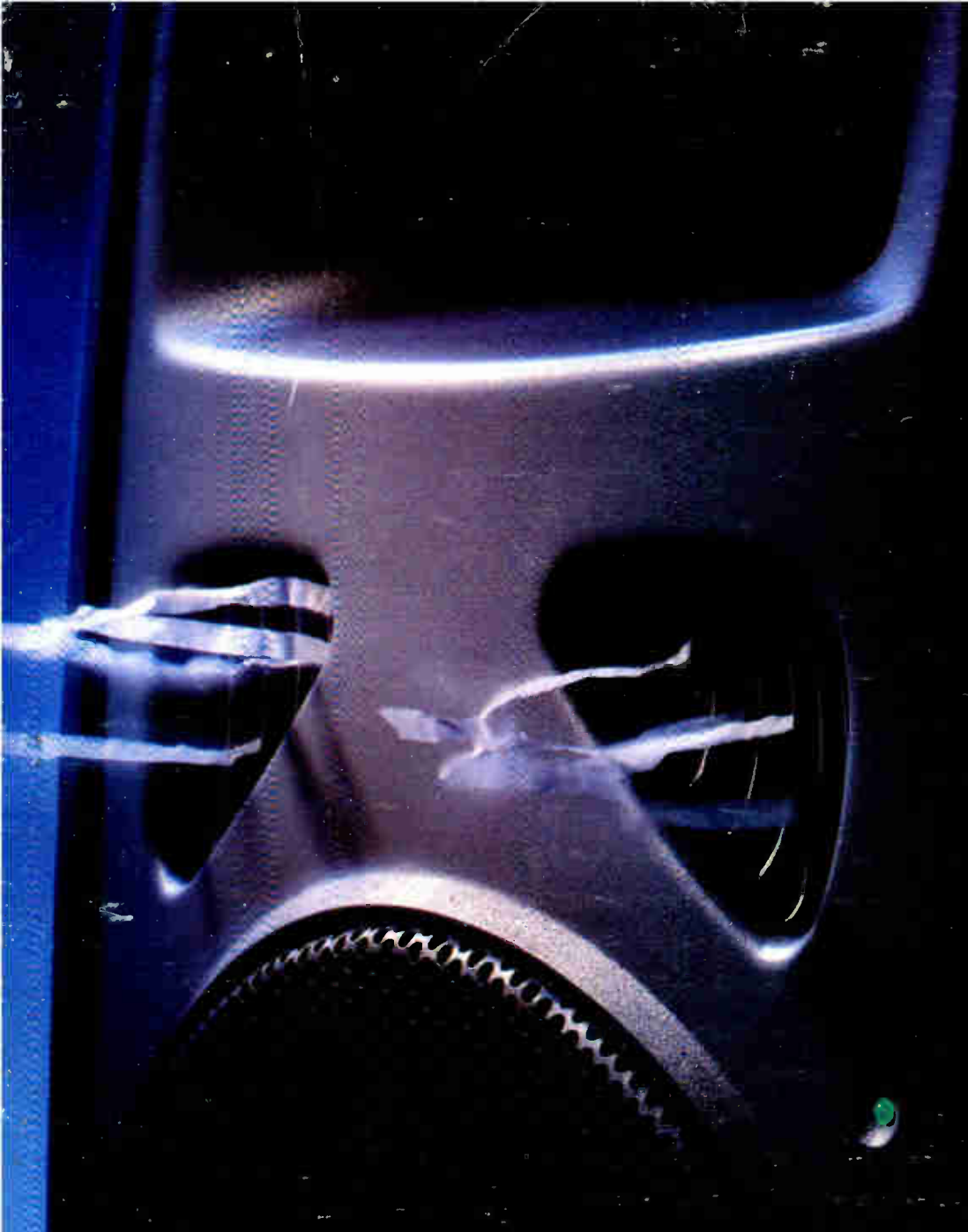

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