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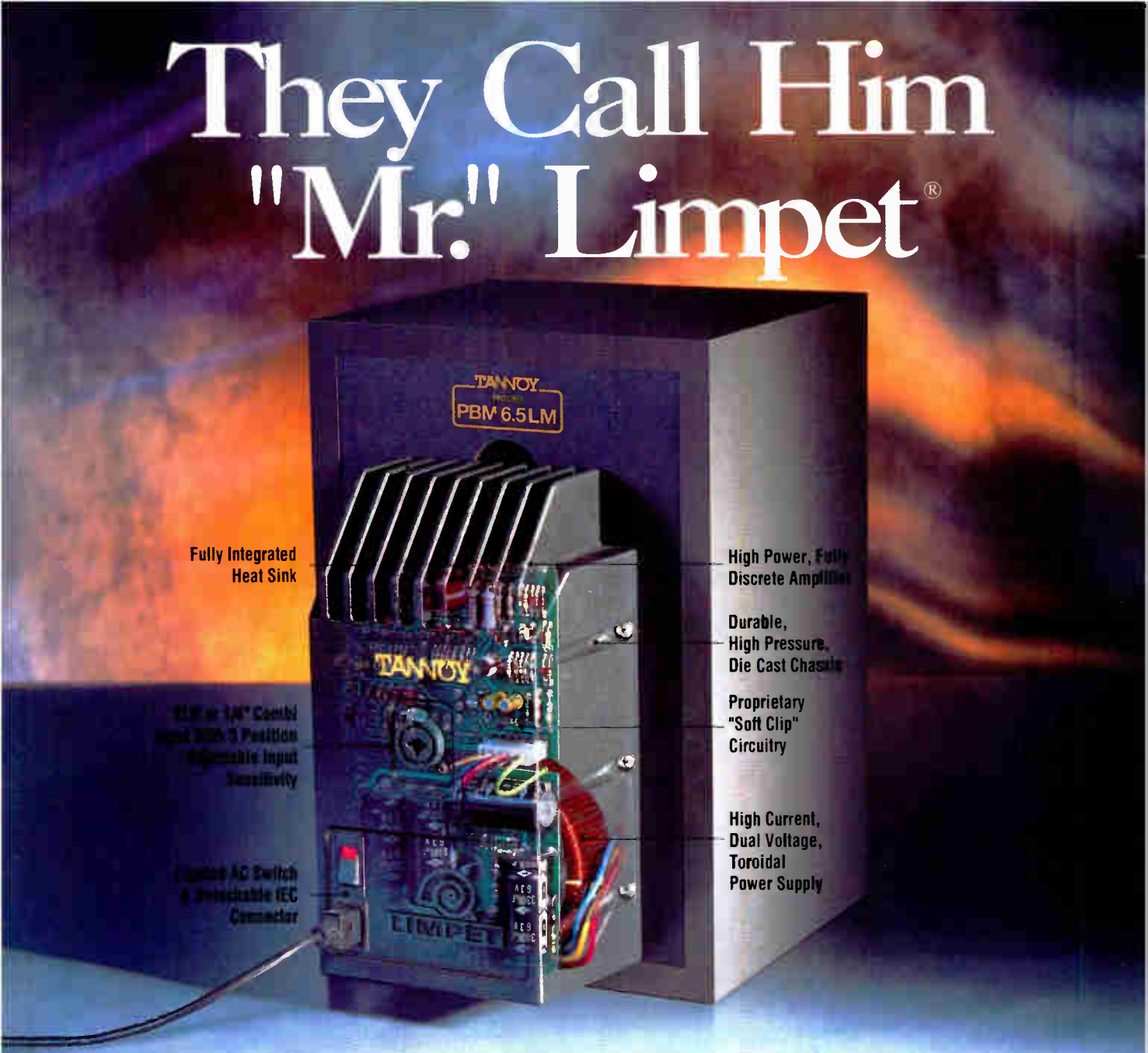

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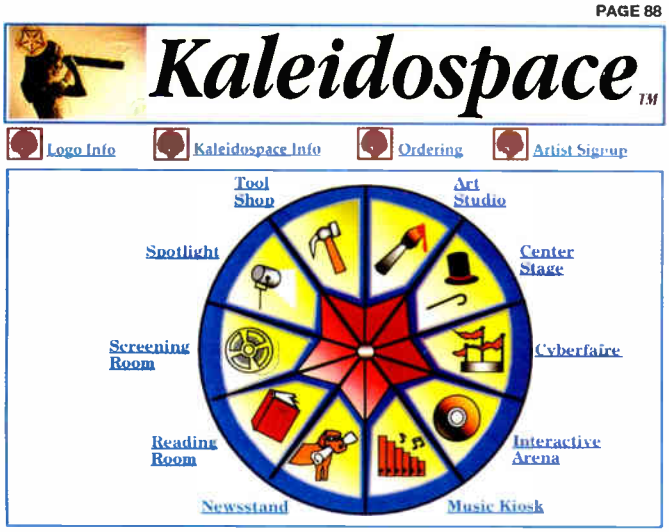

Cover: The Rolling Stones at the Oakland Coliseum in October '94. Showco (Dallas) provided a Prism® stadium system with delay package for the tour. Equipment included Harrison HM5 FOH and SM5 monitor consoles, a Yamaha DMP-7 programmable console, Sony WRR 57 wireless microphones and a Prism digital control system. For more on the Stones tour, see page 148. **Inset photo:** Steve Jennings.

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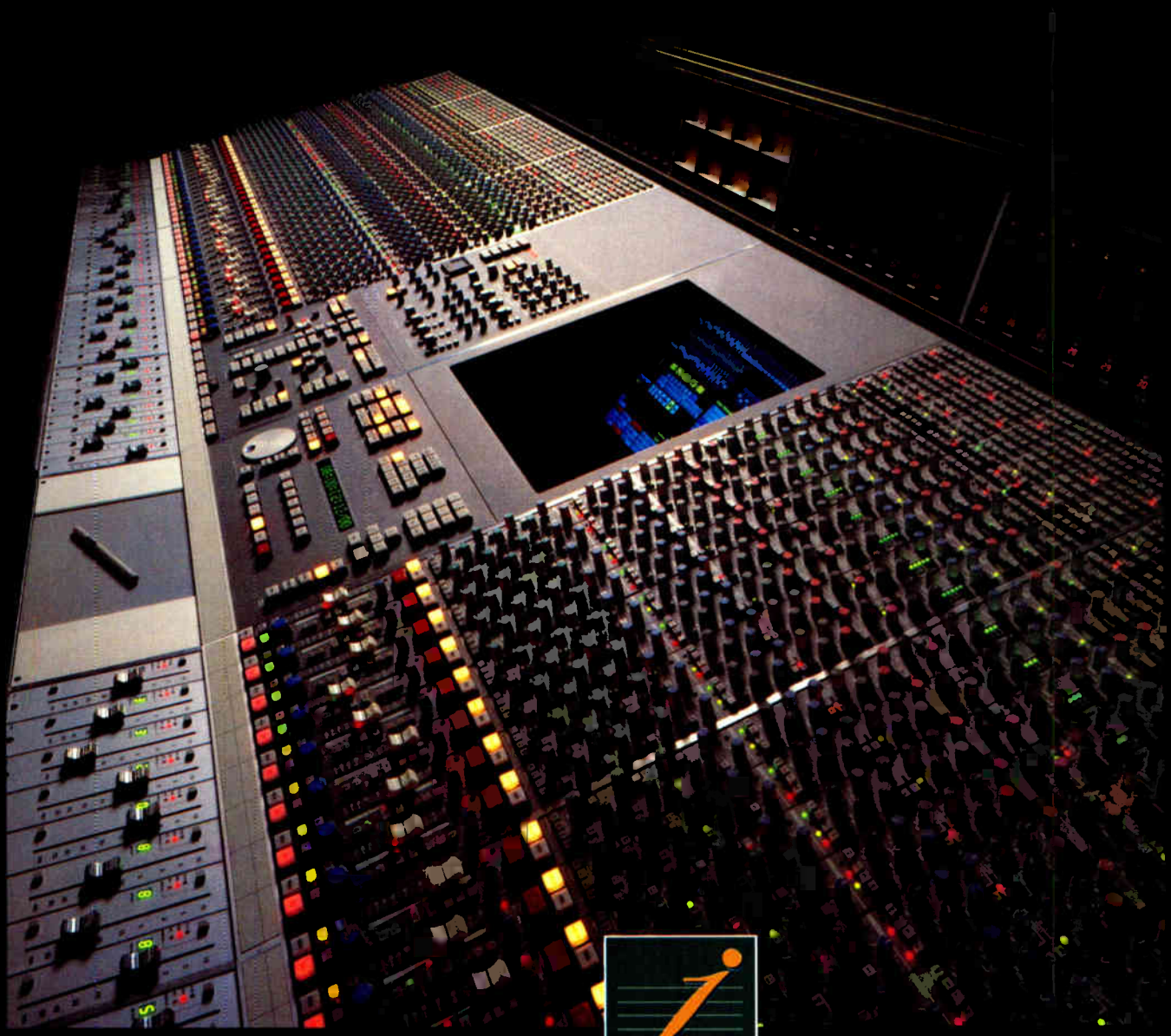
Analogue



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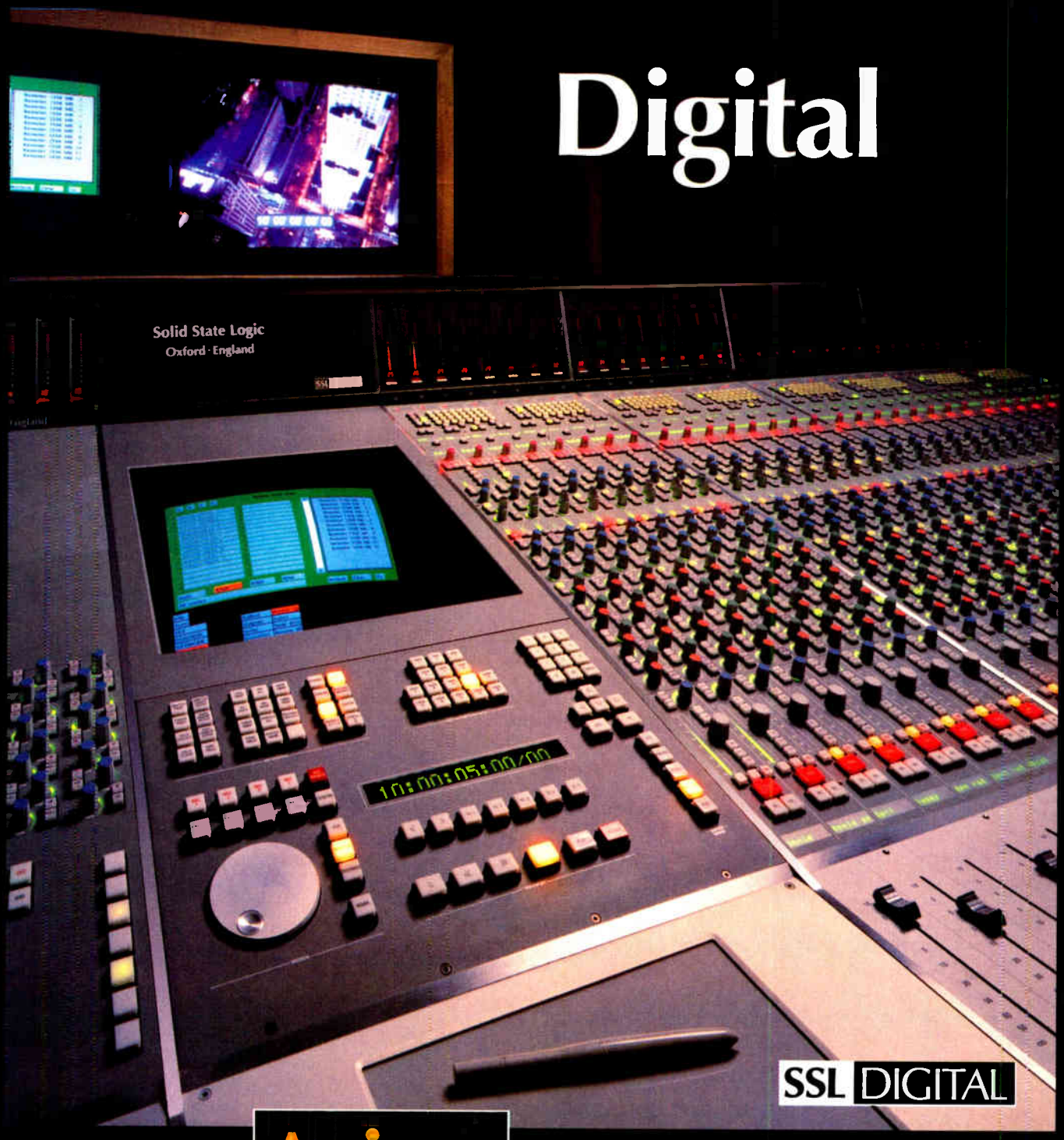

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FROM THE EDITOR

Touring Sound: The Human Element

Happy New Year. Looking out my window here, in the middle of winter, the trees are bare, and spring thaws seem like an eternity away. Most of the continent is snowed in, rained out or just plain freezing.

And once a year, in January, *Mix* focuses on sound reinforcement. Why now? Why not in summer, when the days are long and the touring season is ripe? First, six months from now, local, regional and national sound companies will (they hope) be working their lift gates off in sheds, arenas, clubs, stadiums, hockey rinks, auditoria—anywhere a promoter can conceivably pack an audience. Second, smart sound companies need to start planning now if they hope to catch their share of this summer's touring business.

Running a successful sound company is no easy task. The hours are long, the investment needs are great, and the competition is fierce. Meanwhile, technology continues evolving at a breathtaking pace, and reading magazines and attending events such as AES and NSCA are essential steps in keeping up on the latest happenings.

But technology is only part of the equation of survival in sound reinforcement. High-quality, rugged and dependable gear is a must, but there's a human element that can make or break a show. I recently attended a major tour that was marred by an inept house mixer who missed cues for bringing up the guitar solos, despite the performer moving from his vocal mic and walking over to his pedalboard whenever he took a solo. There's no excuse for this kind of sloppiness. On another show, a renowned FOH mixer insisted that the sound company switch over to his preferred brand of amps because the ones they had been using didn't capture the delicacy of his mix. Some delicacy! The kick drum was the loudest thing in the mix, the SPLs rarely went below 115 dB, and vocals were absolutely unintelligible, drowned out in a sea of keyboards and a blaring horn section.

A couple of weeks later, I checked out a blues band in a local club. The place was a dump. The house mixer (who was also mixing monitors) was working on a late-'70s-era 16-channel console that was covered in gaffer's tape. The mains looked like they'd been hit by a freight train. But the sound was clear. People do make a difference.

If you consider the cost of a typical major concert event—$40 to $80 for a pair of tickets (don't forget those ticket "convenience" charges) and $6 to $10 for parking—it's a wonder that audiences show up at all. Why go to a concert when you can rent a movie for three bucks, catch a ballgame on TV for nothing or use the whopping cost of that night on the town to buy the kid some new shoes or pay two months of your cable bill? In this industry, we all suffer when anyone experiences a show that's less than first-rate. We can't control rainouts at shed dates or traffic jams out of venues, but putting in a little extra effort on the engineering side is always a worthwhile investment.

Let us know what you think.

George Petersen, Editor

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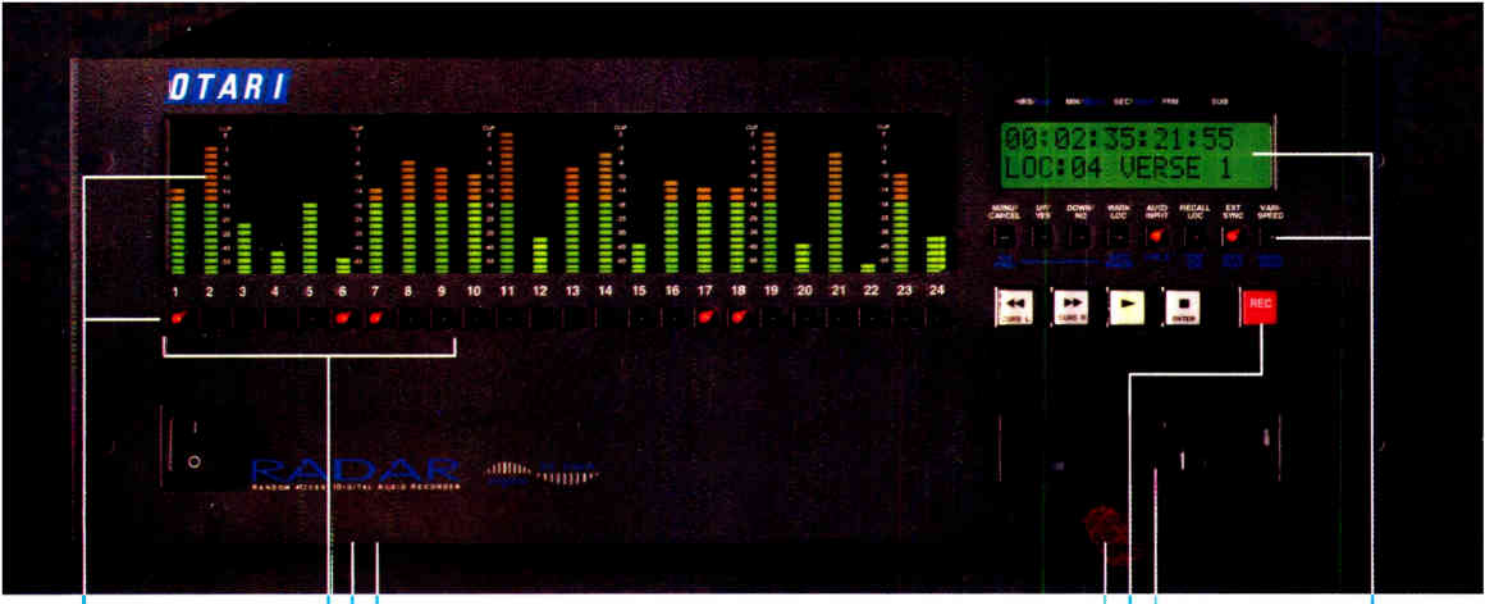

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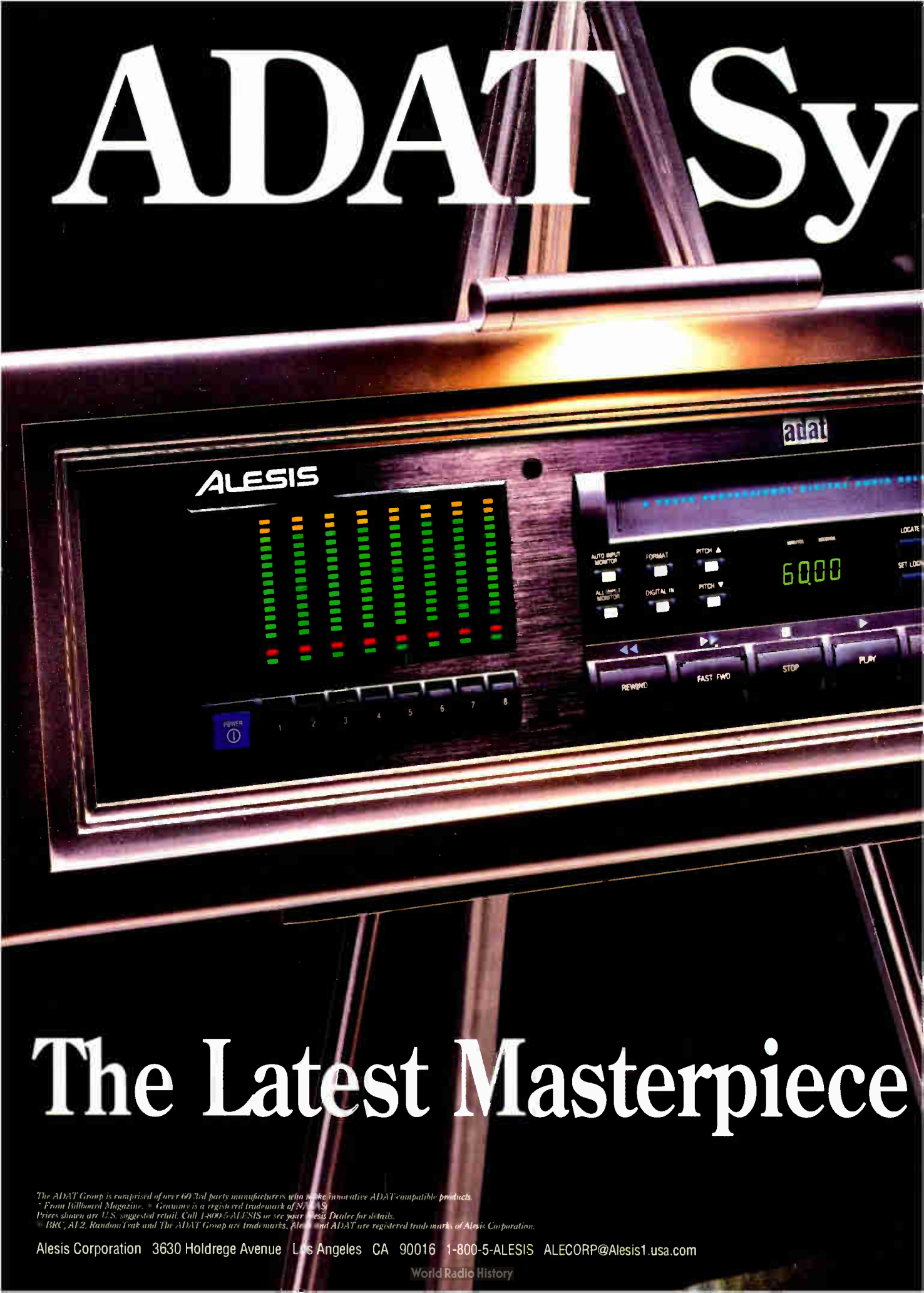

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CURRENT

TEC AWARDS CALL FOR ENTRIES, 1995 PRODUCT NOMINATIONS SOUGHT

The Technical Excellence & Creativity Awards Nominating Panel is currently accepting product nominations for the Eleventh Annual TEC Awards. To qualify, your product must have been released and in commercial use during the eligibility year of March 1, 1994, to February 28, 1995. 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 Technolgy, Sound Reinforcement Console Technology, Small Format Console Technology and Large Format Console Technology.

Those wishing to nominate products should include 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.

Send the information to: TEC Awards, 6400 Hollis Street #12, Emeryville, CA 94608; Attn: Karen Dunn. **All entries must be postmarked by Tuesday, February 28.** Late submissions will not be accepted. For more information, call (510) 939-6149.

SPARS TURNS 15, ELECTS 1994-95 BOARD, OFFICERS

Members of the Society of Professional Audio Recording Services celebrated the organization's 15th anniversary and elected a new board and officers at November's AES Convention in San Francisco. Four hundred people celebrated the anniversary with a tour of Alcatraz Island and a cruise of San Francisco Bay.

At the general membership meeting, held at the convention, the members elected the board and officers, including 1994-1995 president Steve Lawson. Lawson, president of Bad Animals/Seattle, says that during his term as SPARS president, his goal is to "make SPARS more relevant to the general membership by fostering greater communication through online services, as well as refining our business conferences to further meet the needs of the evolving pro audio community."

AKAI OPENS U.S. FACILITY

Akai Electric Co. Ltd. of Tokyo established a U.S. R&D center in Santa Cruz County, Calif., to support development of its digital recorders and electronic instruments. Marco Alpert, formerly of E-mu Systems, was appointed director of the new facility.

"The U.S. market represents tremendous growth opportunity for Akai products," said Toshio Tamaki, director and general manager of Akai's Electronic Musical Instrument division. "By establishing an R&D center there, we will be able to maintain closer contact with music, broadcast and post-production professionals and ensure that our products are designed to meet their current and future needs."

NEW NAME, VENUE FOR APRS SHOW

The UK's Association of Professional Recording Services announced a new name and a new venue for its 1995 exhibition. Taking place from June 21-23, the rechristened "Audio Technology '95—The APRS Show" will be held in The National Hall at Olympia, London.

"Our goal is to house the exhibition in one main area," says exhibition organizer Philip Vaughan, "providing a more dynamic atmosphere and responding to our exhibitors' requests. The National Hall does exactly that, providing us with an extremely prestigious location equipped with excellent exhibitor and visitor facilities."

Now in its 28th year, the APRS show continues to expand, and the organization anticipates strong exhibitor support for the '95 show. For more information, call the APRS in the UK at (0734) 756218.

SYN-AUD-CON SEMINARS SLATED

Synergetic Audio Concepts, the Norman, Ind.-based institute offering education in audio and acoustic technology, is holding a

—CONTINUED ON PAGE 16

Presidents old and new carouse at the SPARS 15th Anniversary bash. Aboard the cruise ship are past presidents (l-r) Chris Stone, Pete Caldwell, Joe Tarsia, Guy Costa, Murray Allen, Dave Porter, Dick Trump, Nick Colleran and Howard Schwartz, along with 1994-1995 president Steve Lawson.

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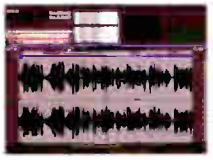
The performance of our audio products appeals to these. The commitment of our company appeals to what's in between them.

It's no surprise that Avid Technology's digital audio workstations are fast becoming the systems of choice for discriminating audio post-production professionals around the world. After all, Avid offers a full line of audio solutions for every step of the post-production process.



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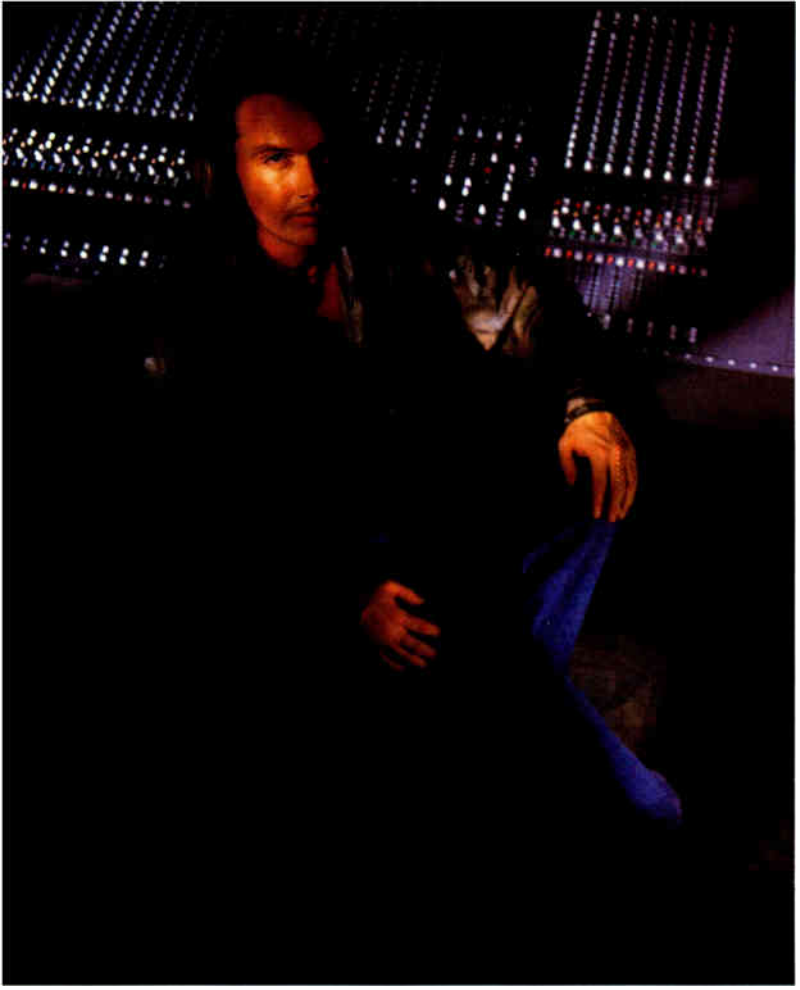

When I finally found the perfect post production console...

"Speed matters when a network satellite feed deadline is looming. The console is fast. It just performs." *Derek Luff, president, Wild Woods Studios in Southern California — talking about business.* **"Three things matter to our clients: do it better, do it faster and do it for less."** *That's why Wild Woods chose the TASCAM M-5000 post-production console.* **"It's incredibly flexible, it sounds great and it's an outstanding value."** *Wild Woods is strictly post-production audio and sound design.* **"This is a 90's console — state-of-art integration with our digital gear."** *TASCAM incorporated superior quality components and innovative signal routing capabilities into the board.* **"It really saves time, allowing us to be more creative. And that means satisfied clients and higher profits."** *One M-5000 wasn't enough for Wild Woods state-of-the-art studio.* **"I was so impressed — I had to have two!"**

Derek Luff and Glenn Aulepp received absolutely no consideration for their appearance in this advertisement. In lieu of receiving studio rental fees for photography, a contribution to the National Wildlife Federation was made on behalf of Wild Wood Studios

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"I love it. It's set up for post-production." *Glenn Aulepp, chief engineer at Wild Woods — on why he chose the console.* **"The board is logically laid out and it's very easy to operate."** *The M-5000 is a 24 bus console with 32 I/O modules expandable to 40. Each channel has two independent signal paths with dual linear faders.* **"I can get things done extremely fast — the large faders are preset for my tape returns, but for tracking I can reverse them at a flip of the switch."** *Both signal paths have an extensive independent EQ, SOLO and CUT.* **"The three cut groups are a necessity."** *There are virtually unlimited grouping and sub grouping options.* **"I haven't run into any limitations for what we do."** *It features 8 AUX sends and has massive headroom.* **"The meter selector is convenient — transient peak hold is very important in a digital environment."** *Engineers like the subtle TASCAM design details.* **"The integrated patch bay is fantastic — very compact and extremely easy to change."** *There's PFL or In Place Solo on both channel and monitor paths.* **"I needed a flexible console so I can complete projects my way — freedom from any console constraints."** *Optional accessories include an I/O expansion kit, stereo modules and a VCA fader automation package.* **"When it comes to post-production, you gotta be good and you've gotta be fast. The M-5000 is perfect for us. There just isn't any other console that offers more value."**

I bought Two of 'em.

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The TASCAM M-5000. For the business owner. For the engineer. For the post-production studio. **Perhaps you don't need two.** *But buying one M-5000 could be the best decision you ever made for your business.*

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INDUSTRY NOTES

Alan Hardiman joined **The Synclavier Company** (Lebanon, NH) as director of sales...**Wayne G. Hrabak** was named vice president, marketing, for **Electro-Voice** (Buchanan, MI)...**Neutrik USA** (Lakewood, NJ) hired **Mike Lynch** as Western regional sales manager and promoted **Ellen Wagner** to marketing communications coordinator...Several hires at Northridge, CA-based **JBL Professional**: Marc Spector was appointed marketing manager for the MI, broadcast and tour sound markets; **Mark Halvorsen** is the new project manager for the company's Control Series speakers; and **Mark Mayfield** was named market manager, focusing on sound contracting, cinema and residential sound...**JVC Professional** of Elmwood Park, NJ, made several promotions in its marketing and product development departments: **Jerry Cohen** was promoted to product marketing manager, **David Walton** to communications marketing manager, and **Neil Neubert** is now manager of advanced technologies...Some new appointments at the **Mark IV Pro Audio Group** (Buchanan, MI): **Peter Igel** was named broadcast/prodution marketing specialist; **Phil Katzenberger** was named technical engineer for DDA and Midas mixing consoles; and **Kirk Boyd** was appointed technical engineer for Klark-Teknik products...**SoundTech** (Vernon Hills, IL) appointed **Bill Robinson** to the position of managing director and promoted **Mark Lierly** to the dual position of product development manager and worldwide director of education and training...**The Russ Berger Design Group Inc.** moved to 4006 Beltline, Ste. 160, Dallas, TX 75244. Phone (214) 661-5222; fax (214) 934-3935...**Christopher Buttner**, former marketing and media specialist of Apogee Sound, opened public relations firm **Aarvak Marketing Communications** in Petaluma, CA, specializing in public relations and marketing services for the pro music, film, video and audio industries...**Philips Laser Magnetic Storage** (Colorado Springs, CO) hired **Joel R. Stanford Jr.** as director of sales and marketing for CD-ROM/CD-Recorders...Sales, service and support company **Audio Intervisual Design** (Los Angeles) named **Larry Deeds** to the newly created position of general manager...**James P. Wischmeyer**, president of Bag End Loudspeaker Systems of Barrington, IL, was nominated for the prestigious Chicago "Entrepreneur of the Year" award, designed to honor owners/managers of growing, successful companies...**Fiber Options Inc.** (Bohemia, NY) hired **Raymond F. Coulombe** as vice president of business development...**Checkpoint Systems Inc.** (Thorofare, NJ) appointed president and COO **Kevin P. Dowd** to the additional post of CEO. Former CEO **A.E. Wolf** will remain as chairman of the board of directors and will take on the additional post of chairman of the executive committee of the board...**Auraltech Inc.** D/B/A **Sound Engineering** changed its name to **SE Systems Inc.** and moved to 145 Industrial Ave., Greensboro, NC 27406. Phone (910) 275-4444; fax (910) 275-9052...**David Read** was named education manager for the National Systems Contractors Association. Prior to joining the NSCA, Read was technical services manager for Altec-Lansing in Oklahoma City...For its 25th Anniversary Spring Seminar, the ITA will focus on the "Converging World of Entertainment, Information and Delivery Systems." The seminar will be held March 8-12 at the Westin Mission Hills Resort, Rancho Mirage, CA. For more information, call (212) 643-0602...The eighth annual **International Teleproduction Society Forum and Exhibition** will be held July 20-23, 1995, at the Parc Fifty Five Hotel in San Francisco. Call (212) 629-3266 for more information. ■

—FROM PAGE 12, CURRENT

variety of on-site and touring seminars this year, its 23rd in business. Three-day seminars at the Syn-Aud-Con farm will happen May 17-19, July 20-22, September 21-23 and October 24-26. On-the-road, two-day seminars are slated for January 18-19 in Anaheim, Calif., February 15-16 in Kissimmee Fla., March 22-23 in Bellevue, Wash., and April 18-19 in Tyson's Corner, Va. Call (812) 995-8212 for more information.

SMPTE, SBE ELECT OFFICERS AND DIRECTORS

The Society of Motion Picture and Television Engineers and The Society of Broadcast Engineers held elections at their respective meetings in October. The SMPTE membership elected Stanley N. Baron (managing director, television technology, at NBC in New York) as president, David L. George as executive vice president, Peter A. Dare as editorial vice president, and Richard L. Thomas as secretary/treasurer.

At the SBE's annual meeting in Los Angeles, the organization elected Charles W. Kelly Jr. (director of international sales for Quincy, Ill.-based Broadcast Electronics Inc.) to a second term as president; Terrence Baun to a second term as vice president; Keith Kintner to a second term as secretary; and Robert Goza to a fifth term as treasurer.

INTERMEDIA '95

The tenth anniversary of Intermedia International Conference & Exposition on Multimedia and CD-ROM will be held February 7-9 at Moscone Center in San Francisco. A large exposition will be complemented by a conference program organized into four tracks: creative, business, technolgy and multimedia markets. Workshops will address networking technologies, digital video production, CD-ROM publishing, marketing multimedia products, and careers in multimedia. For more information, call (203) 840-5634. ■

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SSHDR1 FROM SOUNDSCAPE

THE MULTI-TRACK HARD DISK RECORDER

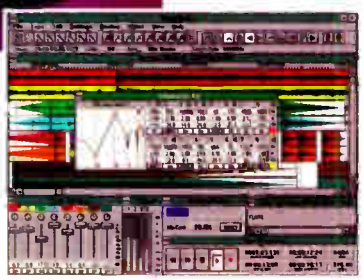
The Producer 'we need more tracks'.

The Engineer 'no problem! how many do you need ...16 ...24 ...32 ...48...➤?'

THE SSHDR1

Sync it! Expand it! Use it!

Unlock the power of digital audio on the PC in your studio without compromising *audio quality* or *synchronization* issues and have real flexibility to EXPAND and upgrade your system. Unlike other systems, each SSHDR1 8 track rack unit has its own internal 24 bit DSP handling all soundfiles allowing the freedom of integration with other Windows™ applications like MIDI sequencers or random access digital video and the ability to expand your system up to 128 physical tracks.



Hardware and powerful editing software from the same manufacturer gives perfect compatibility and eliminates the *'sorry man, it's the other guy's problem!'*.

Now SHIPPING in the US, and with a price tag that WON'T break the bank ... do yourself a favor and DEMAND A DEMO at your local store today and find out why this British company have sold more digital audio workstations in Europe over the past 12 months than any other manufacturer.

Vers. 1.16 now shipping with full 8-track audio scrubbing, real-time fades, selectable fade curves, and more!

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- Expandable from 8 to 128 tracks
- 64 virtual tracks per unit
- Powerful non-destructive editing tools: cut, move and copy/real-time fades/copy from hard drive to active arrangement/normalize process/repeat/loop record/varispeed (+/-10%)/waveform display/stereo link tracks/ compute tempo/stereo*. WAV file support
- Mounts for 2 IDE hard drives within each rack unit currently up to 3.4GB (10½ hours recording time)
- Full chase-lock sync
- Software features 8 real time parametric EQ's per rack unit assignable to any of the 8 tracks
- 'Crystal' 16bit A/D, 18bit D/A 64 x oversampled converters
- Analog in: 2 x RCA/cinch, unbalanced – 10dBv/+4dBv
- Analog out: 4 x RCA/cinch, unbalanced + 4dBv
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- Digital out: 2 x RCA/cinch, S/PDIF format
- Input S/N Ratio: > 93dB un-weighted
- Output S/N Ratio: > 113dB un-weighted
- MIDI: In, thru, out
- Rock solid synchronisation even with 386 machines
- Back up to DAT recorder or any logical PC drive
- Real time digital mixing with full automation via MIDI even using multiple units
- Optional: XLR balanced analog inputs and outputs, AES/EBU Digital inputs and outputs (XLR)

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- Seamless integration with any Windows™ sequencer or editor
- Software upgrades add new features (in the works: Time stretch, pitch shift, reverb, compression)

$3250 s.r.p. for 8 tracks
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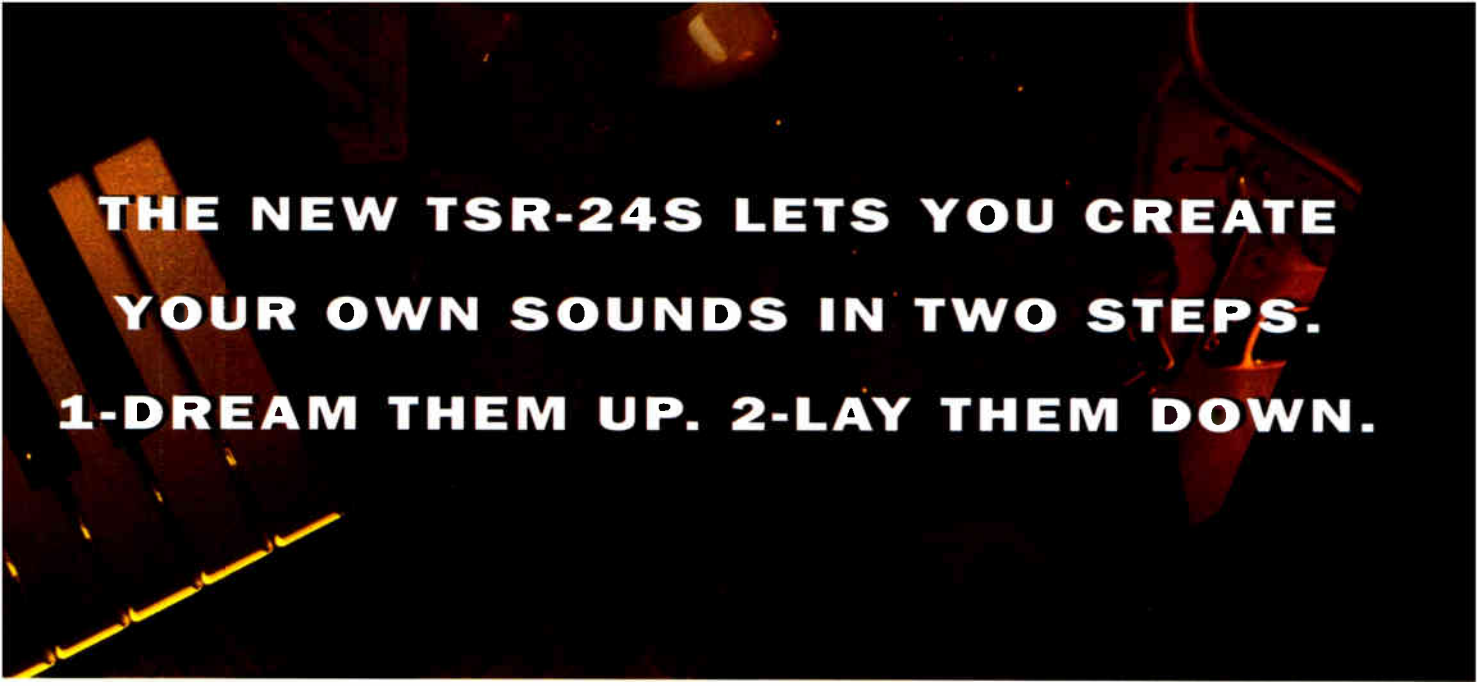

With the TSR-24S, frustrating menus and time-consuming steps don't control your programming. You do. Choose the effects you want, in the order you want, then program and listen to them instantly. No catches. Naturally, the TSR-24S has plenty of raw material, with an arsenal of more than 75 effects. Plus, multiple modulation effects

S-DISC™ PROCESSING

SPECIAL EFFECTS

94 DB S/N RATIO

When it comes to sound, not even compact discs are as clean as the TSR-24S. Our Silencer™ digital noise gate wipes out noise by writing digital zeros when there's no signal present.

94 dB

OVER 75 EFFECTS

Gigaverb (the world's most flexible reverb), crystal clear sampling, multitap and modulated delays, multi-phase choruses and flangers, duckers, auto panners, 4-voice phasers, 10 separate EQs, 4 octaves of multi-voiced pitch shifting, arpeggiators, and more.

DUAL DISCRETE STEREO

Take true stereo inputs, add four assignable outputs, and you get a lot of routing configurations. Let's see, there's stereo in, quad out; mono in, quad out; dual mono in, dual stereo out...well, you count 'em.

HAVE A TSR-24? *No problem—upgrading is a snap. Just contact your nearest DigiTech dealer.*

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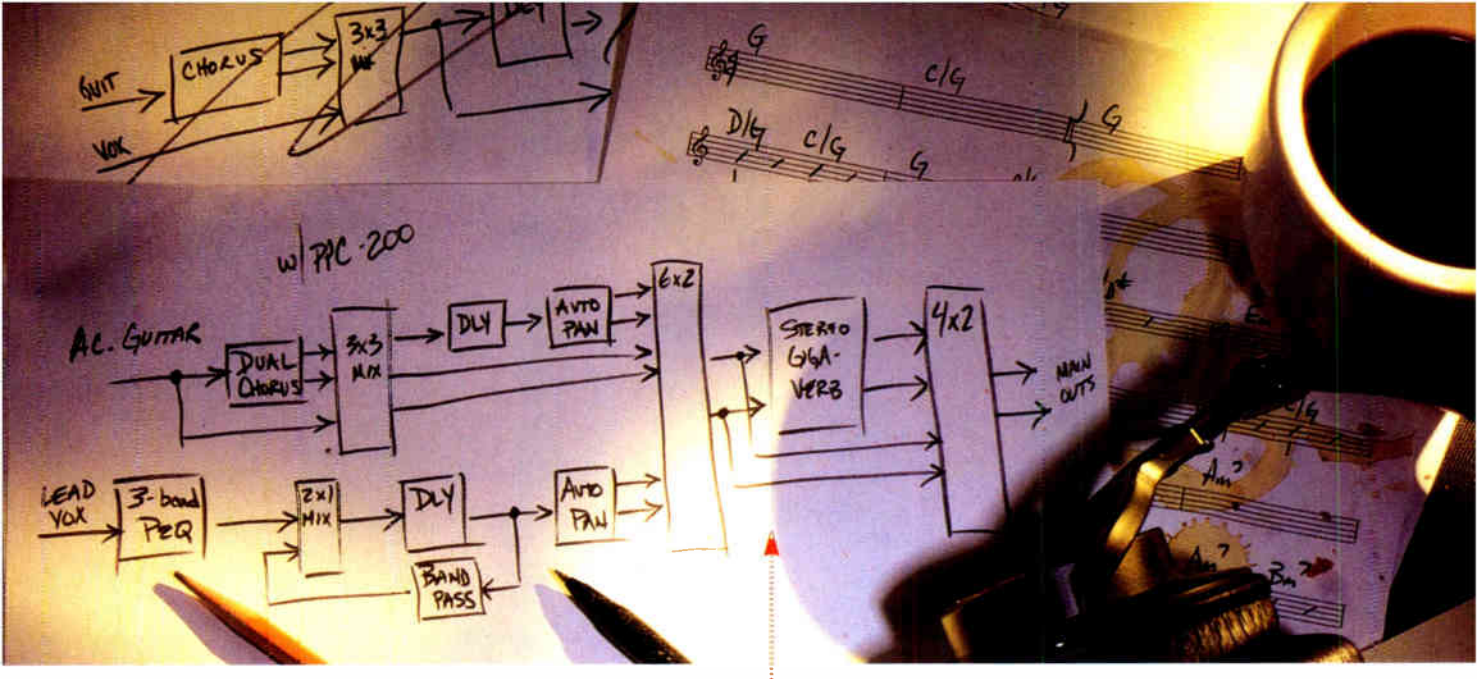

capability and instant module/parameter access mean your great ideas become great music in a matter of seconds. No other machine at any price can match its flexibility. But even before you start dreaming up new sounds, you'll have to take the real first step. Drop by your nearest DigiTech dealer today.

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Add the available PPC 200 card, and you'll have the power of two TSR-24S processors. Parallel processing means seamless effect changes and more.

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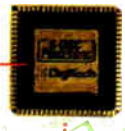
This chip defines DSP horsepower. S-DISC delivers superior sound, quiet operation and performance unmatched by anything in the market. This incredibly powerful chip was designed specifically for audio.



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by Stephen St.Croix

NEW AND IMPROVED

WHERE WERE WE, NOW?

Oh, my gosh! Yet another year. A good day to go to the day-old-synth store and get a few 1994 keyboards for 75% off. A good day to tell you that, due to the late arrival of some very pertinent data about CD-R technologies, that elusive third part of the CD-R trilogy, which I have been promising you, continues to elude us even as I type. I do promise you that you will find it interesting when I finally do pin down the people and data that I am after. Meanwhile...

THE HISTORY OF SILICON

I wasn't around for the First Big Change—when the people of Earth made the monumental (and to some, almost blasphemous) move from tubes to transistors—from a nice, warm, friendly technology that glowed in the dark to a cold, harsh, metal technology that at first sounded like a cross between sandpaper and broken glass. Yes, this was truly the Time Of Passage. A time of one technology replacing another, marking the historic moment when we first began to walk erect through the new Silicon Valley.

I was around for the next Big Change, from discrete transistors to integrated circuits. From metal cans with three wires and little square tabs on the sides to flat ceramic packages with way too many pins and hundreds of little transistors, then thousands, working together toward some Far Eastern engineer's dream. Yes, a new technology that at first sounded like a cross between sandpaper and broken glass. And I was there when ceramic gave way to plastic, and 14 pins changed to 16, 24, and then 40, 80 and more.

And, of course, we all shared the moment when our universe truly blossomed: when the seeds of the technology that will eventually free us from all known boundaries, including space and time itself, were first planted. The curious but otherwise pragmatic introduction of chips that had no amplifiers, no feedback-compensation inputs, in fact, no linear components at all: the birth of digital logic.

And along with that came an immediate need to get information into, and back out of, this new binary world; so Our-World-to-the-Computer-World converters (OWTTCWs as they were originally known, later changed to A-D converters) were invented. And, of course, when this

ILLUSTRATION SUSAN GAL

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"Surround Sound is the new "must have" for Cutters clients.

In fact, on one recent project, we turned a promotional video from stereo into Surround Sound . . . and it started out mono!

We couldn't have done that without AMS Neve Logic automation.

In fact, we were able to do all that in one room. Otherwise it would have been a shuffle from suite to suite.

OPEN MEDIA FRAMEWORK

Clients also like the fact that we can take an Avid drive and play directly on AudioFile via OMF, then mix it digitally on the Logic.

The point is to give Cutters' clients better service, more cost-effective quality, and every new

AUDIO SUITE B

"must have" they need . . . like Surround Sound. Our Logic consoles keep us on the cutting edge."

John Binder, Director of Audio, Cutters Inc., Chicogo.

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technology was first used on audio, the results sounded like a cross between...could it be sandpaper and broken glass? I think it could.

From glass tubes to metal transistors to ceramic chips, to plastic chips; one thing remained the same: Each time there is a techno-jump through the doors of evolution, the new technology at first sounds like a cross between sandpaper and broken glass...Ashes to ashes, glass to glass. Sand to silicon.

DANCING THROUGH TIME, FORWARD OR BACK?

You have certainly seen me complain bitterly about such frustrating developments as 20-bit converters that aren't, audio compression schemes that degrade the quality of the material so severely that even speed-metal freaks can hear the difference (I was actually in a store six months ago when a shaved Nazi came in with the first-generation Sony MD recorder and complained that Megadeath didn't sound quite right), and at least ten other discoveries that scared me. I get *very* worried when companies release new hardware, new software, new music, or new standards that actually support the wanton destruction of audio in the interest of smaller packaging, longer battery life, more storage on any given amount of media surface area, or the most common interest of all, the saving of a few bucks.

Each time we arrive at the threshold of a new technology, the race to recoup the R&D money that was spent to get us there forces the first offerings onto the street just a little too soon. Techno-preemies, as it were. This happens over and over because there are enough people (like me) that feel they actually *need* some particular technothing on the day that the Model One, Version 1.0, is released, so we blindly jump right in and yet again acquire bleeding-edge technology. Only fools rush in where...well, you know.

So the little things may not be ironed out. In some cases, the big things may not be ironed out either. I guess that I am sort of forced to accept the idea that with each new technology comes a shake-out period when, in the process of translating a design to production, the bugs and quirks that simply were not discovered during prototyping surface as performance glitches.

It is for this reason that I strongly recommend that you keep two kinds of daily work associates in your life: 1) Those who are better than you. The reason for this is pretty obvious. How can you learn and grow without exposure to others who have got better chops than you? 2) Those who share the same interests but are less financially endowed than you. So that you always have a place to quickly and fairly unload that Model One when the Model Two comes out three months later (with all the garbage fixed).

Okay. It took 20 years for transistors to sound good. It took 40 years for tubes. And it took about ten for digital. Hmm. Each jump takes only half as long to settle in and straighten out. I can live with that. I just don't buy quite as many Model Ones as I used to.

BUT...

Yeah, but...We can't chalk it all up to that. We must keep a diligent eye out for the really scary trends like lossy data compression. This is a horrible, criminally insane concept. Here is how it works: Mephistopheles Systems

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pays for a huge market analysis that says they need to come out with a hot new product within six months that records and plays four hours of 32-bit audio on a 1-inch, phase-change optical disc if they want to capture your soul. The tech department works for two months to try and make it happen and finally gives up and files a report stating that they are having one hell of a time, the state of the art just ain't there yet; no way. The marketing department, led by the market research, is all ready to do a serious four-page brochure with hot, stamped-foil logos, touting the wonders of four hours of 32-bit audio on a 1-inch, phase-change optical disc.

Something has to give here. Can you guess what it will be? Right. Marketing is not about to give up its new hard-won technobabble. The entire back page is full of it, so *performance compromises are reached*. Marketing decides what it is willing to give up in order to keep the specs that it believes will sell the most units. In this case, it is the four-hour play time, so laws of physics being what they are, 32-bit is changed to 8-bit companding with additional lossy compression, and 3.6 hours is reached. Though the music now sounds grainy, gated and muffled (along with a new, strange, pumping distortion artifact), it does deliver more than three and a half hours of this mush, and the battery lasts almost long enough to play it all, as long as you don't search for more than two tunes per charging. Oh well, it ships anyway! What the hell is this? This is what will continue to happen as long as you accept it. And it may get even worse, because the pressure to meet certain popular performance figures increases daily, and storage density is certainly one of the primary ones.

This is only an example and should by no means be taken as a lone case. In software, for example, digital EQ often sounds much worse than its analog counterpart, because there simply isn't enough horsepower in the hardware to get good-sounding EQ to work in real time. In the race to offer more and more effects in DSP boxes (for the same or less bucks), bandwidths, slew rates, data rates, bus widths and algorithm sophistication and accuracy may be seriously compromised. In some of the newer, nonlinear, digital audio recording systems, data redundancy, error recovery and interpolation schemes actually may be designed to be *less* robust than last year's model, all for "performance" increases such as number of tracks and retail pricing. Then again, other systems may not be.

It is up to you. You must not assume anything! There are wonderful systems out there, and there are impressive bargains compared to last year. Just keep in mind the threadbare, but true, saying: "If it's too good to be true, it just might be too good to be true." Try. Listen. Go forth into the marketplace armed with awareness and clean ears and you will be fine. But if you go out there assuming that the new Klystron VII (with new, water-cooled, U-234-powered A/Ds) will sound as good as last year's Klystron VI (even though the new one has 33⅓ new features and costs 33⅓% less), you might as well take a screwdriver with you, for the benefit of your salesperson. ■

Steve St.Croix has three wood screws embedded in his body. He feels that, considering he's been buying pro gear for 20 years, he is pretty lucky.

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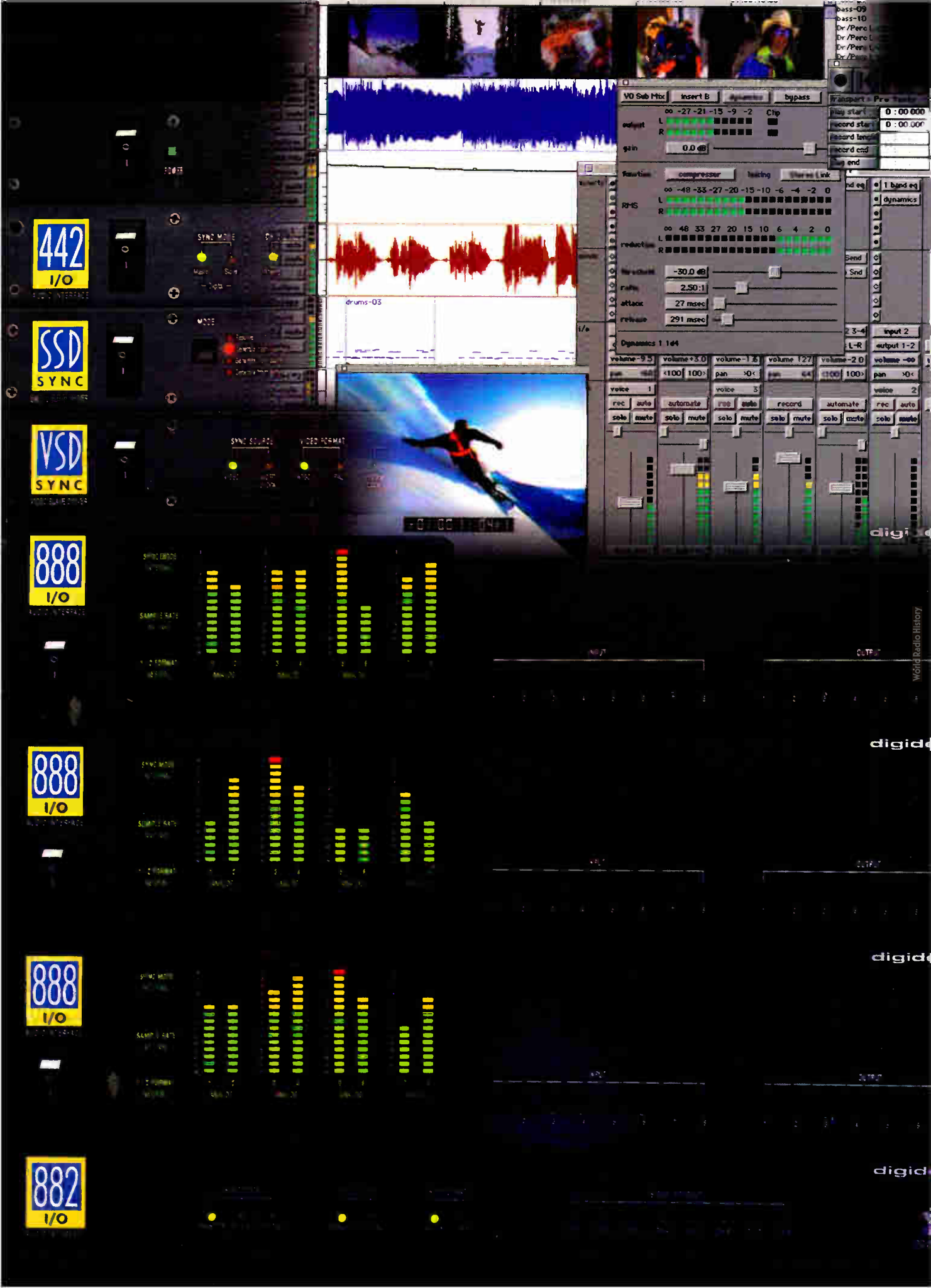
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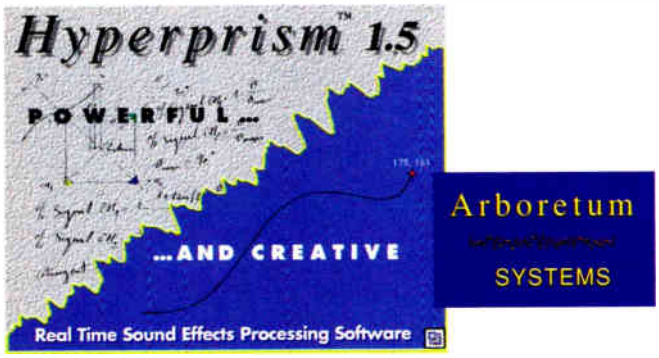

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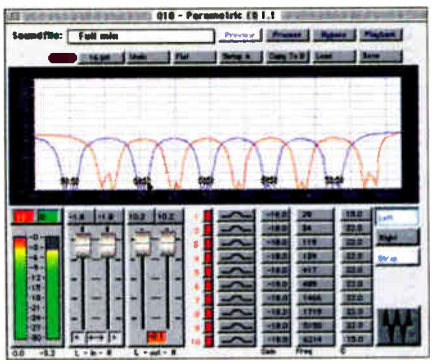
- Use the Blue Window™ Graphic Interface for on-the-fly interactive sound processing with mouse and MIDI control, in foreground or background, in file & live modes.
- For Pro Tools™, Sound Tools I & II™, and Audiomedia I & II™.



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version 1.1

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- Select-and-drag curve editing, control strapping.
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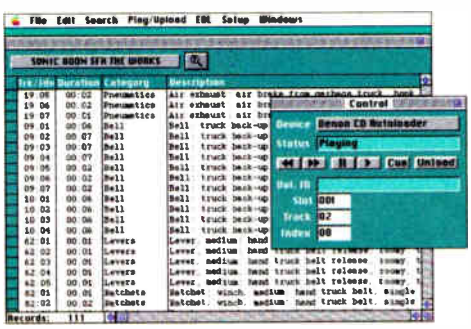

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- Locates and plays through automated CD changers.
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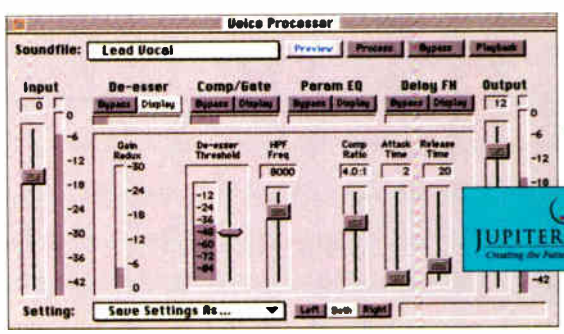
- Bulk Uploads automatically to Pro Tools and SampleCell™.
- Custom view templates.
- Playlist for sequencing selected sounds.
- Control Panel provides transport control of CD changers.
- User-definable libraries and one million word thesaurus.
- Logical keyword search.
- Networkable multi-user version available soon.



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by Pat Brown

SOUND BY NUMBERS

AN INDUSTRY REBORN

In this century, we have witnessed the birth and evolution of the audio business. The understanding of acoustics has been developing for centuries, yet the advent of true electron control has only just begun. The journey began with the first transformers and vacuum tubes, continued kicking and screaming into the age of solid-state electronics and now enters a new era of sampled sound. What a neat idea, turning sound into numbers and making changes with math. I never liked math, which is one reason that I went into the sound business instead of accounting. But now I must concede, math has sought me out, and my high school trig teacher can rightfully say, "I told you so."

In the world of loudspeakers, little has changed over the past 50 years. This industry's pioneers tried just about everything, and the concepts that worked best for them are still today's mainstays. But there is little doubt that computers have brought major advances in loudspeaker *systems*. Designers have begun to envision the amplifier and loudspeaker as a system, devising conjugate networks to correct anomalies in loudspeaker response and yielding accuracy unattainable in the past. The ways we control and route signals have already revolutionized the ways that many of us work.

So, can a computer control a sound system the way an engineer can? The prerequisites for a good mixing engineer include the ability to listen, the ability to make decisions and the ability to act; to control a sound system, then, a computer would have to possess these capabilities. To make decisions, we employ mathematical relationships and logic. Logic is what computers are made of, and they excel at this aspect of system control. Other factors that affect our decisions are intangible ("how it feels"); the sound system, for a good mixing engineer, is an extension of the mind and body, a musical instrument, a means of expression. It is this human element that will always evade computer control.

But sound system features and performance can be brought to new levels by using microprocessors to automate tasks, thereby extending the capabilities of the live engineer. Consider a modern jet aircraft. Its capabilities boggle the mind, but it needs a computer to stay in the air. Like it or not, we, too, are dependent upon ones and zeros, and the scary aspect

THE ABILITY TO POINT WITH A MOUSE IS BUILT INTO KIDS THESE DAYS, AND THE ABILITY TO CONTROL A SOUND SYSTEM WITH A COMPUTER IS JUST A STEP BEYOND A GOOD GAME OF NINTENDO.

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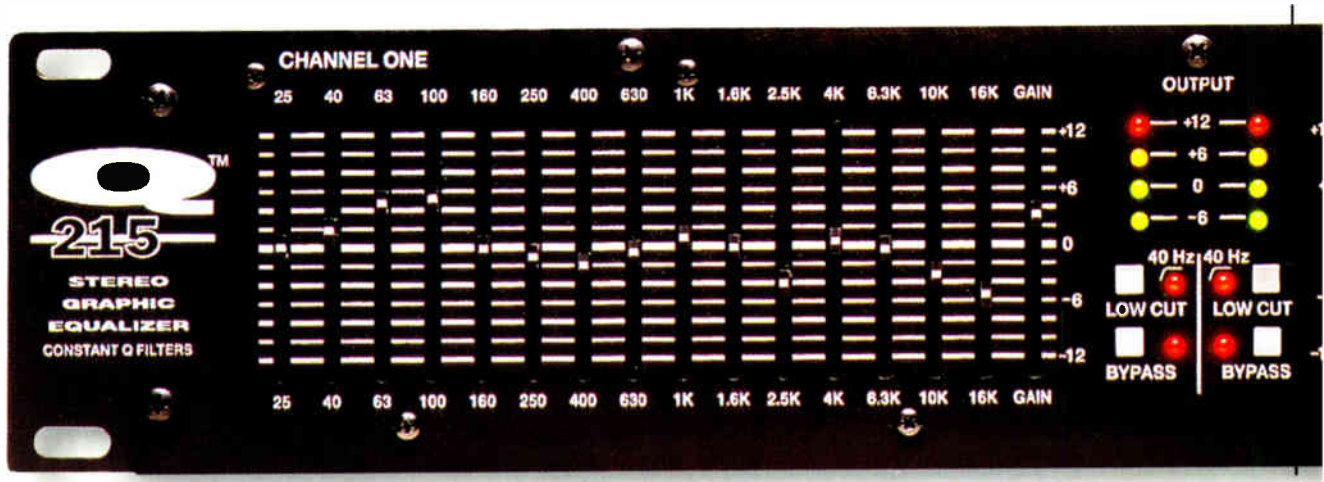
of this dependency is the fact that when computers go down, they go down hard. In times past, a nonfunctioning sound system could often be placed back into service with a little ingenuity and a trip to the local Radio Shack, but not so in the computer age. The answer to this new predicament is redundancy, which means everything must have a backup, which in turn drives up the cost and complexity of the system. We can expect sound systems to continue to progress in this direction, requiring computer intervention at every point. We will even have computers to tell us when the computer isn't working. Since this mixed blessing is inevitable, wise engineers are doing their homework, learning the ins and outs of the computer's ins and outs.

The link between the live operator and the computer-controlled system is the Graphical User Interface. The better GUIs can be as intuitive as a mixing console, and even more so. The ability to point with a mouse is built into kids these days, and the ability to control a sound system with a computer is just a step beyond a good game of Nintendo. With the graphical user interface, an engineer can design the control screen for a complex system, limiting user interaction to just those parameters that the engineer decides may need to be changed, determining in advance how much change will be permitted. A lectern mic can be programmed to allow a few dB of level change by the user but prevent drastic changes that may put the system into clipping or feedback. Now, all a mixing engineer needs is a good set of ears, some decent hand-eye coordination and the graphical user interface to get in touch with the sound system. We are reaching the end of the era when system controls must be under lock and key to prevent the corruption of a precision calibration.

Most of the parameters of modern audio systems lend themselves to computer control. The simple task of changing the level of the program can be broken down into bits, analyzed mathematically and executed via a microprocessor. In fact, nearly all system functions can be controlled in this way. Consider a simple sound system for a town board meeting. As a mixing engineer, I could sit through the meeting and ride level controls, taking an occasional sip of my Diet Coke—or I could install an automatic mixer. This mixer can turn mics on when talkers talk or mute them when they don't. It can respond within milliseconds to reduce levels when a threshold is exceeded or bring a weak voice up to that threshold. An automatic mixer can limit the signal when a book is slammed onto the table or give the system back to the moderator when the decision is made to intervene. It can even reduce system gain as additional mics are activated, preventing the system from going into feedback as energy accumulates. And it can do all of the above for the house system while providing a completely different mix for the tape recorder. And as the microprocessor is doing such a good job, I may do well to drink my Diet Coke at the park, or at another job across town. Computers can do some things better than people, and there are many areas where the capabilities of silicon may exceed those of flesh and blood.

The Q™ 215@$215.99*

Unbelievable!



We know it's hard to believe, but all fine EQs don't have to be expensive. Just take a look at the new Q 215 . . . it's got the features, it's got the durability, it's got the price, and it's got the name . . . Peavey. The Q 215's constant Q filters let you adjust a frequency band level without impacting adjacent frequency bands. These constant Q filters also eliminate the distortion created at high cut/boost levels that plague

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Even at this early stage in their development, computer-controlled sound systems have already infiltrated our communities. The local high school has its sound system "programmed" for the fall musical. One student is in charge of making sure that mics are in place, and another simply recalls "scenes" at various parts of the program, intervening with level adjustments if needed. This same system can be operated from several positions within the facility besides the audience area, and it is password-protected to prevent unauthorized access. At the end of the evening, the sound system is reconfigured for the student assembly the next morning with another click of the mouse.

A well-known rental company uses a microprocessor in its amplified loudspeakers. Upon the return of the system, a report is generated by hooking a printer to the loudspeaker, showing maximum power drawn, maximum loudspeaker excursion, duration of use and a host of other parameters.

A local arena system consists of 18 amplifiers that are powered up sequentially by a microprocessor and are then monitored during the course of the event.

The system at the Methodist church is computer-controlled, allowing smooth and transparent operation without the presence of a live operator. The system automatically keeps the level of the taped music a few dB below the level of the vocalist and powers itself up and down according to a predetermined schedule. A live operator can mix the system manually on a notebook computer from the congregation and then hit the "autopilot" button when the sermon starts.

A large touring system uses a processor-controlled system to power up amplifiers sequentially and perform a quick check on each one, turning a once time-consuming task into an automated one. During the concert, a continuous readout monitors the amplifiers' reserve power and can inform the engineer of loudspeaker failure should it occur. Another computer continuously tracks the SPL of the band and signals the mixing engineer when levels are too high for too long.

Over at the hospital, a new DSP-based nurse-call system allows complete hands-free communication between any two nurses at any location, performing the proper signal routing with the aid of infrared badges that track the nurse's whereabouts.

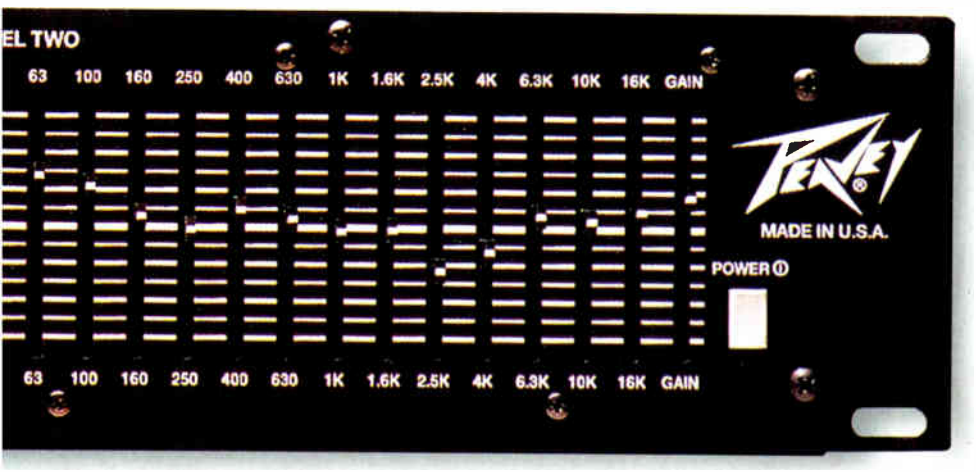
An engineer goes "online" with the sound system at a major theme park halfway across the country to see if things are working properly. That same sound system uses audio cues to control virtually every aspect of a daily parade, from opening doors to igniting fireworks.

Sound like the future? No, it's the present. Computers have permeated every facet of our business; indeed, every facet of our lives. A new age of audio has dawned, an age that brings change with each advancement in computer technology.

There will always be purists who embrace their vacuum tubes and vinyl, but digital will prevail, driven by practicality, cost-effectiveness and efficiency. ■

Pat Brown, an audio contractor/consultant based in southern Indiana, conducts audio and acoustic training seminars for Synergetic Audio Concepts.

EQs using inferior gyrator circuitry. AND since frequencies needing cut/boost are usually higher or lower than a frequency band's center, the constant Q is set to cover the immediate frequencies on either side. AND that's not all . . . CHECK OUT THESE FEATURES: 2/3 octave dual independent 15-band EQ channels • Constant Q filters on standard ISO centers • 40 Hz low cut switch with LED indicator, bypass switch with LED indicator, and overall gain control on each channel • 45 mm sliders with full-length dust shielding • 20 Hz to 20 kHz bandwidth • ±12 dB cut/boost • Dual 4-step multicolor LED output indicators • Electronically balanced and unbalanced inputs/outputs • Internal power supply (no wall wart) • Rugged all-metal chassis • Easy-to-read and -use controls • Heavy-duty fiberglass circuit board mounted solidly to the chassis. AND more. The rugged, new Q 215 @ $215.99* . . . it's got it all. At an authorized Peavey dealer.



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STAR-STUDDED

IT WAS NOT YOUR TYPICAL AWARDS SHOW. As the Tenth Annual Technical Excellence & Creativity Awards were drawing to a close, master of ceremonies Father Guido Sarducci came back on stage for his final remarks. "Wait," he said, "It's not often that I have George Martin in the audience." And with that he launched into a 2-minute medley of lines from Beatles songs, that brought the audience back to their seats and then to their feet. Father Guido, many claimed after the show, was one of the highlights of the evening.

Master of Ceremonies Father Guido Sarducci

More than 700 audio industry professionals had made their way into the Grand Ballroom at the St. Francis in San Francisco on November 11 to celebrate the TEC Awards. Along with the awards in 23 categories, two special awards were given. Carlos Santana presented the Les Paul Award to Herbie Hancock, and engineer Spencer Chrislu accepted the Hall of Fame Award from legendary producer George Martin on behalf of Frank Zappa's family.

George Martin & Spencer Chris

Carlos Santana (above) pays tribute to Herbie Hancock (r)

In what is becoming a favorite part of the evening, celebrity presenters Booker T. Jones, Boz Scaggs, Ray Benson and Don Was got together for an all-star jam on a rocking version of "Green Onions" and Boz Scaggs sang "Dock of the Bay."

Boz Scaggs (l) and Ray Benson; Don Was (lower right)

Skywalker Sound North (Audio Post-Production Facility) and engineers David Hewitt (Remote Recording Engineer) and Robert Scovill (Sound Reinforcement Engineer) picked up their third consecutive TEC Awards. Mastering engineer Bob Ludwig was a double winner this year, for himself and his new facility, Gateway Mastering. Alesis Electronics won two awards, the first for its Monitor One (Studio Monitor Technology) and its second for the QuadraSynth (Musical Instrument Technology).

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TEC AWARDS '94

The winner in the Small Format Console Technology category was the highly acclaimed Mackie 8-Bus Series. The Tascam DA-88 digital 8-track recorder was the winner in the crowded field of Recording Device/Storage Technology.

Booker T. Jones

The House Ear Institute's Hearing Is Priceless campaign will receive 50% of the evening's proceeds for its continuing efforts to educate young people about hearing conservation. The remaining proceeds will be distributed to the SPARS financial aid program to qualifying students; the AES Educational Foundation; past winners or nominees in the category of Outstanding Institutional Achievement, Recording School/Program; and Hearing Education Awareness for Rockers (H.E.A.R.) of San Francisco.

(L-R) Herbie Hancock, House Ear Institute's Director of Public Relations and Community Outreach Charlie Lahaie and bassist and HIP spokesman Nathan East

(L-R) Producer Phil Ramone, Les Paul Award winner Herbie Hancock, producer/musician Alan Parsons, producer George Martin and Father Guido Sarducci

(L-R) Boz Scaggs, George Martin, Herbie Hancock Ray Benson, Booker T. Jones, Hillel Resner, Mr. Bonzai, Phil Ramone, Don Was, Ed Cherney. Karen Dunn, David Schwartz and Jane Byer

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Otari Corporation
Shure Brothers Inc.
Skywalker Sound North
Stewart Electronics
Tannoy/TGI North America

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1994 TEC Awards Winners

Robert Scovill (l) accepts the TEC Award for Sound Reinforcement Engineer from Booker T.

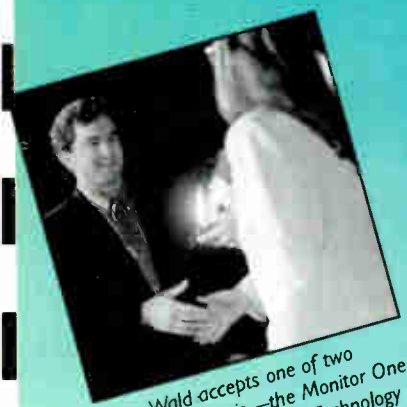
Outstanding Institutional Achievement

- **Acoustics/Facility Design Company**
  studio bau:ton, Los Angeles, CA
- **Sound Reinforcement Company**
  Clair Brothers Audio, Lititz, PA
- **Mastering Facility**
  Bob Ludwig's Gateway Mastering, Portland, ME
- **Audio Post-Production Facility**
  Skywalker Sound North, San Rafael, CA
- **Remote Recording Facility**
  Le Mobile, Los Angeles, CA
- **Recording Studio**
  Record Plant, Hollywood, CA

Roy Clair (l) accepts Clair Brothers Audio's TEC Award for Sound Reinforcement Company from Don Was

Outstanding Creative Achievement

- **Audio Post-Production Engineer**
  Gary Rydstrom
- **Remote/Broadcast Recording Engineer**
  David Hewitt
- **Sound Reinforcement Engineer**
  Robert Scovill
- **Mastering Engineer**
  Bob Ludwig
- **Record Producer**
  Don Was
- **Recording Engineer**
  Bob Clearmountain



Allen Wald accepts one of two awards for Alesis—the Monitor One won for Studio Monitor Technology and the QuadraSynth received the award in the category of Musical Instrument Technology

Outstanding Technical Achievement

- **Ancillary Equipment**
  Apogee Electronics UV 1000 Super CD Encoding System
- **Amplifier Technology**
  Stewart PA-1400
- **Computer Software/ Peripherals**
  Digidesign SampleCell II
- **Microphone Technology**
  AKG C414B/TLII
- **Sound Reinforcement Loudspeaker Technology**
  Apogee Sound AE-9
- **Studio Monitor Technology**
  Alesis Monitor One
- **Musical Instrument Technology**
  Alesis QuadraSynth
- **Signal Processing Technology**
  Eventide DSP4000 UltraHarmonizer
- **Recording Devices/Storage Technology**
  Tascam DA-88 Digital 8-Track
- **Sound Reinforcement Console Technology**
  Soundcraft Vienna II
- **Small Format Console Technology**
  Mackie 8-Bus Series
- **Large Format Console Technology**
  Euphonix CS2000

Bob Clearmountain accepts his TEC Award for Recording Engineer

Photos: Eric Slomanson

Bill Mohrhoff accepts Tascam's TEC Award (Recording Devices/Storage Technology) for the DA-88 Digital 8-Track from Suzanne Ciani

HEAR THE FUTURE

DIC'S NEW 8MM DIGITAL AUDIO CASSETTE IS DESIGNED FOR DIGITAL AUDIO MULTI-TRACK RECORDING!

Split personality?..Not this cassette!

It bridges the gap for Tascam DA-88 users who require a true digital audio cassette designed to deliver the highest levels of performance possible. Today's tape based digital 8 track recorders incorporate technology originally designed for video but that's where the similarity ends. Video technology compensates for the drop outs inherent in video cassettes but Digital Audio Multi-track Recorders require drop out free performance. **That's what DIC's new 8mm Digital Audio Cassette is all about... Digital Audio Multi-track Recording! No identity crisis here!**

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Introducing the Roland S-760 Digital Sampler, a professional sampler for the kind of cash mere mortals actually have. A single rack space digital powerhouse that does virtually everything kazillion dollar units do and more. Including 48kHz stereo sampling, built-in digital EQ, multi-mode filters, extensive wave editing and everything else you would expect from a Roland sampler.

And right out of the box it's ready to use as a 32-part multitimbral musical instrument or a full-fledged studio production tool. With its diversity of sounds and infinite sonic possibilities, unsurpassed fidelity and sound manipulation capabilities, the S-760 will open up new worlds of sound, even if you already have a full rack of synths.

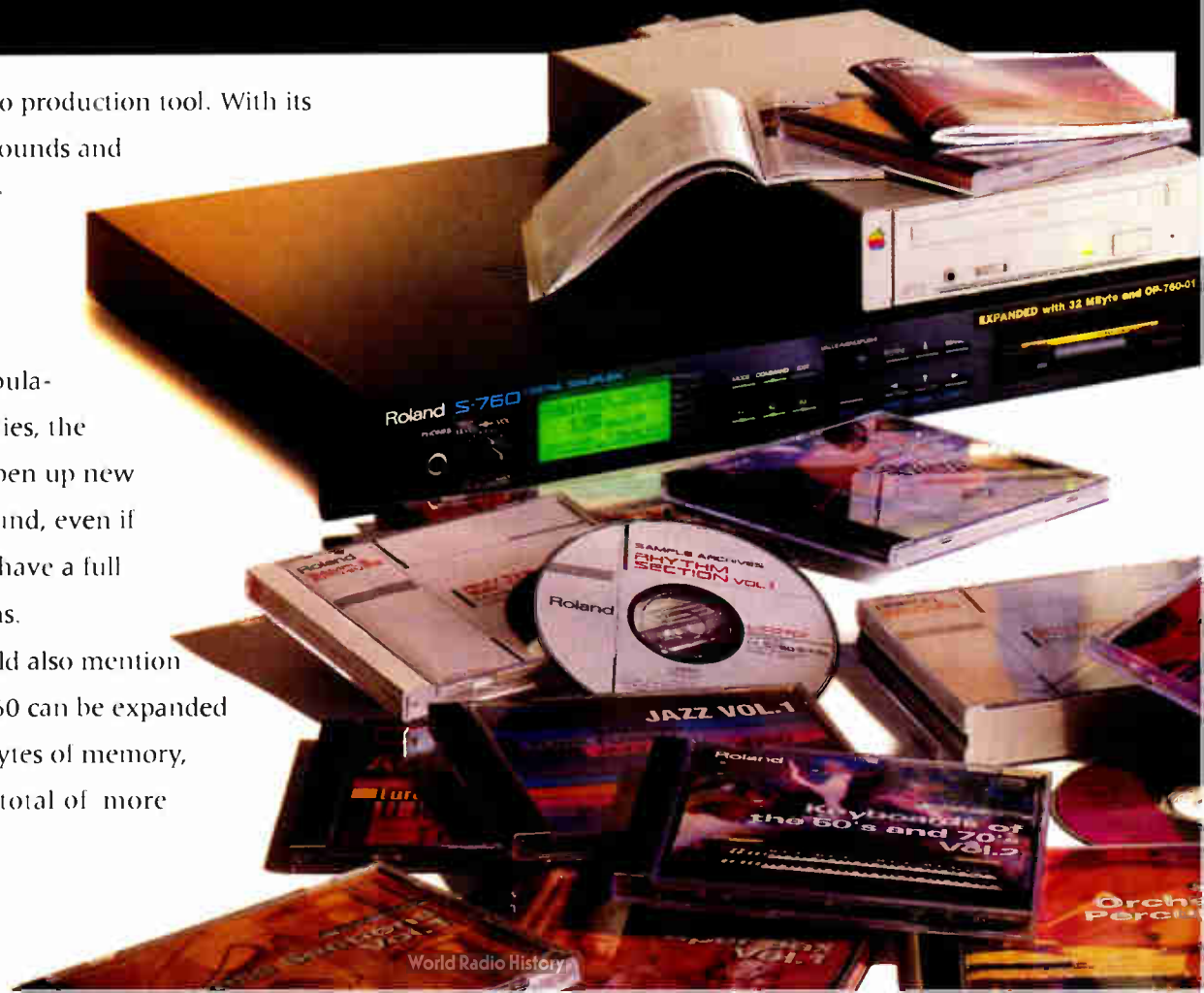
We should also mention that the S-760 can be expanded to 32 megabytes of memory, providing a total of more than three minutes of stereo sampling time at full bandwidth.

And the built-in SCSI interface lets you plug in virtually any storage device, including CD-ROM drives, hard disks and removable optical disk drives.

Edit your sounds with monitor and mouse.

Our large high-res LCD makes it easy on the eyes when you're editing without an external monitor. And with the optional OP-760-01 Board,

If you don't think you're quite ready for a sampler, think again.



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you can connect the S-760 to either a dedicated monitor or your ordinary color TV, and use a mouse for point, click and drag editing. View and access all editing operations such as loop, time stretch and cut/splice functions in an intuitive, easy-to-use graphic environment without having to use an external computer with dedicated software.

The Option Board expands the S-760 with lots of advanced functions like S-video, RGB and composite video output plus digital I/O, transforming the S-760 into the ultimate high-end sampler.

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The S-760 gives you immediate access to the vast Roland 700 Series CD-ROM library, the fastest-growing sound library in the world. And it comes with a 600 Mbyte CD ROM Preview Disk that'll get you started right away. Its standard SCSI port accepts up to seven SCSI devices, letting you play thousands upon thousands of meticulously recorded CD-ROM samples from around the world. Like Roland's Sample Archives, Project Series, Composer Series and numerous third party sources. The S-760 can even load data from the S-550 as well as convert programs from Akai® S-1000/1100 data.

Five bucks says you're ready for a sampler. Put down this magazine, pick up your phone and call (800) 386-7575. Ask for our $5 *Sample Archives Demo Disk II* audio CD and our new CD-ROM catalog of Roland and 3rd party sounds. Better yet, put down this magazine and get to your nearest Roland dealer for a real-time demo of the S-760 Digital Sampler. Then you'll know what we've known all along. You're ready.

TEC TECHNICAL EXCELLENCE & CREATIVITY 1994 NOMINEE

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PRODUCT HITS FROM AES

BY GEORGE PETERSEN

Two years ago, AES came to San Francisco for the first time, and the show was a resounding success. So when AES returned to the City of St. Francis from November 10-13, 1994, there was some question as to whether the reprise could match the original. For those who weren't there, it was an awesome production, filled with the delights and surprises of new technologies and new ideas, in an enchanting host city that once again proved it really knows how to party.

Speaking of parties, this fun-filled AES had a nonstop flow of social gatherings, ranging from bay cruises hosted by SPARS and Crest Audio to the splendiferous Bay Area Audio Manufacturers' bash at the Exploratorium (a hands-on technology museum for kids). Of course, if you were at the *right* place at the *right* time, you could have caught an impromptu jam session featuring Booker T., Boz Scaggs, Don Was and Ray Benson at the TEC Awards, or chatted with Alan Parsons and Phil Ramone at the Audio-Technica party.

But the hottest ticket in town was at S.F. retailer Cutting Edge Audio Group, which presented a "Fireside Chat With Rupert Neve, The Designer" for an SRO crowd. Hosted by some guy from *Mix*, this three-hour discussion—complete with high-back leather chairs, faux mantle (and even more faux electric fire logs)—featured the noted electronics designer, speaking about his life, design philosophies and current projects, including the new Amek 9098, large-format, 48-bus, analog recording console.

DATS NEWS

Pioneer caused a stir with its debut of a 96kHz DAT machine at last year's European AES in Amsterdam. Now the company (U.S. offices in Long Beach, Calif.) has released the D-9601 pro version, which allows recording at 96/88.2/48/44.1/32 kHz and features balanced XLR inputs/outputs, AES and S/PDIF I/O. For 88.2/96kHz sampling, the tape speed is doubled, so a 120-minute DAT tape provides a recording time of one hour. Two D-9601s can be connected to allow double-speed copying of standard DAT tapes, and a 20-bit recording option is in the works. Pioneer is also marketing an audio CD recorder, model PDR-09, priced at $4,000.

Tascam (Montebello, Calif.) debuted two new DATs. The DA-30 MkII is the successor to the company's successful DA-30 studio deck but adds a data/shuttle wheel, front-panel SCMS defeat switch, standard and long-play record modes, and improved converters. Retail is $1,499. The DA-P1 is a rugged, portable DAT with 48/44.1/32kHz recording, S/PDIF digital I/O (SCMS-free), XLR line/mic inputs with phantom power, mic limiter, and switchable -20dB pad.

Fostex (Norwalk, Calif.) unveiled the new D-25 timecode DAT recorder, which is essentially the same as its flagship D-30 deck but substitutes a fluorescent display for

First Look: Sony PCM-800

The $5,995 Sony PCM-800 is compatible with the Tascam DA-88, offering eight tracks of digital audio on Hi-8mm videotapes and the ability to interlock up to 16 transports for up to 128-track recording. And now that two decks are sharing the DA-88 recording scheme, Tascam and Sony have named the format Digital Tape Recording System (DTRS).

Standard features of the PCM-800 include up to 108 minutes of recording on an NTSC 120 tape; 16-bit recording at 44.1 or 48 kHz; ±6% varispeed; individual delay on any track (up to 7,200 samples); selectable crossfade times (10 to 90 ms); jog/shuttle wheel; auto punch-in/out; and the ability to offset sync in a multimachine environment for multitrack assembly editing.

The Tascam and Sony machines have similar front panels, as Tascam is supplying the decks to Sony on an OEM basis. From a

—CONTINUED ON PAGE 240

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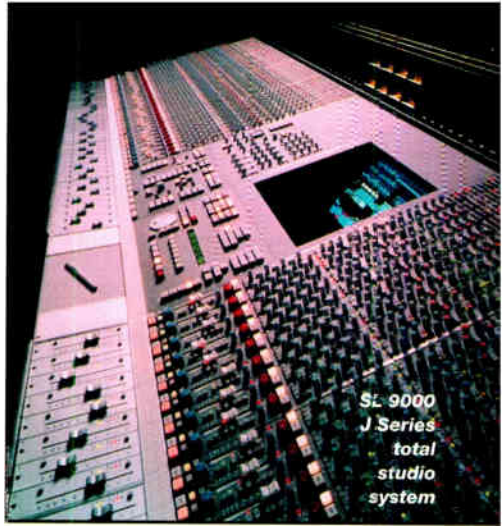
the D-30's LCD readout and is priced at $7,999 ($3,000 less). The D-25 features 16 MB of RAM for instant start, jog/shuttle wheel, SMPTE reader/generator, timecode chase with offset, four-head confidence monitoring, pull-up/down conversions and RS-422 port with VTR emulation. Priced at $1,499, the Fostex D-5 is a non-timecode studio DAT with 32/44.1/48kHz recording, four-motor transport, AES/EBU and S/PDIF digital I/O, and a GPI trigger.

If you make l-o-n-g recordings, you'll be pleased that TDK and DIC showed three-hour DAT tapes at AES.

MDMS BLOSSOM AT AES!

The most talked-about product at the show was the PCM-800 from Sony Electronics (Montvale, N.J.), the $5,995 modular digital multitrack that adopts the Tascam DA-88 format (see sidebar). Now, will the industry really start referring to the format by the DTRS (Digital Tape Recording System) name, which doesn't exactly roll off the tongue like MDM or DAT? Time will tell...

In other Tascam news, Digidesign (Menlo Park, Calif.) announced plans to offer DA-88 I/O support for its new Pro Tools 3.0 workstation. And Tascam's software updates for the DA-88 (now Version 3.03) improve lockup time, provide faster formatting and allow users to turn off the frame display. Tascam also



Pioneer D-9601 DAT deck

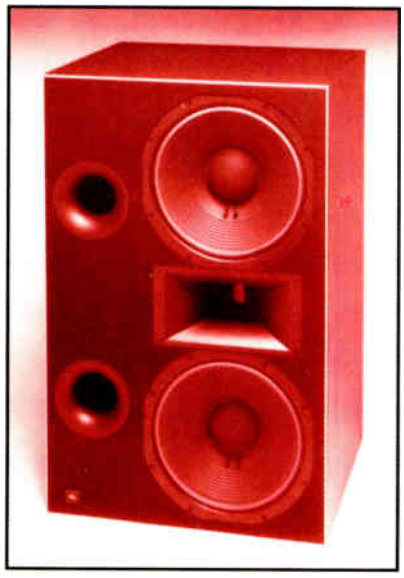
10 THINGS THAT KNOCKED ME OUT

by George Petersen

Adams-Smith SuperController: Post-production is one tough environment, especially with multiple sync and control protocols to contend with. To address these concerns, Adams-Smith (Hudson, Mass.) introduced the SuperController™: The $17,800, PC-based system acts as the central command for anything in the studio, whether it's bi-phase film, SMPTE, word clock, DA-88 sync, Ampex or Sony VTR, GPIs, MIDI Machine Control and various synchronizers—Adams-Smith, Audio Kinetics or TimeLine. Somebody should have thought of this years ago.

B&K Model 4040: When Bruel & Kjaer (distributed by TGI, of Kitchner, Ont.) announced a tube mic project, you knew it wasn't going to be ordinary. Based on a new 1-inch-diaphragm capsule, the first 100 units of this $9,000 mic have two sets of low-noise electronics—tube *and* FET—to allow engineers to listen to (or tape) both signals simultaneously and determine which is best. Ah, the good life...

EAW Multimedia Speakers: I couldn't do an AES report without commenting about multimedia. Finally, somebody has taken a step to transform multimedia into a listenable art form. The MM12 High Definition MultiMedia System (from EAW of Whitinsville, Mass.) is a sub/satellite configuration with two UB12 Ultra-Compact High Definition Systems and an SB48-12 subwoofer. Frequency response from 45 Hz to 20 kHz (±3 dB); maximum output is 113 dB SPL. You'll never go back to 2-inch speakers again!



JBL Digital Monitor System One: JBL (Northridge, Calif.) debuted the DMS-1 system, which offers digital-domain manipulation of crossover, alignment delay and equalization with an ultra-smooth horn, neodymium HF driver and double 14-inchers for bottom end. The DMS-1 system ($17,950/pair) may mark JBL's return to the studio monitor throne. Coincidentally, they just *happen* to fit into URFI 813 soffits...Get ready to upgrade.

K-RoK Monitors: KRK (Huntington Beach, Calif.) entered the low-end ($449) market with an awesome set of near-fields. These sounded good playing urban jazz-funk in KRK's demo room, but to check out their *imaging*, I put on a CD-R with a classical track (two

—CONTINUED ON PAGE 240

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released new software for the SY-88 sync card (now with Sony 9-pin control and VTR emulation) and the RC-848 controller, which adds ABS or timecode display, user-selectable, free-run/re-chase if timecode dropouts occur and a split mode for issuing VTR and MDM commands separately.

Alesis (L.A.) countered with the announcement that Panasonic (Cypress, Calif.) will support the ADAT format and offer its version to the pro market at a future date. Meanwhile, optional ADAT light-pipe interfaces will be offered on the Otari RADAR and Roland DM-800 workstations and the E-mu Emulator IV. Fostex will begin delivering an $895 remote controller for its ADAT-compatible RD-8 this month.

Additionally, Alesis is now claiming a worldwide ADAT-user base of more than 40,000, which should increase with the lowered retail prices of the ADAT ($2,999) and BRC controller ($1,499). The ADAT System 4 software upgrade allows recording of 62 minutes on an ST-180 tape and improves chase-lock performance, while BRC software 2.0 adds improved chase time to VTRs via a new Park Point Offset feature.

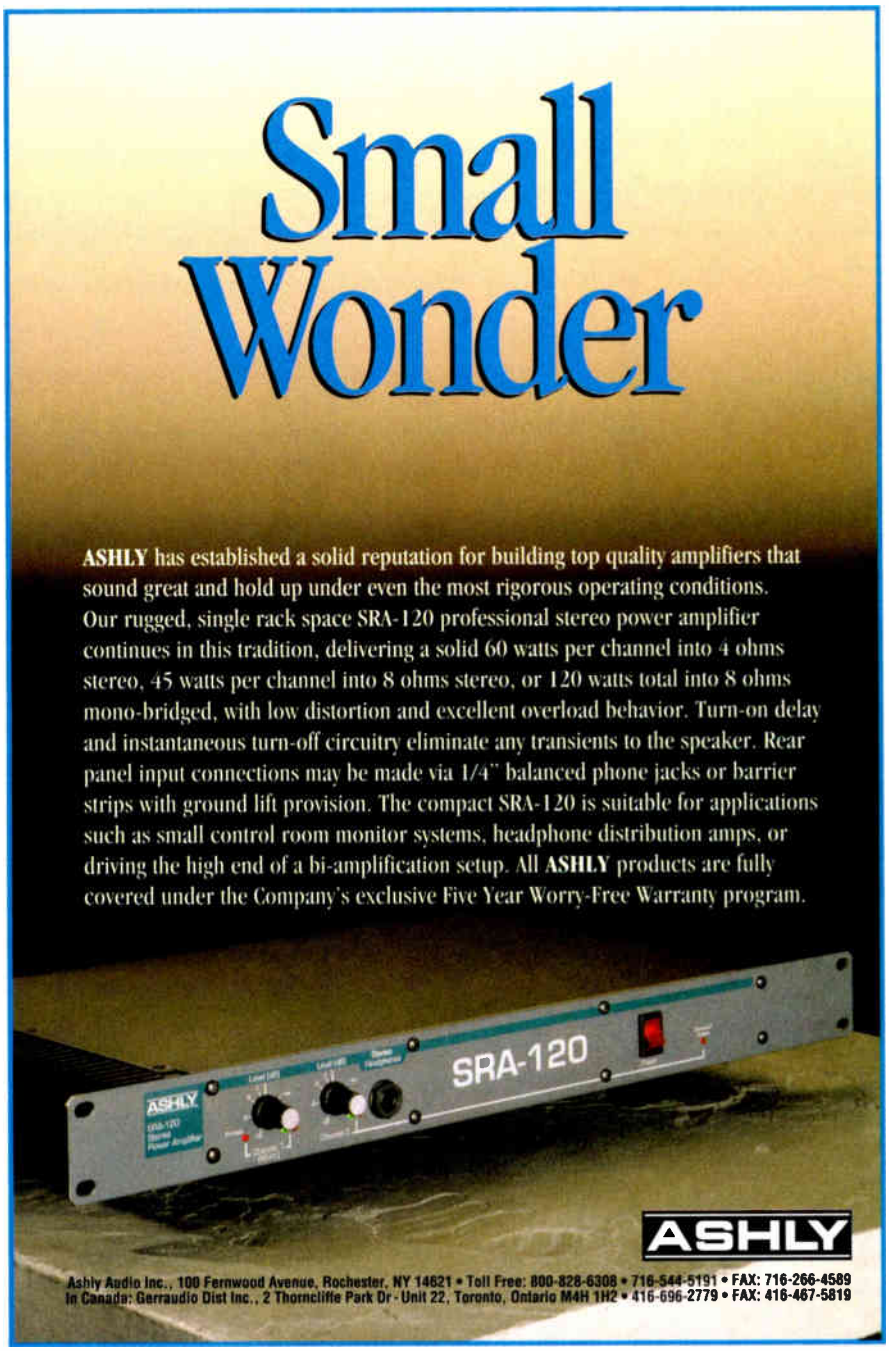
PAQRAT from Rane (Mukilteo, Wash.) stores a stereo 18/20/24-bit AES/EBU signal on four tracks of an ADAT or DA-88 recorder. Just feed the digital output of a high-res converter into your PAQRAT/MDM combo, and you've got a budget 20- or 24-bit recorder! The ADAT version is $999; the DA-88 (TDIF-1) version is $899. Also for your MDM rig is the MDM-8L (from Applied Research & Technology of Rochester, N.Y.), an 8-channel analog compressor/limiter that provides signal-overload protection. The MDM-8L features link switching for stereo pairs and 2.5:1 soft-knee compression or 20:1 hard-limiting modes.

MDMs consume lots of tape. Ampex (Redwood City, Calif.) bowed 489 extended-play ADAT tape with over 60 minutes of record time. DIC Digital (Teaneck, N.J.) showed a Hi-8mm tape with a full two hours—not 108 minutes, like standard 120 tapes—of recording on DTRS decks. (Remember, I told you this "DTRS" thing will take some getting used to.) 3M (St. Paul, Minn.) entered the MDM tape market with ASD, a 42-minute S-VHS tape for ADATs, and AHD, a 113-minute (running time) Hi-8mm formulation for DTRS decks. To keep things clean, American Recorder Technologies (Simi Valley, Calif.) expanded its line of maintenance products with Hi-8mm and S-VHS head-cleaning cassettes.

So with all this MDM hoopla, can we count out the high-end? Don't bet on it: New York's The Hit Factory recently purchased its sixth Sony PCM-3348 digital 48-track. Meanwhile, Studer (now distributed by Lexicon) has sold D827 48-track recorders to Nashville's Masterfonics and New York's Right Track Recording. In addition to two D827s, Right Track installed a 72-fader/180-input Neve Capricorn all-digital console. What recession?

CONSOLES

AES just ain't AES without new consoles. In typically understated British fashion, Solid State Logic launched two major new console products. The SL 9000 J Series analog mixer comes in frames up to 120 channels and features improved audio circuitry, 48-track routing, E *and* G Series EQ on every channel, LCRS busing and four additional stereo mix buses. Compatible with G Series mix data, the J Series computer auto-



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Two Amazing Things Happened in 1994

1 The King of Pop Married the Princess of Rock

2 Bruce Swedien Switched from JBL 4310's to Westlake Audio BBSM-8's

Before spending money on yet another pair of the latest "premium" monitors, invest an hour of your time auditioning a pair of Westlake Audio BBSM Series monitors.

Bruce Swedien did. After 25 years of hard studio use, Bruce retired his trusted pair of JBL 4310's for a pair of BBSM-8's.

To hear a true reference monitor, call your local pro audio dealer for an audition.

Bruce Swedien on Location at the Hit Factory, New York

"These are the first monitors I've been able to spend a lot of time with and be comfortable at the end of the day. The detail is simply great!"

– Bruce Swedien on BBSM-8 monitors.

Westlake Audio

MANUFACTURING GROUP
2696 Lavery Court, Unit 18
Newbury Park, California 91320
805•499•3686 FAX 805•498•2571

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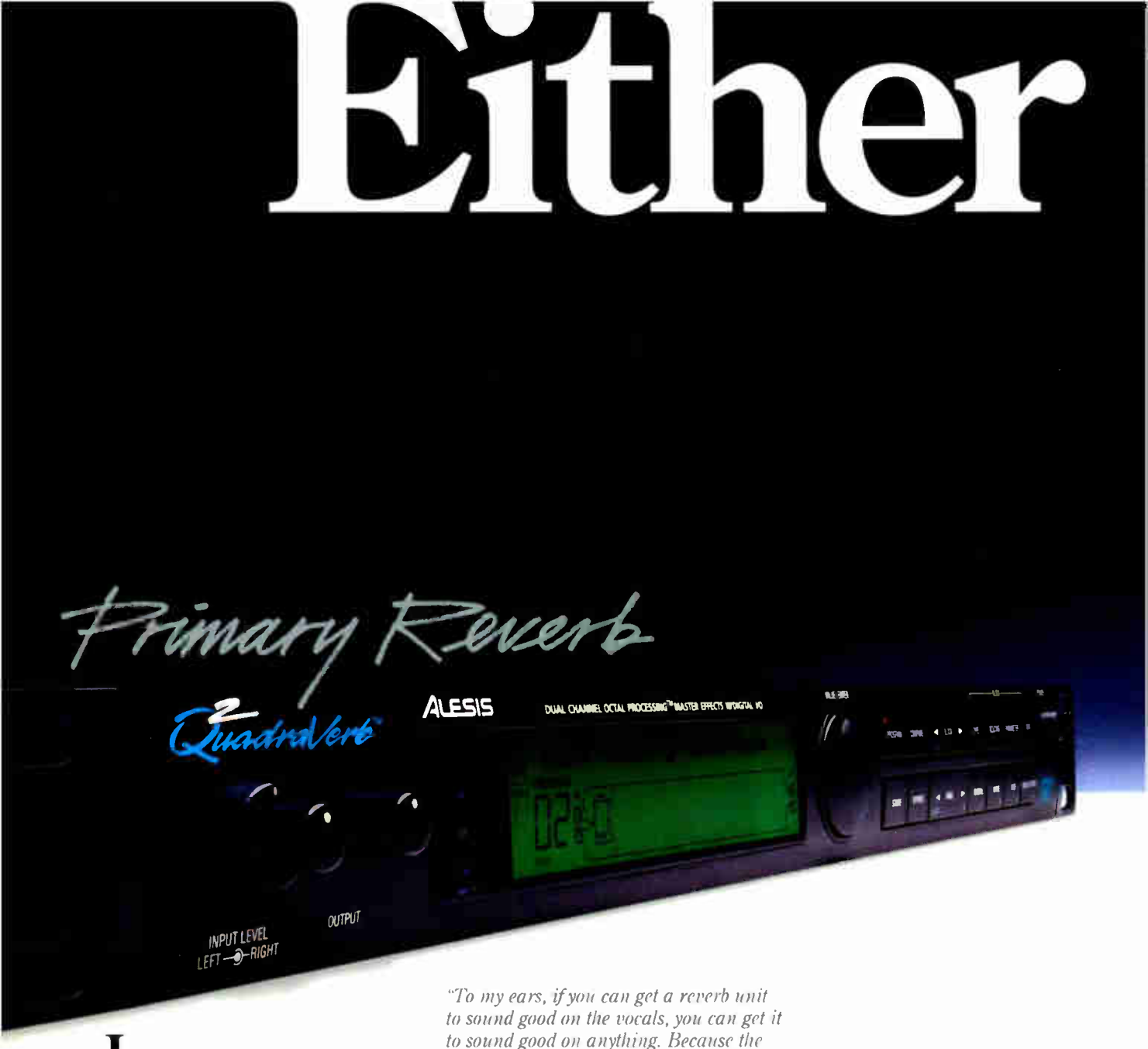
Either



In a world filled with too many confusing options, it's good to know that there's a product built to deliver just two things. The best reverb you've ever heard. The most powerful multieffects you've ever used.

Your primary reverb is always the first reverb on the echo buss. The best reverb in the studio. Until now, reverb this good used up most of

"To my ears, if you can get a reverb unit to sound good on the vocals, you can get it to sound good on anything. Because the biggest challenge for any reverb is the lead vocal. I put this reverb up against everything else out there and nothing surpasses it. I use Q2 on the vocals."

- Francis Buckley, Independent Engineer: Album, Film and Television

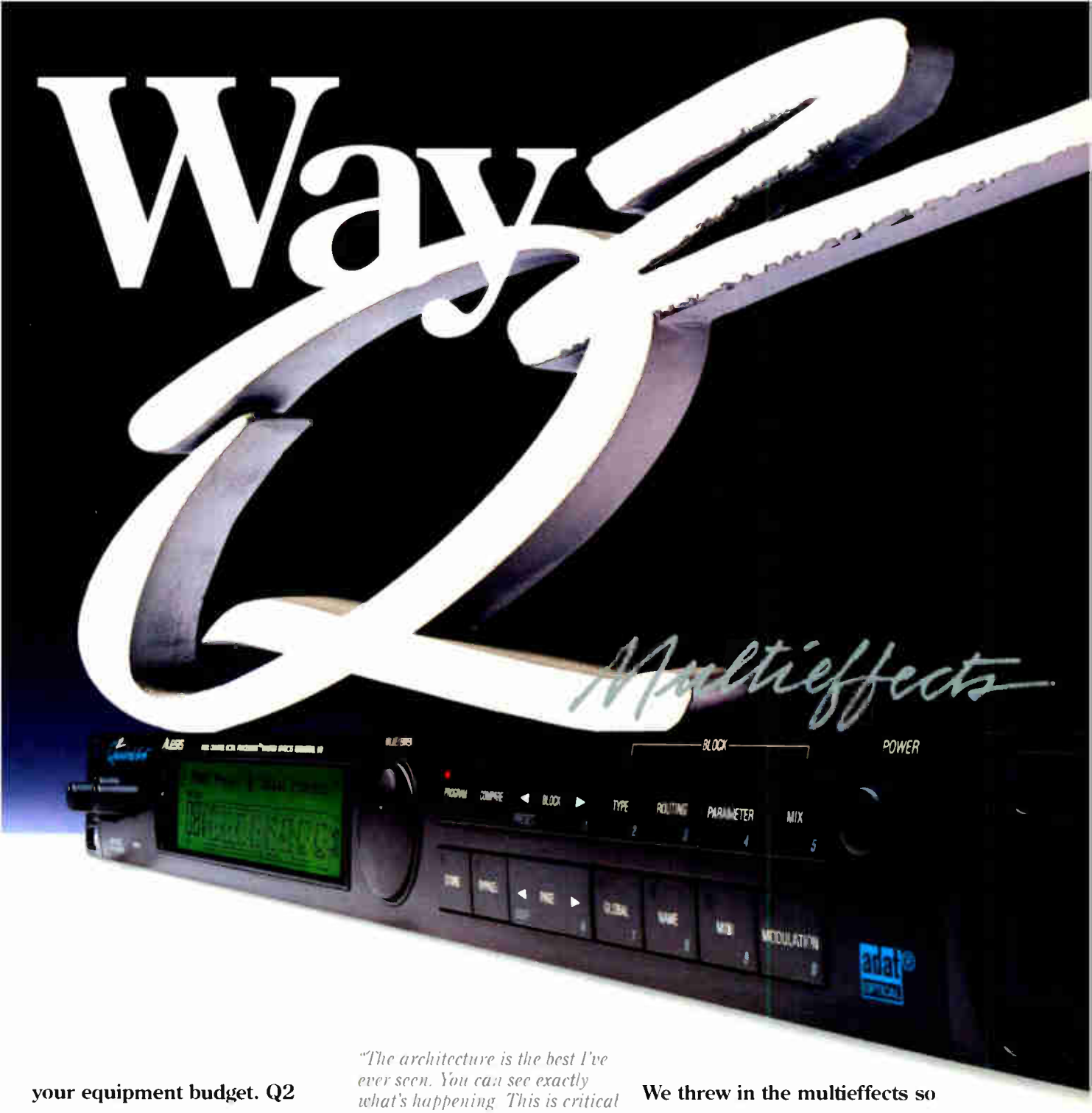
"It's nice to see a company interested in the user's input before they release a product. They developed a reverb that really works. It's easy to make these kind of programs run if you've got tons of hardware. How they did it with such a small box at such an affordable cost is really impressive. It was worth the wait."

- Charlie Brewer, Chief Engineer, Village Recorders

Alesis Corporation 3630 Holdrege Avenue Los Angeles CA 90016 1-800-5-ALESIS ALECORP@Alesis1.usa.com

Q2 The Reverb to Beat

World Radio History



your equipment budget. Q2 changes all that, delivering primary reverb for any budget.

Delivering more is what Alesis does best. So you can always do your best.

"The architecture is the best I've ever seen. You can see exactly what's happening. This is critical if you're going to squeeze the ultimate sound out of a processor. If you need to get at a chorus in a complex patch, you take one look at the display and you're there. Plus, there isn't a classic reverb sound the Q2 can't simulate and improve upon. This unit is a must."

– Jay Graydon, 2 Time Grammy Winner, Engineer, Producer

We threw in the multieffects so you don't have to make any compromising choices. This is truly the way it should be.

Q2™ is at your Alesis Dealer now.

8 simultaneous effects. Octal Processing™ allows any effect in any order. Stereo or independent dual-channel operation. 100 preset, 100 user programs, custom LCD graphic user interface with Virtual Patch Cables™. 92dB dynamic range, 20Hz - 20kHz frequency response, 24-bit internal processing. One Touch Value Enter Wheel. +4dBu balanced (servo on outputs) and -10dBV unbalanced operation on 1/4" TRS, separate L/R input levels, THD+N <0.009%. 16-bit Delta Sigma 128x oversampling A/D conversion. 18-bit Delta Sigma 64x oversampling D/A conversion, 44kHz sampling rate. Rooms, Plates, Chambers, Halls, Nonlinear, Reverse, Spring, Chorus, Quad Chorus, Flanging, Phasor, Lezlie, Pitch Shift, Pitch Detune, Delays, Mono, Stereo, Ping-Pong, Multitap, BPM, Tap Tempo, MIDI Clock Mono & Ping Pong Delays, Ring Mod, High/Low/Bandpass/Shelving Filters, 2-Band Sweep EQ, 3&4 Band Parametric EQ, 5-Band Graphic EQ, Resonator, Tremolo, Stereo Sim, ADAT® Optical Digital Interface™, Reverb Only Mode, Input Envelope Peak Following and Ramp Dynamic Response Mode. Tons of MIDI stuff. All trademarks are property of Alesis.

ALESIS
STUDIO ELECTRONICS

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Calif.) new entry-level systems include the Sonic Power Station, with two channels of digital I/O, digital EQ and onscreen automated digital mixing of up to eight tracks. Retail is $2,995, less the Macintosh. But the big news at Sonic was the UltraSonic Processor (USP), a DSP card with four 56002 processors, improved SCSI handling (with up to 32 channels playing from a single hard disk) and blazing 66MHz speed. Retrofittable to any Sonic System, an $8,995 card supports eight I/O channels with 16-track playback; a card with 16 I/O and 32-track play is $12,995. Opcode also announced a version of its StudioVision software that runs with Sonic workstations.

Akai (Ft. Worth, Texas) showed the new DD1500, a 16-track workstation that requires no external computer and comes with 16MB RAM, Sony P2 machine control, and sync to bi-phase, video, MIDI or SMPTE (VITC or LTC) sources. The basic $17,825 system includes four analog *and* four digital inputs/outputs (expandable to 12-in, 16-out), internal 16-channel digital mixer and a drive bay for two 1.3GB MO drives (or hard disk and MO drive). Its comprehensive control surface has dedicated transport and edit function keys, bar graph LED metering, jog/spool wheel, and LCD, which can be routed to an S-VGA monitor for more detail.

Intended specifically for music production is Prisma Music from Spectral (formerly Spectral Synthesis) of Woodinville, Wash. The system's screen interface was designed by *Mix* columnist Stephen St.Croix and is definitely intended for production in the fast lane, taking full advantage of the speed of Spectral's new digital hardware platform. The Windows-based system has 396 virtual tracks, 8-channel digital mixer and retails at $4,495 (PC not included).

The Fostex Foundation 2000RE, a new version priced at $8,995, is a 16-channel system with eight analog and eight digital inputs/outputs (Alesis optical format), removable hard disk, edit controller with jog/shuttle wheel, touchscreen control and dedicated transport/function keys. Sync protocols include Sony 9-pin, SMPTE, MIDI and ADAT sync ports (for interlocking up to 16 2000RE units or seamlessly integrating the 2000RE into an ADAT or RD-8 system). For higher-end Foundations, Fostex showed its DFM (Dancing Fader Mixing system), an assignable controller with ten long-throw moving faders, and dedicated mix and DSP function controls. The $9,995 DFM combines with a Foundation 2000 system to create an automate-able 8x8x2 recording/mixing/editing/processing system for under $40,000.

BACK TO THE SHOW

An interesting trend at AES was an apparent lack of duplication exhibitors. It seems these companies have moved on to greener pastures (namely RepliTech), perhaps better suited to their clientele.

One complaint about the show was the noise level on the floor, which was frequently excessive. Other than that, it was an unqualified success on every level, thanks to the hard work of the convention co-chairs Marina Bosi, David Robinson and the 97th AES convention committee. Even the normally unsettled, mid-November weather cooperated, providing a dry four-day respite from the heavy rains that had deluged the northwest before the show.

So what does AES 1994 say about

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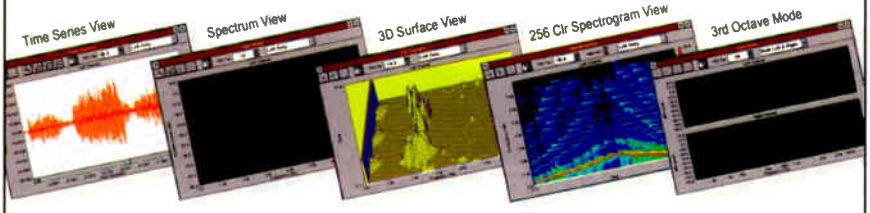
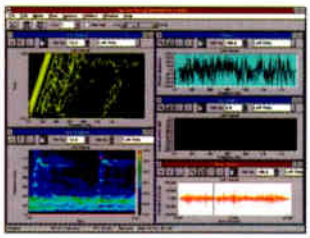
Save 9 dB FPL*

*Financial Pressure Level



You're a sound professional, *so you know the cost of doing business. You know that for $4,000, you'd be hard pressed to find one piece of precision gear that could perform 1) room acoustic analysis, 2) speaker performance measurements, 3) crossover network measurement, and also 4) harmonic distortion testing.*

Now throw in: *5) hard disk record/playback, 6) digital filtering, 7) phase measurements, and 8) 3D surface or 9) 256-color spectrogram displays. Frankly, we don't know of any $4,000 piece of precision gear that can do all those things. But* **SpectraPlus Professional 3.0** *can do them all for a fraction of that!*



It's true. *If you own a reasonably fast PC, a good sound card, and –thanks to built-in compensation tables– practically any old mic, you have all the hardware you need to avail yourself of SpectraPlus Professional 3.0. Even if you have to go out and buy the hardware, you'll spend less than $4,000.*

To begin with, *SpectraPlus Professional 3.0 is a dual channel third-octave and narrowband real-time analyzer. It features FFT sizes through 16K, decimation, filtering, smoothing windows, overlap processing, triggering, markers, overlays, data logging, import/export, and more. Even a full-featured audio signal generator!*

Zoom and Pan *through the Windows® interface to expand any portion of the measurement. Point & click to measure frequency response. Click & drag to select any segment of the spectrogram or 3D surface plot, then play it back, filter it, or loop it.*

Professional quality. *Today, a reasonably priced sound card can give you THD < .005%, S/N -90dB, and 0.2dB flatness ...performance that competes with any gear on the market. We also support the new PCMCIA cards, for analysis from your laptop! Need to see it to believe it? We've got a 60-day guarantee. So call us, write us, fax us or dial up. Ask for our new brochure, our free demo, or for a list of sound cards we can recommend. Never before has such a dynamic product allowed your bank account so much headroom.*

SpectraPlus 3.0

800-401-3472

$395.00, Visa, MasterCard, Check or Money Order, S & H included. Foreign delivery add $10.00.
FAX: 206-697-7730, BBS: 206-697-7717, Tech Info Line: 206-697-7733.
***Pioneer Hill Software**, 24460 Mason Rd., Poulsbo, WA 98370*

*In Australia: **ME Technologies**, PO Box 50, Dyers Crossing, NSW 2429, +61 65-50-2200. In Sweden: **PICS Corp**, PO Box 113, 577 22 Hultsfred, +46 495-14300*

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Neumann's new
KM 184 Microphone
shown actual size

Robert Scovill knows microphones. Named by his peers "Best Sound Reinforcement Engineer" worldwide for two years running, he has mixed for acts like Rush and Def Leppard. His first choice in microphones is Neumann.

"During the pre-production stages of a tour, an incredible number of decisions are placed in my hands. Neumann has made some of these decisions very easy, indeed. There are a lot of look-alikes out there, but Neumann is the real thing."

Introducing the KM 184 - a small diaphragm condenser microphone designed for critical recording and live sound applications. With 20Hz to 20kHz frequency range and 138dB maximum SPL the KM 184 is particularly useful for percussion, cymbals and brass instruments. It is also excellent for capturing the subtle nuances of acoustic guitar and orchestral performances with its extremely quiet (16dB A-weighted) self-noise. Best of all, it has that *Neumann Sound*.

Now, with the KM 184, you have hand-built, legendary Neumann performance for less than $600.* Neumann... the choice of those who can hear the difference.

Neumann | USA

6 Vista Drive, PO Box 987, Old Lyme, CT 06371
Tel: 203.434.5220 • FAX: 203.434.3148
West Coast: Tel: 818.845.8815 • FAX: 818.845.7140

NEUMANN

* MSRP
Subject to change
without notice

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World Radio History

OUR 8•BUS REALLY

We get a lot of calls from folks asking about who's using Mackie 8•Bus Recording/PA consoles.

Good question. After all, a board's only as good as its users.

So we grabbed the latest stack of 8•Bus Warranty Registration cards and hit the phones.

The names in this ad represent a cross section of current 8•Bus users. They range from platinum supergroups tracking new albums to high school choirs, from bar bands to sound designers working on network TV series and feature films. There'd probably be more names but we didn't want to make the type any smaller than it already is —or keep tying up our already clogged phone system.

As our production of 8•Bus boards increases, so does this list.

In a way, it's confirmation of the raves that magazine reviewers have heaped upon the console. Above all, it's proof that the Mackie 8•Bus is a serious tool for professionals. A tool that's getting used day-in and day-out for major projects.

Call our toll-free literature line 8AM-5PM PST and talk to a genuine Mackoid (no voice mail!). We'll send our obsessively-detailed 24-page color brochure on the 8•Bus Series.

Then become a part of this list by visiting your nearest 8•Bus dealer.

Currently in Spain tracking new album on multiple Mackie 24•8 consoles.
Def Leppard

Sound design & mixing of commercials for G.I. Joe, Kenner Toys, Hasbro Toys, Transformers ½-hour show, infomercials.
Lawrence Wakin • Tapestry Productions Inc. • New York, NY

Tracking for Madonna.
Shep Pettibone • Mastermix Productions Ltd. • New York, NY

Recorded Grammy-Nominated "Sunday Morning" off of the album Millenium on 24•8, currently working on new album exclusively on console. "The 24•8 survived the 7.1 San Fernando Valley earthquake. It's definitely built for rock 'n' roll."
Sheldon Reynolds • Earth Wind & Fire • Los Angeles, CA

Music scoring for Pepsi Cola and McDonalds and Six Flags TV & radio commercials.
The Listening Chair • Dallas, TX

Recording and mixing of acoustic music & sounds from the American West. Recent albums include "Charlie Russell's Old Montana Yarns" by Raphael Cristy and "Where the Red-Winged Blackbirds Sing" by Jim Schulz.
Bruce Anfinson • Last Chance Recordings • Helena, MT

Pizza Hut commercial scored to film, scoring of theme presentation for The BaseBall Network, self-produced album "Rick DePofi and the Mels," currently producing NY Noise's 1st solo artist, Aaron Heick (Chaka Kahn's alto player).
Rick DePofi & Craig Bishop New York Noise • New York, NY

[1] Former posts include quality assurance with Warner Brothers, Sheffield Labs, Rainbow Records, Chief Mastering Engineer at JVC. Quote: "It's a great board, dude. Buy it!"

Concert sound reinforcement at the Showcase Theater.
Bob O'Neill, Manager of Entertainment • Six Flags Great Adventure Theme Park • Jackson NJ

Used by students for learning recording and sound design.
The School of The Art Institute of Chicago, Sound Department Chicago, IL

Jazz choir sound reinforcement and recording.
Dwayne Pedigo • Plano East Senior High School • Plano, TX

Sound effects, music and voice for Atari arcade games.
Brad Fuller • Atari Games Corporation • Milpitas, CA

Tracking for R&B and rap groups including vocals for Polydor artist T. Max.
Brad Young & Dow Brain Underground Productions Boston, MA

Dialog editing for Untouchables, TV series and Movies of the Week. "I work out of my home now. It's quite an achievement to be able to get a higher sound quality than most of the other sound houses in town."
3-time Emmy winner David Scharf Helix Sound • Los Angeles, CA

Wide range of multimedia projects including major motion pictures (the names of which can't be divulged).
John Acoca[1] • Oracular Multimedia San Francisco, CA

Albums for alternative groups Twenty-Two Brides and The Cucumbers, demo for Freedomland.
John Williams • Ground Zero Studios • New York, NY

"Praise Songs" contemporary Christian album/CD, "Body Builders" children's album/CD.
Peter Episcopo • Bridge Song Media • Old Bridge NJ

Sound design for Pepsi Cola TV spot aired during last January mondo-bowl.
Hansten Broeke[2] • Buzz, Inc. New York, NY

Sound reinforcement for theater presentations and concerts in a 300-seat theater.
Centre Culturel Franco - Manitobain • Winnipeg, MB, Canada

[2] Quote: "It's the only analog component in my room. You hardly know it's there, it's so transparent."

World Radio History

CONSOLES WORK.

In studios...in clubs...in video and film production facilities... on the road: A sample of what satisfied 32•8, 24•8 and 16•8 owners are doing with their consoles (as of late April, 1994).

Frank Serafine, feature movie sound designer/SFX wizard in the Foley Room at his Venice, CA production complex.

Scoring for two Fox Televison NFL promos, theme & scoring for PBS children's series Storytime, song demos & album tracking, TV commercials, infomercials & demos.
John E. Nordstrom II
Love Den Productions
Pacific Palisades, CA

Album/CD tracking and mixing for the groups Mean Solar Day and Product.
Ramsey Gouda • Onion Head Studio of Chicago • Chicago, IL

Worship service and in-house concert sound reinforcement, recording of sermons.
New Life Assembly of God
Lancaster, PA

Sound reinforcement in a live blues club showcasing live, regional & national acts such as Savoy Brown, Jr. Wells, etc.
Manny's Car Wash
New York, NY

Rental for film mixing projects and home studios. "We love them because we never see them. They're great for our business."
Chris Dunn • Dreamhire
New York, NY

MB•E Meter Bridge $695[4]

The Side-car $395[4]

Skittles TV commercial, demo for new artist Nita Whitaker, original music for Terpsicorps modern dance company.
Lincoln Adler
Are We Famous Yet? Productions
Los Angeles, CA

DNA sampling CD with mega-drummer Bernard Purdie (3000 + album credits)!
Frank Heller[3] • Weasel Boy Recording • Brooklyn, NY

[3] *Quote: "This job had extremely unusual and demanding monitoring & effects requirements. I honestly couldn't have done it without the 32•8."*

[4] *Suggested retail price. Slightly higher in Canada.*

OTHER PROFESSIONALS WHO OWN AND USE MACKIE DESIGNS 8•BUS CONSOLES*

Dave Abbruzzese, *drummer for Pearl Jam*

Slash, *guitarist/songwriter, Guns 'N Roses*

Steve Brown, *guitarist/producer for Trixter*

Natalie Cole, *solo artist*

Greg Droman, *Grammy-nominated engineer for Linsey Buckingham*

Gregg Field, *drummer for Frank Sinatra*

Michael Frondelli, *Engineer-Producer (Eric Johnson, Crowded House, etc.), Creative Director for Capitol Records*

Bill Gould, *bassist for Faith No More*

Bashiri Johnson, *percussionist for Whitney Houston, Madonna*

Mick Jones, *producer for Van Halen, guitarist for Foreigner*

Art Neville, *producer, The Meters, keyboardist, Neville Bros.*

David Frangioni, *MIDI specialist/Engineer Aerosmith, Elton John, and Extreme*

Danny Kortchmar, *producer for James Taylor, Billy Joel, Rod Stewart*

Bruce Kulick, *guitarist for Kiss*

Kyle Lenning, *President Asylum Records, Nashville*

Clair Marlo, *Artist, Producer*

Queensryche

Dave "Snake" Sabo, *guitarist for Skid Row*

Ben Sidran, *producer*

Leo Sidran, *songwriter for Steve Miller*

Steven Tyler, *singer for Aerosmith*

**Mention in this list is intended to indicate ownership only and does not in any way denote official endorsement.*

Producer Ricky Peterson's Pre/Post Production Room with Mackie Designs 24•8 at Paisley Park.

R&B radio remix of Boz Scaggs' "I'll Be The One" for Virgin Records, recording solo album for the Japanese Go Jazz label.
Ricky Peterson, producer, Paisley Park
Minneapolis, MN

TEC TECHNICAL EXCELLENCE & CREATIVITY 1994 WINNER

MACKIE.

20205 144TH Ave NE • Woodinville • WA • 98072 • 800/898-3211 • FAX 206/487-4337
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World Radio History

BASS

APPLICATIONS . . . BASICALLY

FOUR PROS SHARE THEIR TECHNIQUES FOR CAPTURING SOLID BASS TRACKS

BY RICK CLARK

Bass guitar is the primal meeting ground of melody and beat. It doesn't matter whether it's a classic Motown or Stax soul groove, a four-on-the-floor country roadhouse rave-up, Paul McCartney's orchestrated four-stringed counterpoints, or Lemmy's eighth- and sixteenth-note distorted hyperdrive for heavy-metal band Motorhead—the bass is at the foundation of this experience we call popular music.

Mix enlisted four producers who have worked with a number of different kinds of bass: string bass, slap funk bass, rockabilly, 8- and 12-string basses and more. Once we got these four talking about it, it was apparent that a book could have easily been filled. The following are a few thoughts on keeping you grounded, concerning matters of the bottom end.

JIM DICKINSON

Bass has always figured as a major element in the Memphis sound, whether it's soul music, rockabilly, blues or rock 'n' roll. Jim Dickinson has worked with all of it, as a producer and session sideman. Dickinson's production credits include Ry Cooder, Sleepy John Estes, Jason & The Scorchers, Toots Hibbert, The Replacements, Big Star and, most recently, God Street Wine for Geffen Records. He has also worked with the Rolling Stones, Aretha Franklin, Primal Scream, Eric Clapton, Dr. John, The Cramps, Los Lobos and many more. His extensive film soundtrack work includes *Gimmie Shelter*; *The Long Riders*; *Paris, Texas*; *Crossroads*; *Streets of Fire* and *The Border*.

A discussion with Dickinson about the role of bass in music goes beyond mere technical pointers into more philosophical areas. Like much of the great music and art from the Delta, Dickinson believes in artfully walking the line between clarity and implication.

"For want of a better word, it is the mystery of the bass and the motion that I try and capture. Everyone says we are bottom-heavy in Memphis, and thank God we are, because I think that is where the beat is," Dickinson states. "I don't think that the bass sound should be overarticulated. I think the bass can afford

PHOTO BY JAY BLAKESBERG

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to be mysterious.

"The great players of the '60s and '70s were all very mysterious," he continues. "The perfect example is Bill Wyman [of the Rolling Stones], who is now being dismissed by some as if he were some kind of unimportant musical figure. As far as I'm concerned, the exact opposite is true. The role that he played on the early Rolling Stones records can't possibly be overemphasized. With Bill Wyman, it is the motion of his notes, more than his actual articulation that makes him special as a player.

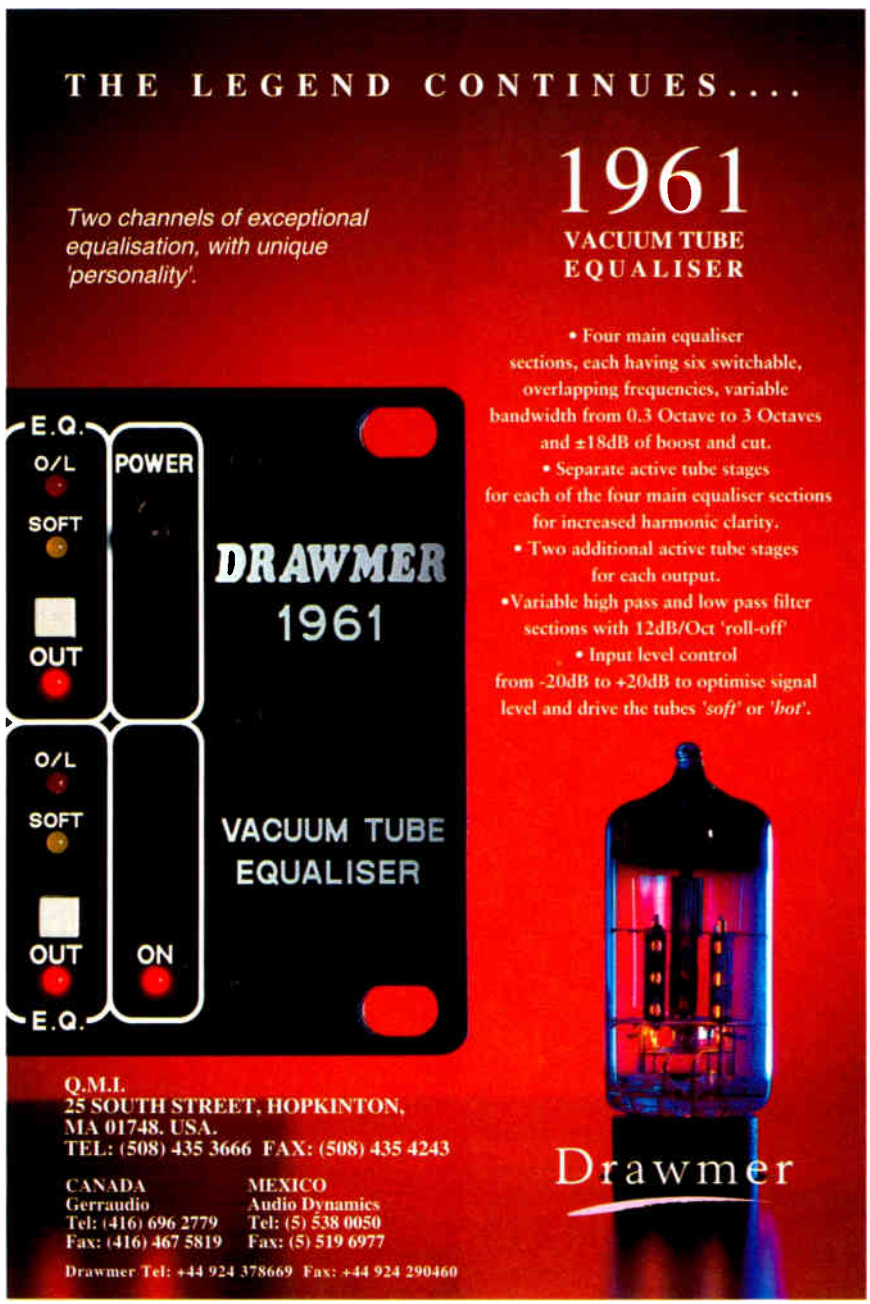
"It has been my good fortune, as a sideman and as a producer, to work with some of [the bass players whom] I consider to be the greatest Fender P-bass players of our generation, like Chris Etheridge, Tommy Cogbill, Duck Dunn and Tommy McClure, who to me was the greatest," Dickinson adds. "There was a certain mystery to all of those players. The bass part wasn't up your nose. It was kind of floating around between your ears and behind your head somewhere. That is still the sound that I go for."

For recording the bass, Dickinson prefers recording digital, because of the medium's ability to capture a deep, punchy bottom end. He feels that, while analog is warm-sounding, it fails to capture deep bass frequencies. The issue of warmth is one that he addresses in other ways.

> **"The big sound of the bass is coming out of the entire front and back surface. The thing people don't understand about miking an upright bass is that the sound is in the room."**
> **—*Jim Dickinson***

"I find that the fewer times I record the ambience of the room, the better," Dickinson explains. "I will use an amp, while tracking, just deferring to the bass player. I almost never use that signal. I take the bass direct through some kind of tube pre, just to warm it a hair, and then, when I mix, I re-amplify that signal in the room, and print that directly to the master. I prefer using an old B-15 or B-18 flip-top Ampeg, if I can get it. It is still my favorite. Unless it is a recorded processed sound you are after. The fewer times you record, either the echo or the bass, the better off you are, as far as I'm concerned."

Another Dickinson preference is to record the bass last in the control room, if the player is comfortable with the idea. "I would rather record the bass last," he says. "Almost everybody overdubs bass right after the drum track. To me, if I can get a bass track I can live with, while overdubbing, I keep it. Then I let the bass player overdub last. There is a very different focus to the performance when you are tracking. It's a different set of motives. I always tell them not to play anything that doesn't help the drummer. I am after a different kind of performance when I track than by the end. I am definitely trying to 'best'



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Switches +48V DC to the MIC input for powering condenser microphones.

MUTE

Each channel has its own MUTE switch. When pressed, the MUTE LED will show that the channel is muted. This can be programmed to work in a number of different ways. **Check out the section "Programmable Mute Groups"**

Pre Fade Listen

This switch routes both, mono and stereo channels to the monitor output with the pre fade signal. Perfect for signal quality and panning.

Fader

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MIC/LINE

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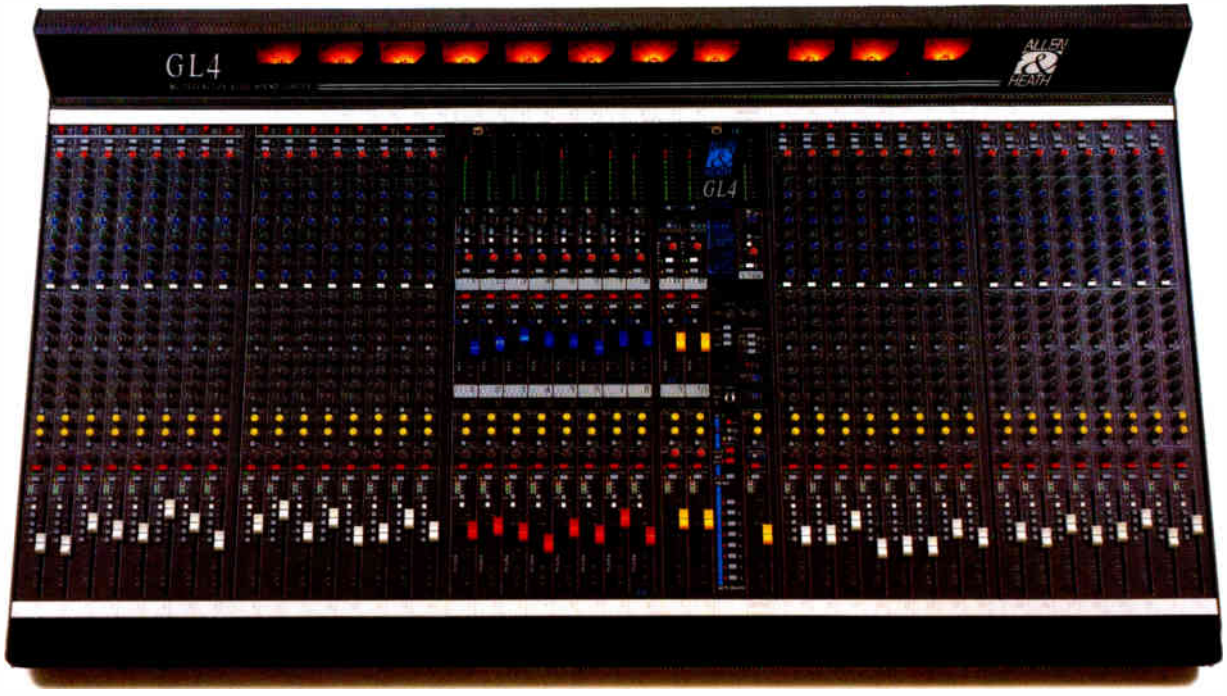
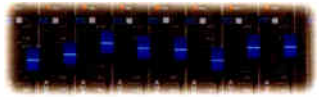
Input Meter

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

Group Module

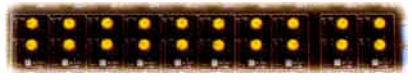
This is where it all happens. The Allen & Heath GL4 is designed for maximum flexibility with absolutely no compromise in the application you configure it for. That's the philosophy behind the GL4's group master section. FOH, Monitor or Recording whatever the application of the moment the ideal control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





AUX Reverse Section

This is the whole front panel. Each channel has a switch that when pressed changes the corresponding group or L/R fader below (yellow) to control the post fade signal level for the selected aux. For the auxes that are set to PRE fade, the fader will not have any effect and USED TO BE the master level control for the monitor output.



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Phase Reverse

... the phase of the input ... to correct the phase differences ... the ... and ... the direct ... ensuring the ... is ... to the ... sound ...

AUX Sends

10 ... post fade ... bring ... in ... to ... sends ... The ... two groups 1 four and one group of two for logical grouping ... and mono ... options allow permanent configuration for ... fade ... the ... options ... the ... to the ... EQ and ... setting ... monitor ... become the 10 ... outputs ...

Routing

... the ... and ... the ... the ... the ... MONO ... STEREO ... MUTE ... ...

Programmable Mute Groups

The system ... be ... of the 10 ... **Mute Group Master** ... and ... the ... corresponding ... LED ... **Mute Preview,** ... the ... LED ... when ... that ... Hit the **Group Edit** button ... and ... the ... each ... LED ... whether they've ... that group ... and voila! those ... are stored ... all you want to get ... to ... the MIDI ... we've got up our ...

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Matica 900	270 Watts	450 Watts	680 Watts	900 Watts	1350 Watts

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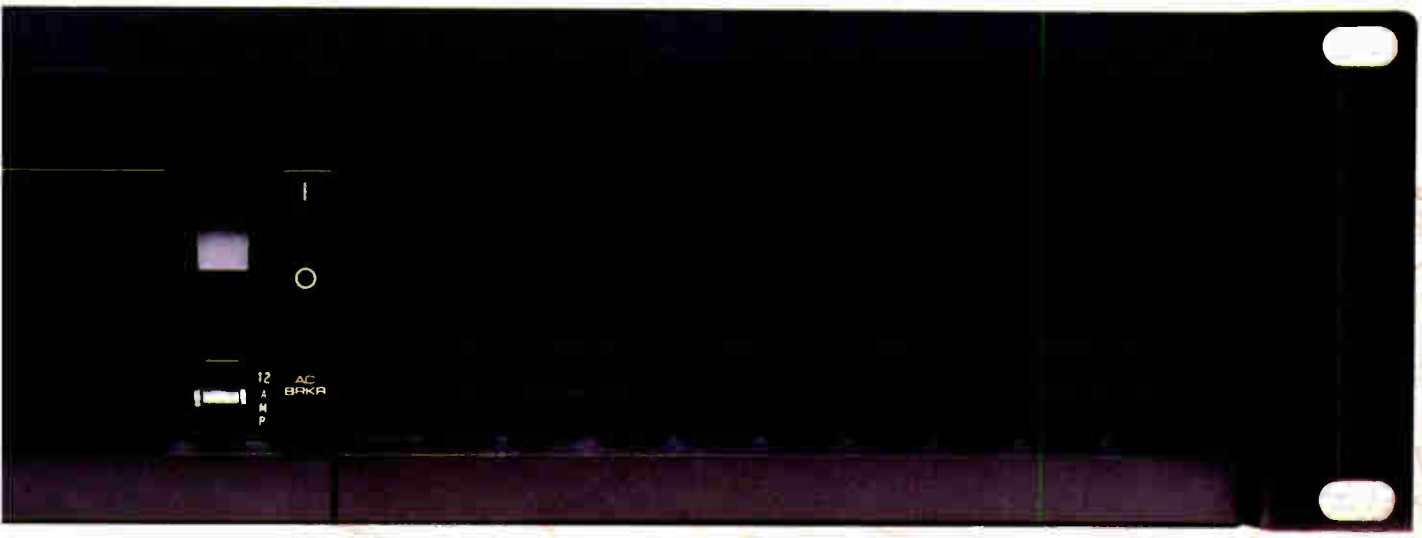

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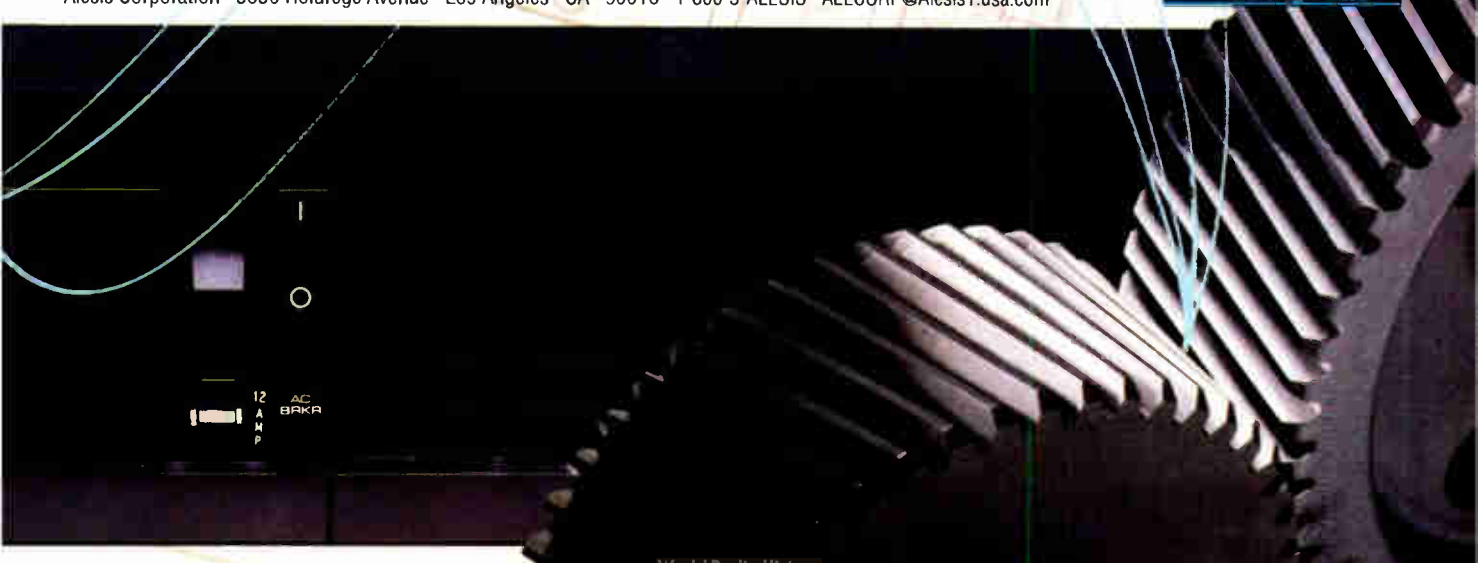

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the performance of the track. That is what the record is about. Otherwise, it is just a documentary recording. Of course, I keep the live tracking bass, guitar or whatever it is, until I have bested it."

Dickinson adds, "The idea of recording bass in the control room has to do with the distance between the speakers. The bass player can't hear the bottom end of his instrument through his phones anyway. I will always put the bass player in the control room, if he is up for it, because it is the only place that he is going to hear his instrument. There is just enough physical delay, because of space and time, between the speakers and your ears, to put the bass player back in the pocket when the tempo is no longer an issue, because it is being dictated by the track when you are overdubbing.

"With most music, R&B for sure," he explains, "I want the bass player a little bit late, because I try to get the snare as dark as I can get it. If the bass player is dead in the pocket when we track, when I put him behind the big speakers in the control room, he's going to fall back in the pocket. I saw Sly and Robbie do the same thing, when I produced the Toots Hibbert record. As soon as the tracking was over, Robbie [Shakespeare] walked into the control room, turned his back to the speakers and overdubbed every single bass part.

"I understand the whole thing of having his back to the speakers," Dickinson says. "He was waiting for them. He simplified his parts when he overdubbed, which is one of my reasons for doing it later. With his own technique, he achieved everything that I tried to get in my process, which is get simpler and further-down-in-the-pocket bass parts. By playing in the control room, you can hear your notes better and articulate your overtones and all the stuff you can't possibly do, either with earphones or with a live amp in your face."

Dickinson understands that not all music should have the bass on the back side of the pocket. This was especially true when he produced The Replacements' classic *Pleased to Meet Me*. Their bassist, Tommy Stinson, drove the band's groove by playing in front of the pocket. Stinson had a highly overdriven, top-end-heavy sound, which presented a different kind of production approach for Dickinson.

"Tommy Stinson played with his ear phones on, because he heard the note almost instantaneously," Dickinson explains. "The whole Replacements groove was in Tommy being in front of the beat and [drummer Chris] Mars behind the beat and [guitarist/vocalist Paul] Westerberg in the middle. Stinson played through a homemade 300-watt rig. I put the amp in the concrete equipment closet of the 'B' studio in Ardent, and it was cranked all the time. I said, 'Do you really need the 300 watts?' and he said, 'I've got 600 watts at home, man.' He was trying to make that slapping roar, and we were just miking the room. The room was so small, it was compressing. You could hear it all over the building. In that case, I definitely used the amp sound, as opposed to re-amplifying."

For acoustic string bass, Dickinson believes that it is important to understand the value of finding the true bass tone out in the room. "People will jam stuff up in the bridge and up in the F-hole, and they will wrap microphones in foam and all that kind of crap. On the bridge, all you get is this little midrangey note," he states. "The big sound of the bass

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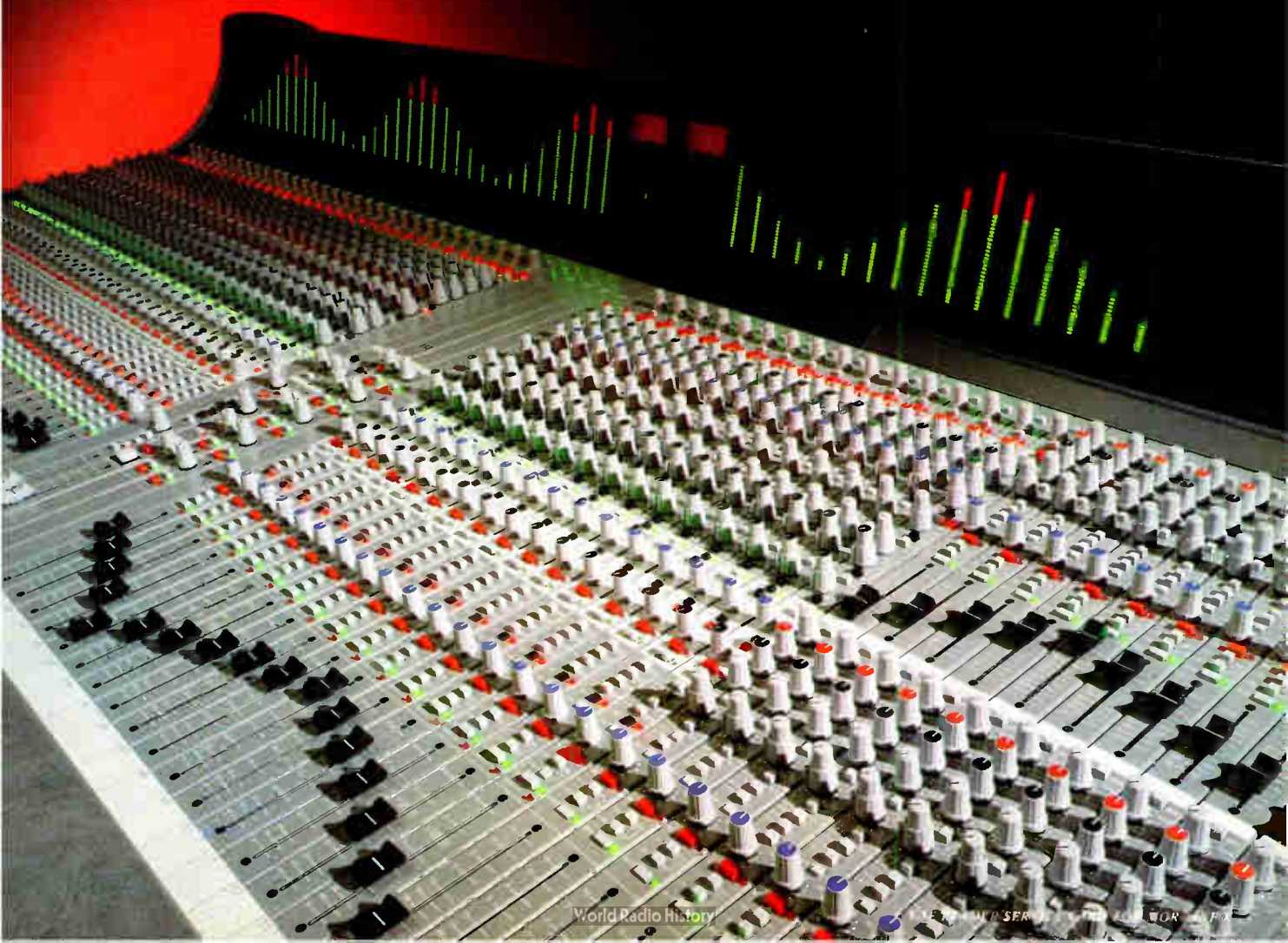

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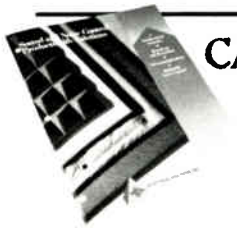

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is coming out of the entire front and back surface. The thing people don't understand about miking an upright bass is that the sound is in the room.

"A lot of the rockabilly slap bass guys had Kay basses that were basically boxes of plywood and sounded like shit. The closer you got with the mic, the more it sounded like a plywood box," Dickinson says. "If you had a good-sounding room and the bottom end was coming off the floor, the further you backed off the mic, the better it got. The best bass sound you can get is from across the room, because the waveform is so long.

"For the old Sun Records sound," he explains, "you want the bass drum and the bass to have the same sonic space. Use the same microphone. Sam Phillips only had five microphones. He had one RCA Victor ribbon microphone in the sweet spot that was on the bass drum and the bass instrument. If he wanted more bass instrument, he got the bass player to move closer to the mic, in front of the bass drum. How easy can it be? Yet, can you get anyone to do that now? He was miking the room. All of his mics were open all the way around, sometimes with the exception of the vocal mic. He was mixing it all into mono, so there was no phase cancellation, and the sound of that room was wonderful."

EDDY OFFORD

Since the late '60s, Eddy Offord has amassed a discography that has included blues, jazz, pop, rock and practically anything else that comes to mind. It is his work with '70s art and progressive rock bands that elevated him to legendary production/engineering status. Offord worked on the first four Emerson, Lake & Palmer albums and produced classic Yes albums, from *The Yes Album* (which amazingly was his very first production) to *Relayer*. He has also worked with John Lennon, The Police, Dixie Dregs, Andy Pratt, Levon Helm & The RCO All-Stars, Wet Willie, David Sancious, John McLaughlin, Utopia, Tim Hardin, Thin Lizzy, as well as doing film work on movies such as *The Last Waltz* and *Zabriskie Point*. More recently, Offord has produced and engineered the first two albums by Capricorn artists 311, and he is currently preparing to produce Medicine for the American label.

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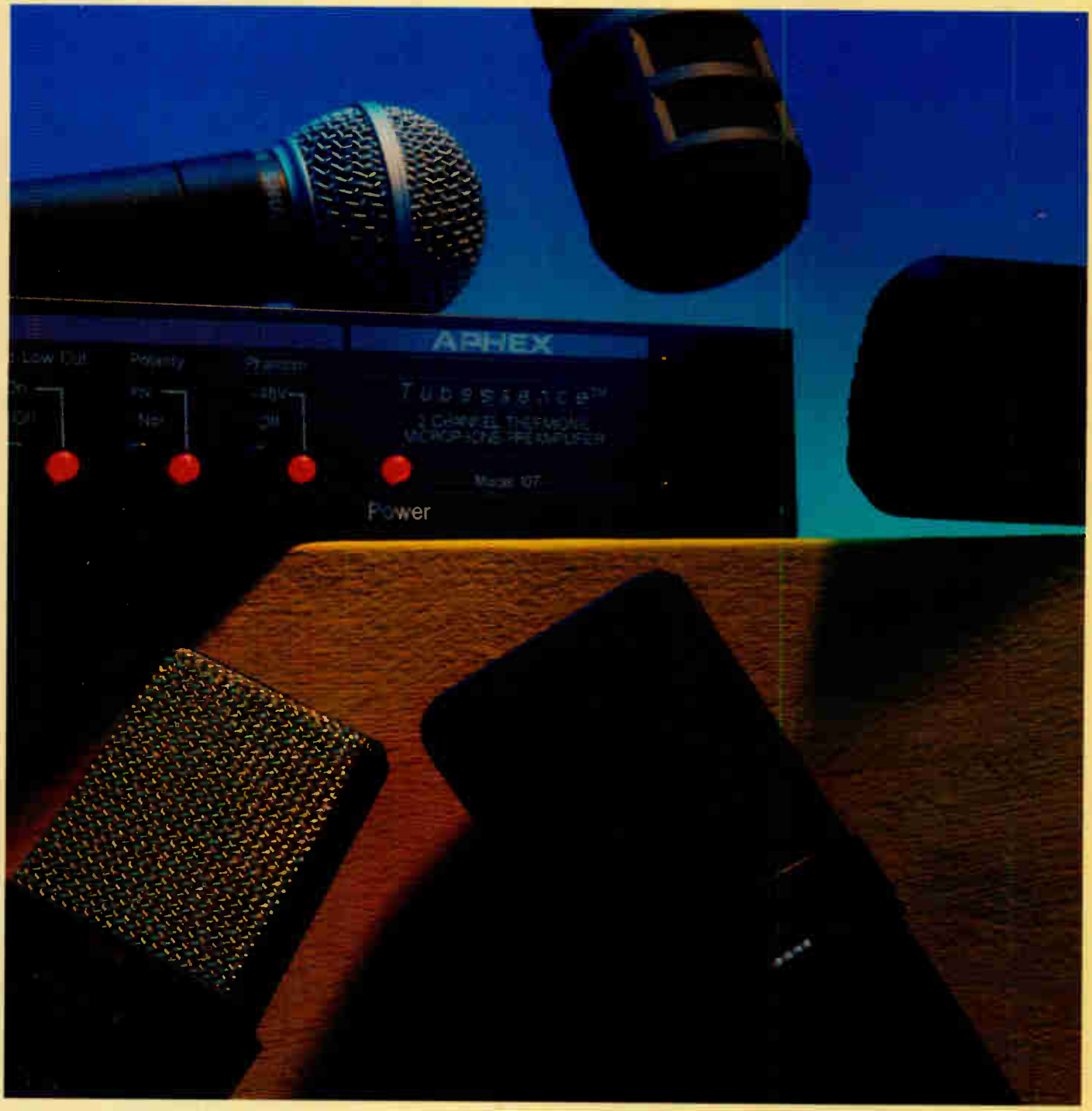

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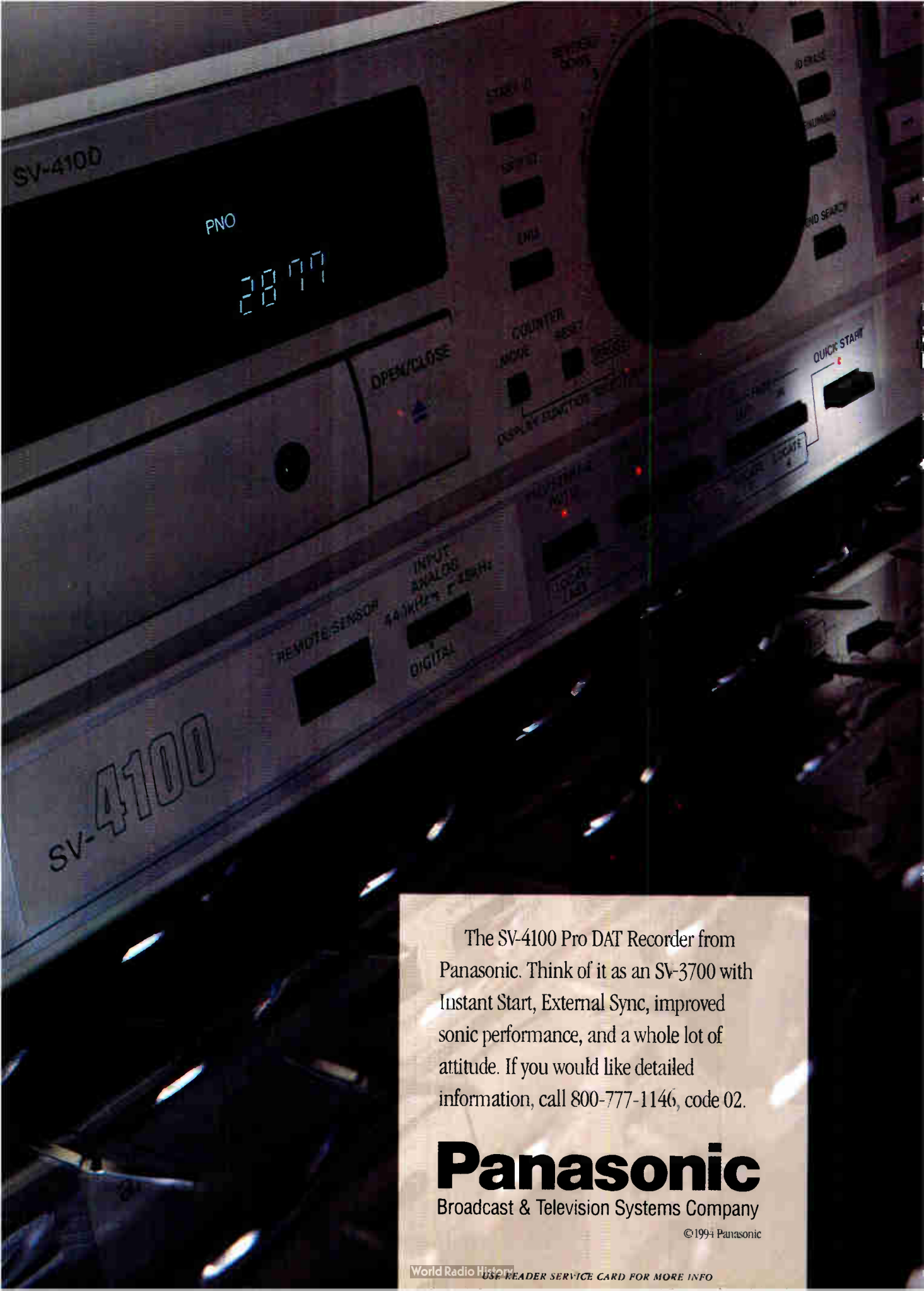

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For the well-known Chris Squire [of Yes] bass sound, Offord says, "We put the bass through more of a guitar amp setup, which I think was a Sunn amp with either 10-inch or 12-inch speakers. I took it direct, at the same time. On the amp, we went for lots of treble and distortion. I would just roll the bass end off of the amp, so it was all click and presence. I used the direct for the low end. I mixed those two signals together, while making sure they were in-phase. By balancing the two, I could bring out the lows or focus on the treble side. I would usually bring out the upper midrange, about four or five thousand, to bring out that gritty, trebly sound. By itself, the amp sounded like a piece of shit, but when you mix it in with the direct, it sounded great.

"Chris was the first guy I knew of that really wanted a sound that became more of a lead instrument, almost like a guitar," Offord continues. "Before that, bass guitar was just there to provide the bottom. I still use the same principle recording bass. Of course, that depends on the player and what he is looking for, too. Whenever I can, I try to use the LA-2A tube compressors, which I think are really good; I compress the signal quite severely."

For string bass, Offord prefers to have the player in an iso booth, if the player is amenable to the idea. "I did an album with John McLaughlin called *Extrapolation* that used a string bass," Offord recalls. "I put one of those hyper-cardioid pencil condenser mics really close to the bridge, so I could get the sound of the fingers on the strings. That way, I could get more presence and not so much boom. I usually place the mic an inch or two from the bridge, on the upper side of the bridge, pointing right at the strings."

In recent years, Offord has extensively used ADAT for recording. Nevertheless, he still finds analog preferable for rock. "To me digital is a very accurate recording, while analog is not," Offord explains, "but what analog does to the sound is very desirable for rock 'n' roll. There is a little bit more compression, and it is a little bit warmer. However, I find that going through digital and then going to analog has pretty much the same effect as going straight to analog. I don't really have a problem with that at all."

SAM TAYLOR

Sam Taylor's production work has earned the respect of many in the industry, particularly with the first four critically touted King's X albums. Much of Taylor's work synthesizes the sophisticated arrangement sensibilities of his mentors George Martin and Geoff Emerick, with an assertive, progressive and hard rock attitude. Taylor, a native Texan, has also produced albums for Galactic Cowboys and Atomic Opera, among others. Most recently, he produced the Bay Area band Annapurna for Collision Arts at San Francisco's Coast Recorders. Taylor likes getting as many of the instrument and amp choices, as well as the settings, laid out in pre-production. He also prefers working with bassists who have a firm handle on their instrument and understand the concept of ensemble interaction.

"I view the bass and kick drum as the basic pivotal foundation of what you anchor all of the other sounds to. I tend to approach it as one instrument," Taylor says. "Before I go into the studio and record, I start back in pre-production making sure the bass player not only understands the concept of ensemble playing, but can play that way. If you have got four people in a band, it is not four different sounds; it is one sound. Everything has got to blend together. A lot of people don't know it, but their sound is based on the sound of everything around them. If they can figure that out, then you can come up with a really great ensemble."

For recording rock bass and drums, Taylor likes cutting 15 ips analog with Dolby SR, because of the warmth and beefy sonic quality he achieves in that medium. For the powerful King's X 8- and 12-string bass sound (which was played by Doug Pinnock), Taylor employed a multiple-microphone setup that enabled the bassist to switch instruments for different parts of the song, and ensured sonic consistency.

"When Doug started bi-amping, there might be as many as three mics capturing the high end and two mics on the low end," Taylor explains. "Those mics, plus a direct, would all be running live into the board, where we would assign them or mix them together, depending on what was sounding correct with the ensemble. I would keep the high

—CONTINUED ON PAGE 218

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FROM TAKE 6 IN NASHVILLE TO FINAL CHIP IN MASSACHUSETTS

BIRTH OF A SAMPLE

BY DAN DALEY

There are some rather fantastic auditory experiences readily available at the touch of a finger. Sometimes the sounds are so incredible and so available that their accessibility and ubiquity has become transparent, if not taken for granted.

In the process of what has been an aural revolution, sampling has replaced synthesis as the primary genesis of non-acoustic sound generation. Synthesizers have evolved into devices that are multitimbrally capable of triggering a keyboard-activated tour of the complex grand opera that is contained in a sampled sound. Hitting a keystroke reveals a momentary glimpse into a complex series of recording, mixing and mastering sessions that sometimes stretch out for months at a time, even across multiple cities and facilities.

IN THE PROCESS OF WHAT HAS BEEN AN AURAL REVOLUTION, SAMPLING HAS REPLACED SYNTHESIS AS THE PRIMARY GENESIS OF NON-ACOUSTIC SOUND GENERATION.

The seamier, litigious side of the sample has drawn the most media attention. From James Brown to Rick James to assaults by the American Federation of Musicians, the digital audio snapshot has been the center of countless legal suits and allegations regarding its economic and artistic implications. Those implications are real enough, particularly to the aggrieved parties and to those who stand to profit from the use of the sample. "Whose music is this, anyway?" is the ultimate question, still quasi-resolved and forever rationalized.

At the same time, the quest for singularity and freshness in a crowded sample-and-hold market has traversed a parallel course. Ad hoc contractual standards have developed, allowing progress in the art and science of capturing the soul of a sound and then manipulating it in all the ways that digital technologies allow. What follows is the course of one such sample, from conceptualization to realization.

THE SAMPLE PLAYERS

Kurzweil Music Systems has been creating samples in Waltham, Mass., since 1982, moving up

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from a single part-time designer to a full-fledged audio department with rooms, student interns and six full-time employees. The company recently decided to enhance its extensive sample library based on its ongoing support of the three-year-old Kurzweil K2000 instruments, which now have Version 3.0 software and other sound upgrades.

Individual musicians are often approached for samples of their work based on the uniqueness of their sounds and techniques—drummer Ricky Lawson and bassist Marcus Miller among them. As one Kurzweil employee puts it, "Our criteria is that [the musicians] be experts at their instruments. The instrument and the techniques play a critical part because once it's sampled, it's difficult to make up for any deficiencies."

In addition to sampled standard instruments and special effects sounds, like wind and rain, the existing Kurzweil library already had some sampled vocals, notably a series of samples of the Tanglewood Choir. But the sonorous, soaring harmonies of Take 6—an a cappella group that started out with gospel in their home town of Huntsville, Ala., and have since won five Grammy Awards and influenced a number of major pop acts, from Boyz II Men to Coming of Age—were irresistible. The sextet just finished tracking their first album with full instrumental backing from the likes of Ray Charles, Herbie Hancock and Stevie Wonder (*Join the Band*, on Warner/Reprise), and they were up to the digital adventure.

Jennifer Hruska, a 1986 graduate of the University of Illinois with a B.S. in Music Education, came to the Kurzweil R&D facility right after graduation. "I didn't really know [then] that sampling was where I wanted to go," recalls Hruska, who is now a sampling and product development consultant to Kurzweil, alternating between Waltham and her home in Oakland, Calif., where she works with Bay Area electronic composition and performance group D'Cückoo as a multi-instrumentalist, technical specialist and producer. The group is described as a "neo-classical, post-industrial cybertribal world funk ensemble," as eclectic as the sampling milieu that Hruska entered in 1986.

Take 6 was approached initially at the 1994 NAMM show in Anaheim. Actually, says Hruska, in a rare reversal of tradition, the act actually brought up the idea. Longtime users of Kurzweil keyboards, they tentatively offered to do a sampling session. The group, however, had reservations about how far it would commit its vocal identity to the sampling process. This is not an unusual quandary for those submitting to the sample process: How much of your identity do you give away?

Sampling has been a sore issue

Clockwise from left: Take 6 in the tracking room at Nashville's Emerald Recording; software engineers processing sounds at the Kurzweil R&D facility in Waltham, Mass.; engineer Tony Shepperd and Kurzweil's Jennifer Hruska during sampling sessions

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for some time with the musician's union. Hruska notes that some of the artists approached by Kurzweil have turned down offers out of fear of breaking previous union sampling rules. The Screen Actors Guild (SAG) and American Federation of Television and Radio Artists (AFTRA), on the other hand, have no such prohibitions, making the Take 6 negotiation a bit less complicated. What the group did request, and were granted, was the right of final approval over the finished samples, something Hruska says is not common. "Their vocal sound is their trademark," she explains. "Their concern was that we didn't do something that literally allowed us or someone else to go make a Take 6 record based on the samples." (See sidebar for more on the economics of sampling.)

NASHVILLE BASICS

The sessions were slated for May 1-3 at Emerald Recording in Nashville, a studio Take 6 had worked in before, recording parts of an updated, soulful version of Handel's *Messiah*. Engineer Tony Shepperd, who had done considerable work on that and other projects with the group, was hired by Kurzweil and flew in from his home in Los Angeles (he formerly lived in Nashville) for the sessions. Hruska was the producer.

In preparation, Hruska spent time listening to the Take 6 recorded catalog, looking for the essential elements of their sound. For Shepperd, the sampling session was a first. "My first questions were about format," he says. DAT had been the first choice; a joint decision was made to include two digital multitrack formats.

Before the session, Shepperd contacted rental operation Underground Sound and rented the regular mic setup he has developed over the years for the group: Cedric Dent (baritone) uses a Stephen Paul-modified AKG C-12, a Telefunken 251 for Joey Kibble (second tenor), a standard AKG C-12 for David Thomas (second tenor), bass singer Alvin Chea uses a Neumann M-49, and Mark Kibble (first tenor) uses a Neumann U-47, as does Claude McKnight III (first tenor). Shepperd also rented six Neve 1073 mic preamps and EQ modules to run through six Tube Tech compressors. Their signal went directly into the Otari DTR-900 MkII deck with Apogee filters; it was also split off to a Panasonic SV-3700 DAT and a Tascam DA-88. Hruska would take those Tascam Hi-8 tapes back to Oakland and Waltham as final mix stems from the multitrack. Monitors were Yamaha NS-10s and the studio's Kinoshita/Hidley speakers, returning through Emerald's SSL E Series/G computer board. A Formula Sound cue system provided the vocalists with individually controllable mixes in the studio, with a touch of AMS reverb in the return.

The first day began with a Take 6 trademark, a song called "Introduction," which provides an opportunity for vocal gymnastics. "That gave them an opportunity to warm up so we could do the actual sampling while they were at their peak," Shepperd explains. Hruska had a list of sounds—ahhs, ooohs, bahs, etc., as well as specialty sounds such as brass-like hits and vocal percussion—that she wanted. Generally starting around middle C, the group would perform the required vocal sound in half-step increments. Hruska explains that vocal samples will thin out faster

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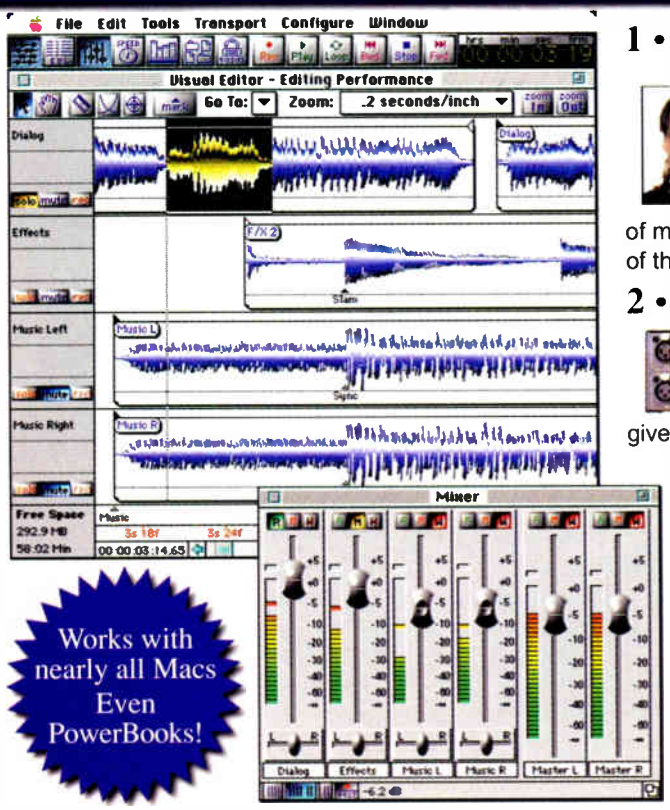

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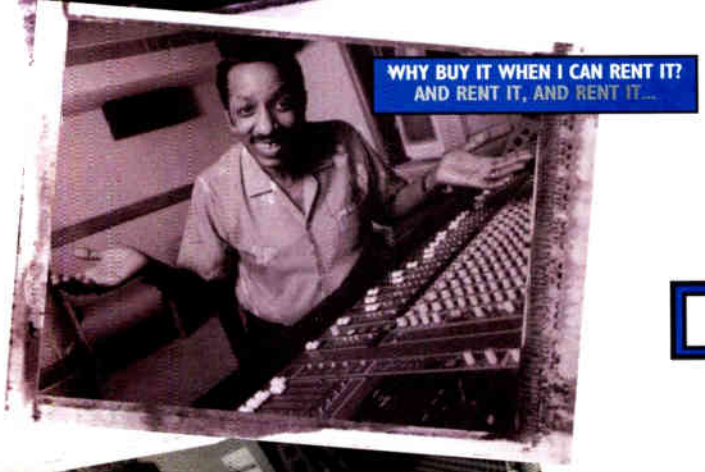

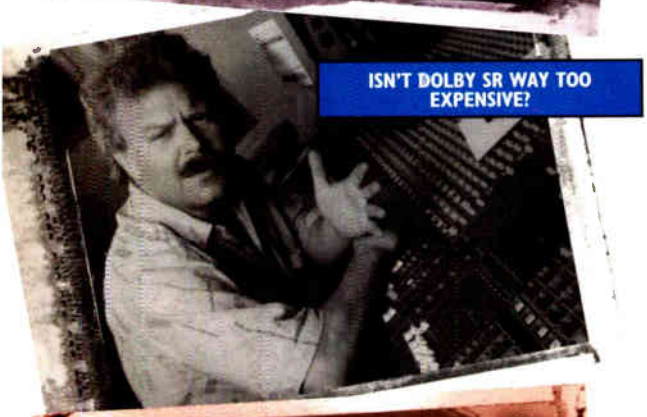

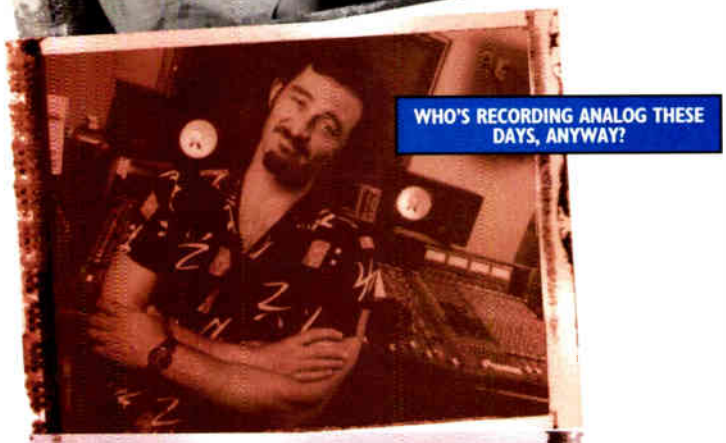

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than many instrument samples as they are played beyond their original note. Most sounds were held for a four-count, using a hi-hat click sound from a K2000 patched through the board for count-offs.

The second day's sessions were dedicated mainly to specialty sounds. All six singers were set up in a circle and sang parts simultaneously. "The reason it took all three days was because we needed to get everything they were willing to give us in all 12 tones, each in their individual ranges," Shepperd says. Hruska, however, adds that, "They had just released a new CD so there were a lot of friends and family in the session and a lot of excitement about town."

Before the sessions began, Take 6 and Hruska conferred about which vocal techniques they were concerned about sampling. "It was a very positive conversation, but it was up to them to speak up if there was anything they were uncomfortable with," she states. "There's a fine line in this type of sampling session: You want to get as much as possible, but you still have to respect the artists' limits."

Day three was mostly percussive sounds and a final recording of the song "Introduction"—which will be used as a promotional demo for the samples—again recorded individually and in an ensemble. "They have a cascading effect when they start singing percussion parts that is simply amazing," Shepperd says. "We started out giving them a click to work with but then realized that it was working against them. I just put about a 2:1 compression ratio on them and a little EQ here and there and let them go." There was some specialized equalization, such as for Alvin Chea's eerily accurate reproduction of a Roland 808 kick drum.

Shepperd tweaked the EQ at 200 Hz and increased the compression to 5:1—"as much as I would for a real drum," he says. And Chea's voice actually required a one-octave transposition of the Kurzweil keyboard's lower end to give him a starting note. "The really crazy thing about the session is that, as things went along," Shepperd recalls, "we were getting further and further out in terms of sounds. It got to the point where we didn't have names to slate all of them, and neither did the singers." The solution was an interesting version of onomatopoeia and a lot of "We'll-figure-out-what-to-call-it-later," Shepperd says.

CALIFORNIA AND MASSACHUSETTS

Once back at home in Oakland, Hruska proceeded to cull the DA-88 and DAT tapes for the best takes of each recorded part. Two hours' worth of 32-track digital tapes, which were recorded in groups of six tracks at a time, remained at Emerald as safeties. At her studio in Emeryville (a few blocks from the *Mix* offices), Hruska mixed the choice takes down to stereo or mono, depending upon which Kurzweil product they'd be used for.

The culling process doesn't stop with the choice takes, however. At Kurzweil's R&D center in Waltham, initial processing of the samples is done with an almost constant referencing between the computer and the K2000. Some samples are more robust than others when it comes to their ability to withstand pitch changes. Vocals are not particularly good in this department, Hruska notes; thus, the equation becomes one of internal memory vs. the number and size of the roots of each sample. Vocal samples are limited to perhaps a major third from the original home tone—the interval that would generally comprise a root—before they begin to lose their elasticity and identifiable sound quality. Putting in a sample for each chromatic note would eat up all the available memory for a ROM upgrade and possibly all of the 64 KB of RAM available on the keyboard. The referencing on the K2000 was used partly to establish how far each sample was capable of being stretched and mostly to see how it played and felt on a keyboard, according to Hruska.

Once choices are made, the recordings are digitally transferred to a mainframe Unix computer, where Kurzweil's proprietary software resides. Each piece—which can now properly be called a sample—is examined using DEW software (Display & Edit Waveform; developed by Bob Chidlaw, chief scientist for Kurzweil R&D and one of the original founding members of Kurzweil's engineering corps) on a Unix platform.

The software can do noise reduction, equalization, compression, truncation and other tasks. Looping and other fine-tuning jobs can also be done with DEW.

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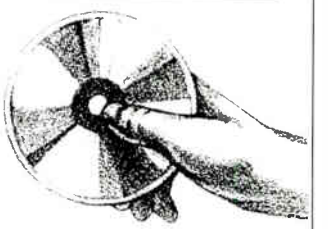

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Running an FFT algorithm on the sample allows a closer examination of the spectral content. Graphs of Hertz and amplitude values permit the direction of the samples—now classified in the computer by file names such as VOXA4EQ (vocal; the pitch, processing info)—into their fundamental and partial components.

"Vocals are defined by their format," says Hruska, referring to a certain shape in the spectral analysis that the fundamental and partials take on. "One tricky part of vocal samples is in the balance between getting the breathy and gritty sounds of the throat in there while eliminating the noise." You're looking for the key frequencies, she says, much like looking for the basic frequency in a snare drum sample that provides most of the attack sound.

"Looping is also tricky with vocals," Hruska explains. "A loop that you play up a fourth from its root position is going to emphasize certain spectral content. Chorused sounds are more spectrally complex. Things that were barely audible at 1 kHz are much more apparent at 3k, where the ear is more sensitive. If one partial is being obnoxious, you may have to find it and turn it down." Even during this process, the samples are periodically transferred back to a K2000 for reference.

Processing is slightly different for the ultimate residual formats for the samples, as well. It has yet to be decided whether the Take 6 samples will reside on floppy disk, CD-ROM or both; some will be burned to PROMs in the keyboards themselves. "For CD-ROM, I might not do as much looping," Hruska says, "because we don't have the size constraints on a 650-megabyte format. I deal with this as though it were two different projects, although a lot of the processing will carry through to both formats."

The final product, in whatever formats, was expected to be available by Winter NAMM. If there is any irony in the fact that so much professional recording technology and techniques have gone into what will be marketed as an MI (albeit high-end) product, it's lost amid the energy and effort that have gone into creating the hybrid that comprises any sample—part human, part machine. ■

The Economics Of Sampling

The costs for manufacturers to acquire samples is anything but clear. Synthesized samples are created in-house or by freelancers working on a for-hire basis for fees agreed to in advance. When independent musicians are approached by manufacturers (or vice versa), the terms are equally variable.

Sampling sessions had been prohibited by A.F. of M. regulations up until recently. An agreement has been drawn up in the past several months by the national union for specific use in sampling sessions sponsored by equipment manufacturers, according to Dick Gabriel, director of electronic media for the A.F. of M. "Before, [union] musicians were prohibited from making samples to create sounds that would replace live instruments," he says. "The new agreement covers their use...for direct recording into the memory of a sampling device." The rate specified by the union is $1,000 for a single musician or leader on a three-hour session, and $500 per musician per three-hour session, as well as a 2% royalty payable from the producer's (manufacturer's) gross.

There's a wide gulf between the union's ideal and the reality of sampling sessions, however. Kurzweil pays a flat $75 per hour to all musicians involved in sampling sessions, and no royalty rate, although some projects are bartered for equipment. "There's always a bit of negotiation involved," Hruska says. "Sometimes the deal is done in exchange for equipment, sometimes for money, sometimes a combination of both."

Jack Hotop, senior product manager for keyboards at Korg, says that his company's sampling session payments are similar and that they also do not pay royalties. Payment ranges are diverse and can be in either cash or equipment, based on factors such as level of professionalism, time in the studio, number of sessions, etc. Regarding the union's idea of what sampling sessions should pay, Hotop comments, "They're going to price themselves out of the ballgame."

At E-mu Systems, sales applications engineer Kevin Monahan reports a similarly broad payment schedule, noting that local union scale—about $70 per hour in Los Angeles—was the basis for many sessions, and that no royalties are paid. However, he adds, many sessions are done by third parties, with E-mu simply buying the results, not supervising the sessions. Furthermore, sessions are increasingly done outside the U.S. as domestic session prices increase, with Eastern Europe becoming an active sampling center. "It's like the stock market in terms of what's paid," Monahan notes. "But L.A. is becoming less cost-effective as a sampling location." And as for the new A.F. of M. sampling stipulations, he says that E-mu would likely not implement them beyond the company's adherence to local scale for L.A. sessions.

Yamaha has various fee scales for different divisions of the company, according to a spokesman who declined to specify any further. However, he did add that Yamaha also pays no royalties and sometimes negotiates with equipment in lieu of cash.

Some musicians also consider the union's stipulations to be unrealistic, and it should be pointed out that no sampling sessions have been done under the provisions of the new agreement, although Gabriel (of the A.F. of M.) says the agreement was so new that most musicians are not aware of it yet. As for the motivation for abandoning the no-sampling position the union has held for so long, Gabriel says it was a result of meetings between union leadership and rank-and-file membership, particularly the Recording Musicians Association (RMA), a group within the union.

—Dan Daley

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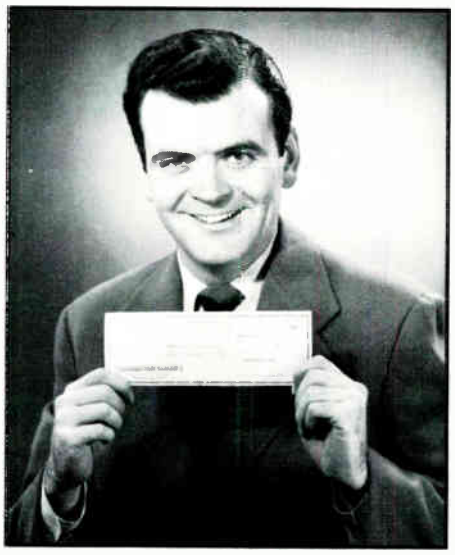

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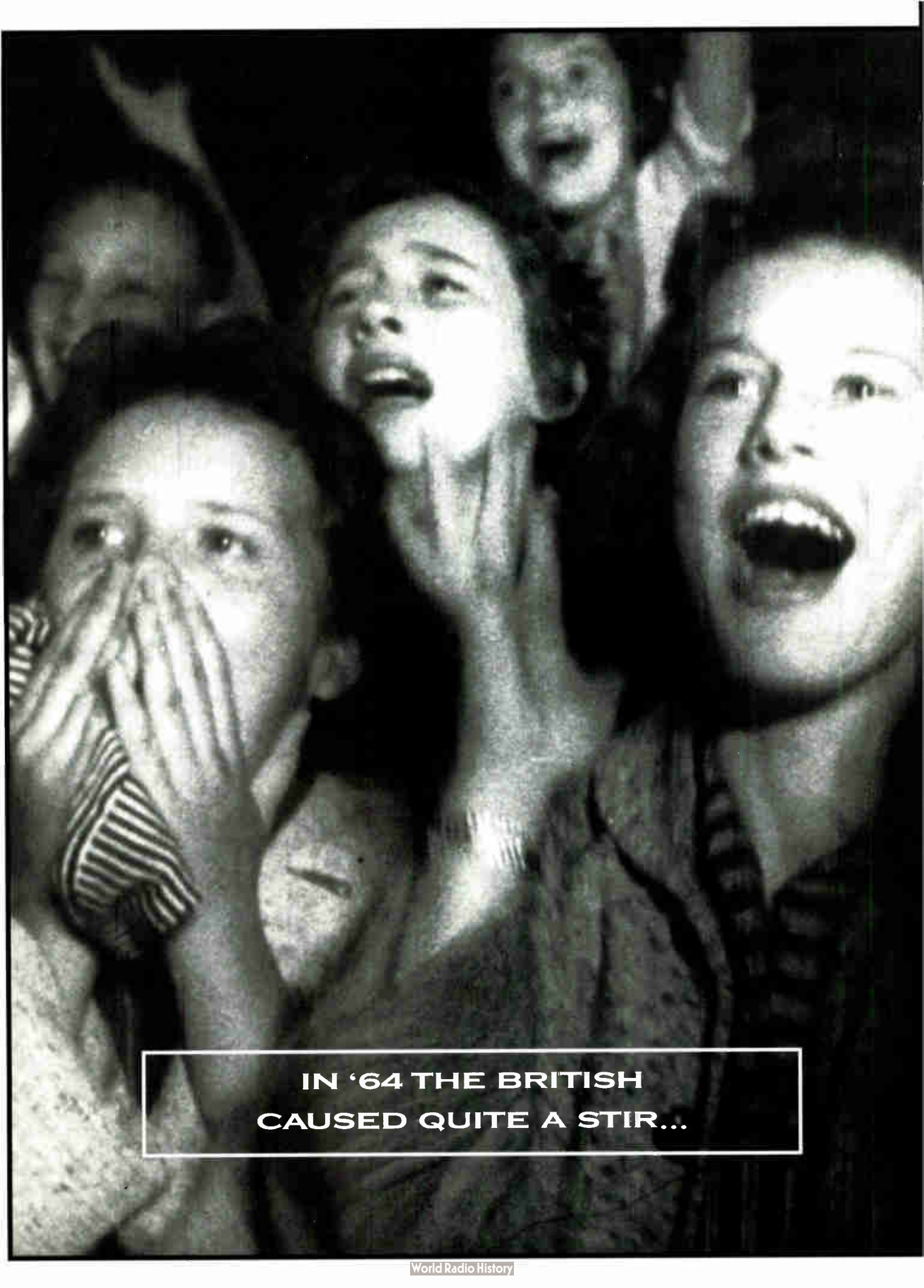

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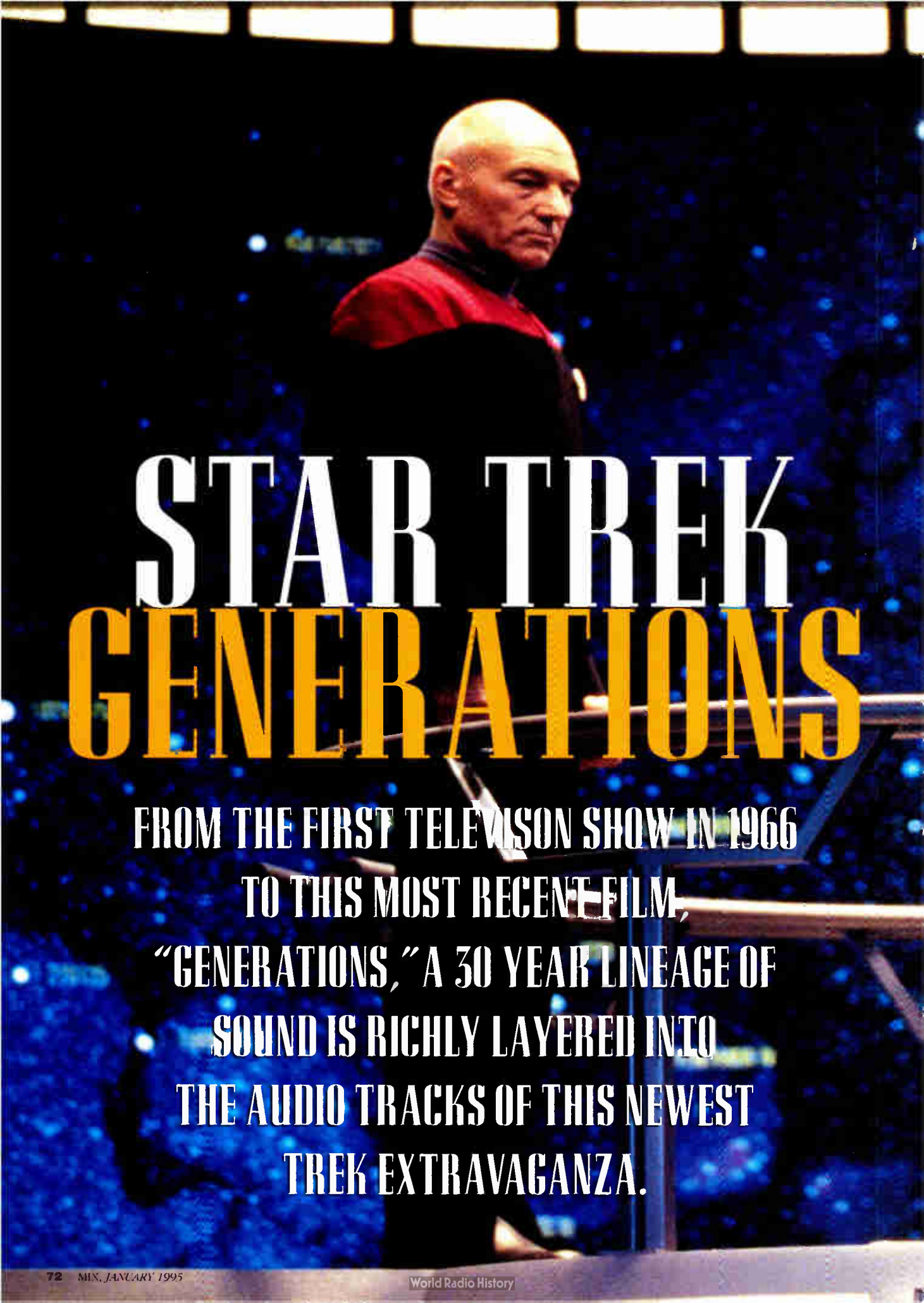


STAR TREK GENERATIONS

FROM THE FIRST TELEVISION SHOW IN 1966 TO THIS MOST RECENT FILM, "GENERATIONS," A 30 YEAR LINEAGE OF SOUND IS RICHLY LAYERED INTO THE AUDIO TRACKS OF THIS NEWEST TREK EXTRAVAGANZA.

World Radio History

BY TOM KENNY

Star Trek is a Paramount Pictures franchise. Nearly three decades ago, the unassuming original show hit the networks without a hint as to its longevity in syndication or its popularity among those who came to be known as Trekkies. It's a rare network television show that is able to work its vocabulary into the American vernacular without sounding dated.

Fifteen years ago, *Star Trek: The Motion Picture* was released, and although the story seemed a little slow over the course of two-plus hours, its technical achievements in visual and audio effects were widely hailed. In fact, the sound effects credits on the original film read like a "Who's Who" of today's top Hollywood sound professionals: Alan Howarth, Frank Ser-

The Federation mix team at Todd-AO, with bodies from the Enterprise and brains of Mark "Chekhov" Smith, Chris "Kirk" Jenkins and Adam "Scotty" Jenkins. Thanks to Brian Jennings of Todd-AO Digital Imagery for the image blend. Photos courtesy of Paramount Pictures and Maureen Droney.

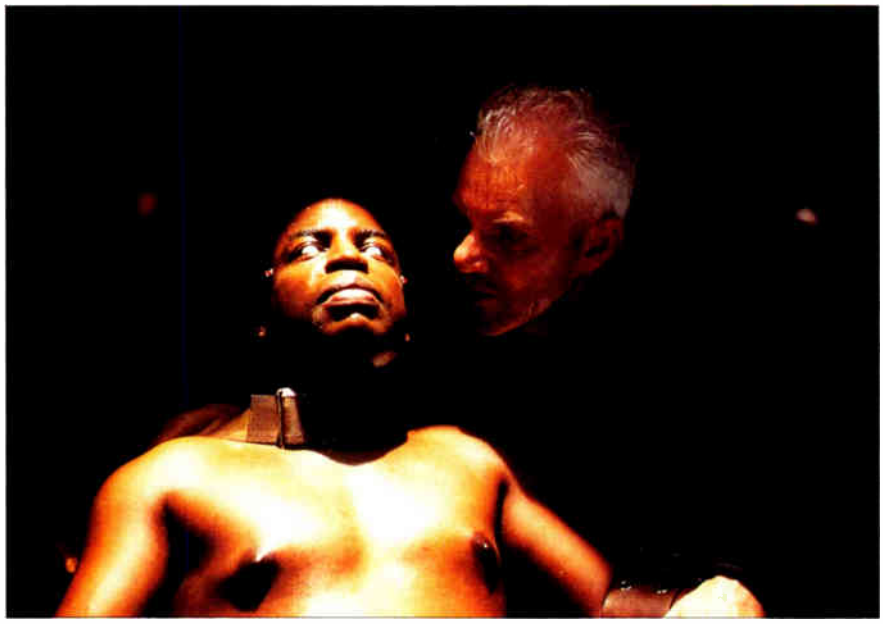
OVERALL PHOTO BY ELLIOTT MARKS/ COURTESY OF PARAMOUNT PICTURES

World Radio History

afine, Joel Goldsmith and Francesco Lupica were the four synth wizards charged with sound effects creation. Supervising sound editor Richard Anderson led an effects team that included Cece Hall, George Watters, Alan Murray, Steven Flick and Colin Waddy, among others. Mark Mangini supervised the ADR; Kevin O'Connell was the recordist. The three-month final mix (Bill Varney, Steve Maslow and Greg Landaker behind the old Quad Eight Orange console) took place at the Goldwyn Sound facility, now Stage D on the Warner Hollywood lot. Robert Wise directed; Jeffrey Katzenberg was an associate producer. Quite a team. Plenty of Academy Awards there.

Five more features followed in the '80s, and the TV show was updated in 1986 to *Star Trek The Next Generation*, which quickly attracted a new following during its six-year run in syndication. It even spawned a spinoff, *Deep Space Nine*, and the promise of a third series.

Jump cut to 1994 and Studio 1 at Todd-AO Studios for the final mix on *Star Trek: Generations*. Old meets new. Television meets film. Kirk meets Picard. For fans of the technohip STNG, it's the first chance to see and *hear* Picard, Geordi, Data, Number 1 and crew bumped up to 35 mm. For fans of the original, it's perhaps a last chance to see Kirk, Scotty and Chekhov in their aging glory. For Paramount, the past 30 years have now come full-circle, and it has yielded a gold mine.



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Above: Geordi aboard the Klingon ship, being questioned by Dr. Soran; Left: Captain James T. Kirk, moments before his disappearance; Below: On the stage at Studio 1, Todd-AO, with (l to r) effects mixer Adam Jenkins, supervising dialog editor Joey Ippolito, music mixer Mark Smith, dialog mixer and Todd-AO president Chris Jenkins, and Dolby representative Tom Ehle.

The Star Trek lineage, however, carries with it a huge sense of responsibility—to the shows, to the films, to its late creator Gene Roddenberry, to the special effects teams and, perhaps most of all, to the Trekkies. ADR supervisor Becky Sullivan said that for the Klingon group walla sessions, they had to have a

PHOTO BY MAUREEN DRONEY

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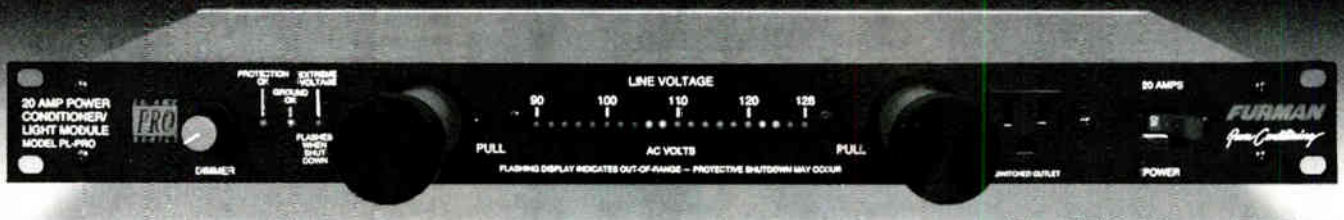

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time, and fatiguing on the brain. Which is why we would consistently pull back on the telemetry tracks [the computer noises and high-tech electronic sounds that accompany high-tech-looking equipment]. Otherwise, it would begin to sound like a phone is ringing through the entire scene." At one point, Lieutenant Data opens a cabinet in his room by pushing a series of buttons, which is accompanied by a "boodle-oop," followed by a "whooshpp." Executive producer Rick Berman asked the mixers to bring down the button sounds and bring up the door-open sound. "Can you imagine anything more annoying in the 23rd century than if every time you pushed a button, it went 'boodle-oop?'" Berman muses.

It might be surprising to just about anybody outside the audio post community that the most-mentioned term to describe the effects on *Generations* was *organic*. Editors used natural sounds—bird chirps, vocal effects, wind noises—all, of course, processed, pitched and combined with other sounds.

Organic sounds also can be found layered into the backgrounds, which are perhaps more critical in the Star Trek series than in most films, since so much of the action takes place on the same ship, and if the backgrounds don't vary enough, there is the real risk of sounding too homogenous. Of course, sick bay will sound different from the bridge, which will sound different from the more intimate confines of Whoopi Goldberg's quarters or Captain Picard's stateroom.

Sometimes the Enterprise interior backgrounds fill five or six channels on the mix, sometimes more. And at the root of each one is the generic Enterprise rumble-generator sound developed by Alan Howarth for the first film ("You feel naked if you take it out," says Wolvington). Then tones are modulated for the bridge, organic wind sounds are added for other rooms, and "tonal color and vocal air," according to Adam Jenkins, are added throughout—whatever it takes to avoid a smooth hum.

At one point, Chris Jenkins suggested using the joystick panner and spinning the pulsing-throbbing element of one background around the room manually, a technique he says he picked up from watching the quad laserdisc version of *Blade Runner* a few nights earlier. The idea is to always introduce variety. Static backgrounds are death.

"The Klingon ships were fun," Adam Jenkins says. "They are not high-tech—at least they don't *look* high-tech. They're older and clunkier, so we wanted the backgrounds to be more wrenching and 'wronking,' and creaking and stalling. If we muted all the other tracks and took away picture, you would know immediately that this is a Klingon ship."

MUSIC

The Star Trek television shows and films are filled with music, and not just for those highly recognizable transition scenes when the Enterprise is zipping off to another part of the galaxy and the theme kicks in. There are big strings, big choirs and very big swells—in *Generations*, about 75 minutes out of roughly two hours.

Dennis McCarthy, who scored STNG for the past seven years, scored the *Generations* film, too.

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The sessions, which involved anywhere from 35- to 95-piece orchestras, depending on the cue, took place at Paramount Stage M, recorded and mixed by Bobby Fernandez on the Neve VR60, Legend Series, to Sony 48-track. (Norman Dlugatch was the engineer, Paul Wurtheimer seconded, and Dominic Gonzales served as stage manager.)

The score was mixed directly to mag, five channels—left, center, right and stereo synth. A haunting, eerie 24-voice choir was mixed to 3-channel mag. It was a tight, four-day schedule, according to music editor Stephen Rowe, who is also music editor on the STNG spinoff, *Deep Space Nine*. That was when we talked in mid-October. A call to the stage on November 4, less than two weeks before the worldwide release, revealed that they were doing "one more session," to accompany final picture, which had come in the day before. *That's* a tight schedule.

At the final mix, Mark Smith, a Canadian whose music background has led him from Robbie Robertson in Toronto to stints with Toto, to "just about every studio in the world," would listen to cues and set levels on a couple of passes before the dialog and effects mixer sat down for each reel. When effects and dialog came in, he would balance against effects (an age-old audio post battle), slip sync at times, bring the choir up when needed, and in one case, "make the Whoopi [Goldberg] cue more ominous."

"I'm a music mixer," he says, "and I know all the scoring mixers in town. They know that when I'm on a show, I will treat their music as it should be treated, as is appropriate to the scene. I've been known to mix music on the stage before, but that wasn't necessary on this film."

One interesting note: On a reel 2 fix, Smith had to add tympani hits, but he didn't have the original 48-tracks. So he copied some tympani hits from the original 6-track stem to the DA-88, then recorded back to the original stem, but he experienced dropouts. After initial puzzlement, his only guess was that the emulsion on the film had degraded with just one too many passes.

DIALOG

These are not talkie movies, admittedly. And the locations are often noisy, which usually makes for a problematic production track. Chief mixer Chris Jenkins says that by and large, the production was cleanly recorded and well-edited, but he was puzzled by instances "when you expect it to be clean, such as on sets, it was sometimes noisy, and when you expect it to be noisy, it was very clean."

Roughly 50% of the lines were replaced in ADR, supervised by Becky Sullivan, and cut on mag. Joey Ippolito supervised the dialog editing at Paramount and was a jack-of-all-trades problem-solver on the stage.

The biggest challenge in the mix seemed to be getting dialog to cut through big music, variable backgrounds and big effects, which often competed in the same frequencies. But as in every film, there were also dozens of little details to work out. Sometimes Jenkins had to remove sibilance, such as when Malcolm McDowell uttered the word "prosthesis" (Berman to Jenkins: "I hear you're the king of 'T's'; how are you with 'S's?"); another time he had to change "Robert" to *Robert* (the French pronunciation) by editing the "T," when no alternate lines from Picard were usable.

When *Mix* visited Stage 1 at Todd-AO in mid-October, the pace was relaxed, and the troops were working "regular" days. Because the producers decided to change the ending, new footage was being shot near Las Vegas, and reels 11 and 12 were held up. Although the first six reels were being print mastered, they still had the premixes for the big effects reels to come, ADR sessions were scheduled for the following Monday, some opticals had yet to arrive, and a scoring session was set for the first of November. The release date was fixed at November 18.

But that's nothing new. Apparently, on the original Star Trek movie, they finished the mix on Reel 1 an hour before the grand-opening screening at the Academy Theater, and director Robert Wise literally took the reel and drove hell-bent across Hollywood.

The first six reels of *Generations* were being print-mastered in DTS and Dolby SR•D on October 20. The mix team was gearing up for the final push on the second half of the film. Longer days were anticipated, but then that's expected in the world of film sound. ■

Tom Kenny is a Mix *associate editor.*

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by Mr. Bonzai

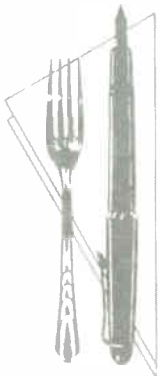
MARK MOTHERSBAUGH

MUTATO MUZIKA

PHOTO: MR. BONZAI

PHOTO: AT WAK

Above: Mark Mothersbaugh; Right: Devo, circa 1980



Mark Mothersbaugh is carved into the big turkey of history as a founder of the indelible Devo, the international New Wave void-filler of the '70s and '80s. His distinctive eyeglasses, flowerpot hat and *haute* industrial *couture* have made him a pop icon whom youngsters instantly identify as "that guy from Devo."

The band formed when Mothersbaugh teamed with fellow Kent State art major Gerald Casale, joined by Bob #1 Mothersbaugh, Bob #2 Casale and Alan Myers. The name Devo is derived from *The Truth About De-Evolution*, a prizewinning film in the 1976 Ann Arbor Film Festival. Big shots Iggy Pop and David Bowie soon became pals of these odd boys from Akron, Ohio, and their self-financed early singles "Jocko Homo," "Mongoloid" and a robotic cover of "Satisfaction" earned them over-and-underground status.

More than simple musicians, Devo became multimedia mavens—making films, inventing fashions and philosophizing about potatoes. Brian Eno produced their first album (*Q: Are We Not Men? A: We Are Devo!*), Ken Scott followed on their second (*Duty Now for the Future*), and the group's third, *Freedom of Choice* (produced by the bombastic Bob Margouleff), included their 1980 worldwide homage to Osterizers, "Whip It." Their final album as a studio band was 1989's *Smooth Noodle Maps*. Mothersbaugh's credits also include playing keyboards for The Rolling Stones, programming synthesizers for Sheena Easton and singing

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Through it all, Mothersbaugh has kept quite busy with his production company, Mutato Muzika. He's also worked as the composer behind successful films, television shows and major commercial campaigns. You might not have realized it, but you were tapping your toes to Mothersbaugh's snappy music for Lifesavers and McDonald's. He's also the large, synthesized brain behind shows like MTV's *Liquid Television*, the animated *Rug Rats* series, *Beakman's World*, and the award-winning *Pee-Wee's Playhouse*.

Join us now at Mothersbaugh's lab, Mutato Muzika, for a can of cappuccino and a little conversation with the man from tomorrow...

Bonzai: This is a new console, isn't it?

Mothersbaugh: Fairly new, yeah, about a year old. It's a CAD, but I think they call themselves CTI, actually. I don't know what they call it—it's kind of confusing. But considering it has 240-plus inputs, it was probably as reasonably priced as you could find out there.

Bonzai: In your arsenal of tools and toys here, what is your main composition contraption?

Mothersbaugh: I'd have to say the Macintosh. I'm on Opcode Studio Vision Pro.

Bonzai: Is most of your work now scoring for television?

Mothersbaugh: It's all over the place right now. We're scoring five TV series: *AJ's Time Travelers* for Fox, *Future Quest* for PBS, *Medicine Ball* for Fox, and *Beakman's World* and *Kevin's Kitchen* for Nickelodeon.

"The old sequencers weren't quantized, so if you didn't exactly tune each knob, you could get microtones. You miss that when everything is so cleaned up, even if you don't want it to be."

Bonzai: How many people do you employ here at Mutato Muzika?

Mothersbaugh: We're flexible—we're like an accordion. It depends on how many projects are going on at the time. On *Beakman's World*, for instance, we have a composer named Denis Hannigan, who took over the project from me, and he's been doing it for the last couple of seasons. We're up to episode 65.

Bonzai: All done here in your studio?

Mothersbaugh: He does it in Topanga Canyon and modems it over on American OnLine. He sends his MIDI notes over, and we've duplicated his studio in this setup. He doesn't have the gear to mix, but he has the gear to compose, so Bob Casale just sets it up for "Denis' Topanga Studio," puts the disk in and mixes it here.

Bonzai: What medium do you record to?

Mothersbaugh: It's everywhere now, because everybody has different requests. We go to 4-track, ½-inch for a lot of the TV stuff and commercials—for some reason they seem to like that format. Some people like DAT with a 2-pop.

Bonzai: What's a 2-pop?

Mothersbaugh: It's a film term, when in the old days two seconds before picture started there would be a pop on the visuals and an audio pop, so that they could line it up on the KEM tables. So we give 'em a pop on the tape, or we put a little dialog that they can sync up to ahead of time. Or else they want a DAT with time code. And some people want things delivered on ADATs, while others want ½-inch tape with center code. We also deliver on Tascam DA-88, because the pros haven't figured out what they like, the ADATs or the DA-88s. We'll supply anybody with anything they want.

Bonzai: What kind of computer hard disk storage do you have here?

Mothersbaugh: We have all sorts of things, hard drives all over the place—inside the Quadra, free-standing gigabyte drives that get moved around. We have MO drives—four of these Pinnacles.

Bonzai: Why do you need all the...?

Mothersbaugh: Memory? Because we record a lot of our sounds and samples. And in this room, in one day, I may work on four different projects. We're scoring a couple of films right now, an independent film called *Flesh Suitcase*, doing TV commercials: Today we did Kahlua; yesterday it was Gummy Savers. The other day, we did Farmer's Insurance.

Bonzai: Are you the main composer on all the works?

Mothersbaugh: There are some projects where people request me. On commercials, it used to be just me, but now it's turning out that my brother Bob is beating me out on some of the demos. J. Walter Thompson in Chicago, for instance, they always request my brother because

—CONTINUED ON PAGE 223

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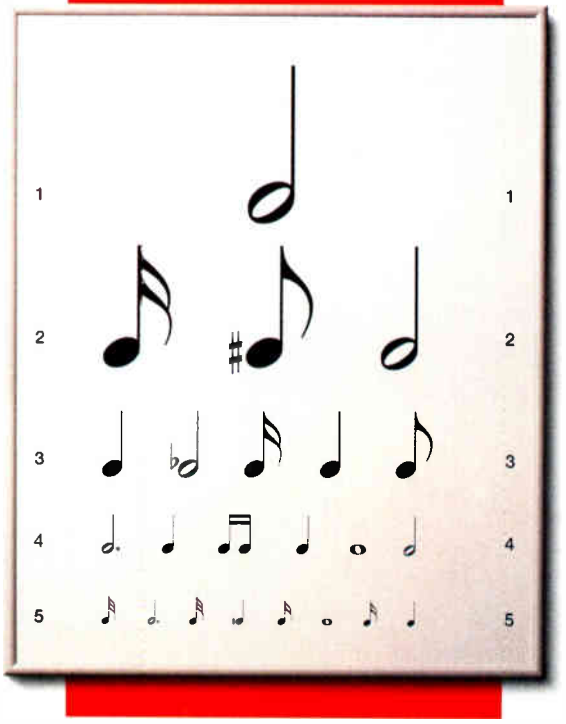

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3M *Reliability*

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by Paul Potyen

AUDIO ON THE INTERNET

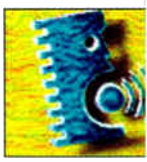
TOMORROW'S MUSIC DELIVERY PLATFORM?

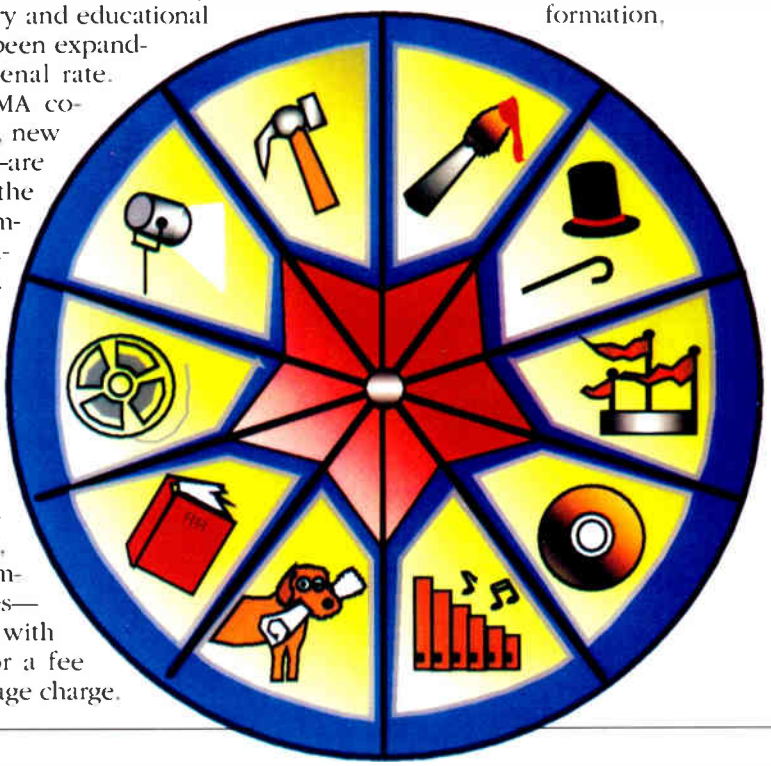
Last month, we talked about the work that has been going on behind the scenes at some independent record labels, as well as among the majors, on the "next generation" CD. But that's only one piece of evidence that the recording industry is on the cusp of some big changes.

Here's another: the emergence of companies that offer the music—and other digital media—of artists and record labels via the Internet. This month, we talked to two of the biggest Net audio providers: the Internet Underground Music Archive and Kaleidospace. But first let's take a look at what has happened to the technology in the past year in order to make this even remotely possible, so to speak.

The Internet—developed a couple of decades ago for the purpose of transferring digital information among goverment, military and educational institutions—has been expanding at a phenomenal rate. According to IUMA co-founder Rob Lord, new sites—or nodes—are being added to the total estimated number of 3 million Internet nodes at a rate of about 20% per month. Each one is capable of exchanging digital information with any other site. Internet service providers—such as Netcom, Delphi or any number of local entities—can set you up with your own site for a fee and a monthly usage charge.

All you need is a telephone line, a modem and a computer. But you don't even need an Internet account to use the Internet. Most online services send ASCII-based e-mail back and forth. And some, such as PAN, Delphi and the WELL, offer FTP (File Transfer Protocol) access. The FTP gateway employs a not-so-friendly, UNIX-based, command-line interface to connect to remote Internet sites and download information.





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meaning text, graphics, audio, video and source code.

An increasing number of Internet nodes support SLIP (Serial Line Internet Protocol), PPP (Point-to-Point Protocol) or TIA (The Internet Adapter). These protocols allow the nodes to use graphic interface programs such as Mosaic, Gopher, Cello, Chameleon, PCWindows, MacWeb and other Web browsers, making for easier and more flexible Internet navigation and information exchange.

The availability of Internet graphic-interface shareware has contributed to what is rapidly becoming a de facto standard in the way that information is formatted. The WWW (World Wide Web) is a collection of Internet nodes that use its HTML (Hypertext Markup Language) scripting language to create multimedia documents. These documents can be read via Mosaic and other Web browsers, and they allow interactive linking to other such documents at other WWW locations. Enter the Internet Underground Music Archive and Kaleidospace.

IUMA

The Internet Underground Music Archive, or IUMA, was founded a little more than a year ago in Santa Cruz, Calif., by two UC Santa Cruz students, Rob Lord and Jeff Patterson. According to Will Hobbs, who describes himself as caliph of marketing at IUMA, "We've been compared to magazines, record labels, radio stations and record stores. I think the best analogy is a virtual record store with listening booths. People can check out songs from the bands they're interested in, read all about the band—we have full biographical and contact information—they can view pictures of band members, album graphics, etc., and they can buy the record. We are an all-purpose music promoter on the Internet."

As of October, IUMA's membership included 350 unsigned artists and 15 labels, "with another 30 labels in the works." IUMA gets about five submissions a day from independent bands. Hobbs explains, "We index everything as best we can. We have a vision to get all types of music onto an even electronic playing field. We are music-driven: Our main goal is the legitimization of the electronic distribution of music. We're also the first to do full-stereo, near-CD-quality music on the Internet." And it's apparently a very popular idea. According to Lord, about 60,000 users download information from IUMA each day. And this does not even take into account those who have merely browsed the system.

That translates into MPEG Level 2 audio compression, an ISO-approved lossy compression algorithm that has been compared to that of Sony's MiniDisc and DCC formats. IUMA compresses 44kHz, 16-bit stereo audio (10MB/min) at about a 10:1 ratio; the resulting typical four-minute piece of music weighs in at five to six megabytes, with minimal loss in audio quality. Still, that's not something you want to download with your 2,400-baud modem. The company recommends a 14.4-kilobaud or faster modem, along with a SLIP connection and an Internet account. "We recommend that they go through their local service provider," Hobbs says. "They are usually cheaper. Another reason to go through a local service provider is that they will usually get real World Wide Web, graphic user-interface software."

Besides Mosaic, Macintosh users can use MacWeb. But IUMA's recommendation is a modified version of Mosaic called Netscape from Mosaic Communications Co. of Mountain View, Calif. Hobbs is enthusiastic about it: "The chairman and CEO [of Mosaic Communications] is Jim Clark, formerly chairman at SGI [Silicon Graphics]. It's fantastic; it's faster, and it's free." According to Hobbs, it has more design and formatting features, such as the ability to change fonts and sizes; when opening a page, first you get all the text, and then it loads any pictures into the pre-allocated layout, rather than waiting until all data is loaded before displaying anything; and you can listen to music in real time. "In the same way that you don't have to have the entire picture before looking at it," Hobbs explains, "you don't have to have the entire soundfile before you start playing it. It automatically decompresses the file as it's downloaded."

IUMA's graphical interface.

IUMA is set up to serve PCs and Macs, as well as Unix workstations. To play audio on a PC, you have to have a sound card. The PC decoding software for MPEG—called a XING Player—is free. You can download it from IUMA to your site. However, there's a minor problem with using MPEG audio compression on the Macintosh. While Mac-based MPEG playback software has been created (one solution was developed by Aware Inc., Cambridge, Mass.), none is commercially available as a stand-alone application. So, what do Mac-

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based Internet nodes do about audio?

IUMA creates low-resolution audio files for previewing music prior to making the big commitment to downloading. At 8-bit, 8kHz, this is a similar format to the one used for audio transmission by the telephone companies and is the only sound-playback option on the Mac at this time. Hobbs claims that IUMA's vision is to offer only CD-quality music, and AIFF is a poor compromise, because full-bandwidth AIFF files take up too much disk space. He was hoping that by Christmas 1994, a Macintosh MPEG-audio player will have been developed in-house and made available for free to users of the IUMA service.

Independent artists who want to be included in IUMA's service are charged a one-time setup fee of $75 to $100 to format one song, two pictures, one logo and two pages of biographical text. For a record label, it's all custom work, so the fee varies—somewhere around $1,000 for a year. There is no monthly fee for the basic service. "However," Hobbs explains, "there are monthly charges for extra stuff, like disk storage or download information for marketing purposes. They give us the CDs, stipulate the music, logos, headers, toolbars, play buttons, and we format it all together into a well-stitched label page. They can have sound bytes of artists and full songs, excerpts, and lots of other interactive features. We also plan to implement video in the near future. The result is a graphical user interface that is interactive and fun."

As Hobbs explains it, the conventional connection between the independent artist and the listener includes "agents and labels, producers and record stores, and the road between you and the record store." Part of IUMA's vision is to streamline that connection. The record labels and artists are responsible for providing ordering information to Net users; IUMA does not provide this service.

IUMA's founders realized early on that their goal did not include dealing with lower-quality music. "It was important to get out there and set a standard," Hobbs says. "Even though there's a huge download time with most systems today, as compression algorithms get better and bandwidths get wider, it'll be easier to experience this stuff in real time, and IUMA will be in a position to take advantage of that."

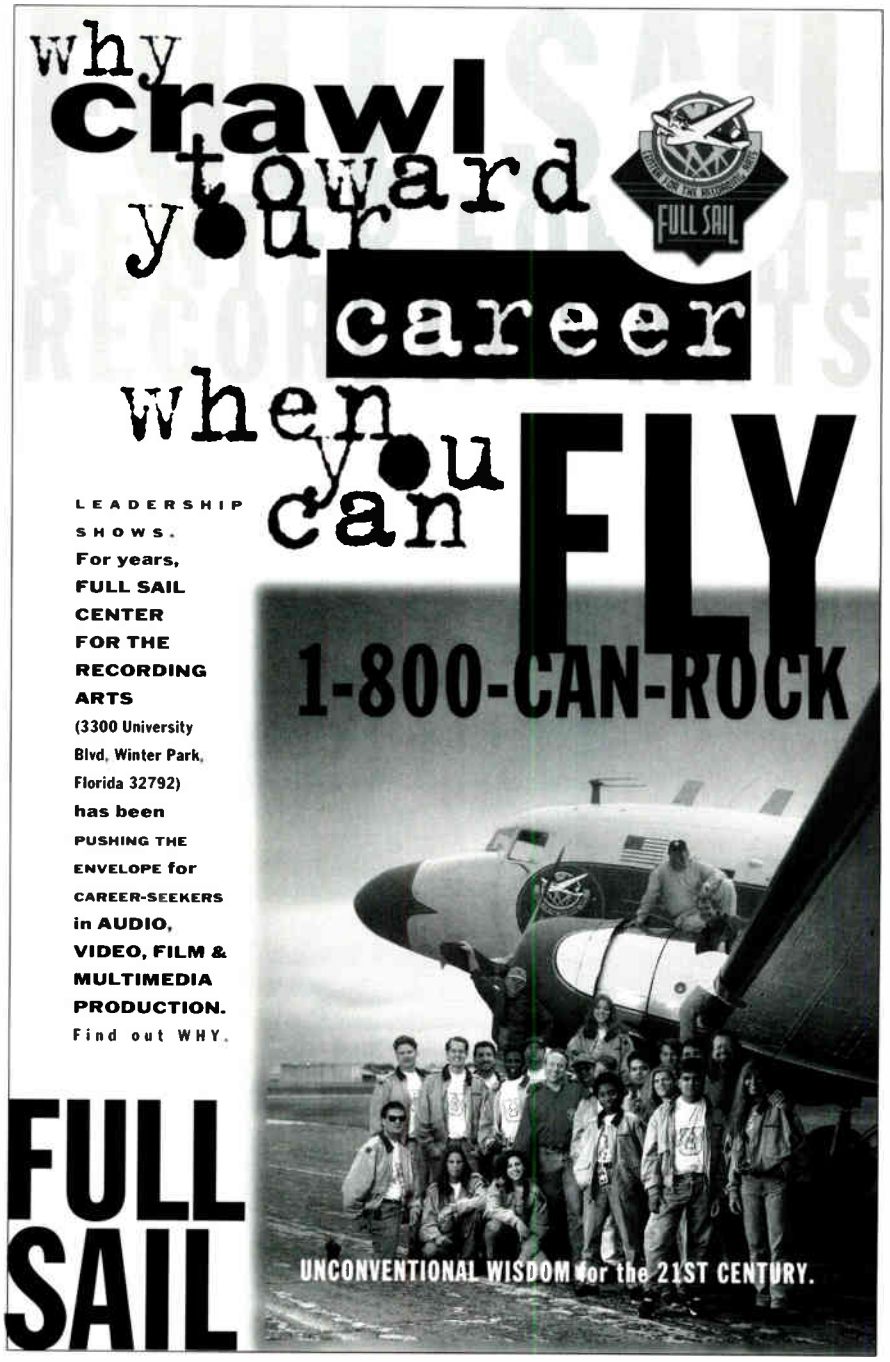
IUMA, 903 Pacific Ave., Santa Cruz, CA 95060; e-mail: iuma.com; World Wide Web: http://www.iuma.com/

KALEIDOSPACE

Based in Los Angeles, Kaleidospace is the brainchild of Jeannie Novak, an independent recording artist. After obtaining a degree in mass communications from UCLA in 1992, she designed and programmed Kaleidospace as an alternative means of music promotion and distribution. Novak's partner, Pete Markiewicz, says, "Before Kaleidospace, no one had specialized in designing an Internet site for the entertainment industry."

Novak adds, "We're interested in unsigned artists—self-produced independents—who have product. The field has moved from early adopters and independents to majors. We only put indies on our site. For example, one of our clients is Trauma Records, who has a band called Driver, which has a single out right now."

Kaleidospace also consults with larger record companies (they're currently in discussion with Sony, according to Novak), with the ultimate goal of building a virtual community. "We want them to come online,"



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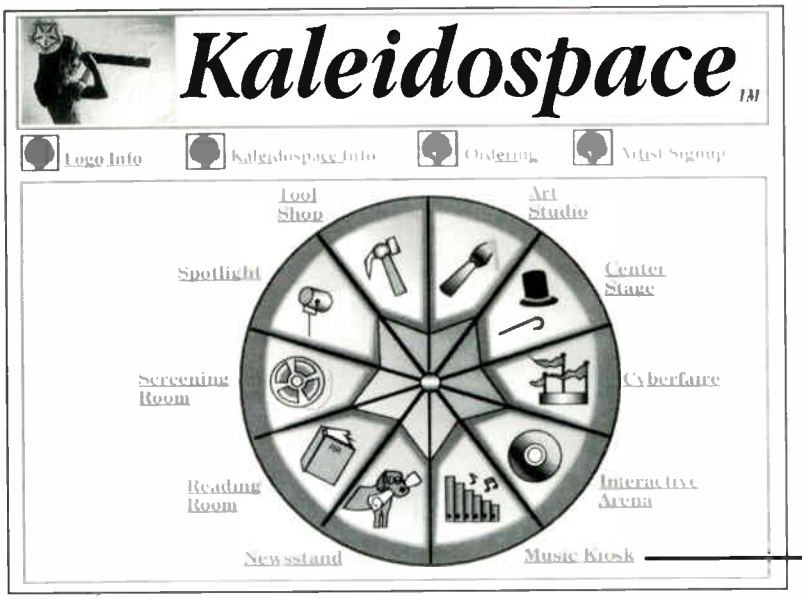
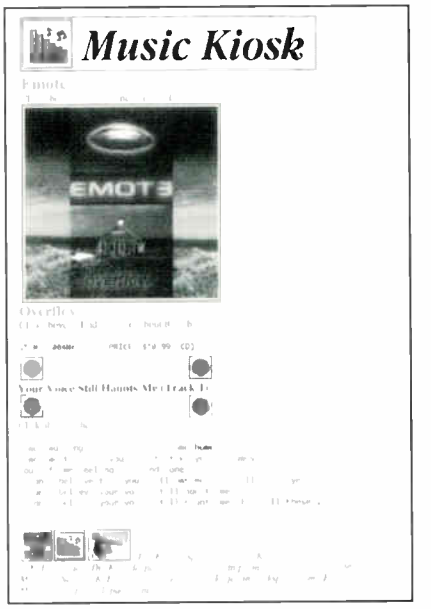
Novak says, "but we don't want them to be part of Kspace. We want there to be an American Recordings space and an A&M space. They can link to us and look at our site and maybe sign our artists. Some of our artists still want to get signed and not necessarily sell directly."

Kaleidospace's roster includes more than 50 independents, and it has established relationships with another 50 companies on a consulting basis. Setup fees vary according to what clients want to put online. Independent artists can have one sound clip and one video clip, plus promo information—including interview transcripts, sound clips and footage, concert information, bios, pictures—for a $100 setup fee and a monthly charge of $50. Each additional sound or video clip is an additional $25, with no increase in the monthly fee. The record company fee is double that. Clients are also offered the option of paying a 10% commis-





The graphical interface of Kaleidospace

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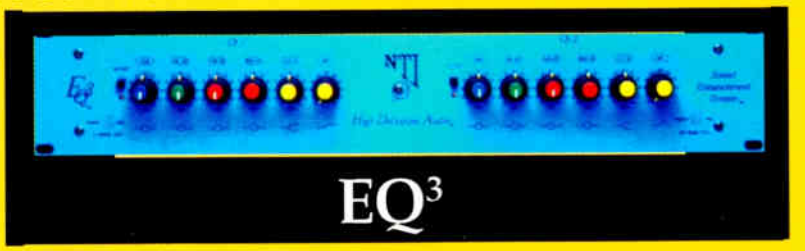

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The Studio 5000 takes its predecessor, the amazing DHP-55, a step further. With new features and programs crafted by studio pros, the Studio 5000 is sure to stir your creative urges. Here's what the people who make their living in the studio have to say about it.

"I immediately started doing things I never was able to do with my other processors"
KIM BULLARD

Excellent Pitch Shifting

John Ross, President of LA's Digital Sound and Picture needs quality pitch shifting for Foley without the artifacts of competitor's products: "... the 5000 sounds natural, just like 2 inch tape at half speed. We require high quality products for simple applications. The Studio 5000 fits in very well indeed." Digital Sound and Picture is an advanced facility using a Lan-based digital audio network and multiple digital audio workstations.

"It's like getting a whole new set of presets for your instrument"
DOMINIC MESSINGER, 5 TIME EMMY AWARD-WINNER, COMPOSER & PRODUCER

Sweeten Mixes, Add Depth

Five time Emmy award winning composer and producer Dominic Messinger says the Studio 5000 "makes the normal exotic". He uses it to sweeten mixes by using the regenerative pitch shifting Mix Imager programs. On drums he adds depth with detuning and dynamic filtering effects.

Creative Control

Clif Brigden, engineer for Thomas Dolby uses the Studio 5000 on Dolby's upcoming album and interactive video projects. "It sounds wicked right out of the box but lets you get to and change every parameter to make your own unique noises."

Leading Edge Special Effects

The Studio 5000 adds a futuristic edge to new animated series 'Phantom 2040'. Producer/composer Gerald O'Brien explains: "The 5000's Lush Chord Shifting algorithm is used on the main theme vocals while guitar and bass tracks get cabinet emulation and special effects. The robot voices are created using combinations of pitch shifting, flange and chorus." Gerald has scored over 22 shows including the successful Cobra series. His songwriting clients include Manhatten Transfer, Hall and Oates and Deborah Harry.

"It will be an indispensible product for musicians and engineers."
DHP-55 review
SOUND AND RECORDING MAGAZINE, JAPAN

"Imagine what music will sound like in 40 years - that's what we're working to create"
GERALD O'BRIEN

Guitar Effects

"They asked for a Jimi Hendrix type cue to go with a 60's acid experience... I quickly called up the Voodoo Wah program... and they loved it!" Larry Brown, TV composer, producer and Emmy winner uses the Studio 5000 to closely emulate guitars with his synthesizers.

Fast

"I have to write a lot of music in a short period of time and the Studio 5000 really helps me to achieve that" says Kim Bullard, writer, producer and session musician. He's using the Studio 5000 to help create the soundtrack for the upcoming film, 'Taxandria.'

"Sounds so deep, I'm still looking for the bottom."
CLIF BRIGDEN, ENGINEER FOR THOMAS DOLBY

Record Quality

The Studio 5000 gives Kim Bullard the detailed sound he demands. "A soundtrack album is also part of the Taxandria project so the cues have to be record quality" he says.

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sion on sales with no monthly fee.

"One important distinction between Kspace and IUMA," Markiewicz explains, "is that we are actually selling. We have order forms built into our system. If they get sales through Kspace, we just pass it on to them. We have a merchant account. We take the information, but we rely on the independent to do the fulfillment."

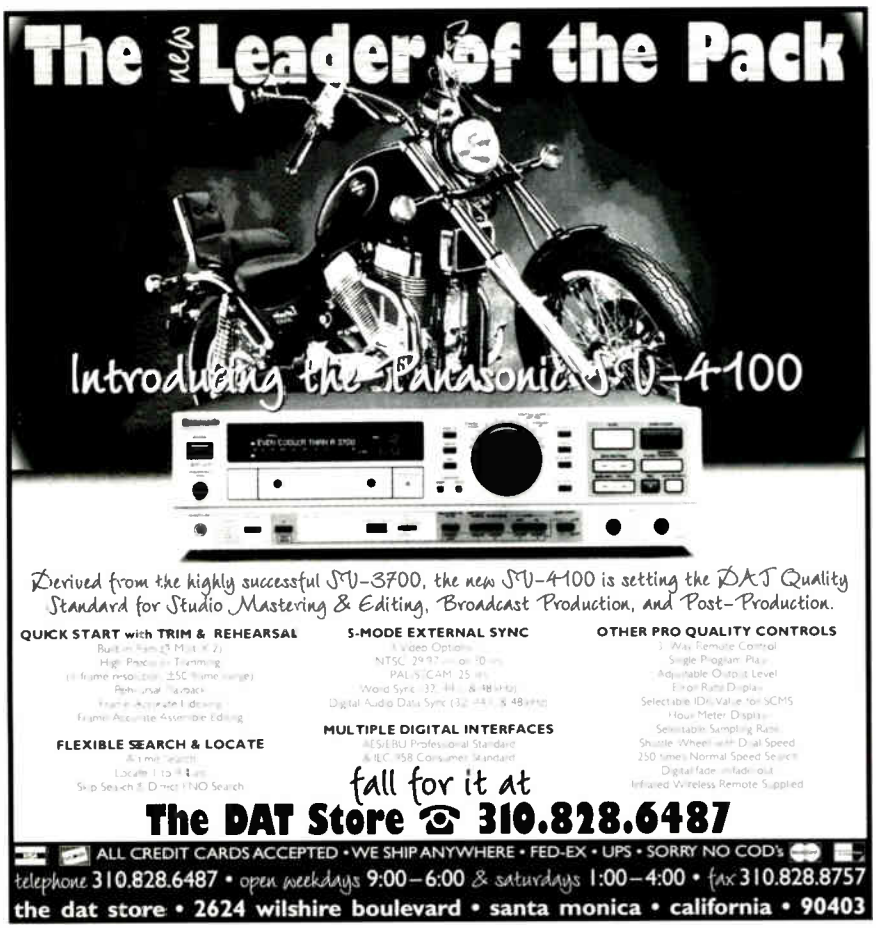
Another feature that sets Kspace apart from others is the incorporation of video on the site. "We're not using MPEG," Markiewicz says. "Our video clips are flattened QuickTime 1.6 movies at 10 fps and 160x120-pixel window size. Unfortunately, the MPEG video spec doesn't incorporate audio. QuickTime 2.0 is supposed to allow MPEG video with audio, but we haven't implemented it yet. Players for all platforms are available from our site, and they're all freeware or shareware.

"We use AIFF and .WAV format for our audio files," he adds. "Our standard resolution is 22kHz, 8-bit. We're considering doing MPEG, since it's so popular, even though Unix systems can play AIFF files. We generally don't digitize whole songs because we're trying to prevent piracy, and we're trying to minimize the downloading time. Our whole point is to sell the work, not to give it away."

It's recommended that Internet users who want to log on to Kaleidospace have a minimum 14.4-kilobaud modem and Mosaic or other graphic-browsing software, with a 486 or faster PC (or any Mac II or later model) and an Internet node with WWW access. Markiewicz notes that since Macs and Unix machines use AIFF for playing audio, while .WAV files are used with PCs, it's fairly easy to estimate their user profile in terms of platforms, which seems to be split about half and half. Their goal is to be compatible across all platforms, and with that in mind, their development system is a Mac, the server is a Unix, and they have a PC for testing purposes.

Kaleidospace, P.O. Box 341556, Los Angeles, CA 90034; (310) 399-4349; e-mail: editors@kspace.com; World Wide Web: http://kspace.com ■

Mix associate editor Paul Potyen wonders if he is the only person who has ever written an article about the Internet without using the term "Information Superhighway."



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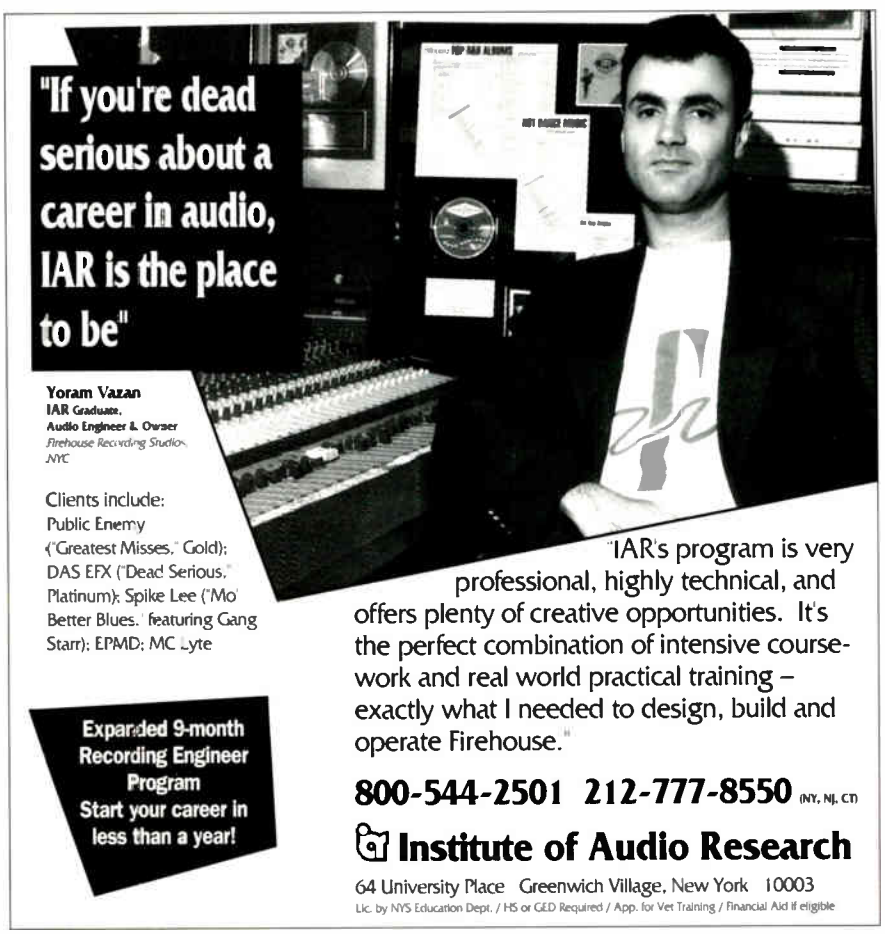

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by Philip De Lancie

MEET MEDIABAND

WILL INTERACTIVITY REDEFINE MUSIC VIDEO?

More than a decade after their acceptance as an essential trapping of rock stardom (real or delusional), music videos still dwell largely in the gray area between promotion, product and art. As product, music videos have had an erratic sales history since the RIAA began tracking them in 1989. Figures for 1993 (the latest available) put net units shipped at 11 million, up 44.7% over 1992. That number is a drop in the bucket compared to the 495 million CDs that shipped in the same period. But Marc Canter believes he has found the key to unleashing the form's true potential and launching the interactive TV industry in the bargain. If Canter's ideas spark the reaction he envisions, he may someday be viewed as the Einstein—or at least the Dr. Frankenstein—of 21st-century entertainment.

Canter was a founder of MacroMind, which has since developed into Macromedia, a leading vendor of multimedia production tools (Director, Authorware, SoundEdit 16, etc.). He cashed in his chips in 1991, and in 1992, he founded Canter Technology. Working on a project he calls Media-

Figure 1: Music video and interactive narrative in one, MediaBand's Undo Me offers a taste of post-millenial MTV.

World Radio History

Band, Canter has brought together like-minded souls who want to erase the distinctions between musicians and visual artists through the creation of music-oriented interactive experiences. With music that responds to the actions of users in rich graphic settings, Canter hopes to give the feeling of "playing" music to the vast majority of the populace who have no developed musical skills or talents. "What I want to do," he says, "is publish original, new interactive music videos that defy the term song, movie or game. They are, in fact, all three combined into one."

Projecting the impact of interactivity on music video—and vice versa—Canter says, "Music videos can now evolve beyond just being a marketing tool. They can now actually be a commodity, something that can be sold. That is what everyone always wanted them to be, but in fact, it hasn't happened. I believe that by adding interactivity—making it a game or an interactive story or something that you can browse around and experience—that is really the element that has been missing from music videos. It is the fulfillment of music videos. In fact, I look at it as something even heavier: the fulfillment of all multimedia, because it has interactivity and high production values, but it's not shooting or killing or driving. As rock videos were to cable, so will interactive rock videos be to interactive cable."

Figure 2: Tune in, boot up and drop out to House Jam's cyberdelic grooves.

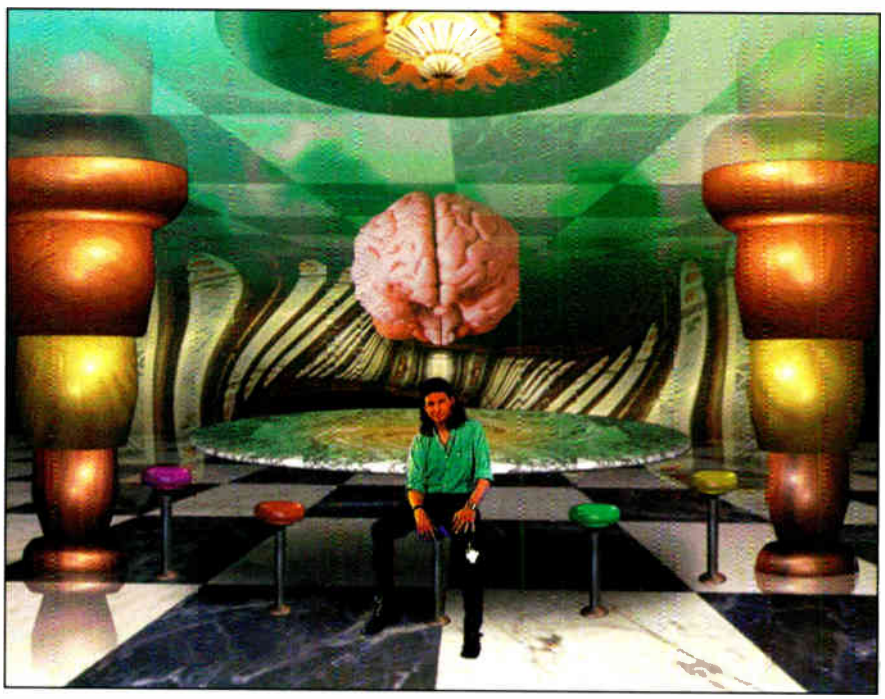

Figure 3: The Smart Bar—everything but the stale pretzels

PLAYING IN THE MEDIABAND

Recognizing that for the next few years there will be no widespread interactive cable infrastructure through which he can bring his ideas to the screen, Canter has projected three phases in the evolution of the MediaBand concept. The first phase, in progress now, is just reaching an important milestone with the release of the *Meet MediaBand* CD-ROM. The disc includes two interactive music videos, "Undo Me" and "House Jam," as well as a sampling of other MediaBand environments.

Undo Me is the section of the disc bearing the most resemblance to the current music video form. But Undo Me goes beyond the David Bowie and Prince (oops!) CD-ROMs, which allow the user, like a video director in an editing suite, to create an edit from several parallel tracks of source video. Instead, Undo Me lets you create the story line itself.

The first step in this interactive narration is to choose from four prospective romantic partners for the video's singer, Kelley Gabriel. As the song and story unfold, you pass through a series of 14 decision points, represented by snapshots along the bottom of the screen (see Fig. 1). These are places where you can heat up or cool down the developing relationship by clicking on either the ice cube or the flame flanking the main video window. Both the music and the video respond to your choices, with different settings for the song, varying in mood and feel, accompanying the different clips to which the video branches. The branching takes place at the end of musical phrases, though if you are really impatient, you can branch immediately by holding down the option key as you click. If you don't like the way things are working out for Gabriel, you can backtrack to previous snapshots or undo the whole relationship and start fresh. In all, Undo

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Me offers 26 minutes of video with 16 possible endings.

The combination of gaming and music elements is not limited to Undo Me; it informs the whole approach to navigating and exploring *Meet MediaBand*. As you move your mouse around in different settings, hidden graphic elements like pointing fingers or rotating spheres pop up, each adding a solo line over the underlying groove mix. Some of these elements take you elsewhere in the program when clicked; others simply add to the ambience. In "House Jam" (Fig. 2), you find yourself chasing and clicking the little bits of imagery zipping across the screen just to see what will happen. In the "Smart Bar" (Fig.3), you click on fellow patrons who pop up on the barstools to deliver pithy commentary intended to amuse the multimedia in-crowd. The music dips so you can actually hear what people are saying when they speak—not like any bar I've ever been in.

Overall, *Meet MediaBand* is clever, occasionally amusing, sometimes frustrating and often quite engrossing, if you are in the mood for a little random exploration. It is always visually interesting. The title is beautifully designed from a graphical point of view, merging the classical and the unexpected into a kind of cyber-surrealism. To accommodate those who find the interface too mysterious, online animated help is currently being added.

Meet MediaBand requires 8 MB of RAM and a double-speed CD-ROM on a "high end" Macintosh (a Windows version is in the works). The requirements are not unreasonable in today's fast-evolving market, but they may undermine somewhat the title's utility in spreading Canter's concepts to the general entertainment-buying public. "A key decision I made," he explains, "was that I was not going to bend over backward and sacrifice my content for technology. The disc works like an amazing charm on higher-end machines, but this product is not for the masses. That flies in the face of prior titles, which shoot for the lowest common denominator machines and let the content suffer. I don't want to do that. I'm developing content for the future, even though it may only be for some people in the present. This product is designed to be on the shelf for the long haul."

Even with QuickTime 2.0 (included), the quarter-screen video in the Undo Me section would not play properly on my 25MHz/040-based Macintosh. Canter acknowledges that he has had complaints from other users with Toshiba mechanisms in their CD-ROM drives. "I don't know why," he says. "It is somewhere between the Toshiba drive, Director and QuickTime." (He will give a full refund to anyone who can't play the disc on their system.)

The rest of the material, animated/integrated in Director, generally played back fine, with a few caveats. First, the wait times going from one section to another are fairly long. That's because Canter's approach to optimizing performance within each section is to preload all the media elements (except the QuickTime video) into RAM, rather than streaming material from the CD as needed. A by-product of this approach is that the title pushes the limits of available RAM in 8MB machines; Canter suggests that users with large system files may need to disable some extensions if they experience performance problems—a less than user-friendly solution. There are also a couple of minor bugs that Canter says are being repaired for what he calls the "final, final, final, final disc." He refers to the

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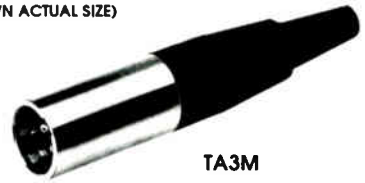

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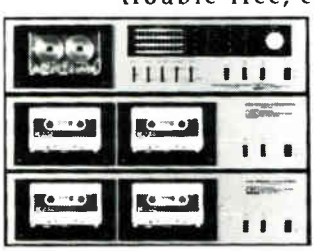

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first thousand discs he has already pressed (and was selling at the time of this writing) as "kind of like the final beta test."

Present-day performance on CD-ROM may seem almost beside the point, given Canter's long-range goals of positioning Canter Techology as an important content provider for interactive TV. But *Meet MediaBand* and subsequent CDs now in the planning stages have an important role to play in demonstrating Canter's concepts and establishing his company's credibility. The disc is currently sold direct ($55.30) from Canter Technology's toll-free number ([800] 381-0201) and at some San Francisco Bay Area retailers. Canter is working on widening its availability and has just entered into a distribution arrangement with Educorp.

"Think of us an independent record label," Canter says. "We are going independent right now, but if somebody wants to come in and offer me a better deal, great. But I have been turning down individual title distribution deals because I want a label deal. I have multiple MediaBand titles coming, plus my experience has been that there are plenty of other young media bands out there. I have already found three or four of them. So, I want to publish them, too.

"On top of that, probably the most important thing is: Who cares about these unknown media bands? What we want is interactive Janet Jackson. So that is why I want a label deal, because from that label position, and that relationship with a record company, I would have the in with the stars that I don't have as an independent."

MEDIABARS AND INTERACTIVE TV

With or without the major-label backing he craves, Canter is poised to move into Phase II of his master plan over the coming year. This is the "MediaBar" phase (planned for 1995-98), which Canter likens to the music video scene in the late '70s and early '80s before MTV became a staple of the cable TV diet. "We are going to start hearing about interactive music videos and interactive talk shows and wacky new capabilities of interactive TV," he says, "but none of us are going to have it. So we are going to want to have someplace to go to experience this new thing."

That place will be a MediaBar, a

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form of "location-based entertainment," where installations of networked terminals will allow multiple users to jam along with "House Jam," perhaps performed by a live MediaBand, or to collectively role-play in interactive narratives like Undo Me. "When you can play against other humans instead of a computer algorithm," Canter says, "it is a completely new level of game. I think that is why the online chat boards are so popular, because they are actually talking to other humans. It is humans interacting." The bars, which will also feature the old-fashioned pleasures of drink and dance, will initially be staged as temporary events and later evolve into permanent installations.

"I see these MediaBars as being a stepping stone," Canter says, "working toward interactive TV, which as we all know, is probably not going to happen until after the turn of the century. The MediaBar will be somewhere you could go to today, experience today and get a real good taste of what the future is going to be about."

Phase III of Canter's plan awaits the advent of interactive TV itself. Anticipation of that day is built into the design of the current products, though scaled down to meet the technical limitations of CD-ROM. "The *Meet MediaBand* disc and all the MediaBand products are designed as if they were a server on a database in an interactive TV system," Canter explains. "What I will do over the next few years is to put out subsequent CD-ROMs which all fit together like jigsaw puzzle pieces, building up the server. On a case-by-case basis, I can scale that content to fit the platform. For example, if I had an Apple interactive TV set-top box sitting on my desk right now, it would play the disc just as if it was on a Macintosh. But even though everything else would be the same, when you looked at Undo Me, the video would be full-screen MPEG."

Canter is also preparing for involvement in some of the test installations that cable operators are undertaking at various sites around the country. "In the next two weeks, SGI will be announcing details of what it is going to take to get on their system in Orlando. They are a long way away from having guys like me work within their system, but I am in line. For the ATT system, which is the Viacom/GTE test in Castro Valley, California, I am negotiating right now for them to pay me to port my stuff over."

Canter's plans may sound ambitious for an independent entrepreneur without major holdings in entertainment content or distribution, but Canter does not seem worried. Confidence is one commodity with which he appears to be abundantly blessed. He also has fairly deep pockets from his parting with Macromedia, as well as investment and sponsorship in various forms from companies such as Apple, Kaleida Labs, Radius, Opcode and Macromedia. Perhaps most important, he is one of the few looking at the information superhighway as a gateway to new and different experiences rather than simply a bigger pipe for tele-sewage. "I know that the current builders of the info highway are only thinking about shopping and movies on demand," he says. "We have an opportunity to position ourselves as one of the original providers of great interactive content." ■

Philip De Lancie is a mastering engineer at Fantasy Studios, in Berkeley, Calif.

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TAP NOTESCAN SOFTWARE

Temporal Acuity Products, of Bellevue, WA, has released NoteScan, a Macintosh software program that when combined with a Mac-compatible scanner (flatbed, sheetfed or handheld), allows users to scan sheet music into TIFF files, to be imported into TAP's Nightingale music engraving software. Scores can then be edited, transposed, republished or exported as Standard MIDI Files. NoteScan is offered as a utility with TAP's Nightingale 2.0 ($495).

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Maxi Switch Maxi Sound

MAXI SWITCH MAXI SOUND

Maxi Switch Inc. (Tuscon, AZ) announces the Maxi Sound multimedia keyboard. In an attempt to eliminate cable clutter by putting all components into one unit, the Maxi sound is an extended computer keyboard equipped with stereo speakers, an omnidirectional microphone and a master volume control. Designed as a complete input/output center, the keyboard is also equipped with sound management features, including a universal audio input jack and an audio output jack, for users looking to add additional devices. Retail price is $99.

Circle 202 on Reader Service Card

ALPHA SYSTEMS LAB MEGAMOTION

Alpha Systems Lab (Irvine, CA) introduces MegaMotion,™ a multimedia video card enabling the user to use two separate, full-motion video inputs (one live and one compressed) and display four different moving images simultaneously on a desktop PC. MegaMotion also provides image-capture capability with real-time, 30 fps video capture at a resolution of 320x240 pixels. JPEG video compression is used to improve disk utilization for image storage. The package comes with Adobe Premiere for Windows.

Circle 203 on Reader Service Card

STEINBERG'S RECYCLE

Billed as a specialized software tool for people using sampled loops and grooves, Recycle, from Steinberg Jones (Northridge, CA) is a Macintosh-based application that performs a wide variety of digital processing tricks on drum and percussion soundfiles. After separating a file into rhythmic components, Recycle assigns each slice to a MIDI note number and creates a key map. The tempo, the "feel," the pitch, and many other parameters of the file can then be modified. The resulting file can be transmitted to a sampler as sample files and a program file. Minimum requirements for Recycle are a Macintosh SE/30 with 4 MB of RAM and a hard disk. Sound Designer and AIFF formats are supported, as well as SampleCell, SampleCell II and most samplers from Akai.

Circle 204 on Reader Service Card

FAST ELECTRONIC DP/R

Fast Electronic U.S. Inc. (Redwood City, CA) announced a nonlinear/linear "hybrid" editing system, capable of real-time mixing between both digital (hard disk) and analog (videotape) sources. In a single board that installs with Fast's Video Machine, the Digital Player/Recorder (DP/R) lets the user compile an EDL, then master from original videotapes, with real-time A/B roll wipes, DVEs and dissolves. The DP/R's integration of two onboard SCSI-2 controllers eliminates bus bottlenecks and delivers a broad range of compression levels (from 100:1 to better than 3:1). The Single DP/R retails for $5,750, and the Double DP/R retails for $6,995.

Circle 205 on Reader Service Card

TURTLE BEACH TROPEZ AND QUAD STUDIO

Turtle Beach (York, PA) announces two new products: Quad Studio is an affordable 4-track recording system/MIDI Time Code generator for Windows. Recording directly to the hard disk, Quad features Turtle Recall™ and Quad sound editing software Wave Tools. Quad Studio retails for $499. The Tropez is a high-quality, game-compatible sound card with digital audio and professional MIDI synthesis. Tropez is priced at $249.

Circle 206 on Reader Service Card

PERIPHERAL LAND 15X QUICK CD

In order to meet the high-speed demands of multimedia users, Peripheral Land Inc. (Fremont, CA) announces a proprietary CD-ROM controller that transparently allows 1x, 2x, 3x and 4x CD-ROM drives to achieve 15x speeds.

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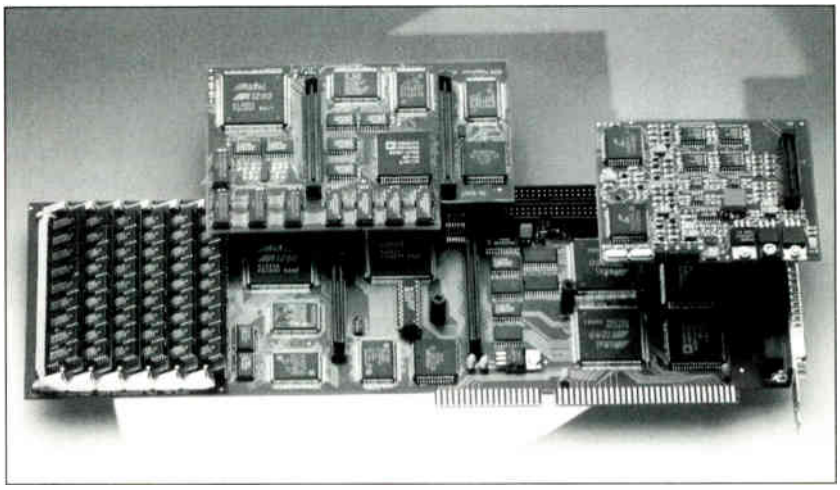

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BY TOM KENNY

POST·SCRIPT

SOUND FOR FILM

Pet Theories

by Larry Blake

Excuses. When things go wrong, everyone has a constant supply of them. What Mark Twain said about the weather—everyone's always talking about it, but nobody ever does anything about it—accurately describes how people in film sound deal with problems in these days of high-tech pioneering, or should I have said pioneerring. All you hear are excuses, excuses, with everyone using the act of creating an alibi as *deus ex machina*. The problem is that excuses don't save you; they make you look even more foolish by skywriting your mistakes to the world.

After a while, you begin to see patterns in screw-ups and their subsequent rationalizations. This month's column takes a look at three theories that I feel can be used to describe a large percentage of mistakes and misunderstandings that occur these days and, more importantly, how to deal with them effectively.

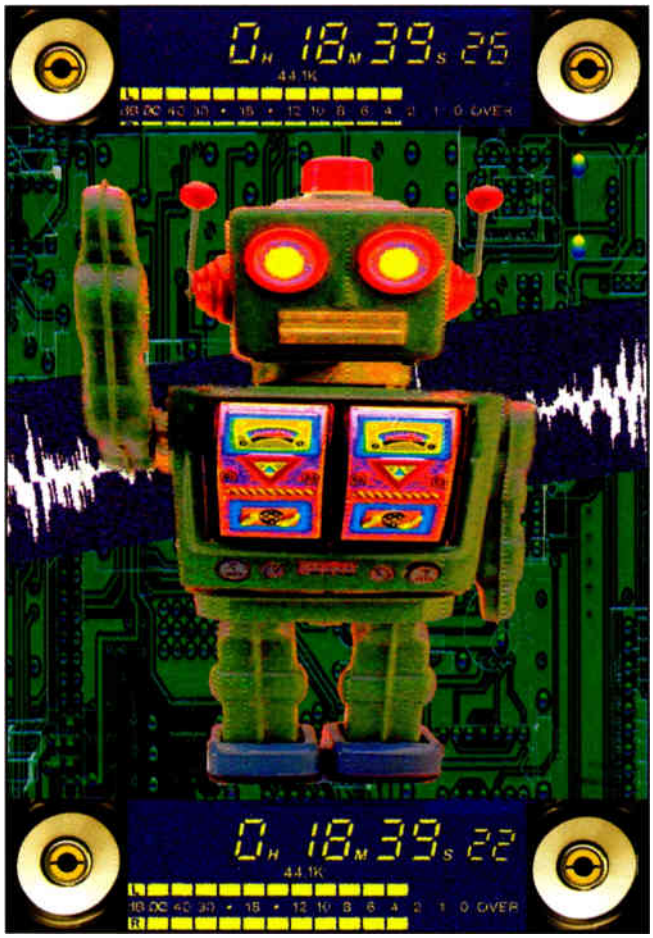

ILLUSTRATION: TIM GLEASON

NUMBER ONE: *THE GREEN MARTIAN THEORY OF EMPIRICAL PRECEDENCE*

Let's say that you are working at a facility for the first time, and you describe to them how you would like the session to run—how the monitoring is to be set up, the outboard gear you want, how you want to align the recorder, and so on. The chief tech will proceed to pummel you with questions about why you want to work the way you do, not out of sincere interest to better understand your motivations, but to put you on the defensive and make you answer to him.

This line of interrogation won't go very far before said chief propellor head will tell you that what you want is not going to work. Politely informing him that you have found this an effective way to work will not register as a blip on his intelligence radar. Nor will sternly telling him that whether he likes it or not, this is how this session is going to run.

The problem is that some people are simply unable to grasp what they haven't seen, like, for example, a green martian. You can explain that you have seen them hanging out at your corner drug store all the time and that they're really quite likable guys and gals. You can't remember when you didn't know a green martian. You know you're right, but you can't seem to convince said tech. It all boils down to trust.

I have a simple way of dealing with these situations when I walk into an unfamiliar facility: I let them know that if they tell me that they are ever absolutely, 100% sure, and I am not, that I will defer to them. And, by the way, I expect likewise. It's silly to make what should be a simple technical discussion into a game of high-

—CONTINUED ON PAGE 107

World Radio History

Sound Design for "Disclosure"

by Maureen Droney

If you saw *Jurassic Park* or *Rising Sun*, you know that Michael Crichton's stories always seem to have a twist, a kind of left-field perspective that makes for interesting movies. *Disclosure*, the newest film adaptation of one of his novels, is no exception. Scheduled for a Christmas release, *Disclosure* tackles the theme of reverse sexual discrimination, the situation where a man is sexually harassed by his female superior. The plot unfolds in the tense, high-pressure corridors of modern corporate life, and *Disclosure*'s sound editing team experimented with new ways to highlight the tension and emotion.

The Warner Bros. release stars Michael Douglas and Demi Moore and was directed by Barry Levinson of *Bugsy* fame, with soundtrack design created at EFX Systems in Burbank. Leading participants in the soundtrack production are associate producer James Flamberg.

—CONTINUED ON PAGE 108

PHOTO: ELIZABETH ANNAS

PHOTO: BRIAN HAMILL/COURTESY OF WARNER BROTHERS

***Right: James Flamberg, supervising sound and music editor, with Harry Cohen, sound effects designer (striped shirt and hat); Below: a scene from* Disclosure**

Making the Most Of Effects on CD

by James D'Angelo

CHOOO CHOOO...CHUG CHUG CHUG...Did you see that? These trains are getting faster and faster. Even in brand-new Adidas Runners, my sound crew can only grab a second or so before their huffing drowns out the train sounds. I can't EQ that out. Give me effects libraries! But, give me new sounds!

To sound editors, this is one reason to bag that lunch every day and trot off to work—the need to create new sounds. Advertisers, music producers, composers and filmmakers all want to prick up our ears and grab our attention, because admit it, sound is just another case where reality can be somewhat lackluster. It's hard to imagine that Darth Vader would have been nearly so imposing if he sounded like Abe Vigoda.

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—CONTINUED ON PAGE 110

ILLUSTRATION: TIM GLEASON

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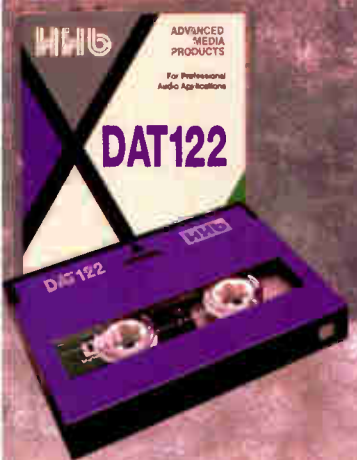

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—FROM PAGE 104, SOUND FOR FILM

tech poker, wherein you have to call each other's bluff, but if that's what it takes to both gain someone's trust and get the job done, then so be it.

NUMBER TWO:
THE DOG ATE MY HOMEWORK THEORY OF WORKSTATION BACKUPS

These fun and exciting days of new high-tech tools are often followed by long, dark nights of dealing with problems. As technology advances, we are masochistically cramming more and more work into smaller and smaller areas. With mag editing, the worst thing that would happen was the box carrying the dialog units for reel 3 falls off the back of the courier's pick-up truck, spewing reels up and down LaBrea Avenue. Now we're in the position to store—and lose—all the dialog for a whole feature on a single 9-gigabyte drive.

And where the sound files themselves can be loaded in again from the source reels, the three editor-months of work that goes bye-bye with one disc crash are not so simple to replace. And rest assured that you will have about as much success creating an excuse for what happened as you did in grammar school when you tried to convince Mrs. Hairbun that your dog ate your homework.

The good, and bad, news is that the solution to this problem is very simple (aren't they all!): back up your work religiously. Alternate backup tapes on a daily basis and take a few extra seconds to write down the date and exactly how much work the tape contains. For example: "11/2: R-1AB DIA—900 feet," or "11/2: R-1AB DIA, V4 Conforms Done." I like to keep a list on the "J card" of all backups that this tape has recorded.

And, of course, remember to keep a set of backups off-site. You can't afford not to.

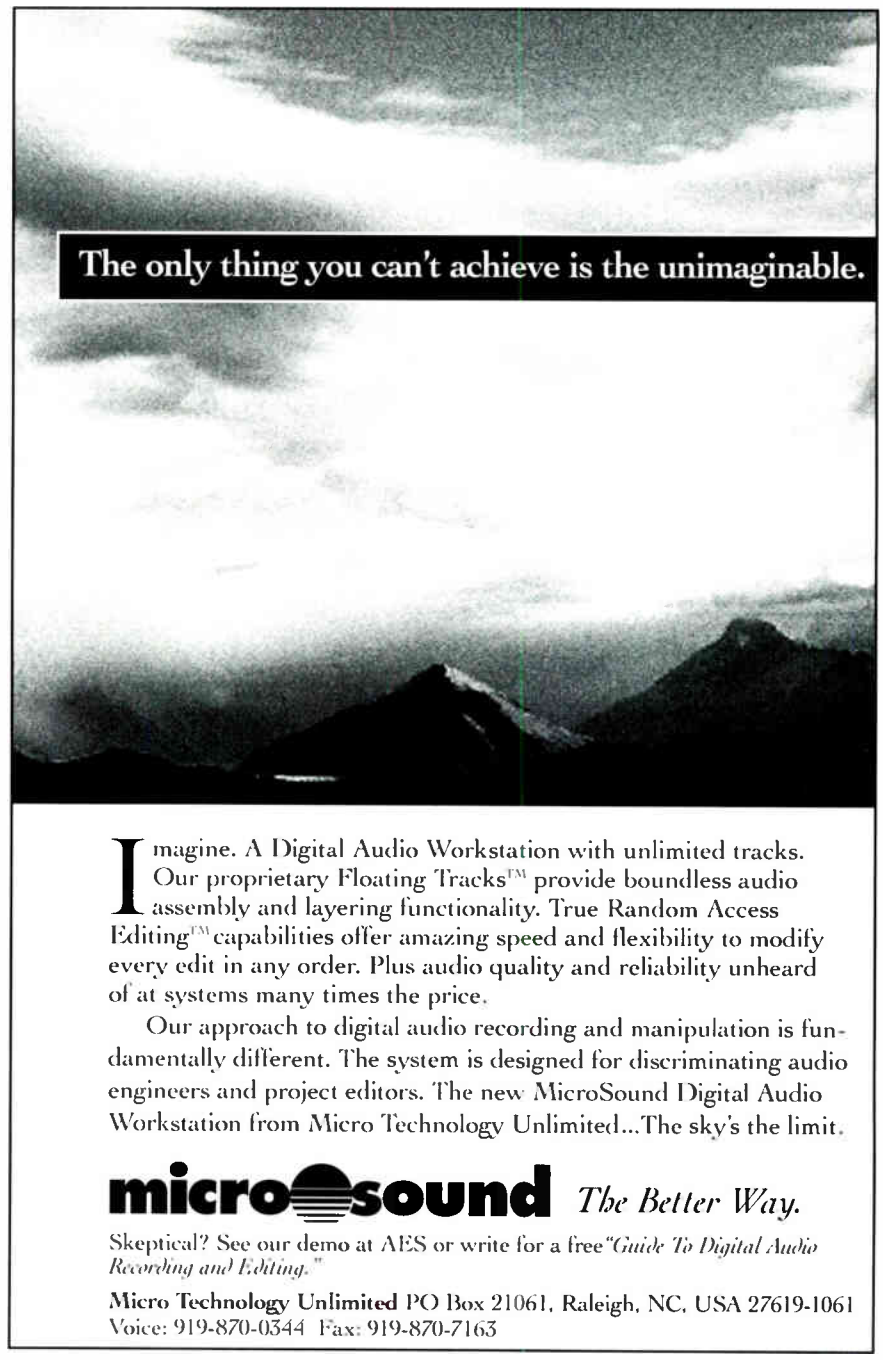
NUMBER THREE: *THE ROGER MARIS THEORY OF EXCEPTIONS*

In a perfect world, we would be able to do all of our own recording, editing, mixing, transferring and projecting. At every step of the way, we would know what had gone into the work and how it should be handled, and eventually we would get so spoiled that we wouldn't write anything down. We would just *know*.

Well, boys and girls, this is not a perfect world, and people *don't* know. The best that we can hope for is that they can read, which makes knowing possible. (Are you still with me?) You know what I'm talking about here: documentation. The safest method of writing down what you have done is to follow the golden rule of film sound transfer: Assume unto others as you would have them assume unto you. Most of the time, we're talking about simple stuff like track assignments, reference levels and time code information; an operator with even average skills will figure out what we were up to.

However, we often create big-time problems, regardless of the quantity or quality of documentation, when we change procedures in midstream. Instead of being able to say "the print master is on tracks 21 and 22," you have to say "*except on reel 6." This is what I fondly call a "Roger Maris," named after the New York Yankee who hit 61 home runs in 1961, eclipsing Babe Ruth's record of 60 in a season. The only problem was that Maris took 162 games, but the Babe did his in 154. For years, Maris has had an asterisk next to his record, indicating that he needed eight more games.

Thus, we should try to throw



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people who will be handling our material as few curve balls as possible. Sometimes they are unavoidable, and we can only make absolutely sure that our colleagues know what we're up to. A production mixer buddy of mine, when recording a show with Dolby SR on the ¼-inch Nagra tapes, will sometimes have to go *sans* SR in the interest of portability. In those instances, a good production mixer will do everything short of informing the transfer person's mother that Sound Roll 79 is *not* SR-encoded.

But, whenever possible, it's best to "hit all of your home runs in 154 games." And while that won't eliminate the possibility of something going wrong, you'll be most of the way there.

Please send along your pet theories directly to me at PO Box 24609, New Orleans, LA 70184; fax: (504) 488-5139; or via the Internet: swelltone@aol.com. ■

Larry Blake is a sound editor/rerecording mixer who lives in New Orleans for reasons too numerous to mention, although movie theaters is not one of them. New Orleans is the worst movie-going major city in the United States, if not the world.

—FROM PAGE 105, "DISCLOSURE"

who is also both supervising sound editor and music editor, and Harry Cohen, who serves as primary sound effects creator. *Mix* spoke with Cohen and Flamberg as they readied for an all-nighter at EFX Systems, finishing up some crucial scenes before Flamberg caught a plane for Rome to record *Disclosure*'s musical score with composer Ennio Morricone in Italy.

Cohen, whose recent credits include *The Mask*, said, "Because of the tension between the primary characters and the overall psychological feel of the film, I cannot be overt with sound. Instead, I've developed a palette of subliminal sounds that create mystery and tension. We've even hidden and replaced sounds inside other sounds to create a degree of mystery and 'edge.' At EFX, we always try, when it's appropriate, to address what we consider to be the subtext in a film, quite apart from a door shutting being just a door. We use other sounds, which can add impact or give us the right mood or emotion.

"The picture that you are looking at sets you up to expect a particular sound, so no matter what we put there, you are going to accept that sound," Cohen continues. "On *Disclosure*, nothing is overt; everything grows out of the natural sounds in the track. One twist we tried to put on it that's really subtle is that the office presents itself, as the story reveals, as not just a place where you go to work, but also as a place where you are fighting for your life, almost a jungle. And sure enough, the director saw fit to, in several establishing shots, focus on the lion's head that is over the entrance to the office building in Seattle. So, since we're on the street there, why not drive a truck by and use the truck to disguise a lion's roar? It's more lion than truck, but it's kind of like, 'Did I hear that? No, it's just a truck going by.' There's a lot of that.

"In the harassment scene, we built sounds into the environment," he adds, "even down to the room tone. Instead of a ventilation sound, the room tone is actually made up of loops of women sighing. And right down to hiding little subliminal words behind the dialog. When someone bangs against a table, the reverb on the bang isn't really reverb, it's a processed woman going 'Aah.' We worked a long time to build these layers, it's really sneaky stuff. When I play the scene back to somebody who doesn't know it's there, they get the feeling from it, but they don't really hear it. It's hidden so well that even when it's loud it doesn't call that much attention to itself. It kind of surrounds the scene, as Jim Flamberg would say, in a 'gauzy halo of sexuality.'"

Cohen laughs and continues, "We brought in voice talents. I had women in here performing orgasms for days. Guys, too! And we work with that as source material so we can shadow [the actors'] breathing and their exclamations. There's all sorts of stuff in that [harassment] scene."

The team primarily edits on a Synclavier, laying effects to a stack of three Tascam DA-88s. "For this film," Cohen comments, "we generally used 24 tracks for backgrounds and 24 tracks for effects, but in a few reels

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we went an extra eight tracks wide. A large part of the nuts and bolts work in this movie was creating a nice set of environments and ambience for the office scenes—layering different air spaces, tracks of ambient footsteps and phones. We're trying to put a lot of stuff into the soundtrack that has real air space on it instead of just a library effect of a phone ringing with added reverb. We also recorded several different offices at different times of the day.

"The set for this film was three stories tall with different offices," he continues, "so there was this large air space sound, and then there were smaller, tighter places with a carpeted floor. We wanted to be able to have variety and create a better sense of the geography of where we were, and also to get the concept that the higher up you were in the company, the less noise you had in your office. I spent four days in Seattle, which was really good, because they did a lot of scenes in the Seattle Metro and a lot of stuff on the ferry, in the public market, in different buildings, and on the street.

"I didn't attach myself to the production," Cohen adds, "because usually they'll never shut up to let me record ambient sounds. But I took a DAT and a couple of microphones—the Neumann 190-i is one of my favorites—and we spent a lot of time just going to those places and getting what I felt I'd need. I tried to be a sonic tourist. What does Seattle sound like? Seagulls downtown, boat horns all day; the city has a tone to it, an actual tone in the background. It doesn't sound like Chicago or New York. We recorded the ferry, and the ferry horn from right next to it, but I must have recorded 30 versions of the horn, everything from right next to it to what it sounds like when you hear it from downtown. It's really nice to have those sounds with real distance on them. It makes it so much less self-conscious when you lay it in as part of the background. Your ear accepts it better."

Flamberg took time out from packing his suitcase and gave us a few more details. Having worked with Morricone on *Bugsy*, he is familiar with the studio where the orchestra was to be recorded. Called The Forum, and built under a church in one of Rome's squares, it's Morricone's home-base studio. "No, it's not like what you would imagine," Flamberg laughs. "It's not damp and dark with torches on the wall!"

Commenting on the subliminal and subtle sounds in the track, Flamberg says, "That's a very big component to the movie, for us at least. It's like paying homage to the subliminal dictum that you know you've done a good job when nobody's noticed what you've done. It's not good if they come out and say, 'I really noticed!' In this movie, it's better that they just feel on edge, or at least placed into the subjective experience of our main character, which is really what we were hoping to accomplish. The guy wakes up ready for his new day at work and all these promotions coming his way, and everything basically turns horrible on him. It goes from bad to worse. And we tried to approximate, with the sound, his growing alienation and, to some extent, a touch of paranoia and a bit of ambiguity. How he's haunted by the sexual harassment with his boss. We'll try to suggest it as echoes of that night that

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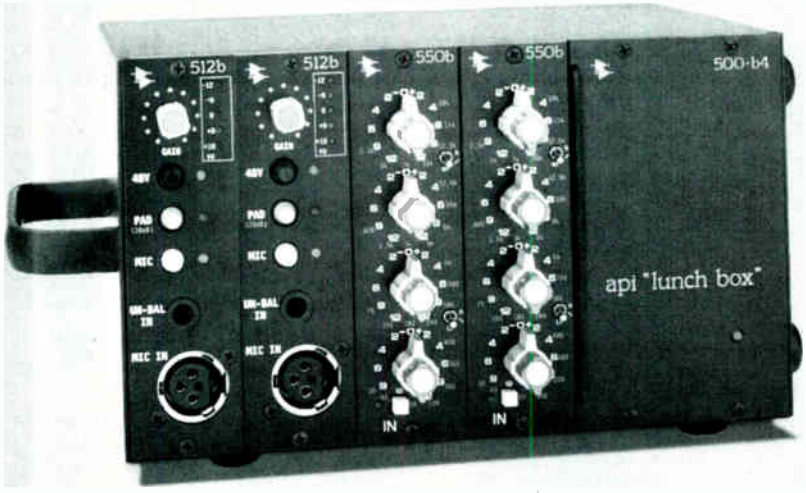

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he might hear. Of course, it will be very subtle, and whether it's used will depend on Barry Levinson's reaction to it."

When asked to describe his favorite aspect of the film's sound design, Flamberg concludes, "The realm of using voices—background murmuring and various types of nonverbal vocal sounds—to suggest things was the most fun, but it was also the most difficult. If you are trying to influence people subliminally, you have to find ways to mask these sounds so that they don't stand out on their own. That's the challenge and the interesting part." ■

—FROM PAGE 105, EFFECTS ON CD

ago, hundreds of thousands of sounds have been recorded and offered to consumers through CD libraries. More and more, these libraries are being used to supplant Foley artists. The sounds are already recorded; all the user has to do is link them up to SMPTE and move on to the next car door slam.

But just as reheated cabbage can loose its crispness, the same car door sound can lose its pizzazz when reused dozens of times. Enter the sound editor. These folks take sounds from the real world and effects libraries, and they layer, stretch, shake, twist, flip, crop and wrangle sounds to give clients the proper emotion and feel.

For a major theme park's TV commercial spot, Bob Bennet, of Skyview Film & Video in Chicago, wanted to emphasize the idea that there was very little time left in the season. "The commercial was cut up to give it a hectic pace," Bennet says. "The cuts were speeding up, and the announcer's voice was locked to the changing cuts of the picture. So I took a droning sound from one of the libraries and had its pitch rise throughout the spot to give it the feel of an engine revving up—building tension. Using Sample Cell, I took music hits from the libraries and pitched them down with added reverb. I locked the results up to the cuts in the picture via SMPTE. On each cut, the hits popped in. It had a great effect. Of course, some of the library stuff I used dry, like the screams, splashes and roller-coaster stuff. But I do a lot of layering.

"For an upcoming electronics spot," he continues, "I combined four different sounds—low synths and spacey sounds—and then toyed with the attacks to achieve a bizarre pulsating thing, which I used to build suspense. The whole track built up to one moment, and then BANG! Then there was a reprieve—the moment after the bang. I got my sound for that from a library, too. It was a female 'aaaaah' sound."

Stephen Dewey of Machine Head in Los Angeles says that although sound libraries are infinitely useful, they can also be the kiss of death. "They are habit-forming, and you have to remember to do something exciting with them," he stresses. "I go to libraries right away for the literal stuff [dog barking, car door shutting, etc.], and it frees me up so that I can spend my time thinking about the more abstract parts or giving some of the sounds more attitude.

"Nearly everything after that initial step is layered," Dewey adds. "I mix brake squeaks with ringing, Tibetan voices with a didjeridoo, voices with truck sounds, a closing door with an explosion. After I get the literal stuff done, I work on the emotions, and this is where the layering and sound design is really helpful." Many times he mixes his own recordings with the material on the libraries to provide extra texture. "Sound design is not about the

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Ah, decisions, decisions. You want to buy a new multitrack recorder, and you want to go digital so that you'll get the best possible sound quality. And you'd like to buy a hard disk recorder, rather than tape, so you can get random access editing power. And finally, it's got to be something you can really afford. But there's a problem.... don't all hard disk systems require expensive add-in hardware and software, to already expensive computers? Not anymore!

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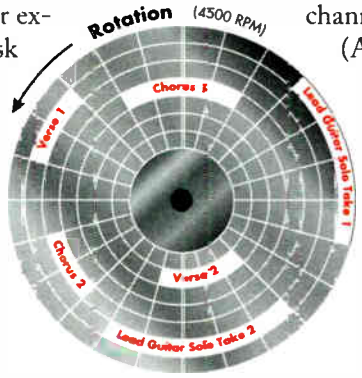

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workstations," he explains. "I could sound design on a hammer and nail. Sound design is what you do with all the sounds you have. Sound design is wrangling the conventional sounds to give them attitude or conveying an abstraction."

Jonathan Helfand, of Jonathan Helfand Music in New York City, is a big fan of sound effects libraries. "These guys will use every conceivable mic in every location," he says. "I've got entire CDs of train sounds—whistles, brakes, hell, they even got gnats hitting the front windshield...not really, but it seems like it."

Helfand's company does scoring, sound design and audio for TV and radio. "I did these spots with sports themes—basketball, golf and tennis—and they wanted really emphatic sound," Helfand explains. "I ended up cutting up the sounds entirely; I took the attack of the golf swing, mixed the hit of the wood on the ball with an iron door, and when the ball took off, I mixed that with an F-14 taking off from an aircraft carrier. It really blew the clients' minds. I had to play with the decay of the iron door so that it would blend into the F-14, but once it did, it sounded great. A lot of the stock sounds are incredible, but to add the emotion, you sometimes have to do some tweaking.

"A few years ago," he adds, "I did this real cool thing where the spot started with some typical urban scenes and sounds: dogs, cars, basketballs, dump trucks, brakes squeaking, doors slamming, a jackhammer. As the spot progressed, all these sounds kept repeating until they actually formed a rhythm. Then, as this rhythm got tighter, we faded in this doo wop group. It was great. I love libraries—they have an incredible spectrum—but I spend a lot of time running them through outboard gear to give them a unique feel. I do a lot with signal processing."

So, sound effects libraries can be the kiss of death, but they can also be the saving grace. But one thing is for sure: Nearly everybody is using them somehow. To sound editors, effects are merely a starting point, or just a piece of a soon-to-be-very-different invented sound, and they can definitely save the legwork of running after that train. It's all in the attitude and the emotion. ■

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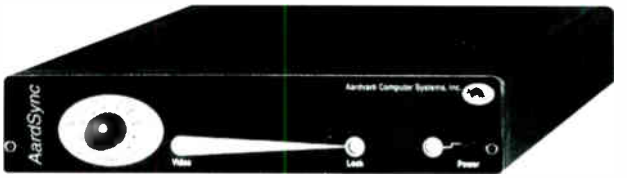

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by Dan Daley

REMOTELY SPEAKING

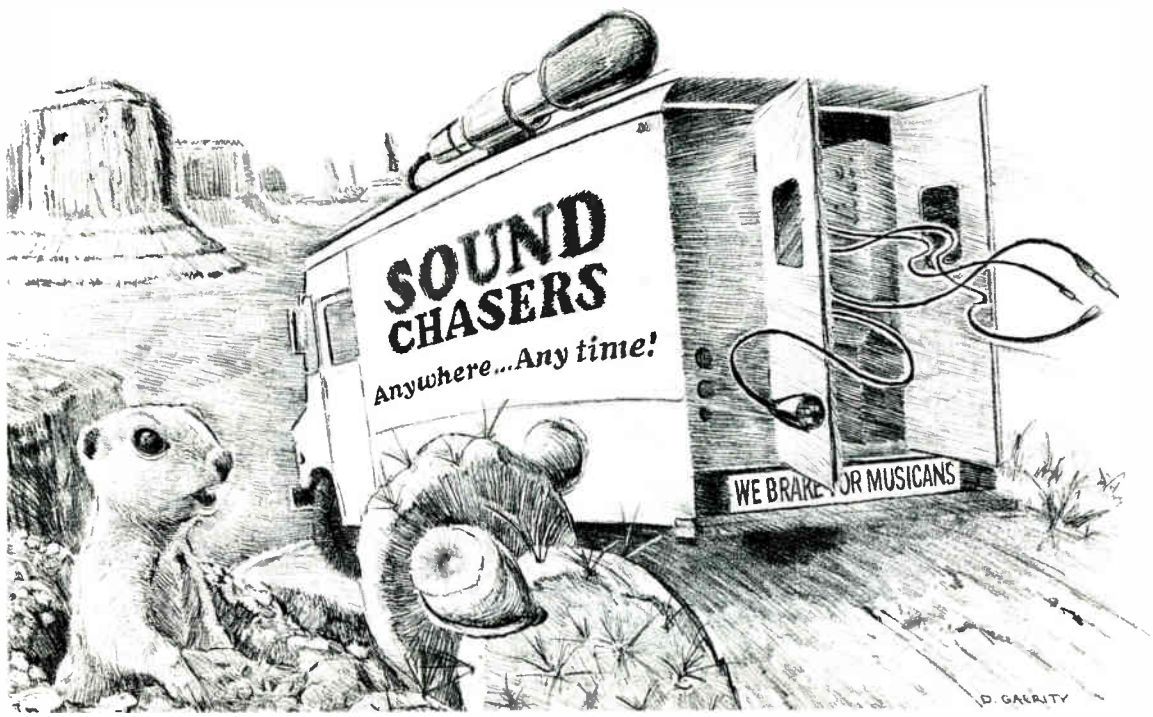
MORE MDMs ON THE ROAD

Remote recording is undergoing significant changes, thanks largely to the advent and proliferation of MDM devices. In an earlier column, I discussed this phenomenon and its implications: smaller trucks, greater accessibility for new service-providers and clients, and lower rates. It seems that most of the aspects of the project studio phenomenon are now being applied to location work. Yet, the basic tenet of project studios seems to be missing from this arena: Those getting into remote recording are not doing so to support their own projects. So, MDM-based remote recording ends up smack dab in the middle of the commercial camp.

As a matter of fact, it's brought a few individuals back into that camp. Charles Buchanan started a 16-track, open-reel remote recording service, Metro Audio, in Detroit in 1964 but left the business seven years ago because of the cost of upgrading. He has nine Gold and four Platinum albums to his credit, and now he is back in business, in Winterhaven, Fla., using an ADAT system and his original custom Audio Design console in a 1972 Chevy step van with a 12-foot trailer.

"They're smaller and a lot easier to set up," says Buchanan of the MDMs. "I get a lot more room for outboard equipment and video." Metro has a client base of bluegrass festivals and small groups that make use of Buchanan's continuous recording approach of using four ADATs for 16-track projects, cueing up one pair as the other pair records.

Dan Coleman, chief engineer with Keywood Portable Recording Studio in St. Louis, runs a small van with an ADAT setup through a Mackie 2408 console. The system is hooked up via Elco connectors, allowing it to shuttle between the remote and fixed applications, where he does local



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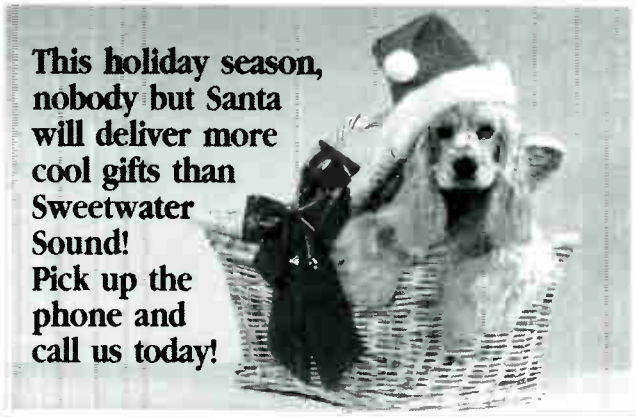

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bands and audio for film.

"I guess by default we're a commercial operation," Coleman says. "We wouldn't have done a remote operation without this kind of technology. It would have been too expensive." Clients who initially balk at the MDM approach are reassured by Coleman, who stresses both quality and cost advantages. "We let them know that a number of major artists use this type of equipment all the time and that we can provide them with a good remote recording for a reasonable price—one they couldn't have gotten otherwise." Keywood charges $500 a day on location and, in another example of implementing increasingly affordable technologies, offers a $4,900 package that includes recording, mixing, CD prep and 1,000 compact discs, delivered. "We break it down to them so it's $4.90 per CD," he says. "Clients such as churches and other groups can take them and sell them for ten dollars as fund-raisers."

An example of an MDM-based remote operation that has transcended the project level is Nevessa Productions in Westchester, N.Y. Owner Chris Anderson has six Tascam DA-88 decks in a 16-foot GMC box. "I don't know that we ever were a project-level operation," he says, noting that the fixed studio installation he runs has always been a commercial operation.

Anderson's operation bridges the gap between major trucks and smaller, project-based operations. He's made it successful by targeting a niche: broadcast audio. He was able to go to the Apollo Theatre in Harlem and offer to bump their recordings up to multitrack for the same price that 2-inch tape used to cost them, thanks to the low cost of the MDM hardware and long running time of the software. And his setup reflects his experience with professional recording and dealing with clients. He has installed air conditioning in the truck, not just for him but for the tape decks, which he says are very sensitive to humidity fluctuations. He also pays great attention to power supply consistency, because he says MDMs are less forgiving of voltage variations than 2-inch decks. And cleanliness is super-critical in his MDM-remote environment; Anderson hand-cleans his head drums and has modified the DA-88 cooling fan to become an intake rather than an exhaust fan. That,

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  –Each track can be viewed and edited in either OOE or FFE mode at any time, regardless of the edit mode of the other tracks around it.
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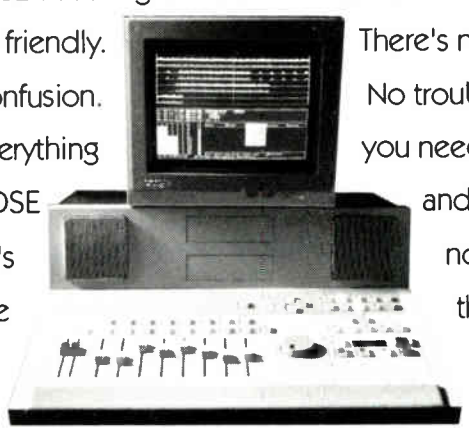

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along with a jerry-rigged Hoover vacuum cleaner bag attached to the chassis, has considerably improved his multitrack performance, he says.

Armed with both the less expensive technology and the critical expertise, Anderson says there is no "glass ceiling" for remote operations based on MDM technology. "I don't really think there's a limit to how far something like this can go."

When project studios first appeared, many commercial facilities

> "It's disconcerting to have three-quarters of a million dollars tied up in a truck and [face] the possibility of someone with one-tenth that investment being able to provide a similar quality."
> —Hooster McAllister

were blithely unaware or chose to ignore the potential that the new technology had for affecting their business. In retrospect, the emergence of the project/personal studio is arguably the most significant development in the history of the recording industry. And history is cyclical and relentless. Will the evolutionary incursion of MDMs into the remote world affect commercial remote recording?

"I think anyone who ignores it is a fool," states Richard (Vance) Van Horn, vice president of audio for Sheffield Remote, a video and audio truck operation based in Phoenix, Md. "I was just in New York having this same conversation with Randy [Ezratty, of Effanel Remote], and we realized that there were no real up-and-coming stars in the remote recording industry. We were wondering where they were coming from."

Van Horn isn't convinced that the new remote recorders are coming from project studios. However, he believes that there is a large pool of potential talent and clients for affordable remote work. "I feel like this industry is safe the way it is for the next five years, anyway," he says. "But on the other hand, things are changing. We've got a fixed recording facility here, and I've already felt price pressure from project studios. We also have a 30-foot video truck with analog and digital Betacam; I'm now seeing what can be done with computers

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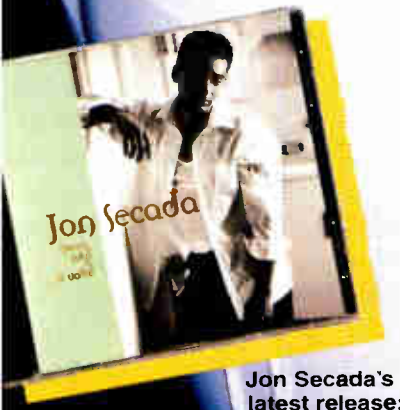

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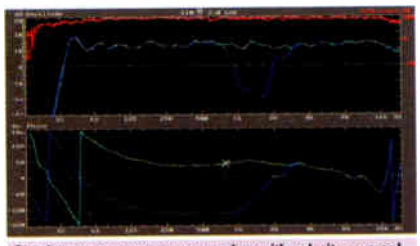
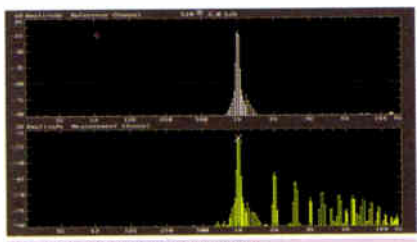
is vital to the success of every sound system. Polarity reversals can cause unequalizable holes in your system response and endanger your components. By viewing the system's phase response with SIM, an operator can quickly spot, and correct, unwanted polarity reversals.



Speaker response vs. same speaker with polarity reversal.
Top: Amplitude response. Bottom: Phase response

Harmonic distortion

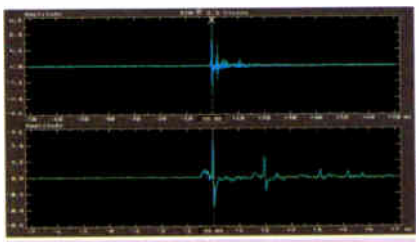
adds unwanted spectral coloration to your audio signal, and once introduced, is almost impossible to remove. Whether caused by component degradation or by gain structure mismanagement, SIM can detect and measure distortion in any system component, allowing an operator to quickly focus on and minimize the sources of distortion in the system.



Harmonic distortion in a loudspeaker:
Top: Input spectrum 1 kHz tone
Bottom: Output spectrum 1 kHz tone with distortion

Measuring delay times

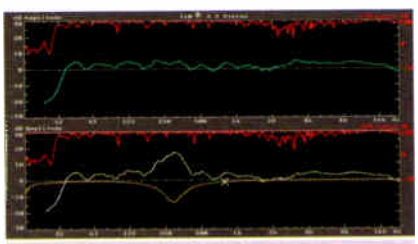
is impossible with most audio analyzers. More often than not, delay times end up being set through trial and error, and a whole lot of running around. SIM can measure the time offset between speakers and give you the delay times you need ***within ±.02ms***. Moreover, the whole process typically takes less than 5 seconds.



Delay finder function:
Showing a non-synchronous arrival from two speakers.
Bottom shows 10 times magnification of top.

System Equalization

can be a painstaking, and often frustrating, process. With SIM however, you can view the peaks and dips in your speaker system's response from 8 Hz to 22 kHz with ***1/24th octave resolution***. By measuring and displaying the response of the speaker system and the equalizer simultaneously, SIM can quickly and accurately get you to your desired system response.



Complementary Equalization
Top: Resulting system response. Bottom: unequalized speaker response (white) and EQ response (orange).

And once the show begins...

changes in temperature, humidity and audience presence can effect the response of your system. Only SIM has the ability to monitor system response ***during the actual performance***, allowing you to compensate for the dynamic effects of your system's changing environment.

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Some of the many SIM System II Users

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Walt Disney's World on Ice
Les Miserables
Pro Mix
Andrew Bruce
Miss Saigon
Autograph Sound & Recording
New York State Theater
Harris Sound
Abe Jacob
M.A.S. International
Tony Meola
Boston Symphony Hall
Roger Nichols
studio bau:ton
Carnegie Hall
Beauty & The Beast on Broadway
Andrews Audio
Placido Domingo
Royal Shakespeare Theatre – Stratford-on-Avon
Woodstock II
San Francisco Opera
Sound Hire
Encore, The Three Tenors
Miami Audio Visual Co.
Capitol Records
Hermes Music
Solstice, Inc.
Jonathan Deans
La Semana Alegre Festival
Bob Hodas
Masque Sound & Recording
Ultra Sound
Montreux Jazz Festival
Arte
Lou Reed
Walters/Storyk Design Group
Celine Dion
Grisby Music
Guys & Dolls
Kiri Te Kanawa
Stage Sound/Audio Visual America, Inc.
Primus
Conway Recording
Bad Animals
Roy Thomson Hall
Wonderland Studios
Onken
Yuming Matsutoya
Fiesta Texas
Pro Media
Fantasy Studios
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Certified SIM Operator Mitch Hodge of Stage Sound/Audio Visual America, Inc., at the Telluride Bluegrass Festival 1994

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for video and thinking how that's going to affect that investment. And record companies are chasing their tails; budgets used to start at $80,000, and now we're seeing rap and other music projects starting at $20,000. There's definitely a connection between project studios and what's happened in the [record] business, and there could be one for the remote business as well. Ten years from now, who knows?"

Kooster McAllister, owner of Record Plant Remote in West Milford, N.J., has used both the ADAT and DA-88 formats, and although he is relatively satisfied with the results, he says his clients still have reservations about the reliability of the MDM platform when it comes to the one-chance-to-get-it-right world of remote recording. "Major trucks do major work, and their major clients are still reluctant to commit to these machines," he says.

But the future is a rock in his shoe, if not in the pit of his stomach, at this point. "People aren't specifically asking for the format...yet," he says. "That day will probably come. It's disconcerting to have three-quarters of a million dollars tied up in a truck and [face] the possibility of someone with one-tenth that investment being able to provide a similar quality. They can't yet. So what we're really selling right now is peace of mind. But you're looking into the same crystal ball I am."

Dave Hewitt, owner of Remote Recording Services in Lahaska, Pa., is regarded by some as the dean of U.S remote recorders. He shows little concern about predictions that broad access to project-type technology will lower the level of quality of the industry, or that high-end remote recording is threatened. "Look," he says laconically from his truck parked behind New York's Metropolitan Opera House, as an aria drifts through the monitors in the background, "Some people are gonna get into it and stick with it, and some won't. It's a self-regulating business. It's based not just on technology but on preamps, parts and people."

And since the double entendre appears appropriate, I have to ask, "Is the fat lady singing yet?" And Hewitt answers, without checking the monitors, "Nope, not yet." ■

Dan Daley is one of them Mix *editor types.*

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NEW PRODUCTS

E-MU EMULATOR IV
New from E-mu Systems Inc. (Scotts Valley, CA) is the Emulator IV professional stereo sampler. The rackmount E-IV features 128-voice polyphony; up to 128 MBs of RAM; four sample rates (22.05, 24, 44.1, and 48 kHz); 16-bit input; digital EQ; digital I/O (AES/EBU and S/PDIF); a new icon-based graphic user interface; and seamless compatibility with Emulator IIIx, Emax II and the Akai S1000/S1100 sound libraries.
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OPCODE OVERTURE
Opcode Systems Inc. (Palo Alto, CA) debuts Overture, a professional music-notation package for the Macintosh computer. It features click-and-drag simplicity and extensive MIDI capabilities. Without leaving the notation environment, all performance parameters in a piece can be edited, including note duration, attack times, key velocity, pitch bend, controllers and program changes. Overture supports OMS.
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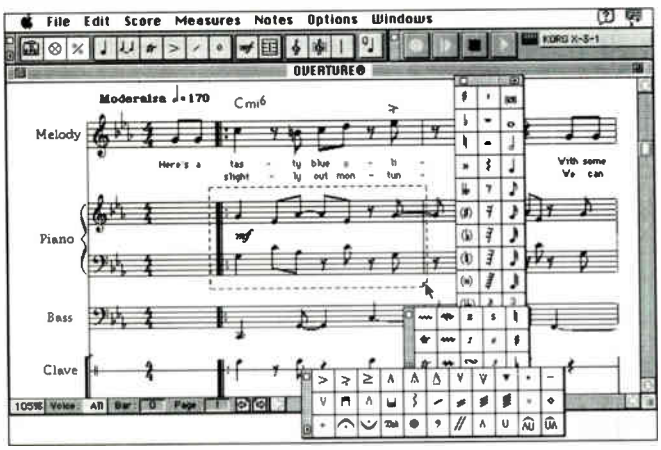

FREEDMAN RODE NT-2 LARGE CAPSULE MICROPHONE
New from Freedman Electronics (Rydaimere, Australia) is the RODE NT-2, a large-capsule, dual-pattern microphone. It features a large capsule with a gold-plated membrane, switchable omni and cardioid polar patterns, FET circuitry and a maximum SPL of 130 dB with the -10dB Pad.
Circle 228 on Reader Service Card

VOCE MICRO B II
The Micro B II, from Voce (Wood-Ridge, NJ) is a 32-note, polyphonic MIDI organ synthesizer that specializes in B-3 emulation. The half-rack MIDI module includes 36 drawbar presets; rotary controls for volume, overdrive, key click, percussion volume, vibrato and chorus effects; an improved rotating speaker effect with cabinet simulation; and adjustable rotor fast speed. The new version accepts MIDI Volume.
Circle 229 on Reader Service Card

dbx 290 DIGITAL STEREO REVERB
dbx Corporation (Sandy, Utah) announced the 290 digital stereo reverb. Developed for studio and live applications, the 290 offers true stereo reverb that can be used in stereo in/stereo out, mono in/stereo out or mono in/mono configurations. It features 24 bits of signal processing resolution and an 18-bit digital-to-analog converter.
Circle 230 on Reader Service Card

DIGIDESIGN D-VERB
Digidesign (Menlo Park, CA) announced D-Verb, a 24-bit resolution reverberation software plug-in for the Pro Tools/TDM bus environment. D-Verb allows the addition of reverberation or ambience processing to single or multiple tracks, keeping audio in the digital domain. Included are seven algorithm presets with adjustable parameters for size, pre-delay, decay time, diffusion, etc.
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ROLAND SUPER JV SYNTH MODULE

New from Roland Corporation (Los Angeles, CA) is the 1080 Super JV Synthesizer Module. It features 64-voice polyphony and 16-part multitimbral capability, a 32-bit RISC chip CPU and expansion slots for up to 42 MB of memory. Also, up to four 8MB SR-JV80 Series wave expansion boards can be added for instant access to thousands of patches.

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ART MR-1

Applied Research and Technology (Rochester, NY) has packaged the sound of the RXR Elite digital reverb into a cost-effective, portable reverb processor, the MR-1. The 5x5.5-inch, 16-bit unit comes with input and output level, bypass switches, mix controls and a 16-position preset selector.

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SPIRIT FOLIO LITE

Spirit Corporation (Sandy, Utah) introduced the Folio Lite, a 16-input (including four mono and four stereo input channels), ultra-compact console. Less than 11 inches in depth, the Lite also offers switchable phantom power, PFL solo and 2-band EQ on both mono and stereo channels. It also has two effects sends with a stereo return and a 2-track tape input that can be routed to the stereo mix bus.

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LEXICON PCM80 EFFECTS PROCESSOR

Lexicon (Waltham, MA) announced the PCM80, a digital reverb and effects processor. It is a true stereo effects unit with digital and analog interfaces, featuring 18-bit conversion, a 24-bit internal bus and Lexichip™ II, the latest generation of Lexicon's VLSI chip, optimized for reverberation programs. 200 presets are included. Retail: $2,495.

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DDA FMR CONSOLE

DDA (Buchanan, MI) introduced the FMR Console, designed specifically for mixing with a wide variety of recording media. The split-design console combines DDA's Forum Standard Input and Forum Master Modules with a new Bus/Tape Monitor Module. Although the FMR is an 8-bus console, up to 24 bus/tape monitor modules can be used. It can be configured as small as 8/8 and up to 32/24; an 8-channel extender with eight input modules is also available.

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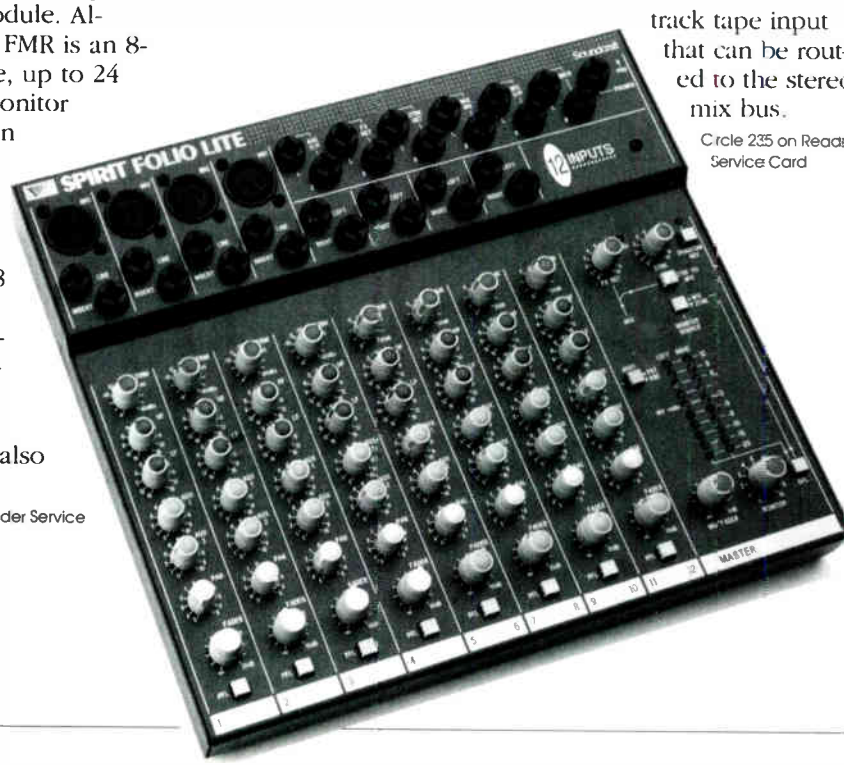

DB3000 DIGITAL OPTIMIZER

Distributed by Audio Intervisual Design (Hollywood, CA) is the dB3000, a multifunction digital audio processor for sample rate/data format conversion, monitoring and measurement. The rackmount unit provides professional sample rate conversion, high-quality 16- to 8-bit reduction, optimized digital transfers, jitter removal, calibration, troubleshooting and multimedia developer's tools.

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BEHRINGER COMBINATOR
Behringer (distributed by Samson Technologies, Hicksville, NY) announced the Combinator MDX 8000, a stereo multiband compressor/leveler/peak limiter offering high-level sonic performance and user versatility for recording and broadcast applications. The Combinator delivers simultaneous compression and leveling on four discrete frequency bands of stereo program material with individual parameter control and in/out switching on each band.
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BBE 362NR
BBE (Huntington Beach, CA) released the 362NR sonic maximizer and noise reduction unit. The 362NR restores detail, clarity and richness to recordings in a single-rackspace unit. It features -10dBu unbalanced ¼-inch and RCA connectors, dual-channel/ganged controls, threshold controls and detector release time control.
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ALESIS MIDIVERB 4
From Alesis Corporation (Los Angeles, CA) comes the MidiVerb 4, which offers dual-channel parallel processing and auto-level-sensing. The unit is a true dual-channel processor that can act either as a traditional stereo signal processor or as two independent mono effects processors. It features automatic level sensing, a 48kHz sampling rate, an 18-bit 128x oversampling analog-to-digital converter, an 18-bit 8x oversampling digital-to-analog converter and 256 programs selectable via MIDI or a back-panel footswitch.
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APHEX MIC PREAMP
Aphex Systems (Los Angeles, CA) introduced the Model 107 dual-channel thermionic (tube) microphone preamp. The front end is transformerless, and high-quality capacitors are used throughout the signal path. Equivalent Input Noise is -128dBu. The unit has front-panel XLR inputs and 48VDC phantom power. Retail is $599.
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PACIFIC REFERENCE MONITORING AMPLIFIERS
Pacific Innovative Electronics (North Hollywood, CA) introduced a line of accurate, hand-built, dynamic MOSFET reference monitor amplifiers. They offer two mono-block models (150-225 watts) that take up two and three rackspaces, respectively, and two stereo amplifiers (125-175 watts per channel) that also take two and three rackspaces.
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HOT OFF THE SHELF

Professional Newsletters has published ***IRS Audits of the Music Industry***, a reprint of the official IRS internal training manual for music industry audits, a great book if you're looking to avoid *certain* issues. Call (800) 846-2202...**Tascam** announced software update 3.03 for the DA-88. Free to registered owners. Call (213) 726-0303...**Metro Music Productions** is offering "Lifestories" an all-orchestral production CD library. Call (212) 799-7600...**Leader Instruments** has two new 3-channel, high-end, dual-time-base oscilloscopes, a 100MHz and a 60MHz. Call (800) 645-5104...Everything from cables to pro audio can be found in **Bi-Tronics' 1995 Full Line Catalog.** Call (800) 666-0996 for a free copy...**DGS Pro-Audio** announced a dedicated audio interconnect catalog for its comprehensive range of audio connection products. Call (800) 292-2834...**River City Sound** Productions has two new production music CDs: Broadcast Series Volume 4, and Specialty Series Volume 5 "Mellow Moods." Call (800) 755-8729...***Digital Projects for Musicians*** ($24.95) by Craig Anderton describes how to create various MIDI devices. At your local bookshop or call Mix Bookshelf: (800) 233-9604...**Manhattan Production Music** is launching Apple Trax, a new library of production music. The first two releases are "Guitar Music" and "Keep It Up." Call (212) 333-5766...**Opcode Systems'** new OMS version enables MIDI on Apple PowerMac computers. Call (415) 856-3333...**JRF Magnetic Sciences** has designed more durable replacement heads for 24-track Studer A80s and A800s. Call (201) 579-5773...**Music Quest's** MIDIEngine 8-port/SE MIDI interface is designed for all IBM-compatible computers. Call (214) 881-7408...**Digital Audio Labs** announced a new interface to the CD-Recorder feature for its EdDitor Plus™ Call (612) 473-7626...**Neutrik** introduced the NP2RCS compact, right-angle, ¼-inch plug. Call (908) 901-9488...DGS Gotham's GAC-2 AES-EBU cable overcomes problems with digital transmission. Call (800) 292-2834...**Fieldpiece** has come out with a low-cost meter kit for field service. The LT16 Fieldpack is a small DMM. Call (714) 992-1239...**All Drums** is a complete drum library available on CD, DAT and cassette. Call for catalog (407) 260-0079. ■

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World Radio History

by Mel Lambert

A 64-input API Legacy console with Flying Faders at Appo Sound, Tokyo

API LEGACY SERIES

ALL-DISCRETE RECORDING/PRODUCTION CONSOLE

The new API Legacy is a truly remarkable console. In both appearance and operation, it is unique in many respects, from the simplicity of its front-panel features to the uncluttered signal flow beneath the user controls and switches. This is a vintage-looking console, not unlike those boards that those of us with gray in our hair remember fondly from over 20 years ago.

It incorporates a vintage, all-discrete design, but with the best that the '90s can offer. It was designed to look like a '70s API board. The model I spent some time with (a 32-input/24-group Legacy) was installed last August at MCA Music Publishing, Universal City, Calif., in a compact facility used to record and mix in-house demo projects for the company's roster of songwriters. Referred to somewhat irreverently as the "James Bond Board," the console bears a brass plaque pronouncing that it is the seventh mixer to leave the factory; it is therefore tagged "007."

The Legacy is, quite simply, one of the cleanest-sounding boards I've ever come across, which is what its makers intended. API has taken the best of a plain, vanilla design—a simple panel layout coupled with an all-discrete electronics signal path—and brought it up to date. The Legacy is available in a variety of frame sizes, based on 16-channel input buckets and a 24- or 48-channel monitor section. The separate, split-monitor section is optional; it's possible to run an all-input Legacy using various internal buses for monitoring. An optional center section accepts a combination of effects returns, plus API and other vendors' modules. So a user can order a very simple, 16/32/48/64/80-input model that occupies a modest space, or add a left- or right-hand monitoring section for a more familiar split design that also takes up little space in a control room or mobile truck.

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The advantages of custom configurations are obvious. You just order the electronics that you're going to need; nothing extraneous is required in the signal path, beyond a preamp, line driver and output buffer. You can insert other electronic functions as needed—such as EQ, aux sends and subgroups—with the knowledge that each decision will just involve another high-quality op-amp. In other words, the user is able to truly set up a minimal signal path from mic to tape. The result is a clean, punchy sound without the artifacts all too common in many contemporary designs that use additional, non-essential electronics and VCAs.

But expect to pay a premium for this design approach. Because of the high cost of custom-designed circuit components, plus a degree of customization not available in off-the-self consoles, The API Legacy is relatively expensive. A basic 32/24 starts around $160,000, reaching close to $325k for an 80-channel, all-input configuration. But it is available with top panels and side trim in a choice of oak, ash, birch and other woods, plus custom color stains. Fader automation is extra.

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GETTING TO KNOW THE API LEGACY

Each channel strip comprises four modules: the stand-alone Model 212L mic preamplifier; the legendary Model 550L equalizer; the Model 768 input; and the Model 468 fader module. Large-format Legacy consoles can omit mic preamps and EQ to save a few dollars without compromising input flexibility during mixdown. (Of course, modules can also be added at a later date, including the new API noise-gate/expander, which fits into the same small space as the current mic preamp module.)

Electronic building blocks within the Legacy are based on the firm's discrete design API2510 op-amp, which has been optimized for linear, low-distortion audio applications. The company's "less in more" design philosophy means that nothing is inserted into the signal path until the user decides that it's necessary to use it to amplify, equalize or otherwise manipulate the audio.

The company's "less in more" design philosophy means that nothing is inserted into the signal path until the user decides that it's necessary to use it to amplify, equalize or otherwise manipulate the audio.

The Model 212L uses the same circuit as the vintage API 512b preamp, complete with input transformer. Gain is adjustable from zero to 60 dB, with 20dB pad and phantom power on/off. A five-segment LED ladder shows signal overload; clipping is at +28 dB for enhanced headroom.

The Model 550L equalizer offers four discrete bands; the upper and lower incorporate switchable bell/shelf slopes for low/highpass. Unlike most EQ designs, the 550L is a passive filter, using op-amps only as buffers. An in/out switch bypasses the module. Cut/boost is up to 12 dB per section in 2dB steps. There is plenty of frequency overlap between bands. Bandwidth "Q" is adjusted internally according to the amount of cut or boost; wide for small settings, narrowing as you call for more processing. Band #1 extends from 30 Hz to 400 Hz; band #2 from 75 Hz to 1.0

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The 550L EQ module

kHz; band #3 from 800 Hz to 12.5 kHz; and band #4 from 2.5 kHz to 20 kHz. All control settings are on detents so that you can easily reset any channel to its previous configuration. While I would have preferred to see the cut/boost available in smaller, 1dB steps, it is possible to park the controls between detents.

And what a great sound! I found myself reaching for less EQ than I might on other boards. Each band is totally usable, with good overlap and a sweet, smooth sound, even with large amounts of boost. Even from my limited exposure to the Legacy's EQ, I could easily understand why studios pay big bucks for vintage API equalizers and channel modules; and the new design is just as impressive.

On drums and bass guitar, in particular, the Model 550L EQ is outstanding. It retains the gut punch that we hear in the studio, but which often gets lost after being passed through multiple stages of indifferent electronics. Listening to playback through the Legacy is illuminating. Badly recorded tracks sound like badly recorded tracks, with clipping and noise that's all too easy to hear. Off-axis miking sounds like off-axis miking, with all the inherent "phasiness" and other sonic anomalies that might otherwise be overlooked. Add some midrange EQ around 2.2 kHz to a guitar track, and the track leaps forward. It's a remarkable achievement, thanks in no small part to API's belief in an all-discrete signal path using the firm's proprietary (discrete) op-amps and output transformer topology.

The 768 input module features 16-bus routing (keycaps are available for 1/17, 2/18, etc. designations, to make it easier for 24/32-track layouts). Switchable mic/line-input selection routes either the mic-pre or multitrack bus to the channel input, while a pan in/out selects L/R or odd/even panning for stereo or group assignments. The post-fader output can also be routed directly to one of two stereo buses, STA and STB, for subgrouping during mixdown, or to set up more complex mix-minus balances.

A total of six auxiliary sends are available per channel. Auxes 1 thru 4 are mono, with individual gain and cut switches; each pair of aux sends features a single pre/post-fader switch. Aux 5/6 is a stereo pair with level and pan. Two additional switches extend the functionality and usefulness of the stereo aux sends. An "LN" switch enables the Aux 5/6 section to function as an additional input, accessible from the patch bay, and is designed to provide extra effects returns or as a tape monitor. (This is how you might set up an all-input board, by using the

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aux section as a dedicated tape return for listening through the multitrack during track laying and overdubs.) An "MX" switch disengages Aux 5/6 from that channel, and routes the section directly to buses 1 through 8, thereby providing eight additional sends per channel during mixdown, or as extra "clean feed" cue mixes. Routing from the channel fader is still available to buses 9 through 16.

A passive highpass filter can be set using internal jumpers to roll off the aux output's low end at 50 Hz, 80 Hz or 150 Hz. (MCA's board was set to 80 Hz, and I can see little reason for changing from that setting.) An insert button allows external processors to be connected directly via the patch bay into the appropriate channel path, post-EQ/pre-fader. Finally, the aux section houses the Solo, Mute, Group Safe and Solo-Safe buttons that provide AFL, PFL and Inplace Solo, in addition to the familiar solo and mute.

The Legacy's front panel is clean and uncluttered. Finding your way around the console is easy. The panel knobs are a classic work of art: cast aluminum with a solid feel and clear, distinct markings.

SPLIT-FORMAT MONITOR SECTION

The Legacy's separate multitrack monitor section is available in two sizes that offer either 24- or 48-track functions. Two module designs are available. The Model 868 monitor module is designed to be used with a separate long-throw P&G fader (which, incidentally, is already wired for automation), while the more compact Model 862 features an integral, short-throw P&G fader. Where space is at a premium, Model 862 modules are the way to go. Either module design is also available in an effects-return configuration.

The monitor modules feature two mono and two stereo cue/foldback buses, with level and pan for sends 3/4 and 5/6. The post-fader output can also be sent to the separate STA and/or STB stereo buses for subgrouping and other functions. Automation systems are available from the well-known suppliers, including Martech/Neve Flying Faders, GML Moving Faders, plus Uptown System 2000 and System 990. For added flexibility, each Legacy is already wired to accommodate direct interfacing with mute, insert and other channel switch functions.

The API Legacy is a "conceptual" console. Although the various building blocks are very simple—both electronically and functionally—the sum of the parts is truly greater than its elements.

A central master controller section houses 16 individual gain trims for the multitrack buses; six master gain trims for the auxiliary sends; an 11-frequency oscillator; cue-master gain controls, plus matrix routing switches from aux sends, control room feeds and talkback; master solos; control room/studio monitor selections; and extensive talkback functions.

The API Legacy is a "conceptual" console. Although the various building blocks are very simple—both electronically and functionally—the sum of the parts is truly greater than its elements. You can feed mic sources through the EQ to multitrack buses; generate aux sends for foldback and/or effects sends; and mon-

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An open letter from Morris Ballen, Disc Makers Chairman

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itor the combination of live and prerecorded tracks via the separate monitor section. All pretty straightahead, with a clean, concise sound. (And if you haven't tracked a session through a split-design console in a while, check out the ease with which you can determine what source is on what channel or monitor fader without peering at LED displays or cramped writing strips.)

THE BOTTOM LINE: API'S LEGENDARY LEGACY

Once you're familiar with the basics, The Legacy's additional features really come into their own. The ability to use Aux 5/6 for extra inputs during remix is very handy, especially if the frame has been short-loaded to save space and/or budget. Okay, they lack EQ, but you can always use outboard units. And the pair of STA and STB stereo buses allows separate mixes to be generated and summed at the output. In addition, several signal sources can be combined into a Grand Master bus, controlled by a stereo fader. Push buttons select STA, STB, Aux 5/6, Bus 1/2 and EXT, allowing any or all of these sources to be used as submasters, feeding the main two-mix output.

All in all, I expect The Legacy to appeal to a narrow market niche. For facilities that need to provide outstanding audio fidelity, and a console topology that can be learned in 15 minutes, the Legacy is just what the doctor ordered. And for musician-owned facilities, where ease of use and sonic transparency are key parameters in the buying decision, again the Legacy is a good choice. For the rest of us, however, it might be a while before market pressure tips our hand in the direction of API's no-compromise console. However, it does sound breathtaking.

My sincere thanks to composer Mike Fennel, head engineer at MCA Music Publishing, Universal City, Calif., for letting me have access to the studio's 32-channel Legacy for these evaluation sessions and for his patience with my many questions.

API Audio Products Inc.; 7655-G Fullerton Rd.; Springfield, VA 22153; (703) 455-8188; fax: (703) 455-4240. ■

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

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by George Petersen

OTARI RADAR

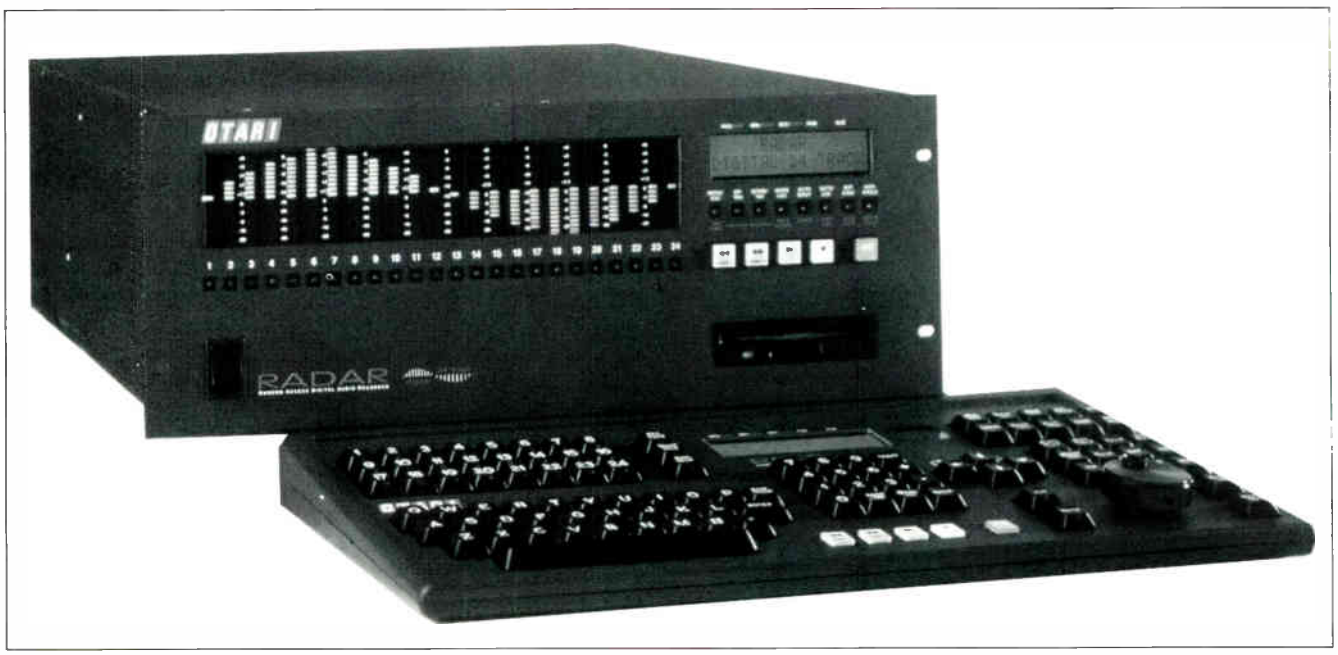
DIGITAL RECORDER

By now, just about everybody knows about RADAR, the Random Access Digital Audio Recorder. The brainchild of Creation Technologies, of Vancouver, B.C., the RADAR system has been in development for some time and has been shown publicly at various conventions over the years. But what's new about RADAR is that the product is now distributed and marketed by Otari and is available through Otari dealers worldwide.

Announced last March at the NAB Convention, the Otari/Creation agreement represented the best of both worlds. Creation had a viable product, but its only products in the audio field were the MIDI accessory lines from its Anatek division. Meanwhile, Otari had an established pro audio dealer organization, a strong support and service network, and a need for an affordable digital product to compete with new, lower-cost digital systems. Perhaps most important, the Otari name provided instant credibility with studios, post houses and broadcast users.

Although the RADAR name is familiar to many pro audio users, there still seems to be some misunderstandings about the system. Housed in a compact, 40-pound enclosure, RADAR is a stand-alone (no computer required), 16-bit, disk-based recording/editing system that is available in 8-, 16- or 24-track configurations. The basic RADAR system (including internal hard disks) retails at under $1,000 per track.

RADAR can accommodate up to three internal 1.0-gigabyte drives (one for each 8-track block), which provide 22 minutes of recording per track, or approximately 528 track-minutes on a 24-track system. However, in applications such as CD preparation from stereo masters (analog or DAT)—where only two tracks are required—the maximum allow-



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able recording time would be 188 track-minutes, or 94 minutes of stereo recording: more than ample for any CD project. Additionally, RADAR recording time can be expanded with three external 2.0GB SCSI drives, while an Exabyte tape-based backup system is an optional—but highly recommended—addition.

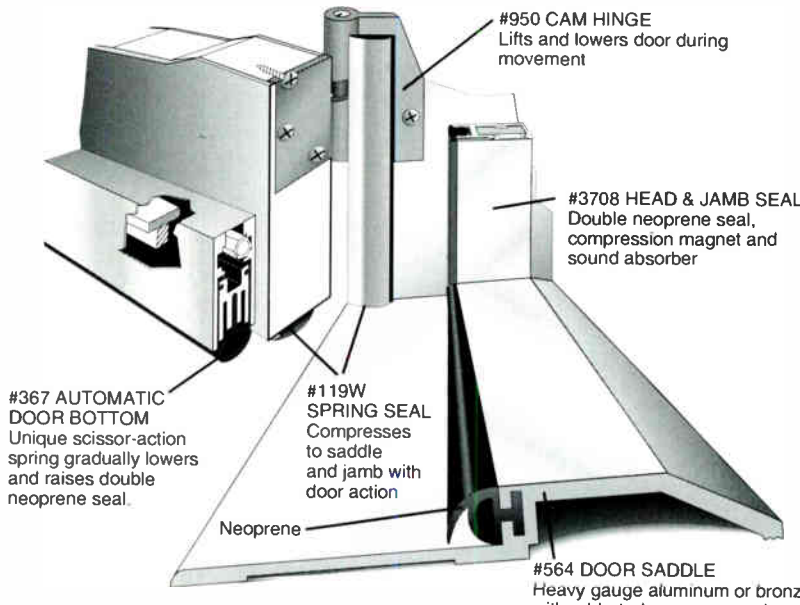
Standard features include nondestructive cut/paste editing, edit preview, track slipping, track looping, 24-track simultaneous recording, selectable 32/44.056/44.1/47.952/48kHz sampling, programmable crossfade times, varispeed (+11.9% to -45.57% at 44.1 kHz), full-function locator with jog/shuttle wheel, and SMPTE chase sync to 24/25/29.97/29.97DF/30/30 drop-frame rates.

RADAR's four-rackspace front panel is deceptively simple, with a power switch, bank of 24 LED meters, record-arming buttons for each track, lighted rewind/fast-forward/stop/play/record keys, backlit LCD, eight multifunction locator/menu keys and a floppy disk drive. The only function of the floppy drive is for loading system data and/or software upgrades; RADAR is currently running operating system 1.02; users of earlier software should contact Otari for an upgrade.

Given the limitations of its small size (about the size of one of those unabridged dictionaries), the rear panel is understandably packed with connections. The audio inputs and outputs are on ¼-inch TRS jacks that can handle balanced or unbalanced connectors, and the inputs and outputs each can be switched to operate at +4 or -10dB levels. This is especially useful in cases where you may be recording with outboard preamps (or direct outs) and interfacing with a console that has -10dB, unbalanced tape returns. MIDI in/out/thru jacks, for MIDI Machine Control, MIDI sync or MIDI Time Code applications, are provided (but, unfortunately, were not implemented in the Version 1.00 system I tested). Other back panel connections include word-clock/video sync in/out (with 75-ohm termination switch), AES/EBU and S/PDIF digital ports, longitudinal SMPTE time code in/out (on ¼-inch jacks), 50-pin Centronics SCSI terminal, RS-422 control port (9-pin), RE-8 remote control port and RADAR-LINK in/out for connecting additional RADAR units to the system.

Although it is possible to use RADAR without the remote control, the RE-8 adds features, speed and versatility to the system. In addition to duplicating the transport controls and LCD readout from the main unit, the RE-8 offers a jog/shuttle wheel, full-size QWERTY keyboard, large, lighted track-arming buttons, 10-key data entry pad, numeric LED display (which indicates project numbers), and 38 dedicated keys for autolocation, auto-punch, and utility and editing functions. The underside of the RE-8 has a mouse output (also not implemented) and ¼-inch, momentary-contact (normally open) footswitch output jacks for "hands-free" control of cue-to-location, punch-in and play functions.

No contrast control for the LCD is provided: The contrast is set for optimal viewing when looking at the display from a "typical" studio position. This was adequate for viewing a tabletop-placed RE-8 from a low, seated position (where it usually would be), but I've done more than my share of sessions where keyboards, mice, controllers and locators are placed just about anywhere in the control room, ranging from atop the console faders to facing the engineer (propped up against the meter bridge). For those few hectic occa-



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sions, a contrast control would be nice, but, generally, it's not essential.

The RE-8's key layout is intuitive, and a good deal of thought went into ergonomic access. For example, the "Mark In/Out" keys for setting edit or locator points are at the lower right corner and are easy to find when looking at a video playback or cueing voice talent in the studio. I was surprised by the lack of a dedicated "return to zero" key; later, upon mentioning this to some Otari representatives, I was humbled when they suggested I try pressing the "0" on the numeric keypad, which performed the RTZ function. If all else fails, read the manual.

Some of the most mundane utility functions are handled via some rather slick interfacing. For example, hitting the Digital I/O button brings up a window on the LCD for selecting whether the digital I/O is AES or S/PDIF; the next page down provides assignment of the digital ports to any two tracks, which is accomplished by turning the jog wheel (the track-assign LEDs light one by one, as you spin through your selections) or simply by pressing the track-arming buttons directly. As with many of RADAR's functions, there are several available methods to enable most tasks, and in most cases, engineers can choose the way in which they want to work.

While I'm sure that the RE-8 would be nicer if its plastic case were replaced with a heavier, metal enclosure, I have to wonder how many users would be willing to pony up the extra cash for such a device. The RE-8 is a highly recommended $1,100 option for the RADAR system, and many pro autolocators are priced in the $5k (and up) range. Still, there is some uneasy flexing in the RE-8 chassis when a heavy-handed lunk such as myself leans on the buttons. On the plus side, I was extremely pleased with the action of the jog (scrub) wheel: The audio was first-rate at any speed, and spinning the knob at just the right speed for "normal" speed playback was effortless. As someone who's often involved with dialog-editing projects, the latter feature rated highly in my book.

In operation, RADAR generates a noticeable amount of fan noise, which could be distracting in a quiet control room, especially when three external hard drives are connected. With the degree of control offered by the RE-8, the main RADAR unit can be relegated to a machine room; in fact, the second set of controls on the main unit is ideally suited for such applications. Unfortunately, RADAR's meters are located on the front panel of the main unit, and there is no remote metering option available. This would be a useful addition, and Otari should consider this as a future system addition.

Speaking of the meters, RADAR has 20-step, LED ladder displays for each of the 24 tracks, and a red-clip LED at the top of each meter lights when signal reaches 18 dB above 0 VU. The meters have fast-acting, peak-type program "ballistics" and include a momentary, self-resetting peak-hold feature. Another nice touch is the clip LEDs. If activated, the clip LED on any track will stay lit to warn the engineer about any digital overload condition that may have occurred during a recording. These remain lit until the track is taken out of record arming.

One of RADAR's strongest attributes is the fact that most of its recording functions mimic standard multitrack operations closely, so users will feel comfortable with the system from

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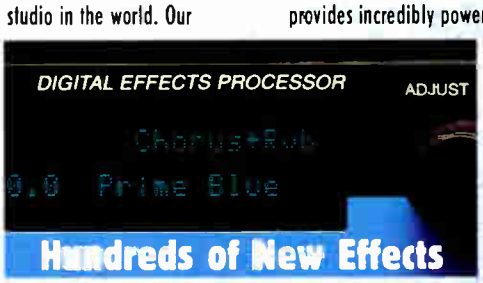

The PCM-80 is based on a new hardware platform featuring the very latest in proprietary digital signal processing. It's a true-stereo processor with balanced analog I/O as well as digital interfacing – you can even mix the two sets of inputs together. Its 24-bit digital bus ensures the finest resolution within the PCM-80's multiple-DSP architecture.

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Perhaps the most impressive feature of the new PCM-80 is its unique Dynamic Patching™ matrix, which takes the PCM-80 into new sonic realms. Dynamic Patching provides incredibly powerful, synthesizer-like control over your effects. It maps data from external and internal controllers such as footswitches, envelope generators, MIDI controllers, tempo and LFO's – even the input signal itself – to any effect parameter. With up to 10 patches per effect, and an amazing eight steps per patch, the control possibilities become almost unlimited.

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the start. The computer within the unit is transparent to the engineer: There are no operating systems to learn, and the installation involves little more than unpacking the boxes and plugging the unit in. When you want to record, merely arm the tracks and press "play" and "record"; to punch in to a track that is playing, press "play" and "record." You've probably already done this a million times on other systems, and most RADAR functions are not much different from good-old analog recording.

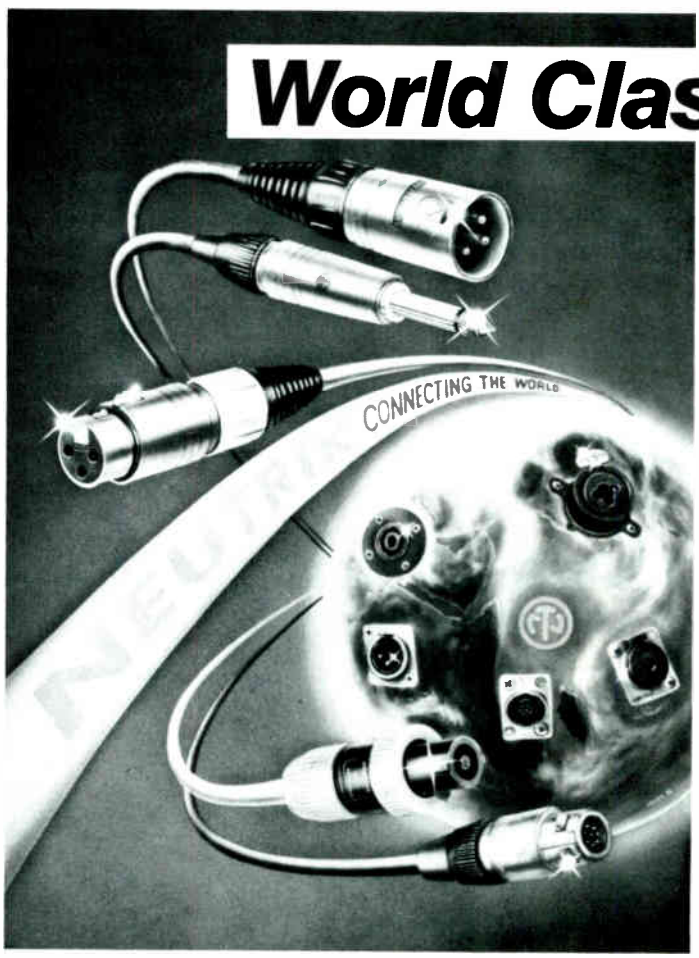
Obviously, a major difference between RADAR and analog (or tape-based digital) systems is the ease with which tracks can be edited. Sections can be cut, copied, pasted or looped simply by defining regions via mark-in/out points and using the cut/copy/paste/move/loop keys. A "clipboard" is an area of RADAR memory provided to hold sections of audio to be cut, copied or pasted into other parts of a track. But rather than storing all of the digital information of a clip, the clipboard only stores a clip's location pointers and track numbers, so the amount of memory required by clipboard functions is minimal. Once on the clipboard, a section of audio can be copied or pasted as many times as required, although the clipboard only can hold one clip at a time. A slide function allows any user-defined section or track to be time-slipped in relation to the other tracks in ms or frame increments.

Anyone accustomed to screen-based editing (highlighting waveforms or sections for editing functions) may miss the slick interface, but once you are used to it, RADAR's event-based editing is fast and logical. At least you won't have to sit around waiting for screen redraws!

Whether editing or performing punch-in/out functions, user-selectable crossfade times are available. These default to a fairly brief 5 ms but can be adjusted up to 100 ms. I prefer slightly longer crossfades (somewhere in the 10 to 20ms range) for most material and appreciated RADAR's wide range of crossfade times, especially when punching in over dissimilar material, where 100 ms really comes in handy.

RADAR's varispeed features are also useful. Changes can be entered in percentage (ultrafine 0.01% increments) or as musical values (cents). For a quick review of music theory, there are 1,200 cents to an octave, which is 12 steps, so if you want to change the key on a song from A to B-flat, you need to increase the pitch by 100 cents. As with most digital systems, RADAR's amount of available varispeed depends on the sampling frequency of the recording. At a sampling rate of 48 kHz, this is +2.81/-50%; at 44.1 kHz this is +11.9/-45.55%, and at 32 kHz, this is +54.21/-25%. One minor bug was that when you have the varispeed page open, the transport "stop" key is disabled, although Otari says this was taken care of in the new software release.

The SMPTE chase mode worked flawlessly, providing fast and accurate chase-synching from external, longitudinal time code sources. Also, users can enter positive or negative SMPTE time code offsets, and these can be set in hours/minutes/seconds/frames/subframes. The time code *out* port was inactive in the version I tested (said to be remedied



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soon), and, in other time code news, Otari says the newest software also offers reverse play to time code, which should be good news for post-production applications.

RADAR currently only supports the Exabyte 8505 tape backup drive, which is slow (nearly three hours for loading/offloading 24 tracks of data) and provides 5 gigabytes of storage on 8mm Exabyte cassettes. This presents no problem on a basic 24-track RADAR, with 3 GB of internal drives. However, a 6GB complement of storage—three internal *and* three external drives—exceeds the 8505's stated backup capability. At the same time, the 8505 uses a lossless data-compression algorithm, which reduces the storage needs of most 16-bit digital audio material by approximately 30%, so 6 GB of RADAR data could fit on 4.2 GB of tape. Unfortunately, the compression is dependent on the complexity of the program material (basic tracks are less complex than mixed tracks), so you may find out that a 6GB audio backup won't fit on a single tape until 2.8 hours into the backup process. This is obviously not a problem unless you have a RADAR system with three external drives, but with this in mind, Otari plans to release multitape backup support with the next software release.

I spent nearly a month using the RADAR system on a variety of projects, ranging from multitrack music recordings to radio spot production and audio sweetening. The system was rock-solid and seemed bullet-proof: It *never* crashed or lost data, despite me giving the system a thorough thrashing. The quality of the audio was also top-notch, with 64x oversampled analog/digital converters and 18-bit DACs. And one would be hard pressed to find a workstation with *true* 24-track (input and output) capability that could compete with RADAR's $22,400 price (with remote).

Of course, there's still work to be done, with a few additional features (such as MIDI, time code output and machine control) still to be implemented. Yet Otari's commitment to the product, and the fact that ongoing development is a key aspect of any software-based device, make RADAR an able contender in a tough field.

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World Radio History

by George Petersen

TL AUDIO

VALVE EQ AND COMPRESSOR

No country is an island, and pro audio is a world community filled with delectable treasures from every part of the globe. A typical session may record on Swiss tape machines using British consoles, German microphones, Austrian headphones, Japanese MIDI instruments, Canadian amplifiers and American monitors. You gotta be up on languages, especially when dealing with equipment from faraway places, like England. Otherwise, you wouldn't know that "valve" is merely the Brits' word for what we Yanks would call a "tube," or more specifically a *vacuum* tube, because what they call a "tube," we call a "subway."

With such linguistic hurdles in mind, I decided to check out the new Dual Valve Equaliser and Dual Valve Pre-Amplifier/Compressor units from TL Audio. By the way, the "TL" part of the name refers to Tony Larking, a major equipment retailer based in Letchworth, England. Adding to the name confusion, our cousins across the sea spell equalizer with an "s," and the "dual" part of the name tells us that these units can be used as stereo or dual-mono devices. And if you look at the names of these two products, you would probably infer that the Dual Valve Pre-Amplifier/Compressor includes mic preamps, which it does. Unfortunately, there's nothing in the name "Dual Valve Equaliser" to suggest it has onboard mic preamps, which it also does.

Now that we're past the formalities, let's look at the basics. Both units are housed in two-rackspace chassis and weigh in at under nine pounds (4 kg)! Inside, the PC board circuitry is neatly laid out and uncluttered, with plenty of room for servicing and ample room for air circulation around the ECC83 triode tubes. Simple screen mesh on the front panels is enough to keep temperatures under control; in fact, even after a long session, the housings remain fairly cool to the touch. So far, these TL Audio boxes have broken all the traditional rules of tubedom: They're lightweight, don't cost thousands of dollars and operate without raising the control room thermometer past the boiling point.

THE EQUALISER

The Dual Valve Equaliser is a 2-channel, 4-band design with high-frequency and low-frequency shelving and two overlapping peak mid-frequency bands with a fairly wide bandwidth (Q) of approximately 0.5. A front-panel switch converts the EQ from stereo 4-band to mono 8-band operation, and a rear-panel switch

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converts the line outputs from -10 to +4 dBu. Speaking of inputs and outputs, both ¼-inch unbalanced and XLR balanced are standard, as is switchable +48VDC phantom power on the mic inputs. Two ¼-inch insertion points (tip=send; ring=return) allow the user to break the connection between the preamp and EQ sections, for using the preamps separately on a tracking session or gaining access to the equalizers without going through the front end.

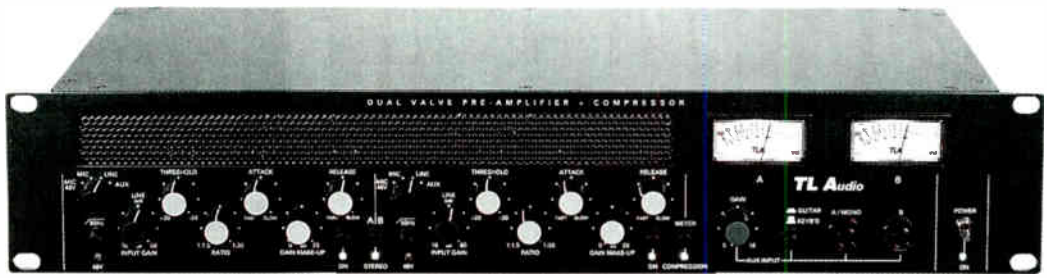
operation is simple, and users will rarely need to consult the manual.

THE COMPRESSOR

Like the equalizer, the Dual Valve Pre-Amplifier/Compressor is a 2-channel processor that uses a combination of solid-state and tube circuitry. The tubes are twin-triode ECC83, run from a lightweight, stabilized DC supply. The SSM2017-based mic preamps are similar to that used in the equalizer, but unlike the EQ, the compressor provides the option of individually supplying the phantom power to either mic input, and two front panel, ¼-inch aux inputs can handle stereo or mono signals. Another nice touch is the dual high-pass filters operating at -3 dB at 90 Hz; these can be switched into or out of the input path and provide gentle, LF reduction to eliminate breath or wind noise, rumble, etc.

The gain control element is also a hybrid of tube and solid-state circuitry, with continuously variable controls for threshold, attack, release, ratio and gain make-up. Stereo operation is enabled via a link switch that controls all dynamics parameters from the Channel A pots. Unbalanced, ¼-inch insertion points in the sidechain circuit allow equalizers or other devices to be connected for frequency-dependent compression, such as de-essing, and in Stereo mode, control voltages are linked to maintain stereo imaging.

Attack times range from 0.5 ms to 50 ms; release times go from 40 ms to 4 seconds, and the compression ratio is variable from an easy 1.5:1 to 30:1 limiting. The rear panel's balanced XLR and unbalanced ¼-inch inputs and outputs are identical to those found on the equalizer. Twin illuminated meters on the front panel normally monitor the unit's audio output, although they can be switched to indicate the amount of gain reduction applied to the input signal. And yeah, the compressor could also use a little color differentiation between the knobs, which would make things easier during a hectic session or live gig.



The unit accepts balanced XLR mic or line inputs (pin 2 hot), and a front-panel ¼-inch jack is provided for guitar, bass, synth or other instrument-level source. The wiring of the latter is unconventional, using a TRS jack wired so that the tip is for a high gain input (guitar or bass), and the ring is wired for low-gain inputs such as a synth or drum machine.

Whatever the input source, the first stage is a transformerless IC stage, using a low-noise SSM2017, which feeds a triode tube second-stage amplifier. The EQ stages are entirely tube-based, using two ECC83 twin triodes per channel. The output stages are solid-state, electronically balanced and transformerless.

An input gain control is switchable from mic to line inputs and has a 45dB range (+16 to +60 dB mic; -10 to +35 dB line) to accommodate nearly any source. The four EQ bands have +/-12 dB of boost/cut and, although not continuously sweepable, offer a choice of four center frequencies: 60/120/250/500 Hz, 250/500/1k/2.2k Hz, 1.5/2.2/3.6/5kHz and 2.2/6/8/12kHz. The EQ bypass controls on each channel switch silently, and operations are straightforward, with only a few minor quirks: The AC switch is pushed downward to turn the power on, and there is no differentiation in the spacing or coloration of the knobs on the different bands. Other than that and the odd TRS wiring on the aux input,

THERE'S NOTHING QUITE LIKE A TUBE COMPRESSOR TO SMOOTH OUT A VOCAL TRACK, ADD AIR AND BREATHINESS TO BACKGROUND VOCALS, OR GIVE AN SM57 THAT EXPENSIVE VINTAGE MIC SOUND.

THE SOUND

As a reviewer, I hate to admit it, but I fell in love with these two boxes from the start. Those SSM2017-based mic preamps are respectably clean, and while they won't lead anyone to throw away their GML or Focusrite gear, they'll probably outperform the typical in-console preamps in most studio mixers. Additionally, the wide-ranging inputs create a versatile toolbox for all sorts of studio tasks, such as becoming a direct box to track bass or guitar parts directly to tape, or even running chores as mundane as handling -10 to +4dB conversions. Doing the latter on the compressor—even with the compression action set in the Bypass mode—runs the signal through the first tube stage and adds a nice warming to the sound. As an added bonus, this is great for those cold-sounding synth or sampled sounds.

Bass sounds run through the compressor were warm, fat and huge, without excessive boominess from overshoot. And there's nothing quite

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like a tube compressor to smooth out a vocal track, add air and breathiness to background vocals or give an SM57 that expensive vintage mic sound. Of course, with a great mic, things get even better. I have friends who absolutely must compress everything they record or track, and if you're one of those types, you'll love the compressor's stereo functions.

With its wide, overlapping bands, the equalizer is best suited to program-shaping and overall tonal work, so don't expect this unit to notch out 60 cycle hum in a dialog track. I'm a big fan of shelving EQ (it always seems to be snubbed by those gotta-have-parametric types), and I used a light bit of shelving (+1.5 dB at 60 Hz; +3dB at 12 kHz) to sweeten a blues album I was mastering for European release. The EQ, combined with the tube warming, was just the right touch on this digital project. On mixing projects, I found that in most of the bands, the preset centers fell on musically useful frequencies, and I'd characterize the sound as warm and sweet. A useful feature is the ability to change the unit into an 8-band device, which comes in handy for either using two different bands in the same range—say simultaneously cutting at both 60 and 120 Hz—or doubling up and making changes at the same frequency to increase the amount of available cut/boost.

On the bench, both units met spec: The EQ's frequency response was flat within -1 dB from 20 to 20k Hz; the compressor's frequency response was only 1 dB down at 40 kHz; and THD+N on both units measured 0.025% (@1kHz), which is excellent for tube processors.

Having spent a couple of months with TL Audio's Dual Valve Equaliser and Dual Valve Pre-Amplifier/Compressor, I'm impressed with the versatility and performance of the units. Though the boxes are not inexpensive (the EQ retails at $1,395; the compressor is $1,595), when you consider you're also getting two high-quality mic preamps, tube direct boxes and -10/+4 converters with a stereo compressor or EQ, the price starts looking quite affordable.

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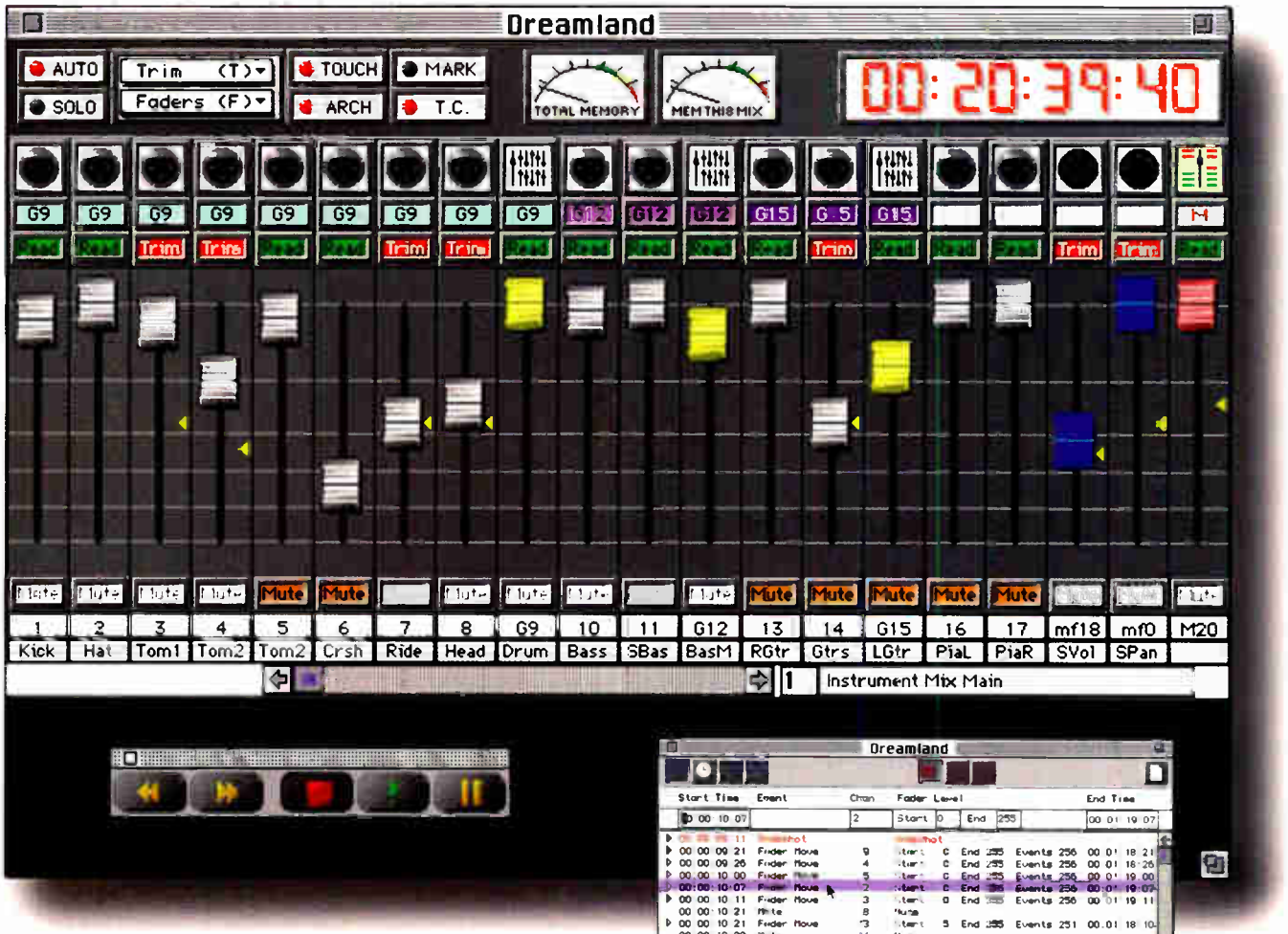

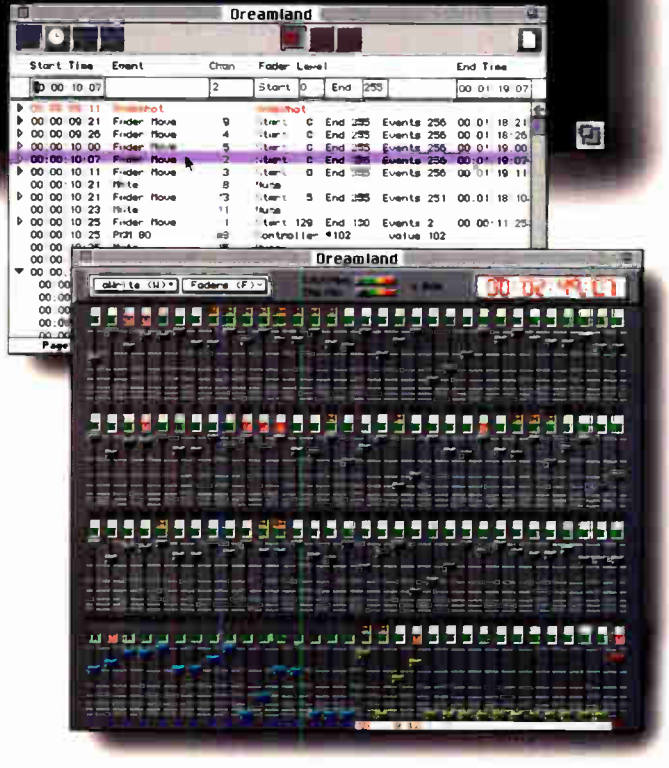

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World Radio History

Showco Turns Stadiums Into the Voodoo Lounge

Mick Jagger

Keith Richards

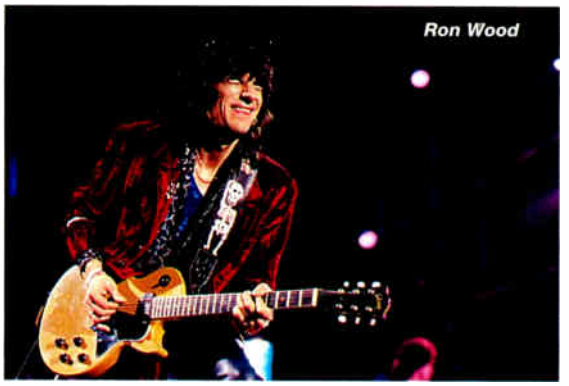
Article by Jeff Forlenza
Photos by Jay Blakesberg

Dallas-based Showco has worked with the Rolling Stones since the *Some Girls* tour in 1978. For the *Voodoo Lounge* tour of '94-'95 the veteran rock 'n' rollers revved it up once again and, of course, the production and sound system were state-of-the-art. Similar to the 1990 *Steel Wheels* tour, Benji Lefevre mixed front-of-house and Chris Wade-Evans mixed monitors. After serving as house sound mixer for Led Zeppelin, Lefevre became an independent engineer in the '80s, and he has worked on a wide variety of live and studio projects for the likes of Robert Plant, INXS, Jack Bruce and Peter Gabriel. Wade-Evans started working with Mick Jagger on his solo tour in '88, and he has also worked with George Michael, (the former) Prince and David Bowie.

Showco senior vice-president Robin Magruder talked recently about the proprietary Prism® stadium system used on the *Voodoo Lounge* tour: "The array itself is completely integrated along with the Prism digital control system, so you have a completely matched and balanced system. We think that's why

BACKGROUND PHOTO: MARK FISHER

World Radio History


Ron Wood

we get the kind of results we do, with extremely good coverage, clarity and definition. It is a proprietary design with primarily JBL components and Crown amplifiers. Beyond that, it's basically a trade secret exactly how we do it.

"The Stones stadium system has a set of Prism delay enclosures that are used for enhancing the high end, which we all know rolls off over distance," he continues. "That's used in several different configurations. We have free-standing delay towers, which are used in most venues to distribute the delayed sound to the back upper tiers of stadiums. In some of the configurations, they'll also put some cabinets on the back of the mix tower. For a very wide baseball-type field, they'll typically use four of the towers to get good dispersion.

"Probably the most unique thing audio-wise has always been the scale of the sets and production [on Stones tours]," Magruder adds. "The scale is generally so vast that it requires an extremely elaborate and large-scale monitor system. They're not interested in ear monitors. They prefer open-field, real high-definition, high-volume monitors wherever they go. The band, and particularly Mick, travels over hundreds and hundreds of feet, both horizontally and vertically, throughout the set. So there are a number of Prism SRMs [Stage Reference Monitors]—a high-powered, low-profile, compact monitor that we've developed. There's also a large Prism sidefill array for general fill on the main stage area, where they perform most of the show. There are monitors all along the perimeter of the stage and then up in various little special areas that they go to in different songs. That's obviously a key requirement."

Magruder says of the general theme of the production, "It's a rock 'n' roll band—there aren't any quads or any strange sound gags. But there's a very, very full complement of state-of-the-art audio processing. And certainly [Lefevre] uses that, but he uses it very judiciously. One of the special aspects that we've developed for this tour and several others is a very wide configuration: The main speaker arrays are about 160 feet apart. With the Prism system, they get tremendous stereo separation and stereo imaging. So the mixer can really pick things out and get a lot of layering in the mix, very much like you could achieve in a studio with high-quality studio monitors."

Charlie Watts

Outboard racks are loaded with an assortment of signal processing gear, including AMS DMX 15-80S digital delay/harmonizers, Brooke-Siren FCS-960 Varicurve programmable equalizers, dbx 903 comp/limiters, Drawmer DS 201 dual noise gates, UREI 1176 comp/limiters, TC Electronic 1128 programmable equalizers, Lexicon 224XL digital reverb, Roland SRE-555 tape echo, and Ya-maha SPX9 00, SPX90II and REV5 reverbs.

Microphones include an arsenal of AKG (414, 451, 460, D12), Beyer (M88, 201, M422), Sennheiser (409, 421, 441) and Shure (548, SM57, SM58, Beta 58). Jagger and the backup singers use a Sony WRR 57 wireless system with Shure SM58 capsules. "Benji uses Neumann U87s for drum overheads," Magruder says, "which is something of a studio technique: It's a big-diaphragm mic, and one of his philosophies for using that mic is that it's got extremely good frequency response. It also will handle the dynamics of the drum kit and the bleed you inevitably get in the live situation. Sennheiser 421s are in the horn section. The [other] vocal mics are mostly Shure mics. Keith's got a combination of AKG 414s and Sennheiser 409s on his amps."

Magruder goes on to describe the consoles: "We have the Harrison HM5 in the house with a 32-channel extender, and [Lefevre] uses a Yamaha DMP7 for some of his effects, keyboard cues and simple things; he uses the Yamaha virtually as a switcher. The monitor console is a 52-channel Harrison SM5. The SM5 has a 16-way matrix, so it's capable of up to 32 mixes. And with a monitor system this elaborate and extensive, you really need that many mixes. The Harrison is a superb product: Benji and Chris swear by them.

"Benji's probably dealing with at least 50 input channels," he continues. "And I believe Chris is using about 26 monitor mixes. That was the initial estimate, but I believe he's using beyond that now. And he's got the headroom to add more because they kind of evolve as they go. The set design continues to evolve, too: the runways and ramps and screamers have all evolved over the course of the tour; we've just added more Prism SRMs to cover new areas that they're going to explore."

A mammoth production that's constantly evolving. Sell-out stadiums full of fans. Giant inflatable characters (Elvis, the Virgin Mary, a baby, to name a few). Pyrotechnics and a huge stage complete with a mammoth tower that looks like a metallic, fire-spitting cobra. "The Stones are the highest level of production," Magruder explains, "so there's tremendous redundancy built into the system; it's got to be extremely reliable. Redundancy is one of the essential features, really, for any large-scale tour." ■

World Radio History

TOURING CONSOLES

a buyer's guide

by Mark Frink

Fifteen years ago, a typical live console had 16 inputs and three auxiliaries, with one being used for stage monitor foldback and the others for effects sends. Now, signal delays with moving parts are pretty much out of vogue, and monitors are run from their own console onstage. The input list for contemporary four-piece groups often calls for a dozen drum mics, the same number of instrument inputs, a half-dozen vocals and at least as many stereo effects returns. Add to that the inputs for even a simple opening act, and a 40-channel console is full. Requirements for contemporary touring designs and special events are regularly into three digits.

The "two hands" rule of ergonomics long ago dictated incorporation of submaster control faders once there were more than 16 channels. While submasters offered eight-finger operation and grouped signal processing via inserts, VCA control of inputs allows overlapping control groups. Matrix mixing is also prevalent these days, and a minimum of two matrixes offers the additional outputs for fill and delay systems. Multiple stereo matrixes also offer remix capability, allow extra mixes for archive recordings, the ability to make tapes for multiple bandmembers and for media feeds, as well as meet the demands of contemporary distributed sound designs. The number and kind of auxiliary sends and returns will also vary with the applications. In general, more flexible console architectures mean that rental and service companies have the ability to meet changing demands of various clients and projects, while for specific, dedicated applications and installations, mixers may be satisfied with a smaller set of features and options.

Engineering and manufacturing improvements have resulted in consoles having more features than available previously. Quality has also improved, due to advances in materials and designs used. Full-featured consoles are now financially within the reach of groups and facilities that couldn't consider owning such a resource previously.

Kick the tires! Shopping for a live mixing console is like buying a foreign sports car, though it likely will be driven over bumpy roads. It's often the only piece in the sound system that can't be replaced in an emergency. Consider your options carefully and try several out at typical events. Talk to engineers you respect who have used the console. Rent one for a short period of time, if there is an opportunity. If you work for a service company, ask your regular clients' engineers and operators for their opinions. Contemplate what your potential clients are likely to want in the future. Try to predict what trends in console operation are likely to become regularly asked for in bid specifications. The cost of buying the wrong console could be an unhappy customer.

Many features can only be judged in person, such as how the control surface is laid out and how easy it is to operate. Where is the operator likely to reach, and how easy is it to visually inspect and to interact with the console? The color scheme, the visual arrangement and the physical organization of the switches, faders, knobs and other handles can be as important as the actual circuitry for many, particularly first-time operators who must get familiar quickly. Options for adjusting the lighting for the control surfaces, meters and LEDs can best be appreciated in person.

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Manufacturer	Model	Year	List $	Inputs	Other Input Conf	EQ	Groups	Outs
Allen & Heath	GL4	94	$7,995	40	24-40	4 sweep	8	11
Amek	501 by Langley	94	$37,000	40	24	4 sweep (Q switch)	8	S+M
Amek	Recall by Langley	94	$74,500	56	40	2 band 2 switch	8	S+M
Amek	TAC SR6500	92	$50,777	40	32,24	4 sweep	n/a	18
ATI	Paragon	90	$94,900	40	24 to 64	4 para 2 sweep	16M/8S	Matrix 4M
Cadac	'J' Type	91	$112,000	40	32-120	3 para	16	-
Cadac	Concert	94	$440,000	60	32-120	3 para	12	-
Crest	Century GT Series	94	$17,460	32-52	Custom	4 sweep	8	S+M
Crest	Century GTx Series	94	$22,000	32-52	Custom	4 sweep	8	S+M
Crest	Century Vx Series	94	$30,000	32-52	Custom	4 sweep	8	S+M
Crest Gamble	Gamble EX56	87	$79,900	56	Custom	4 sweep	8 S	S+M
D&R	Axion	92	$84,900	40	32,78	4 sweep w/Q switch	8	S+M
D&R	Vision 48SR	93	$22,600	48	24,32,40	4 sweep	8	S+M
DDA	Forum	92	$21,415	48	24	2 sweep 2 shelf	8	11
DDA	Forum Mute	93	$27,525	48	24	2 sweep 2 shelf	8	11
DDA	QIII LCR	93	$35,495	24-64	24-64	4 sweep w/Q	8 S	11
Fender	MX-5200 Series	94	$3,160	32	16,24	3 sweep	4+	2+
Harrison by GLW	HM-4	85	$71,000	36/44	20 ext	4 para	4 S	2 S
Harrison by GLW	HM-5	85	$81,840	24/32	20 ext	4 para	8 S	4 S
Harrison by GLW	SM-4	85	$70,000	36/44	20 ext	4 para	4 S	2 S
Harrison by GLW	SM-5	85	$79,500	32/40/52	20 ext	4 para	8 S	4 S
Midas	XL3	91	$64,387	48	24-48	2 sweep 2 para	16	18
Peavey	Performance Series 3680	90	$12,000	36	n/a	4 sweep	8	S
Peavey	Performance Series 5080	94	$18,500	50	n/a	4 sweep	8	S
Ramsa	WR-SX1	95	tba	52	44	4 para	20	20+L/R
Soundcraft	Europa	91	$66,995	40	24-32	4 para	8	S,M
Soundcraft	SM 24	94	$69,950	48	32-40	4 para	24	s
Soundtracs	Megas II Stage	94	$20,299	40	24-32-48	4 sw/para	8	8+M1+M2
Soundtracs	Sequel II	94	$26,199	40	24-32-48	4 sw/para	8	8+M1+M2
Studiomaster	MD8C-32	94	$3,595	32	16,24	3 sweep	8	S
Studiomaster	P7 (P740)	92	$9,245	40	16,24,32	2 sweep 2 fixed	8	S
Studiomaster	Showmix (SH4082)	91	$10,565	40	16,24,32	2 sweep 2 fixed	8	S+M
Yamaha	PM2000	94	$17,999	40	32,24,16	2 sweep 2 fixed	8	S+M
Yamaha	PM3500	95	tba	48	40,32,24	4 para	8	S
Yamaha	PM4000	92	$71,999	48	40,32,24	4 para	8	S

Model	Matrix	AuxSD	AuxRTN	VCA	Muting	Metering	Dimensions	Wt.
GL4	11 x 2	10	8 S	No	MIDI	BG	55.9x30.7x7.9	99
501 by Langley	10 x 4	8	2 S	8	4	10 BG + 2VU	66x39x13	300
Recall by Langley	10 x 8	12	8 M	8	8	18 BG + 2 VU	86x44x16	550
TAC SR6500	No	18	no	8	8(VCA)	20 BG	62x34x16	400
Paragon	4sterea,	16	8 S	9	11 input mutes	48 BG	90x45x20	425
'J' Type	16 x 32	10+S	4 S	15	*	100 BG	100x36.8x15.5	536
Concert	12 x 12	16	none	15	**	100 BG	132x38x17.7	760
Century GT Series	11 x 2	8	8	No	4	10 BG	57.5x29.5x9.25	160-220
Century GTx Series	11 x 2	8	8 Center	No	4	21 VU	57.5x33x10	210-270
Century Vx Series	11 x 8	8	3 S	8 Center	12	21 VU	57.5x33x10	210-270
Gamble EX56	8 S	8M, 1S	No	No	8	65 BG	74x40x15	400
Axion	11 x 8	12	8 S	8	8 group/999 scene	68 BG + 2 VU	90.5x38x20	n/a
Vision 48SR	10 x 8	8	10 S	No	999 scene (opt.)	10 BG	85x30x10	n/a
Forum	optional	6	8	n/a	n/a	BG	78x10.5x30.3	200
Forum Mute	optional	6	8	n/a	8	BG	78x10.5x30.3	200
QIII LCR	12 x 8	8	8	optional	8	BG	63X24X40	361
MX-5200 Series	No	6	4 S+M	optional	Yes	dual LEDs	51x25x7	86
HM-4	8	4	4 S	8	8	32 VU or BG	71x35x11	300
HM-5	4 S	16	8 S	8	8	32 VU or BG	71x40x11	350
SM-4	8	8	4 S	8	8	32 VU or BG	73x35x11	300
SM-5	16	16	8 S	8	8	32 VU or BG	71x40x11	350
XL3	16 x 2	16	16	8	8	BG&VU	73x19x41	800
Series 3680	10 x 2	8	8 S	No	No	11 BG	69x34x14	190
Series 5080	10 x 2	8	8 S	No	No	11 BG	88x34x14	230
WR-SX1	8	20+L/R		Yes	10 groups	10 VU	87x14x41	tba
Europa	12 x 8	12	8 S	8	8	80 BG	96x44x14	550
SM 24	n/a	n/a		8	8	64 BG	87x35x14.5	375
Megas II Stage	11 x 8	6	4 S	No	6	10 VU	62x32x13	180
Sequel II	11 x 8	8	8 S	8	8 scene	10 VU	72x36x15	242
MD8C-32	No	6	18	No	1 scene (MIDI)	10 BG	70x25x6	150
P7 (P740)	No	6	4 S	No	100 scene (MIDI)	10 BG	65x30x4.5	135
Shawmix (SH4082)	No	6	6 S	No	No	11 BG	68x23.5x6	147
PM2000	13 x 4	6	4 S	No	128	11 VU	67x9x31	168
PM3500	12 x 4S + 4	8	4 S	8	128	14 VU	83x14x36	n/a
PM4000	11 x 8	12	4 S	8	8	18 VU	83x14x45	404

*multiple scene memory **mulitple scene memory with total recall S = Stereo M = Mono

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Audio-Technica 4033
Demeter VTMP-2b
Groove Tube MD-2
Milab DC-96B
Millennia Media HV-3
Neumann TLM 193
Neumann KM 184
Sennheiser MKH-80

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Consider how quickly modules can be changed, and whether they can be swapped while the console is in use. What are the internal options for changing the pre and post routing of auxiliaries for industrial applications and special-event configurations? What type of connectors are used for inserts and outputs, and how will this fit into the current inventory or installation? The number of balanced sends, as well as the facilities for linking consoles, is important if the console will be used in large designs. With the proliferation of low-cost, multitrack, digital recording formats, the number of live shows that use direct line outs for individual input channels is rapidly increasing. When was the last time you saw a big tour that didn't have ADATs?

Other real-world information—like the broadband preamp S/N ratio and the robustness and headroom of the summing amp stages—can be difficult to determine from a manufacturer's specifications. Although modern solid-state electronic performance has generally improved, some manufacturers still offer budget consoles at the expense of preamp and summing-amp performance.

A wide variety of operational features may now be considered standard for live mixing. Pads and polarity, or "phase reverse" switches, are essential. Fixed highpass filters to cut stage "rumble," breath and wind noises in live situations are standard, but adjustable filters allow the operator to tune the low-cut for different situations and maximize the amount of useful signal. Four-band equalizers have been preferred on live boards since the British electronics invasion more than two decades ago. Fully parametric EQ sections are offered on more expensive consoles. The ability to adjust the bell-width on the mids and the ability to switch from the normal shelving-type filter on the highs and lows to a peaking-type filter when boosting are rapidly becoming standard features. Stereo input channels save space and make it easier to operate stereo effects, while squeezing extra inputs into the same-sized frame.

Signal-present and clip LEDs, along with solo and mute indicators are common, as are more fully segmented signal LED ladders. Advanced solo systems on many consoles offer interlocking, momentary, or stacking and resettable logic, in addition to standard input priorities. Mute group scenes are commonly operated manually by four or eight switches, with mute-group logic providing local override or "safe" switches on individual channels. MIDI-operated mute scenes are increasingly available and likely to become more common.

The location, size and feel of the auxiliary send knobs and the ease of individually switching them on and off, pre- and post-fader, should be considered. Creating stereo mixes with individual auxiliary sends is more cumbersome than it is to use dual-concentric stereo sends with pan pots. Stereo auxiliary returns with limited EQ are common and are often incorporated in group modules to facilitate potentiometer-swapping with the group faders, which economizes console layout, particularly if the console also offers VCA control of the mix. Such designs often overlook VCA control of stereo auxiliary returns. Furthermore, console designers are, more and more, incorporating individual dynamic signal processors such as gates and compressors by hanging them onto the VCA circuit in each input channel.

Special inputs, outputs and routing for communications systems, playback and talkback inputs are often found on the master section, enhancing the user-friendliness of the console, particularly when it becomes full and things get hectic.

The ability to reset the console manually via nulling LEDs or software indicators, along with computer or MIDI control of switches, is being incorporated into newer console designs. Various levels of automation are optional via software-control packages that can be inserted or placed on the outputs; mechanical automation of console faders via third parties is available in many cases.

Last but not least, power supply features, such as resettable breakers and switch-over functions in case of failure, are worth investigating. Supply designs that work well on the manufacturer's original domestic voltage may not be stable on different international electrical services around the world. The integrity of the PSU' cable connectors is worth looking at, and the ability to double the length by adding the spare cable can be a bonus. ■

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Below: Lead singer Adam Duritz;
Below right: FOH engineer Rob Killenberger

3 for the

PHOTOS BY STEVE JENNINGS

LIVE SOUND

Counting Crows Come Home

by Jeff Forlenza

Riding a wave of success from their debut album (*August and Everything After* on Geffen), the Counting Crows returned to their old stomping grounds to play a sold-out show at Berkeley's Greek Theater recently. We spoke with FOH engineer Rob Killenberger about touring with the "Best New Band in the Land," and he shared some technical tips for making sure the Crows' shows fly every night.

Killenberger mixes front-of-house from a 60-input Yamaha PM4000, while monitor engineer Graham "Hutch" Hutchinson uses a Ramsa WR-S840 console for monitor mixes. On the Crows' summer tour, Firehouse Productions (Brooklyn, N.Y.) provided full production, and Delicate Productions (Camarillo, Calif.) supplied stacks and racks. For the Berkeley show, Delicate provided the entire audio system except in-ear monitoring, which came from Firehouse. The P.A. was a Martin system including 24 F2B bass cabinets (two 15-inch drivers), eight F2M mid cabinets (three 12-inch), eight F2H mid-high cabinets (two 2-inch and three 1-inch), eight F2C "combi" cabinets (12-inch, 2-inch and 1-inch) and 12 BSX sub-bass cabinets (two 18-inch). All told, there were 30 cabinets stacked on each side of the stage.

A big part of the Crows concert productions involves Adam Duritz' monitor mix and vocal sound. "He's very particular," Killenberger says of the lead singer. "He wants to hear everything precisely. We have the Radio Station [ear monitors] for Adam. For a while, we had just a pair of wedges, and it was okay. But every now and then, he'd blow out his voice because the stage volume was loud, and he'd be having a hard time hearing his own voice. Since we got the ear monitors, he hasn't lost his voice from performing, and he hears his voice exactly as he wants to hear it. We put a Summit tube EQ on his channel to EQ his monitor mix. He's having a great time with the in-ear monitors. You can tell there's more emotion in his performance because he doesn't have to search for his sound. We'll be getting other bandmembers on ear monitors very soon."

Adam Duritz' vocal style—along with his lyrics—are the band's most-recognizable trademarks, and

—CONTINUED ON PAGE 160

World Radio History

road...

From left: Showco systems engineer/crew chief David Moncrieffe and FOH engineer Jim Huth; Below: Lead singer Scott Weiland

Flying With Stone Temple Pilots

by Mark Frink

Bursting onto the scene two years ago with their own brand of new alternative music, Stone Temple Pilots recently toured North America with Jim Huth mixing FOH. We caught up with Huth in Los Angeles, where he was getting STP ready to go first to Europe and then on to South America with the Red Hot Chili Peppers. Huth has been with the band since the beginning, meeting them while he was running a rehearsal studio in L.A. called Bill's Place.

When STP got their deal with Atlantic, they rehearsed at Bill's Place for several weeks with full production and Huth engineering. "They asked me, 'Any chance you could go out with us and do this on the road? We need someone for two weeks. But you gotta drive the truck and haul the gear and cook the food, heh, heh...but you get to mix, also.'" Huth relates. "I haven't worked for anyone else since. They're a great bunch of guys."

Huth says that the band really cares about the show sounding like the record. "They want it to come off live," he explains. "Before I went on the first tour with them and did those clubs, I sat in a recording studio and played the CD and sang through a microphone to try and get all the effects right."

Huth mixes STP on a Yamaha PM3000. For effects, he uses an Eventide 3500 for vocals, along with two SPX900s (being particularly fond of the distortion-with-gate preset) and a couple of Roland SDE-3000 delays. On drums, there is a Lexicon LXP-5, LXP-15 and a PCM70. A dbx 120dx subharmonic synthesizer is used in a couple of spots on the bass guitar as special effect to "shake the 18s."

The vocal mics are Audix OM-7s, increasingly popular with alternative bands. "I knew Nirvana and Pearl Jam were using them, so we tried them and have been using them ever since," Huth comments. "I bought half a dozen at the beginning of the tour and still have five working, although they have to buy new grilles regularly. Scott Weiland throws the mic up as high as he can at the end of every show."

After switching from other popular models he tried previously, Huth uses a Shure SM91 on Eric Kretz's kick drum, which has no muffling. "As funny as it sounds when you hit the drum standing right beside it, it works great live," Huth explains. "The snare is the usual 57." EV 408s are used on toms because "the SM 98s just don't last with this band—you can only hit them a couple of times with the stick." AKG 460s are used on the ride, hi-hat and splash cymbals and 414s are used for overheads. At the FOH, a BSS 504 quad gate is used for toms and a Drawmer DS-201 is

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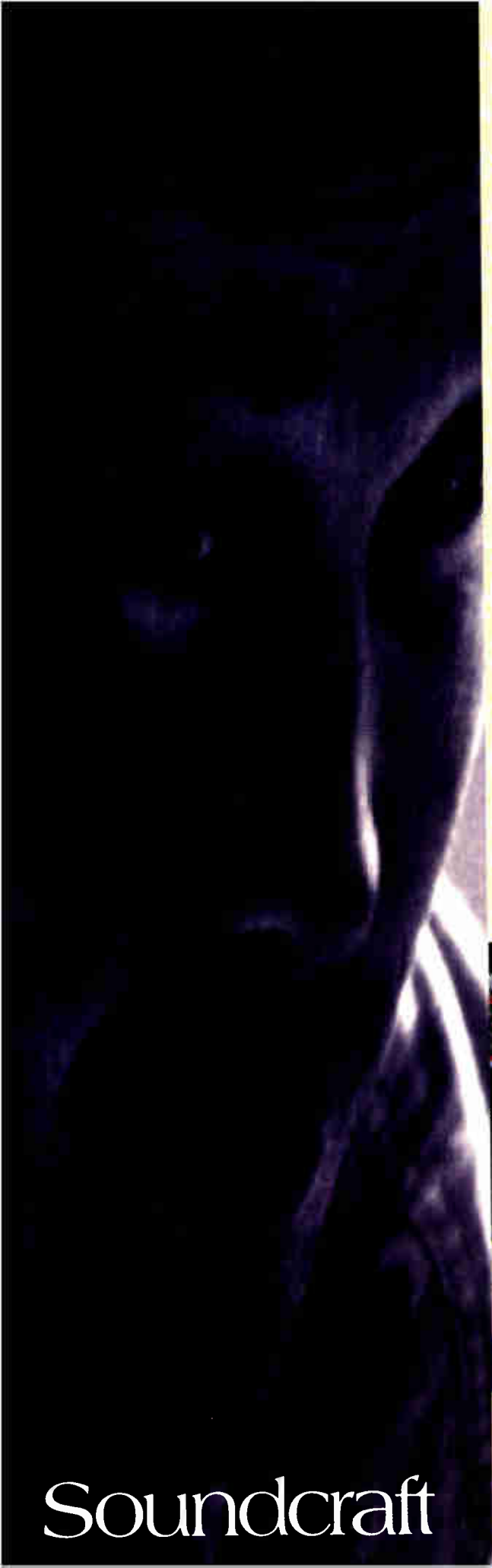

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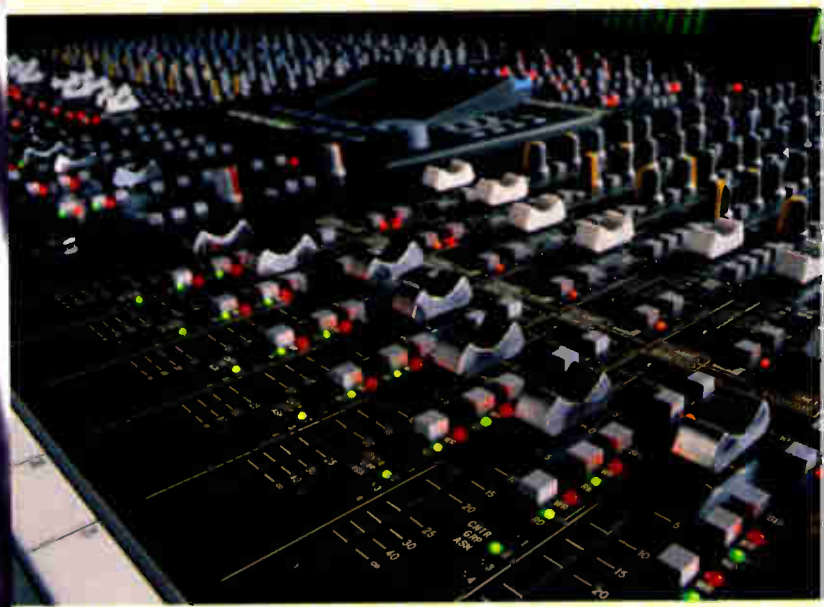

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used on the kick and snare. Three channels of a BSS 404 are used on kick, hat and ride.

A Demeter Tube DI is used on Robert Deleo's bass guitar, which is plugged into a rack-mount SansAmp first and then into an Alembic preamp and finally to his QSC MX 1500 power amp, giving the bass rig an extra gain stage. Huth uses two double-10-inch cabinets with ports and two quad-10-inch cabinets with Eden speakers, found in the original SWR equipment. "I also take a post-out direct from the SansAmp, and I mic the speakers with a D-112," Huth says. A Drawmer 244 is used at the FOH. Because of the bass rig's extra gain stage, "it's real loud," Huth says matter-of-factly. "The guitar rig is also on ten."

Deleo's brother Dean uses two Marshall stacks for guitar. The stereo guitar rig is miked with two SM57s for cut and two Sennheiser MD409s for warmth. "I don't put any EQ on the guitar mics," Huth says, "just a highpass filter at about 120, and that's it." A Fender Bassman "on ten" is also miked with two 57s for a "second guitar sound that I then assign to its own VCA so I can just use it in certain places. It sounds like two guitar players that just got real tight." A Demeter preamp is used in the guitar rig, along with a Rocktron VHT power amp and an IntelliVerb for chorus and delay. The acoustic guitar has a Baggs pickup with a micro amp going into a Demeter Tube DI. At the console, there is a BSS DPR-404 compressor used as a brick-wall limiter.

STP has been using Showco (Dallas) since January of '93 when they filled in for Helmet, opening for Ministry and Sepultura in New Orleans. "Showco has stood behind us and pretty much given us everything we've needed," Huth explains. "The band are great believers in Showco because of the people and the monitors." The other three guys on the crew this year were from Showco. Crew chief was Dave Moncrieffe, who also works as the systems engineer. "It's a two-person mix, where I run the board and he runs the system," Huth explains.

The stage technician is Scott Patter "who's in all the live video shots runnin' across the stage settin' mics back up." Monty Curry, the latest Showco engineer doing the monitor chores, continued on with STP to Europe where they used Roadstar of Sheffield, England. At the drum set, Curry uses four wedges and two subs. There are 17 monitors on the stage for the four-member band, but it has been necessary because the crowd noise has often been 110 dB at the stage. ■

Ottmar Liebert's Acoustic Textures

by Mark Frink

Ottmar Liebert, quietly being discovered for his blend of classical and contemporary acoustic guitar instrumentals, wound down his touring this summer to go back to New Mexico and record. We caught up with the tour at the beautiful St. Michelle Winery in Woodinville, Wash. Liebert's live show is mixed by his brother, Stephan Liebert, on a Yamaha PM3000, using a TC Electronic M5000.

"I bought the 5000 a year ago, and it's super clean, very compact," Stephan Liebert says. "The only thing is it's susceptible to low voltage, and it gets hot. It fried one Klark that was over it in the rack." Its two machines are used for drum reverb and for guitar reverb. The other effects were a Roland SDE-330, two Yamaha SPX990s and an SPX90, "just for occasional effects." Liebert continues, "I don't believe in gates and limiters with mostly acoustic instruments. I keep my fingers on the faders, and whatever happens, I'm right there instead of compressing anything."

The only console insert was a BSS 920 Varicurve on the two acoustic guitar channels. "If you use it in stereo, you only get six bands, and that sometimes is not quite enough to use for the main P.A. EQ," he says. "I use the Klark 360 on left and right, and then I have the subs on an auxiliary send." A Sony MiniDisc player was also used during the show.

"I add crickets to one song, and there's a helicopter in another song," Liebert explains. "In one song we add a radio talking effect, and there's another place where there's the sound of a tempest. Last year, I had a keyboard set up with a [Roland] 770, and then this year Ottmar bought a MiniDisc player that can

PHOTO: MARK FRINK

Ottmar Liebert

record, so this way it takes up less space and it's easier."

The sound production being carried was supplied by Delicate Productions of Camarillo, Calif. Saving space was carried to the extreme on this tour, making it possible to put everything in a U-Haul-type trailer behind the bus. In-the-ear monitoring reduced stage amps and speakers to one small rack and a handful of transducers. "Our first concern was whether we were going to have enough low end for the drummer, but he was totally happy with it, so we went with them for this tour," Liebert explains. "It makes both my life and the monitor engineer's life easier, and the band is much happier. Plus the stage looks much cleaner."

With this setup, the drummer ends up on the far right. They need to get the drummer as far away from the center of the stage as possible, because the mic on the guitar is wide open. "The problem I had last year using wedges was that the piano

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player and the drummer had their mixes really loud to the point where it would affect my stereo mix," Liebert says. "It always was drum-heavy on the right, and the first few rows would really suffer."

Delicate's Bill Sage was performing the monitor chores on a Ramsa, whose outputs were simply driving four pairs of hard-wired in-the-ear monitors, using a rack with an Aphex Dominator and a Crest 1001 amp for each mix. Three of the guys were using Future Sonics ear molds, and the bass player, who was the newest addition to the group, was using Etymotic Research in-ear monitors. Sage had a four-way selector for referencing the mixes, and there was an extra pair of the Etymotic transducers.

The two acoustic guitars were miked with AKG 460 condensers. The bass player came directly out of his SWR head. The drum kit was a combination drum set and percussion station, increasingly popular with this type of music. The "kick and toms" are studio samples triggered from a Roland S-760 by an Alesis. The snare and timbale each had a Shure SM57, and the wind chimes had an SM81. The bongos and congas were miked with Sennheiser MD 409s, and the gong had an MD421 behind it. The three overheads were AKG 414s.

A couple of unusual instruments completed the drum kit: There was an AKG D-112 in the *cajon*, which the drummer actually sits on. It is a traditional Peruvian instrument, popularized by Cuban salsa musicians, and is a square, wooden box with a thinner, loose surface on the front side, which is struck. The *cajon* has guitar strings on the inside, and it sounds, not surprisingly, like a cross between a bass drum, a wood block and a snare. There was an *udu*, which sounds something like a tabla. This *udu* was a modern, ceramic adaptation made by Frank Geogiorni of New York based on the traditional Nigerian clay drum. It was shaped like a flattened gourd and miked with an AKG 535 near the mouth.

The pre-show music is an "audio wallpaper" compilation of long chords, sustained notes and ambient sounds, created by the Liebert brothers specifically for the time between doors opening and the start of the show. "We couldn't find anything we liked for pre-show, so we created it," Liebert says. "We're always collecting ambient sounds on portable DAT for the effects library. One sound is a power saw from some carpentry being done in the lot behind the studio. Another is children at a playground, and once again there are the crickets. In Santa Barbara one night, we found this huge field full of crickets, so we recorded it." The piece is cut as one 72-minute track. They had so many requests for it that they printed a limited run of a thousand copies on CD, named it *one:1993* and sell it at the T-shirt concession.

PHOTO: JEFFREY FRIEDL

Stephan Liebert

Like many touring acts these days, the Lieberts have also been multitracking on the road. "We made live recordings of twelve of the shows earlier in the year with hopes to get a live album," Liebert says. They used three ADAT machines, monitoring with two small Neve stereo consoles. "The idea was to warm up the signal as much as possible before it even went onto the ADAT by using nice mic preamps. Summit was nice enough to let us use some stuff, and we had a couple of channels of Massenburg. Then we dump that onto a Studer, running it through Dolby SR and then mix through the Neve board. That way it won't sound too digital, we're hoping." ■

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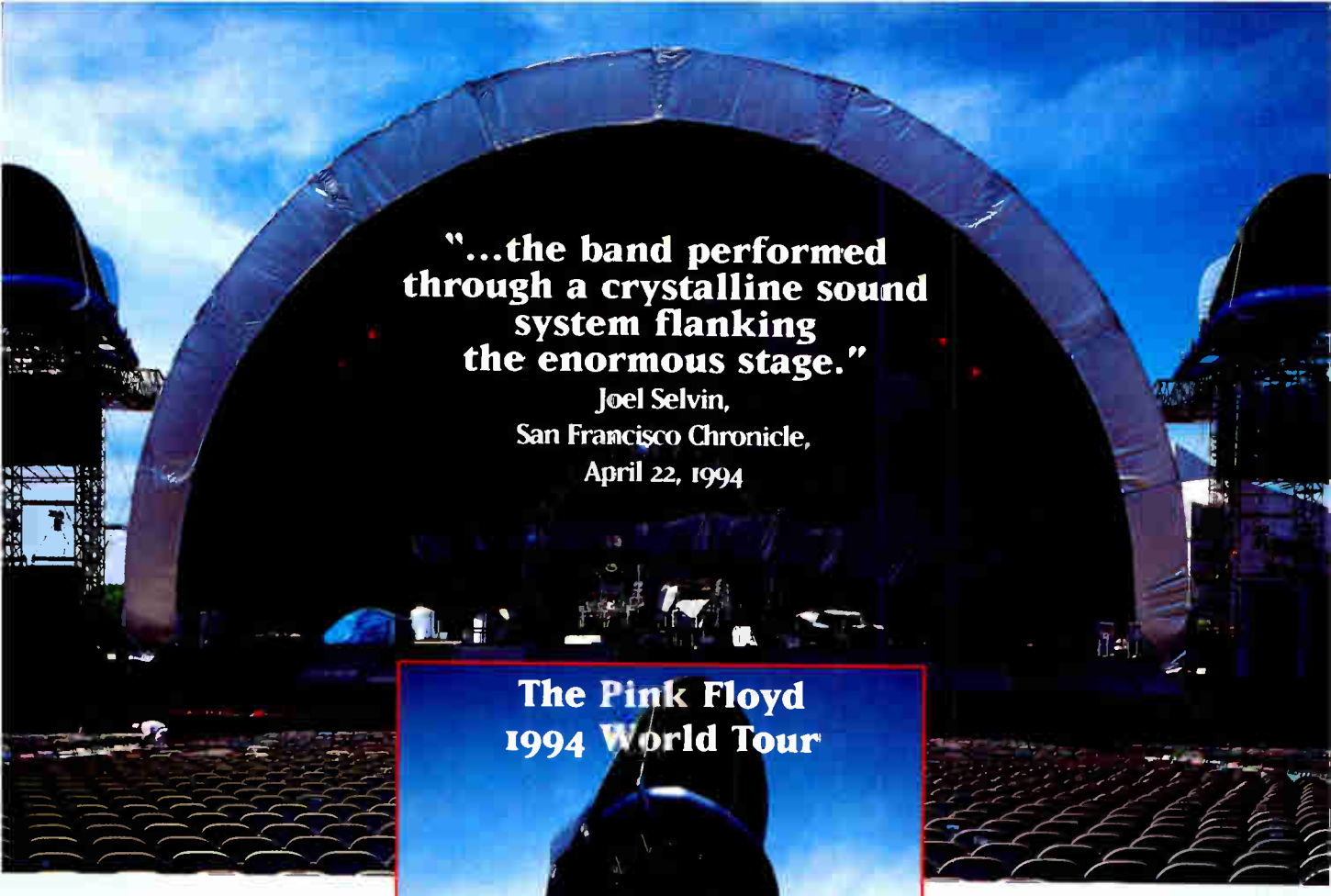

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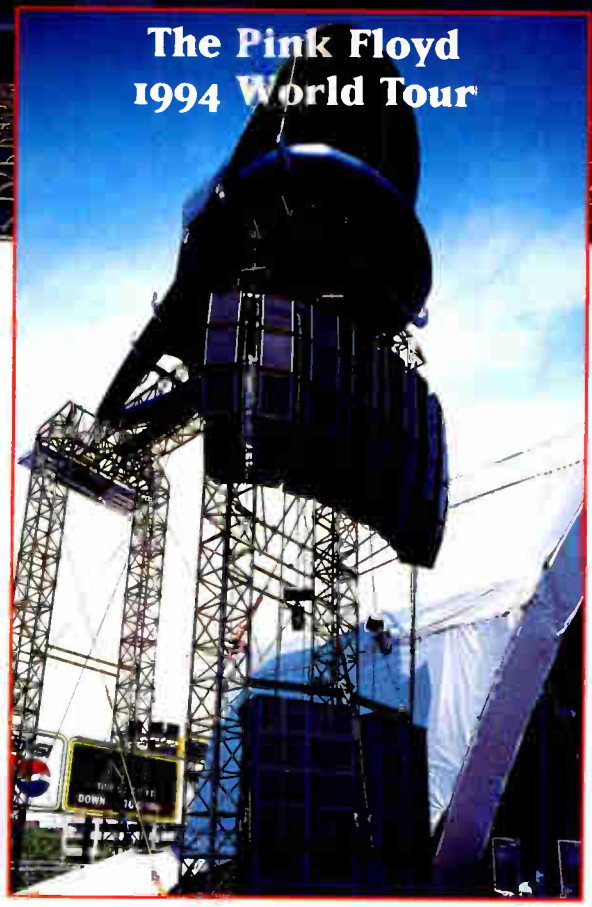
The Pink Floyd 1994 World Tour



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Photos: On May 8, 1994, Pink Floyd played to a sold-out audience of nearly 50,000 at Vanderbilt Stadium, Nashville, TN. With Britannia Row & Turbosound, there wasn't a bad seat in the house.

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—FROM PAGE 154, COUNTING CROWS

Killenberger strives to convey the emotional nuances of Duritz' voice with high-quality mics. "We were using the Beyer TGX-580, and the sound was great; it was a very warm and rich mic," Killenberger explains. "Adam really liked the way that mic sounded. But they weren't reliable with the style of vocals that Adam has. He puts a lot of energy into his vocals, and, because of that, he's constantly spraying into the microphone. Excessive moisture gets into the mic, and that would weigh down the diaphragm. So we had to switch over to a Shure Beta 87, which has a very natural sound to it; I think it's one of the most transparent-sounding vocal mics on the market. The Beta 87, being a condenser mic, doesn't have as much warmth as the Beyer, but it's much more reliable. We did an outdoor show opening for the Rolling Stones at Giants Stadium [East Rutherford, N.J.] with this mic in a heavy downpour. Adam and the band were drenched, but the mic still sounded great."

As far as processing Duritz's vocals, Killenberger uses a "Varicurve on his channel [to EQ it]. His insert goes into a BSS 901 and then into a BSS 402 compressor, and then out of that into the Varicurve," he says. "Basically, on the 901 I'm compressing—at a medium bandwidth—around the area of 500 to 600 cycles and 2.5k to 3k. I try to make his vocal as smooth as I can. Same thing with the guitars—I don't like the guitar to sound harsh and piercey."

Killenberger explains more of his miking preferences: "On kick drum are the Shure SM91 and the B&K 4007. That's a great combination. The SM91 sits on the pillow in the drum pointing back toward the beater head, and the B&K is on a stand about three inches inside the head of the drum, pointing upward away from the 91. Some of the other mics on the drums were a Shure SM57 on snare top, a Beyer 201 on the snare bottom, Shure SM98s on all the rack toms, AKG C-460s on the hi-hat and ride cymbal, and AKG 414s on the overheads.

"We have Sennheiser 409s on all the guitar amps," he continues, "two of which are Matchless amps for Dave Bryson. Dan Vickery uses two '67 Fender Vibrolux amps, which are phenomenal-sounding amps. The Vibrolux is a 35-watt, dual-10-inch combo; it is very well-rounded with a smooth warmth and cut, and is perfect with Dan's musical style. Charlie Gillingham plays a Hammond B-3 with a Leslie 122, and that's just miked with a pair 57s on the top and a Beyer M88 on the bottom. Matt Malley has an Ampeg SVT bass rig, with two 8x10 boxes; I just put a Sennheiser 421 in front of the box and use Countryman DIs on his basses."

For accordion, Killenberger uses a combination of an AKG

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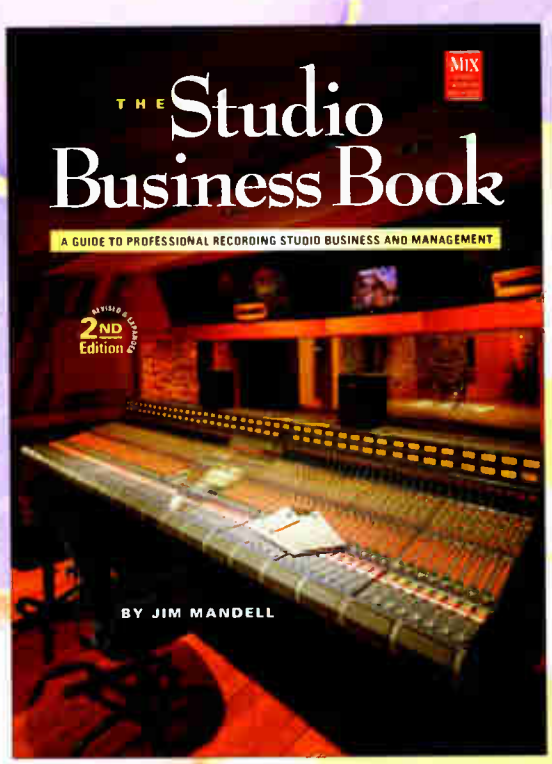

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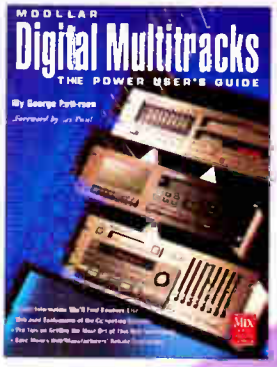

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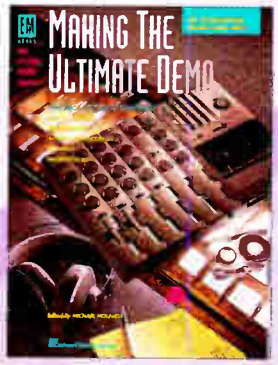

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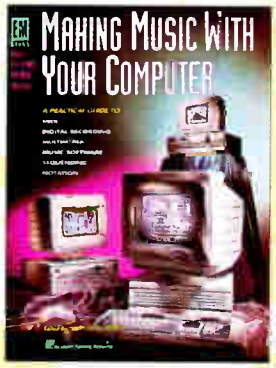

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408 mic and a Countryman DI. "The accordion has a pickup inside," he explains. "I basically use the pickup and just 'hollow out the middle.' When Charlie plays the introduction to 'Omaha' on the accordion, it sounds very big because the pickup has a great low-end response. However, it doesn't translate the mid and high frequencies accurately. So, I use the mic to sort of 'help out' the pickup. Charlie and I are trying to achieve a bagpipe-sounding accordion for that 'Omaha' intro."

Killenberger gets direction from the band as far as how they want their shows to sound: "Dave Bryson is also a recording engineer. He's given me a lot of hints as to how the band should sound and how their shows should feel. He basically said that they don't want it to sound very big. They don't want the drums to be very clicky. The kick drum is not gonna be a snappy kick; it's gonna be more of a round kick drum to couple with the bass. They didn't want a big, clanky top end. Other engineers come up to me after shows and say, 'It sounded pretty good, except I would have had more transient attack on the drums, and I would have put more top-end clarity on the bass.' But that's one thing that the band doesn't want to have. They want more of a lower-mid-definition, 'quarky' kind of bass."

Being the live engineer for a band whose well-known album precedes them is a formidable task for Killenberger. "The band wants to be somewhat reserved, but at the same time I want it to still have the excitement of a concert. I think we reach a happy medium," Killenberger concludes. "Because you still have thousands of cheering fans out there, and they want to see a great rock show. Basically, my job is to make sure everybody on the stage can be heard clearly. I have to be sure that all of the great music happening up there is translated through the sound system to sound as good as it possibly can. I want people to listen to this show and say, 'Wow—what great lyrics, what a great band!'" ■

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Article and photos by Mark Frink

SoundCheck

Seattle at night

CLUBBING IT UP IN SEATTLE

The larger live clubs in Seattle are regularly visited by national acts, as no West Coast tour is complete without a stop in the Emerald City. National headquarters for great coffee, gray skies and grunge music, Seattle continues to be an alternative breeding ground, with many rehearsal and recording studios to accommodate the hordes of local artists, who work as dishwashers, messengers and espresso baristas by day, forging their musical chariots of fire by night. There are several clubs that you're likely to visit on a national club tour, but this short list is by no means all of them. For more info, consult *The Rocket*, a bi-monthly free bible of the music scene; it has listings for shows throughout the Northwest, as well as reviews, classified ads and such.

Our first stop, the **Off Ramp Music Cafe**, is located at 109 Eastlake Avenue East, right at the bottom of the offramp at southbound Exit 166 off Interstate 5. This is where Soundgarden played in the movie *Singles*. Technically a cabaret, this is the only club in town that can be open after "liquor" hours, so after last call, the show can keep going. Emilian "Woj" Wojtowycz, has been working here since 1991, shortly after the club changed over to full-time live music. The narrow music room has two rows of booths on the rear wall. (Capacity, 469; alternative format.)

Off Ramp gear: All highly adequate. The main console is a 32-channel Soundcraft 500 with a Yamaha SPX-900, SPX-90, D-1500 delay and a Roland SDE-1000 for effects. Inserts include a Drawmer DL-241 and an assortment of old Symetrix compressors and quad gates. There is a pair of JBL/UREI 5547A equalizers and 7110 compressors for the main system, which consists of two gray-carpeted trapezoidal boxes loaded with double-12s and a 2-inch JBL horn, stacked on two double-18s per side, powered by two Crown 3600 VZs and a PSA-2 amplifier. The monitor console is a Yamaha 2408M with an assortment of Rane equalizers and a TDM 24 CX-4 crossover. The monitor amps are a JBL 6290, a Crest 4001, and a 6-channel Rane MA-6 on the highs. The three pairs of front wedges are loaded with JBL 12s and 1s, and there is an old Community fiberglass double-15 "big mouth" bass bin with a JBL 2-inch horn sitting on top for the drum mix. The microphone complement includes Sennheiser 421s, Shure 57s and 58s, and EV PL-80s.

RKCNDY (pronounced "rock candy") is on Yale Avenue, around the block from the Off Ramp. We talked to house engineer Jeff Stanley just before he went on a five-week hiatus with Sweetwater, opening for Candlebox. The room is medium-sized with concrete-block walls, and this rig gets loud. There is a balcony mix position facing a 4-foot stage in the rear corner. This is one club where you might not want to be on the floor for some of the shows. (Capacity, 509; all loud formats.)

RKCNDY gear: The Midas Pro-4 is not unagreeable to mix on, and most of the 36 channels work. House effects are

Above: "Irish" McKinney at The Backstage Club; Right: Jeff Stanley at RKCNDY

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a Yamaha REV7, an SPX-90, and two Roland SDE-1000s, and the inserts are a Valley 4-channel Gatex, a Symetrix SG-200 dual gate, a dbx 160x and a Yamaha GC 2020B stereo compressor. If you bring your own processing, you'll need XLR effects patch cords and TRS plugs for the inserts at the patch bay. The console's mix output goes to two TDM 30GE-1 graphics, two Symetrix 501s, and two BSS 340 crossovers. The hanging main speakers are two boxes per side, each loaded with McCauley 18s and 12s, a Radian 2-inch on a DDS horn and JBL 2404 tweeters. The mains are powered with a Hill dx 3000, a Hafler "500," a

Jim Anderson at the Crocodile Cafe

Yamaha P-2200 and a 2100; these amps are pretty standard for most of the Seismic systems in town. The monitor console is the ubiquitous 2408, mounted vertically behind the stage in a 3-foot aisle behind a chain-link fence, between the wall and the back of the stage. There are three Yamaha Q2031 stereo equalizers and two TDM crossovers for the six mixes. Monitor power is Hafler and the wedges are a typical Seismic Audio design, double McCauley 15s with 2-inch Emilar 320B drivers on DDS horns, as is the upright drum box. Old Northwest two-way boxes are flown for sidefills. The mic cabinet has an EV RE20, AKG 451 condensers, Shure 58s and 56s and an EV 308. The sound system is owned by Seismic Audio, which provides systems for many other clubs in town.

The **Crocodile Cafe** is located two blocks north of the Moore Theater at the corner of Blanchard and Second Avenue. This is where the beautiful people hang out—you know, the black-on-black crowd. A short menu is served until 11 p.m. The music space, one of the best-sounding small rooms in Seattle, is separate from the cafe; the bar is in the back. Seattle club-scene veteran Jim Anderson is the house guy, having previously worked at the Central in Pioneer Square in the formative years of grunge. (Capacity, a couple hundred; tragically cool format.)

Crocodile gear: The console is an old 20-channel Soundcraft 1-S with a Lexicon PCM-41, Roland SRV-2000 and a MidiVerb II. A Symetrix CL-100 comp/limiter, a 501 and an SG-200 dual gate are the inserts, and there is a UREI 539 cut-only EQ for mains and the ever-popular TDM crossover for the four-way main stacks. The stage is triangular, with double-18 subs at each side and two Martin "philly-shaves" stacked vertically and powered by a Hill dx 3000, with a QSC 1400 powering the high-mids and highs: a Renkus-Heinz 3300 on a DDS 60x40 horn and JBL 2404 tweeters. The monitor board is a Tapco 6100R with an expander for 14 channels; it's on the stage, sitting on the amp rack. The two 15- and 1-inch, flown sidefills are the only monitors, and they're powered by a QSC 1200 and a BGW 750 on the lows, using another TDM crossover. The microphone complement includes an AKG D12, M-69 for toms, and 57s and 58s, of course, but you might want to bring your own vocal mics and a sense of humor. Anderson says he was originally convinced of the ruggedness of 58s by Seismic's owner driving a 10-penny nail into a 2x4 with five strokes and plugging the mic back into the front line with no audible difference.

The **King Theater** on Sixth Avenue is the largest regular all-ages club in town. Originally a movie house, it seats 900 and shows movies when not putting on triple-bills for the younger crowd. Popcorn is served in the lobby. This is also a Seismic P.A., and it rocks.

King gear: The house console is a late-model Soundcraft 800B/40 with all eight auxiliary pots on the strip, and the effects are a Yamaha SPX-900, two SPX-90s, a REV7 and a Roland SDE-3000. There are dbx 160x compressors for inserts on the mains, along with a Klark equalizer, and there's a 6-channel ARX noise gate. The main speakers are a brand-new Seismic Audio four-way box with two horn-loaded 18s and two horn-loaded 12s, all McCauley. The high-end is an Emilar 2-inch and two JBL 2404 tweeters, all on DDS horns. The monitor console is a 32-channel Soundcraft 500 with Yamaha Q2031 equalizers, and the wedges are biamped double-15s with an Emilar and passive 2404 tweeters.

Under The Rail is directly below the elevated track of the monorail that the 1960 World's Fair left behind. This is a high-ceilinged building with a large room and a classic blue-collar rock-club feel. I caught Yngwie Malmsteen's soundcheck, and the room sounds like the large garage that it is, but the P.A. manages to hold its own. Ken Hughsby owns the sound system, Greg Thomson is the house guy and "Nasty" is the stage manager. (Capacity, 800ish; garage rock format.)

Under The Rail Gear: The main console is a Soundtracs M Series 32x8 with an Alesis XT reverb, Lexicon PCM-60, a PCM-42 and a DigiTech RDS 1900 DDL. Inserts include a US Audio Gatex and a Symetrix 501. There are stereo pairs of UREI 537 equalizers, Symetrix 501s, and UREI 525 crossovers for the main stacks. These are all McCauley double-front-loaded cabinets with two each per side of the double-18s, double-15s and double-12s. There are two JBL horns with 2445 drivers per side on top. The system is powered by three Crown MA 2400s and an MA 1200 amp. The monitor rig consists of a Peavey 24x8 monitor console,

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two Yamaha Q2031s with a TDM crossover, powered by two BGW 8000 and two Crown 300 amps. Wedges are double-15, a 10 and a DDS horn. Sidefills are a 15-, a 10- and a 2-inch.

The **Mo'Roc N Cafe** at East Pike and Tenth, a newer club on the south end of Capitol Hill, has Caribbean and home-style food, slanted toward vegetarian and vegan fare. With a restaurant section and a "quiet" bar besides the music room, which has a small balcony, its floor plan is typical of popular clubs in town. It has also become a hot spot in the year it's been open. The triangular 3-foot stage is in one corner, with the mix booth in the opposite corner of the room. In spite of the tiled floor, the system sounds good when the room fills up and has plenty of low end. It is owned by Kelly Barry, who operates it most of the seven nights a week the club presents live music. (Legal capacity of 130, though it probably fits many more; alternative and hip format.)

SEATTLE CONTINUES TO BE AN ALTERNATIVE BREEDING GROUND, WITH HORDES OF LOCAL ARTISTS, WHO WORK AS DISHWASHERS, MESSENGERS AND ESPRESSO BARISTAS BY DAY, FORGING THEIR MUSICAL CHARIOTS OF FIRE BY NIGHT.

Mo'Roc N gear: The 32-channel DDA D Series console has dual ¼-inch inserts and XLR sends and returns for effects, so if you carry auxiliary gear, you'll need the right connectors. There's a Roland SDE-2500 MIDI digital delay, and Dynacord DRP 20 and DRP 16 reverbs. Inserts are a Klark-Teknik DN 510 dual gate, a JBL 644 quad gate, two JBL 712 stereo compressors and a dbx 166. On the mono mains is a Behringer MDX 2000 compressor and a KT DN300 equalizer. Two DeltaMax 1152A speakers per side are hung from the ceiling, and there are two DeltaMax 2181 and two S181 subwoofers under the front of the stage, all powered by QSC EX 4000 amps. The four monitor mixes are from two Allen & Heath GL-2 rack-mount mixers linked via SysLink slots. Three pairs of Dynacord SRC-360 two-way speakers (EV 12s and DH-1As) are hung from the ceiling for monitors and powered by Dynacord PCA 2524 amps. There's a carpet-covered, 18-inch W-bin with another Dynacord on top of it for the drum mix. The microphone complement includes EV 408s and an RE-27. There's a couple of D-112s for kick drum, an assortment of 58s and 57s, Milab condensers, and Klark LBB-100 direct boxes.

Kelly Barry at the Mo' Roc N Cafe

Pioneer Square is an older area located north of the newly repaired Kingdome, about a dozen blocks south of the world-famous Pike Place Market. Weekend summer nights find lower First Avenue to be a barhopper's dream come true. One cover charge gets you into a dozen clubs in the area. With a capacity of 500 and over a dozen microbrews on tap, the **Fenix Underground** is the largest and best-equipped of these, located on Second and Jackson at the south end of the Pioneer Square "circuit." Other clubs with live music include **Brother's Bistro**, the new **Catwalk Club**, **Colourbox**, the **Old Timer's Cafe**, the **Pacific NW Brewing Co.** and the **Pioneer Square Saloon**. The **Central Saloon** on First was in early on the grunge, punk and alternative music scene, but it changed ownership recently. Gear: varies widely; bring anything that's remotely important, like a sense of humor.

The **Backstage Club**, at 22nd and Market in Ballard, has been there for about 11 years, and house engineer "Irish" McKinney has been involved for the past nine. The Ballard area is 15 minutes north of downtown Seattle, across the Ballard Bridge. The club is a U-shaped, terraced, sit-down room in a basement with plaster walls. Red velour acoustical treatment is left up on the posts from when local supergroup Heart was there last fall, rehearsing and performing while recording a live "unplugged" album, with John Paul Jones producing. A variety of out-of-town acts that come to Seattle regularly know the Backstage best. My first sojourn to the Emerald City was here with Marshall Crenshaw back in 1985. (Capacity, 425; all formats except grunge.)

Backstage gear: The Backstage recently bought a used Soundcraft 800/32 that originally belonged to Sun Sound, and that yours truly performed the "ground-mod" on many moons ago. Other improvements include a new front end consisting of three hanging EAW JF-200s and two SB-218 subwoofers per side, powered by two Crown MA 2400s and a VZ 5000. Effects are a Yamaha REV7, an SPX-90 and a Lexicon PCM-41. There is a set of Peavey 5-channel gates, along with a newly added Aphex 4-channel ST 501 compressor for inserts. If you bring your own, you'll need ¼-inch sends and returns for everything. There is a Peavey 24x8 monitor console with five Rane equalizers. Crown PSA-2 amps power the JBL and

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The **Ballard Firehouse** is the poor cousin one block east on Market Street, and it frequently hosts struggling artists from the '70s when local bands aren't appearing. Literally an old converted firehouse—so get used to the sound of the room and the P.A. early on.

Firehouse gear: The console is a 24-channel Soundcraft Spirit with a TDM graphic crossover and a Symetrix 501 for the mono mains. Effects are a Roland SDE-1000 and an ART ProVerb. The two four-way stacks are a double-18 sub, two sideways Northwest double-15 boxes, a small double-12 and Northwest 2-inch horn, powered by an AB 1200, a Crown MT 1000, a Yamaha P-2100 and a Carver PM-1200 for the passive monitors. The monitor console is a Yamaha 2408M with three DOD graphics. The wedges are three JBL MR 805s and two older Yamahas. Consider bringing at least your own auxiliary gear if you play here. House engineer Rick Johnson was supplementing the system when I stopped by. Last-minute band or P.A. gear can be rented from American Music on Freemont Ave., right near the Zoo, and they're open 'til 6 or 7 p.m.

Another club bites the dust: **Parker's**, a local live music institution for the past three decades in the 'burbs north of Seattle, closed its doors last year to reopen as a sports bar.

Don't forget your tewk so you stay warm this winter. I'll meet you across the street for a double-tall skinny. Later, dude...rock on! ■

Mark Frink works as an independent engineer in the Seattle area when not mixing Tony Bennett, Tosca or touring trade shows.

NEWS FLASHES

Allen & Heath's new GL 4 console made its AES debut in San Francisco. As with the popular GL 3, it is designed as both a FOH and monitor console. Expandable to 52 inputs, it comes in a 32-channel standard configuration with eight submasters and ten auxiliaries on individual knobs. Each channel features a variable highpass filter and four bands of full-sweep EQ. Other features include eight stereo returns with 80mm faders, a 13x2 matrix and a pink noise generator...Sabine introduced its REAL-Q product, a real-time, adaptive digital equalizer that monitors program material during a performance and maintains any specified curve, with the ability to choose which portion of the frequency spectrum is controlled by the REAL-Q and which portion is manually controlled. The product features a real-time analyzer, pink noise

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generator, memory locations to store EQ settings and a 31-band digital master EQ and 31-band correction EQ, which can be superimposed. REAL-Q has dedicated menu keys, cursor movement keys, a data wheel and a dedicated Help button. It offers input and output of all digital formats and is capable of processing an analog and a digital input simultaneously...The Sixth Annual Live Sound Workshop is being held January 16-18, in Orange, CA, at the Chapman University campus, immediately preceding the Winter NAMM show in nearby Anaheim. The registration fee of $650 includes materials and meals. In addition to the veteran staff of HIGs, guest speaker Harry Donovan will talk about rigging systems and Craig Janssen wil speak on DSP processing. The three-day program is split into two tracks on the first two afternoons, concluding the third day with a hands-on, live music "practical" with a band. Those interested can call (812) 995-8212...DDA introduced the Q II Monitor, which includes six stereo and eight mono sends, making it good for in-ear monitoring systems. Auxiliary inputs for wireless receiver outputs allow operator monitoring of the mix heard by the performers. The comprehensive cue system has advanced logic features similar to the Q II FOH console...BEC Technologies of Orlando, FL, introduced its SIGMAnet Series, which provides signal distribution via fiber optics, offering a low-cost alternative that acts as a 20-bit digital stereo point-to-point link. The new AD2 and DA2 input and output modules are compatible with BEC's Pro-Line Series of digital audio distribution products...Next month, we'll have an AES wrap-up for anyone who was busy working that week and couldn't make it. Plenty of new products and ideas for us to mull over this winter, while we warm our feet by the fire. New term for 1995: line array. ■

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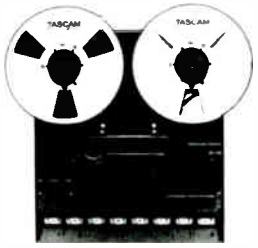

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The Paper Chase

Tour Managing And Mixing At The Same Time

by Monty Lee Wilkes

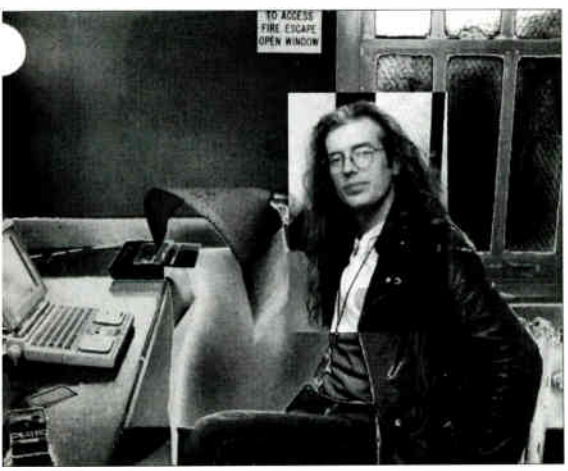
You just got that mixing gig with a band you're excited about. You realize that things are starting off a little small, probably on the club level, but that's okay because this act is going to be big. There's just one more thing. Due to budget constraints, the management wants someone who can not only mix, but *tour manage* as well. Welcome to the wild world of the tour manager/sound engineer.

This position is becoming increasingly popular in the touring industry. Many newer or smaller acts cannot afford to hire two people for these jobs, but it can work well for everyone. The act can save a little money by combining the two positions, and the person doing both jobs can make a little more dough. Like it or not, this is how tour economics dictate things at the moment, and being able to do both jobs might be the trump card that gets you the gig over the competition.

The majority of this article will be dedicated to being the trail boss and will pretty much ignore the fine art of mixing live sound. You probably plan on being a sound engineer first and a tour manager second, but this will only be true for a couple of hours a day. Never forget your true love of mixing, but realize you are going to be dealing with people who won't give a rat's behind about how many noise gates and what kind of digital reverb the next show will have: the managers, accountants, agents, folks at the record company, journalists and media people.

They want to know how many people came to the gig. How many shirts were sold? Did *The Times* show up, will the review be good? Why is the hotel budget soaring out of control? How much time does the band have to do interviews? It is important to address all of the concerns heaped upon you by the higher-ups. Everyone wants the act to succeed, and many people, from management to record company, are working hard to achieve it. The tour manager plays an important role in bringing all of these elements together. Hey, if the act makes it big, they can hire a "real" tour manager and you can forget all this and just mix; or maybe you'd rather tour manage after all?

The Wonderful World of Computers...I am a big fan, but they have their pros and cons. I was recently production manager on a tour that played theaters and arenas. I advanced the entire tour without using pencil and paper, but I also had a real production office with phone and fax lines each day. On a small tour you may find your office is the payphone in the john. Sometimes it is just easier to go with the good old loose-leaf binder when touring out of the bus or van rather than drag-



Monty Lee Wilkes

World Radio History

ging a computer and balancing it on your knee in the snow or sleet or gloom of night.

Nine times out of ten, the only thing you need a computer for is to print out a document that you already have a copy of, to fill in a blank form, or to look up a phone number. A good hard-copy system can be better and faster than a computer—it has lower power requirements, and it is often easier to fax duplicate documents from it, since most hotels and venues will have a fax and even a photocopier nearby. Most portable ink-jet printers are water-soluble so you'd be crazy not to photocopy them anyway. If you do go the computer route, you'll still want to have a paper backup, because a hard drive crash could wipe out all of your information.

Be prepared for a sea of paperwork. The funny thing is that if you're smart, you will impose this paperwork on yourself. A good tour manager is a storehouse of information: everything from load-in time for the crew to keeping track of press and interviews. Over the years, a tour manager devises a series of forms that make each day fall into place. Sharpen your pencil...

Open your binder and fill it with one advance sheet for each day of the tour. You will use this form when calling ahead and making sure that everything is set. It should tell you the day and date, city, venue, promoter, phone and fax numbers, before and after show travel, and whatever else is important to you or your act (e.g., nearest veggie restaurant to the gig). It should also have spaces for load-in, doors, set times, how many stagehands, the status of the catering, directions to the gig, etc. Having these blanks in front of you when phoning the promoter or production manager in advance will prompt you to ask the right questions and avoid overlooking important details. Advance those gigs! Get as many of blanks filled in before you hit the road as possible. When this doesn't happen, you'll be advancing shows from truck-stop pay phones while the band is having a hot meal.

Now you're out on the road: First thing in the morning look over today's sheet. Get out the faxes with interview requests that came into the hotel last night while you were doing the show and schedule them. Are there new guest-list and backstage or photo-pass requests? If so, enter them on your guest-list form (more on this later). Make sure that everyone is awake. Hotels have been known to botch the wake-up call. You, of course, are awake regardless because you carry a travel alarm clock. It's a good idea to call each room ten minutes before departure to light a fire. It's a nice way to tell them to get their butts down to the lobby without telling them they're late.

Be prepared for a sea of paperwork. The funny thing is that if you're smart, you will impose this paperwork on yourself. A good tour manager is a storehouse of information: everything from load-in time for the crew to keeping track of press and interviews. Over the years, a tour manager devises a series of forms that make each day fall into place. Sharpen your pencil...

On the way to the gig, provide the navigator/driver with the directions you got when you advanced the show. (You have, of course, allowed enough travel time to stop and eat, and the umpteen times the band will need to go to the bathroom.) Once you get to the gig, it's time for more paperwork: the stage plot and input list for the sound and lighting people. On your input list, it is helpful to list alternates for microphone choices. You may do well to carry multiple versions of your list, such as a 32-, 24-, and maybe even a 16-channel version. This way, some of your decisions are already made for you, since you have plenty of other things to do besides sound.

What other things? Now may be a good time to talk to the house lighting person if you don't have your own. Next, make sure the catering is satisfactory, or at least what you need to do the gig. It's good to deal with water and towels for the stage before soundcheck and then have your crew hide them for later as opposed to finding out at showtime that the opening act drank all the Evian and used all the towels.

If you have time, pull out your Generic Console Chart. I say "generic" because you are going to be seeing as many different boards as there are shows. Something simple works best and don't worry as much about faders and group assignments as about input gains and channel EQ. Be thorough, but remember, other tasks await you. If you are wearing more than one hat, there's a good chance that you'll also be the merchandiser.

When advancing with the promoter, you've arranged for someone to sell if necessary, and made sure that person will be at the venue around soundcheck time so you don't have to wait to count-in your product. Pull out the merchandise worksheet, and have both yourself and the person you count-in with sign the form to indicate that you agree on the amount of product. This can eliminate trouble later on. At the end of the night, count what's left, do a little math, pay the hall and/or vendor their cut, and get those shirts out of the venue.

Before you leave the venue after soundcheck, get your guest-list form handed in. This form should have the date, city and venue at the top and then the list below. Make it clear when you turn your guest list in to the box office that you need it (and any other guest lists) back at the end of the night with a clear indication of who showed or didn't. You will most likely be asked who did and didn't make the scene. Also have all the names of your entourage on this form, so that when someone loses their laminate, they can still get in without a hassle. Be sure to do a

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"last call for the guest list."

Many musicians, for various reasons, prefer to eat dinner as early as possible. Take care of it. If dinner is provided by the promoter, it may be catered at the venue, or the promoter may send you out to a restaurant or give you a cash "buyout" with which to get your own chow. Time permitting, this may be the chance to go check into the hotel and freshen up before the show.

When checking in, have another form at the ready: the rooming list. Be sure to list aliases if you use them. It is imperative that an accurate rooming list be given to not only all the members of your entourage, but to the front desk and hotel operator as well. When interviews get missed because the journalist called for Joe Singer and was told that person is not in the hotel, it is not the hotel operator's butt that is going to get chewed by the band's manager, but yours. Make sure that the hotel understands the importance of proper phone call routing. Also make sure that the hotel posts only room and tax to the master account and maintains separate incidental folios for each room.

Having a good crew is essential to wearing both hats. Be sure to take good care of your crew.

Get everyone out of the hotel and back to the gig with plenty of time to reset your console and make sure everything is okay in the dressing room. Check mic placements, and even do a line check if you deem it

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If there was a rule about how to get ahead in this business, it would say something about using the right tools for the job.

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necessary or have the luxury of time for one. Check your console so you know how it is muted. Assign one of your crew people the job of leading the band on and off the stage, as you will be at the house mix position at this time. If necessary, have this person remain at the dressing room door to keep well-wishers and industry types out until you can get there to organize the after-show meet-and-greet. Most artists need time to "chill out" after the show before meeting the public.

Once you have things under control backstage, it's time to get paid—for the show, and for the merchandise. Whichever you do first depends on a couple of things: If there is an after-show rush on merchandise and the box office is ready, take care of that—let the public buy more product. If merchandise sales appear to be done and the promoter isn't ready to settle yet, square away the merchandise. Also keep your eyes on your crew and make sure that they have the proper labor (stagehands) that they need to get the gear packed up and loaded out.

If all the hands got drunk, or the student hands at a university that are getting "paid" by seeing the show for free have suddenly decided that a career in live production is not for them and are splitting, deal with it. Handing out the T-shirts after your vehicle is loaded is one strategy. Having a good crew is essential to wearing both hats. Be sure to take good care of your crew, especially if there is only one or two of them. Being a good team is even more important when there are only a few of you. Don't be afraid to jump in and start moving gear. You can't have "white gloves" on a smaller tour: If this wasn't a smaller tour, you wouldn't be wearing all of those hats.

Once you get out of the venue and back to the hotel, be sure to check your messages and faxes. Chances are good that there will be a pile of them to make your life a little more hectic. Place wake-up calls accordingly, two if necessary. As soon as you get up to your room, it's time to count the beans. There are many accounting methods available. (Oh yeah, they told you that you would be doing the tour accounting as well, didn't they?) Some management companies have their own forms they may wish you to use. Some people use a standard colum-

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nar pad to keep track of money coming in and going out. I use a laptop computer with an electronic spreadsheet that I have fine-tuned, but this can be another standard blank form and a calculator.

I could dedicate an entire article to tour accounting, but let's cut it short this way: Do your accounting every day. Right after the gig. Don't put it off until tomorrow. When thing's don't add up. It is easier to find that error or remember that ten spot that the drummer promised he would sign for later when there are only hours between transactions as opposed to days. Circle the amount spent on all receipts and attach them to the worksheet. When plowing through a pile of paper trying to find errors it will make life easier. Keep this stuff in a safe place. Remember: Receipts equal money.

A good travel agent can be the tour manager's best friend. Some acts may already have an agent that they prefer. I have been using my agent for years, and wild horses couldn't separate us. She is a "rock travel agent" and knows the venues in every city and how far the hotel is from the gig. Most importantly, she knows my style. I know that, in a pinch, I can leave a decision between two hotels to her and she will pick the right one. I'm a firm believer that the travel agent be the tour manager's choice.

An important thing to remember is that you catch more flies with honey than vinegar. No one likes the "tough guy" tour manager. Being a jerk does not make you tough, just a jerk. Screaming about the contract rider will more often than not get you nowhere when the promoter scratched off your catering part of the deal with the booking agent. A tour manager gets paid to be a diplomat. You are—at least for that day—representing the act, the management, the agency, and many other people that you may not even know...yet. This is not to say let people walk all over you, but remember, you are probably going to meet these people again someday. ■

Monty Lee Wilkes is a freelance sound engineer/tour manager/production manager who has worked with the Beastie Boys, Nirvana, Redd Kross, Luna, The Replacements, The Smithereens, Soul Asylum and Southern Thunder Sound.

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New Sound Reinforcement Products

DOD R410 II MONITOR PROCESSOR

New from DOD (Sandy, UT) is the R410 IIPA/ Monitor Processor, which is designed to increase monitor system headroom in live sound applications. It offers a 15-band graphic EQ, providing 12 dB of boost or cut and two variable notch filters offering up to 24 dB of attenuation.

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CADAC CONCERT MIXER

Clive Green & Co. (Bedfordshire, England) unveiled the Cadac Concert mixing desk for live sound mixing. A 32-channel version of the board with a 12x12 matrix, will provide a total of 112 inputs and 72 outputs. It also features programmable switching, a "Complete Status Recall" facility with nulling LEDs and motorized faders. The nulling LEDs provide instant operator feedback of the desk status in low-light conditions.

Circle 213 on Reader Service Card

YAMAHA PM3500 CONSOLE

Yamaha (Buena Park, CA) unveiled the PM3500—a compact, lightweight, 8-bus, VCA-type mixing console. It features 128 MIDI-controlled scene memories and an expanded cue/solo system with VCA group cue, mix cue, master solo, and VCA and PFL cue trims. All inputs have 4-band, full parametric EQ, and the master section offers four stereo and four mono matrix outputs and sigma-peak bus overload indicators.

Circle 214 on Reader Service Caard

MBT '94 LIGHTING PRODUCTS CATALOG

MBT Lighting and Sound (Anaheim, CA) announced the new 1994 Lighting Products Catalog. It features detailed photography, comprehensive descriptions and a no-pricing format, which enables retailers to use the catalog as a brochure. The catalog allows the lighting retailer the flexibility of carrying a line of products without keeping everything in inventory.

Circle 215 on Reader Service Card

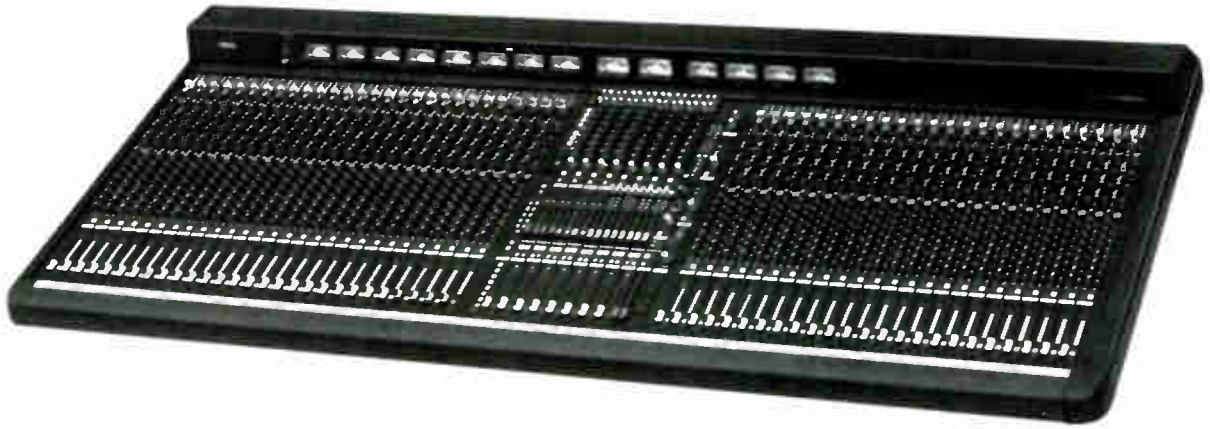
KLARK-TEKNIK INTERFACE CARD

Klark-Teknik (Buchanan, MI) introduced a remote-control interface card for use with its DN728 digital delay line. The single plug-in interface can decode a 4x4 cross-point switch matrix to access up to 64 user memories.

Circle 216 on Reader Service Card

ALTEC LANSING DTS152A-F

New from Altec Lansing (Oklahoma City, OK) is the DTS152A-F low-frequency loudspeaker. Designed to enhance the bass performance of a full Altec DTS



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sound reinforcement system, it provides a low frequency response of 39-500 Hz. The new loudspeaker allows a full-range DTS loudspeaker to be optimized in the mid- and high-frequency range. The DTS152A-F provides a maximum output of 133dB SPL, handles 2,000 watts of input power and can be configured for 4- or 8-ohm loads.

Circle 217 on Reader Service Card

ATI STEREO INPUT MODULE

Audio Toys Inc. (Columbia, MD) announced the Stereo Input Module for the Paragon mixing console system. The new module is the same width as the standard mono channel and offers full dynamics control, including a stereo version of ATI's patented RMS compressor and a stereo noise gate. It features two separate mic preamps, dual-input LED meters, 4-band stereo EQ with bandpass filters, six stereo aux sends, four mono aux sends, stereo gate and compressor.

Circle 218 on Reader Service Card

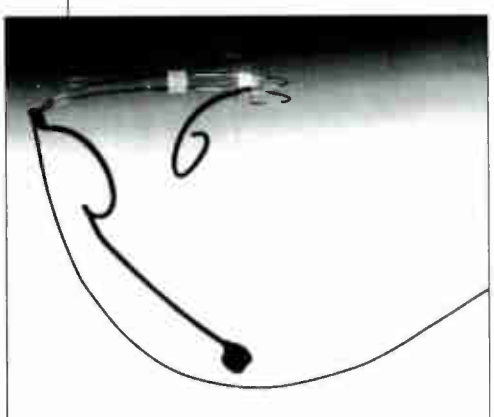
SENNHEISER MKE48 ST AND MKE2 ST

Sennheiser (Old Lyme, CT) announced the MKE48 ST (cardioid) and MKE2 ST (omnidirectional) headsets. Both headsets are made of a form-fitting material to accommodate various head sizes and microphone positions.

Circle 219 on Reader Service Card

BGW PERFORMANCE SERIES 3

BGW (Hawthorne, CA) announced the Performance Series 3 Audio Power Amplifier. It is a 2-rackspace, 450-watt-per-channel (into 4 ohms, 20-20k Hz) power amplifier with an IHF power rating of 1,000 watts into a bridged mono 8-ohm load. Features in-



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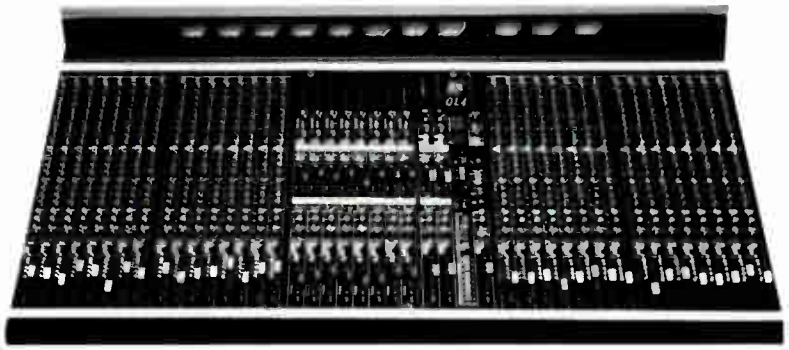

clude a switch-selectable clipping eliminator, dual-speed forced-air cooling, power, clip and signal-presence indicators, detented front panel gain controls, and XLR and ¼-inch input connectors.

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ALLEN & HEATH GL4

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

Circle 221 on Reader Service Card

SABINE REAL-Q

Sabine Inc. (Gainesville, FL) introduced the REAL-Q, a real-time adaptive digital equalizer that monitors program material during a performance and maintains specified equalization curves even after the room fills up with people. The user can choose what portion of the frequency spectrum is controlled by REAL-Q and what portion is manually controlled. It features pink and white noise generators, memory locations for EQ settings and 31-band digital equalization.

Circle 222 on Reader Service Card

DDA QII MONITOR CONSOLE

DDA (Buchanan, MI) introduced the QII Monitor, a modern concert sound monitoring console. It includes six stereo sends and eight mono sends on each of its input modules. Mic and line inputs are available on each input module, along with equalizers that can be switched to pre- or post-the fully balanced insert point.

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M-1

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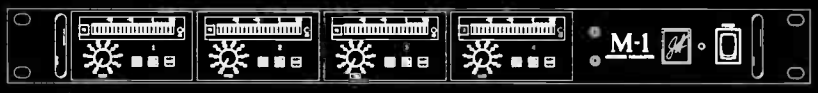

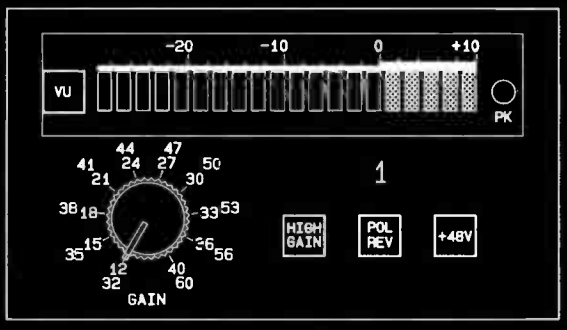

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BY BLAIR JACKSON

RECORDING NOTES

Liz Phair Whips It Up Her Way

by Adam Beyda

After wowing jaded scenesters and landing on many critics' year-end Top 10 lists with her debut, *Exile in Guyville*, Chicago songstress Liz Phair has returned with an understated collection of more mature tunes on her new release, *Whip-Smart*. Rather than boldly leaping forward or turning sharply in a new direction (such as, say, speed merengue), Phair carefully steps toward new ground with the LP. Though it plays around with (rehashes?) some of the same mock-shock turf as the first album (in "Chopsticks," the opener, Phair can't resist alluding to a torpid sexual encounter in front of the TV), *Whip-Smart* is less brash and flippant, less given to ironic detachment than its predecessor. Its greater seriousness expands Phair's emotional range and personality, while leaving the hooks and charisma of the first LP intact. It's not the grabber that *Guyville* was, but it keeps you sticking around.

And that seems to be what Phair has in mind. Anointed as this season's alternative rock "it" girl, Phair has set in motion slowly spinning forces that could easily grind her quirkiness down to mushy commercialism, so much grist for the hype-monger's mill. But she seems determined to proceed with caution, regulating the scope of her own commodification: She graced the cover of *Rolling Stone* while holding the press at arm's length; and, instead of jumping wholesale into the majors, she's opted to move slowly and stay in touch with her indie roots, releasing *Whip-Smart* on Matador/Atlantic. As this particular two-label imprint suggests, the album walks a line between major and independent label sensibilities, both in terms of its content and in the way it was recorded.

PHOTO: STEVE JENNINGS

When it came time to record *Whip-Smart*, rather than bring in a schmoozy biz guy to slather on the modern-rock radio sheen, Phair chose to stick with the same independent-minded recording team she worked with on *Guyville*. *Whip-Smart* was "directed" by Phair and recorded and mixed by Brad Wood (eschewing the terms "producer" and particularly "engineer," Wood prefers to be credited as recorder and mixer, finding this a more accurate description), with assistance from Casey Rice, primarily at Wood's studio, Idful Music.

Wood started Idful after working as an assistant engineer at the Chicago Recording Co. and getting fed up with not finding the experience he wanted recording rock bands. With an explicit commitment to inexpensive recording and analog technology, Wood and two partners struck out on their own in early '89, opening Idful in Chicago's Wicker Park neighborhood and equipping it with used gear, including

—CONTINUED ON PAGE 189

World Radio History

PHOTO: PETER NASH

Bill Miller Travels "The Red Road"

by Jeff Forlenza

Native American Bill Miller is not your usual Nashville neighbor. Yet, the Mohican (of the Stockbridge-Munsee tribe of Wisconsin) has added his distinctive flute and guitar to numerous live and studio sessions around Music City for the past ten years. Miller is also a gifted singer/songwriter with a background as a graphic artist, and his seven years of fine-arts training come in handy when composing—he storyboards his songs. In fact, visual is a word that quickly comes to mind when describing the music on Miller's Warner Bros. CD *The Red Road*.

The Red Road was released nearly two years ago as part of Warners' Western series, which brought back the music of the Old West. But Miller's CD went beyond the scope of that novelty classification. The album began getting favorable reviews and AAA airplay because of its soul-baring lyrics and heartfelt instrumentals. The music caught the ear of Pearl Jam's concert booker, and Miller wound up as the opener a couple of times in Arizona for the Butthole Surfers and Pearl Jam, for shows benefiting Apache causes in Arizona. After that, Tori Amos read about Miller in *The Irish Times* newspaper and asked him to join her on a recent American tour and, in effect, gave the album second legs. Sharing the stage with the Butthole Surfers, Pearl Jam and Tori Amos is a long way from Nashville's Row of studios where Miller's career started.

"I moved [to Nashville] about ten years ago by the urging of Michael Murphy," Miller says. "I used to tour with him before he really became country. He found me in Wisconsin where I was living, and he sort of encouraged me to move down there. At that time, I didn't want to move right away. But I started to see singer/songwriters living there like Lyle Lovett, John Prine, Steve Earle and these types of people. And I thought I'd go down there and check it out. But it took me a long time. It took me ten years to bust through."

—CONTINUED ON PAGE 199

CLASSIC TRACKS

"Hotel California"

by Blair Jackson

Reunion tours and albums are usually disappointing to just about everyone involved (fans *and* musicians), but nearly everyone agrees that the return of the Eagles has been positively triumphant. Their sold-out (and overpriced) tour, which resumes this month after Glenn Frey's surgery last fall, has drawn raves in nearly every city. Their new album, *Hell Freezes Over*, consisting of live tracks from their *Unplugged* appearance and four new studio cuts, has re-established the group as a force to be reckoned with. The Eagles were such a fixture on the radio in the '70s and early '80s, it was hard not to get sick of them, but time has been good to them and their songs—it's no wonder so many of their tunes are regarded as rock and/or country classics. That the band looks and sounds so good after such a long layoff is testimony to the strength of the players and the brilliance of their songbook.

The brightest jewel in the band's collection of original songs was, is and probably always will be "Hotel California," the title track of the zillion-selling Eagles album cut in 1976. With its wild triple-guitar attack, tough reggae beat and brilliant, biting Don Henley lyrics that seemed to perfectly capture the dark but still glittering edge of '70s life in the fast lane (another great song on that album, of course), the song was a powerful, almost hallucinogenic, evocation of characters trapped in a seductive self-created hell

In October, I managed to track down producer/engineer Bill Szymczyk, who produced *On the Border*, *One of These Nights*, *Hotel California* and the group's original swan song, *The Long Run*, to chat about the session for the song "Hotel California." Ironically, the night of our

—CONTINUED ON PAGE 194

PHOTO: HENRY DILTZ

The Eagles, 1979

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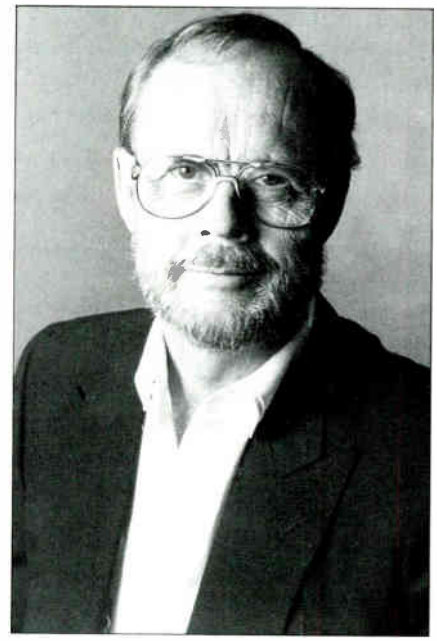
JEREMY LUBBOCK:

AN OUTSPOKEN ARRANGER SAYS HIS PIECE

by Blair Jackson

British-born arranger/producer/composer/songwriter Jeremy Lubbock has been working behind the scenes for so long that he's still virtually unknown outside of the community of musicians. This despite a highly impressive list of credentials that includes arranging work for such artists as Barbra Streisand, Madonna, Michael Jackson, Sting, Rod Stewart, Whitney Houston, Lionel Richie, Linda Ronstadt, Elton John, Celine Dion, Joni Mitchell, Pat Metheny, Leonard Cohen, David Foster, Luther Vandross, Michael Bolton and many more; songwriting for Kenny Rogers, Al Jarreau, Manhattan Transfer, Olivia Newton-John and others; film-scoring work on *The Color Purple* (for which he received an Oscar), *Nuts*, *Rocky IV* and more; a handful of album productions, including the wildly successful Kiri Te Kanawa-Jose Carreras *South Pacific* album, and discs by Jennifer Holliday, Tremaine Hawkins and Tommy Page; and nine Grammy nominations and three Grammy Awards for arranging—in 1994 he had an unprecedented three nominations in the category, and won for "When I Fall in Love" from *Sleepless in Seattle*.

Bright, funny and full of strongly held opinions about almost any subject you'd care to mention, the 63-year-old Lubbock, who's lived in the United States for the past 15 years, offered some glimpses into his work world in an interview from his home in Los Angeles.



In your work as an arranger, how often are producers making specific suggestions about the feel they want your arrangement to have?

Not that often. By the time you get to write a piece, you already have a sense of what the flavor is supposed to be. I think it's true to say that people come to me in the first place because of the sound that I make, which is a fairly distinctive one.

And that sound is...

Ho, ho, ho! You can't expect me to answer that, can you? It's hard to define, of course, but I'll try to explain it a bit. I'm very fortunate to have had several musical backgrounds in very distinct areas of music. The first 20 years of my life was nothing but classical music. The next 20 years of my life was pretty much nothing but jazz. And since about 1970, I've moved more into the pop world. So I have all these influences at my command, and I think what makes my work distinctive is the mixture of all these influences. It seems that people respond to the classical music element of it most. I don't want to get too heavy about this, but I do believe that there are certain aspects of classical music that in some curious way have become part of the collective unconscious. In other words, people who profess to know absolutely nothing about music respond to classical music—when they hear a piece by Bach, for example.

Were you influenced much by people like Franz Waxman or Bernard Hermann from the film world, or pop arrangers like Nelson Riddle, or later, Paul Buckmaster?

Leaving aside the genius of people

Fort Apache's MCA Alliance

by Eric Bradford

The relationship between artist and recording studio has rarely gone beyond that of client and service provider. But when you believe as strongly in your clients as the production team at Cambridge, Massachusetts' Fort Apache Recording Studio does, the surrender of master tapes to a faceless record company can be akin to giving up a child for adoption. So early last year, the group took matters into their own hands by signing a deal with MCA Records that allows the studio to develop, demo and (with MCA's approval) sign artists under their own imprint.

"This idea came about because here were five producers who were responsible for what's become 'important' alternative music, stuff that's gone on to do very well and has been influential to other artists," explains David Snow, manager of the Fort Apache label and production company. "They were constantly finding talent when it was really raw and young and developing it into something, and then after they'd make a record, they'd be done with it. This was conceived as a way to stay involved in the development of these artists after they make their first record."

PHOTO: JENNIFER DEFORGE

Fort Apache production team, L to R: Tim O'Heir, Sean Slade, Gary Smith, Lou Giordano and Paul Kolderie.

The partnership is unique in that

—CONTINUED ON PAGE 190

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like Gil Evans and Ellington and some of those types, my absolute favorite arranger was Don Costa. Of course, I loved Riddle and all those people. But the best album Sinatra ever made, for example, was called *Sinatra With Strings*, which Costa did; it's incredible.

It's difficult to say how this person or that might have actually influenced me, however. I never had an arranging lesson and never read a book about it. I've done it completely out of my ears, and I think there's a lot to be said about that because you're not following anybody else's rules. Unconsciously, of course, I've been influenced by people going back all the way to Bach. But I've always just followed my own intuition, and I've been fortunate that I've never come up against someone saying, "Can you do an arrangement for this that sounds like Paul Buckmaster?" because they know I'd say, "Well, then why the hell don't you get Paul Buckmaster?" [Laughs]

Do you have a preference between European and American orchestras?

Although I've played with excellent orchestras here, I think I still prefer European orchestras. The sound of the strings is different. The American string players are rather harsh. They're trained differently over here than they are in Europe. The European players have a much more mellow, sweet sound to them. And since I'm from there, it's still home ground for me, and I like working over there. I've worked a bit with the London Symphony Orchestra, and I quite like them.

How about British vs. American engineers?

To be honest, it seems the English engineers have a much greater knowledge of the orchestra. I've worked with guys in this town who don't have the faintest idea what an orchestra is supposed to sound like. There was a period when I was constantly dragging engineers kicking and screaming out of the control room, into the studio, and standing them in front of the orchestra and saying to them, "*That* is what an oboe sounds like!" If you're going to do this gig, you better know what all the instruments are supposed to sound like! Engineers are the bane of my life if they don't know what they're doing. They can ruin what you're doing.

There's a school of thought that says the old way of minimally miking orchestras was preferable to modern multimiking methods.

Oh, I agree! There's a lot to be said for the old way of doing it—4-track or 2-track or whatever. To tell you the honest truth, I think there's probably more bullshit talk per hour about engineering than there is about any other subject I know about. When I see the bloody tap dance these guys go through when they're doing a mix, it's absolute horseshit—whether the limiter is one millimeter to the left or to the right! Who's going to know? Ten hours for a mix? Forget it. It's silly. I have a pipedream that might be the salvation of the record industry, and that is: All the record companies would say to all the producers, "You can have as much money as you like, but the record has to be finished in a month." It would stop people dicking around with the music; they dick around with it *forever*. They can't make up their minds about the tracks, so they go in and do it again and again and again and adding this, that and the other. Pretty soon, what you've got is this mushy bowl of porridge, instead of the old days when you went in with a band or orchestra and a 4-track machine, and you just cut it, and that was it. Those records have a wonderful immediacy about them.

These days, engineers get nervous, so they want one mic for the oboes, one for the flutes and so on. For me, almost the ideal recording situation was that period back in the '50s or '60s when Neumann made a microphone that looked like a grapefruit and you hung this over the orchestra and you just told the orchestra to play, and it sounded phenomenal. Because when you go to a concert hall and listen to an orchestra, your ears are, so to speak, the microphone. You pick up the sound in the hall. You don't highlight sections on your own: If the piece is written right and it's played right, it balances itself. All you need is one source to pick up the sound, like a pair of ears or one stereo mic. That should do it.

Do you have favorite studios here and abroad?

In L.A., I usually try to use Studio One at Ocean Way. I love A&M Studio A, but you can never get in there. I suppose my absolute favorite, though, is the big room at

World Radio History

MGM. It has such a great ambience to it: absolutely brilliant. On the other side, Abbey Road 1 is spectacular; probably the best natural acoustics of any place. The other one I've just worked in that I loved is George Martin's new studio, Air Lyndhurst. It's stunning. I was just over there doing a project for EMI classics with a Spanish guitar player called Manuel Barrueco. Even though he was playing acoustic guitar, he sat in the orchestra, right in front of me instead of in a booth, and it sounded brilliant. There's also a place in London that I love called Henry Wood Hall, where we did the *South Pacific* album. It's a converted church and not a studio as such—people bring equipment in. The acoustics are great.

Do you ever play piano on your own sessions?

Occasionally. I'll only do things I know I can do. I'm not trying to impress anybody, so if I think somebody can do something better than me, I don't hesitate to get that person. But there are certain things I can do on the piano that are right for the things I do, and it ends up being much easier than explaining it to someone else.

What sort of equipment do you have in your home studio setup?

I have one of the new Mackie 32-input boards—it's phenomenal, man. I have a Macintosh which I run with Performer. Tannoy monitors, Roland 48 mixer, two MIDI Time Pieces, a D-70 controller, two D-550s [rack-mount samplers], two 3990s, a Kurzweil K2000, Korg Wavestation, M1 and M3, three JD-990s with orchestral cards. I'm putting a lot of memory in the Kurzweil because I'm about to get this Czechoslovakian sample library of strings and woodwinds [the Vitous Virtual Symphony Orchestra, from InVision]; it's phenomenal. My pet hate is synthesizer string sounds, which have been grotesque, to say the least. But I have manufactured gorgeous string sounds mixing the D-550 and the 990s together and tweaking the hell out of it. Of course, almost everything I'm doing in my studio I'm just using as a sketch pad. I'll always use a real orchestra when it comes time to record.

What's been your experience working in film music?

Hideous. [Laughs] There are unbelievable idiots in the film industry as far as music is concerned. The problem is several-fold. The advent of home studios was an absolute curse in one sense for film composers, because directors now want to come and sit in your studio with you and pretend to be composers. Also, they now ask everyone to demo everything. Well, you *can't* really demo what something's going to sound like played by an 80-piece orchestra. I don't do movies very often for the simple reason that the apparent requirements of the film people are impossible to deal with. I'd rather stick with records, where the music is the important thing, and to hell with the pictures.

After so many years in the business and having already worked with so many top performers, do you have any problem getting motivated to write yet another arrangement for somebody?

Oh no. I love it. I love writing music and working with people, and you never stop wanting to write a better piece than the last one you've written. ■

—FROM PAGE 184, LIZ PHAIR

a good collection of mics and a Tascam board. Wood set about recording indie bands like Seam, Tar and Red Red Meat, and after meeting Phair at a wedding, recorded *Guyville* with her in '92. After *Guyville* made its big splash, Wood was able to parlay the interest in the LP into financing for his studio. Both Capitol Records and Sub Pop invested in his career, enabling him to pay off debts and completely upgrade the studio's control room: Everything was rewired, a new floor was floated, and Wood bought some new equipment, including a 32-input Neotek Elan console and a Studer A80 24-track.

But it's safe to say that the new equipment wasn't the primary reason Phair opted to stick with Idful and Wood. Though he's doing a lot of work on the indie/major cusp these days (including recording the fab debut by Chicago's major-label-bound Veruca Salt), Wood retains a distinctly indie approach to recording, if you construe indie to mean making work that's more concerned with cultural significance than with commercial viability. (Not that in the marketplace these things ever exist in isolation: The point is that Wood's just not the kind of guy who's going to be cutting the next Sting record.) He's into helping bands realize their vision rather than imposing his own. "I prefer it when a band has more of their own ideas," he says. "And they usually do—they usually have tons of ideas, especially when there's a budget and they've got some time. It's just a matter of me trying to put their words into actual sounds."

PHOTO MARIA SUAREZ

Recorder/mixer Brad Wood outside his Idful Music in Chicago

Phair is actually a singer/songwriter disguised as a band—her sound is really built on her voice, her lyrics and her guitar. It's not hard to imagine hearing her songs in a smoky cafe with just Liz and low-slung guitar. But since Phair chooses the guise of a rock band and cannot play all the instruments herself, the team ended up employing some unusual recording methods to capture her songs. Wood, who also plays drums on the LP, says that for the most part, he wouldn't hear Phair's songs before the day she brought them into the studio. "Often, she'd bring in a song and we'd record the whole thing that day. I'd have to write a drum and bass part right on the spot. She liked the idea of spontaneity." On the majority of the songs, tracking would begin with Phair laying down a keeper guitar track to a click track, or handheld percussion, through amps miked with a Neumann FET47 or U87, or Telefunken U47. Wood says Phair

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—FROM PAGE 187, FORT APACHE

Snow and the studio's five producers—Gary Smith, who co-owns the studio with Brit-rocker Billy Bragg; Lou Giordano, Paul Kolderie, Sean Slade and Tim O'Heir—have a say in the promotion and handling of the acts they sign, in addition to the A&R duties that make up the bulk of the deal. "Hopefully, what we're doing is setting the tone of how to market these artists and making not only broad but also some specific suggestions and following through," Snow says. "If it works, we're driving a much bigger force at MCA. We're very artist-oriented with the deals that we make and also with the way we think about marketing."

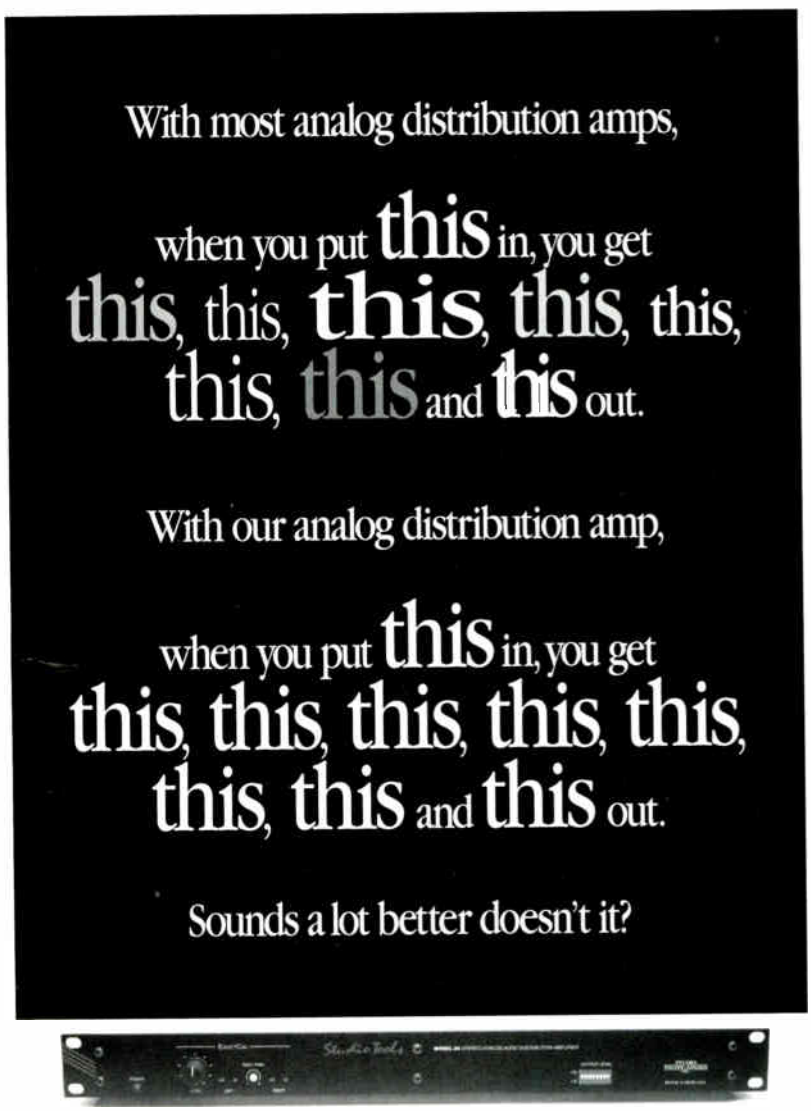
In addition to underwriting the development of chosen artists, MCA provided funds for a major studio upgrade that was completed last summer. The overhaul included a redesign of the physical layout of the control room, as well as the purchase of a Neve 8078 console and Studer A820 and A827 analog tape machines.

MCA is the home of such proven mainstream talent as Elton John and Meatloaf and enjoys a strong position in the music business, but the label is hoping the Fort Apache deal will fill a long-standing hole in its alternative rock roster. "If we can prove to the alternative artists of the world that we can stay true to the things that they care about and be successful with a company like MCA, then we'll attract more of them, and MCA will learn some things that will give them success as well," Snow says.

The first MCA/Fort Apache signing was Boston's Cold Water Flat. "I know that the people who are involved in this have the same interests as we do and have the same commitment to the type of music that we want to make," says Paul Harding, the band's drummer. "We knew when we signed with them that they would be committed to helping bands in general, and us in particular, to have a career in music, as opposed to some L.A. A&R guy saying, 'Yeah, yeah, we'll sell a million copies and put you all in Rolls Royces.'" A track from the group's upcoming album appears on a new compilation CD titled *This Is Fort Apache*, which is otherwise intended to serve as the music industry's introduction to the past accomplishments of the studio. Also taking part are such eminent alternative acts as Radiohead, Dinosaur Jr. and The Lemonheads.

The original Fort Apache was founded in 1986 and located in Roxbury, Mass. When crime in the area escalated, the decision was made in 1990 to shift operations to the current facility in North Cambridge. These two locations have seen a seemingly endless string of alternative rock luminaries, including Belly, Buffalo Tom, The Pixies and the Mighty Mighty Bosstones. The studio continues to attract the cream of the current rock field, partially due to its reputation for being more concerned with quality product than a with sterling bottom line.

"You walk into some studios, and they just don't get it," Giordano says. "It takes more than equipment to make a record. You need a selection of guitars, you need a few different amps, a couple of snare drums...You need to have that stuff around for people to play around and experiment with and enjoy themselves and have a feeling that they're creating something. That's what we have: an environment to make a record, not just the shell of a console and a tape machine." ■



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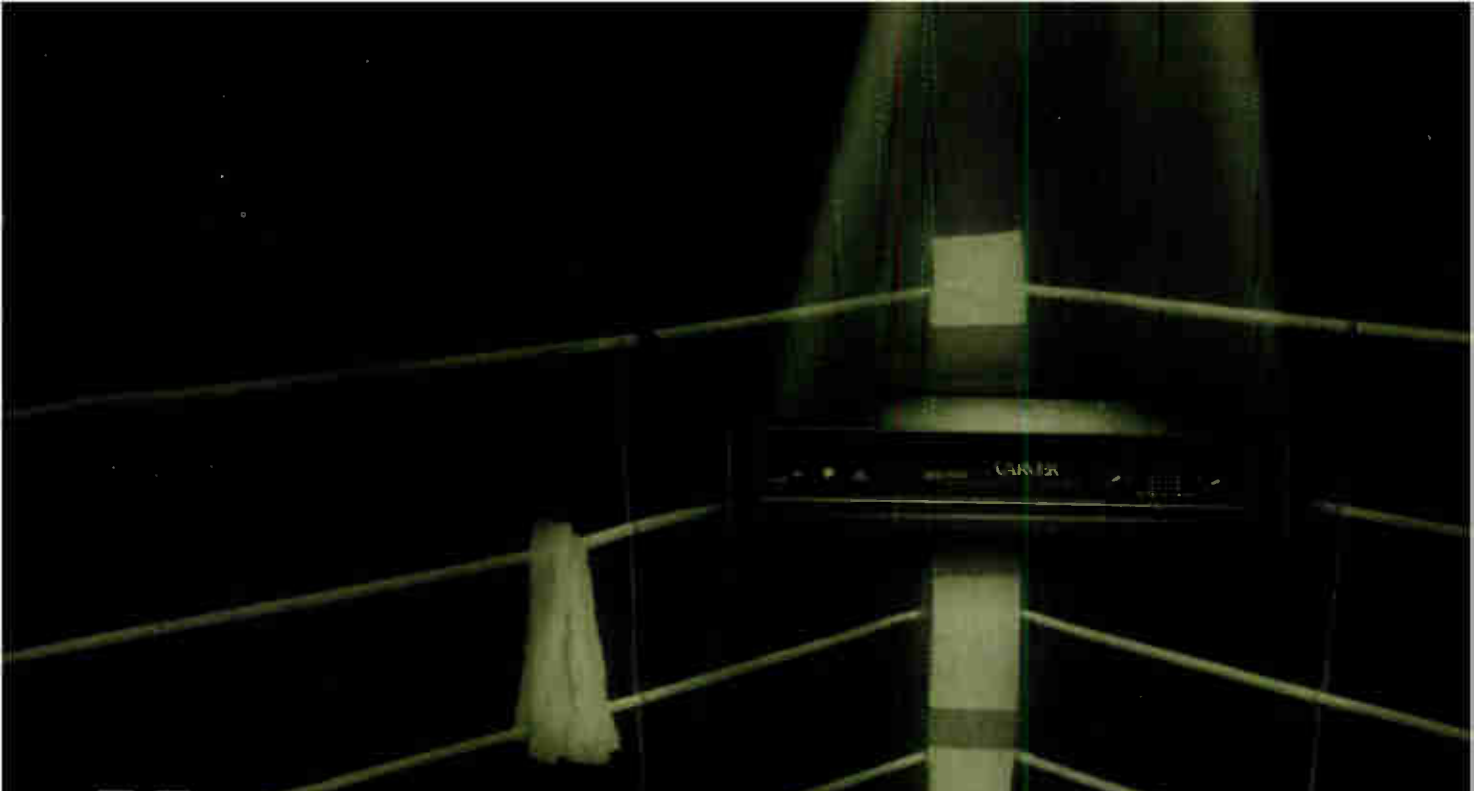

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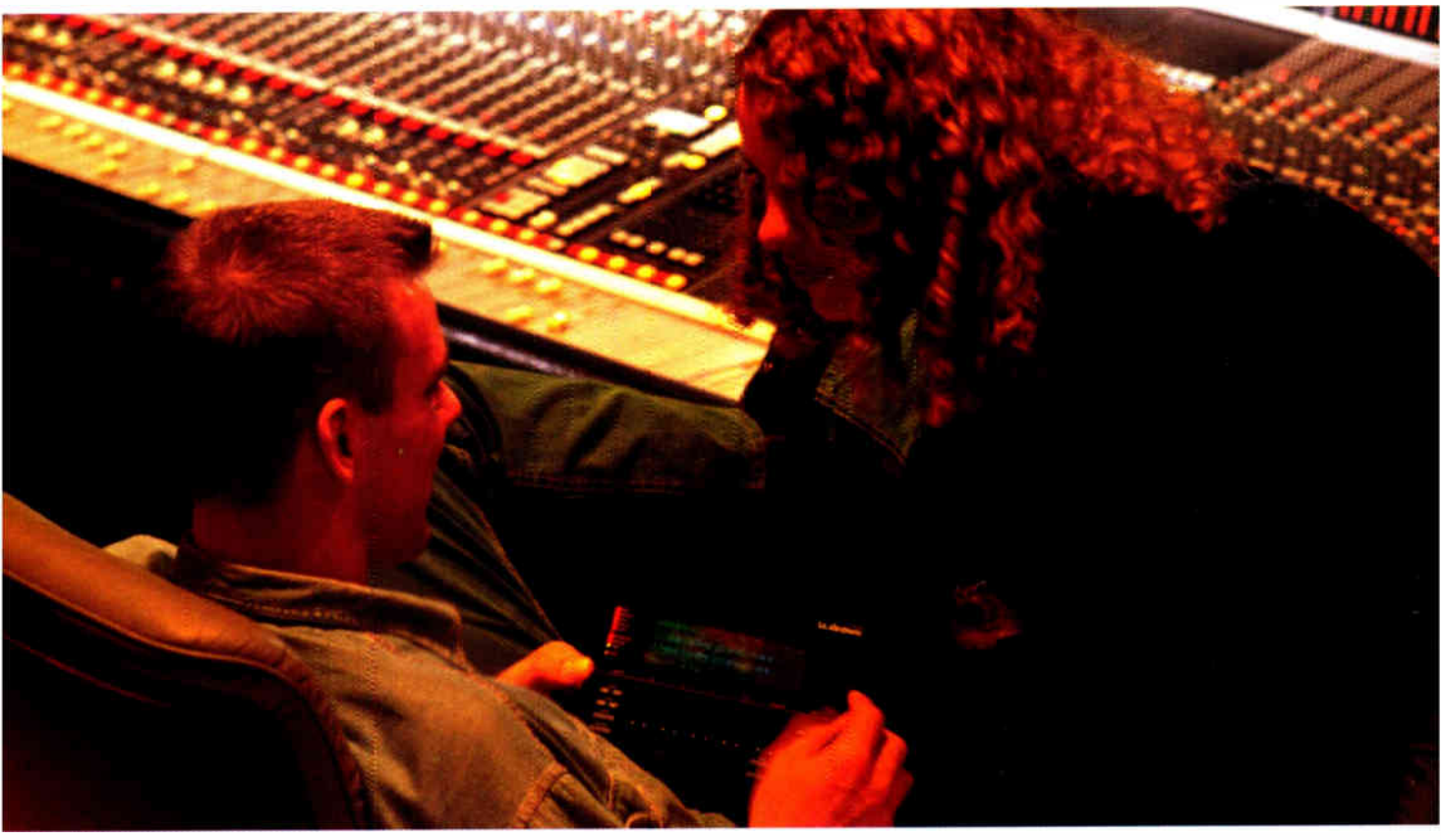

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World Radio History

—FROM PAGE 189, LIZ PHAIR

has a Peavey practice amp that she likes, which they used on most songs. "Often, Casey and I would split the signal and run it through other amps," he adds. "Casey has this weird mono hi-fi amp from the '50s that we use as a guitar amp that has a beautiful, clean sound." After getting the guitar down, Wood would record drums, bass and other elements and "try to make the whole thing sound like a real band." He calls it an "assbackwards" way of recording, yet it's clearly appropriate to Phair's circumstances.

Phair is actually a singer/songwriter disguised as a band—her sound is really built on her voice, her lyrics and her guitar.

Despite a lot of idiosyncratic recording methods, and deliberate lo-fi tastes and treats, *Whip-Smart*'s sound also reflects Phair's expanding horizons and larger recording budget. The vocals, for instance, got a slicker treatment than on the first LP. For one thing, they were tracked in the Bahamas at Compass Point (nice perk), and they sound like they were recorded with more concern for perceived professionalism, despite Phair's penchant for singing out of her range. Wood and Rice used a variety of mics on her voice (including an SM57, a U67, a Sony M500, a Radio Shack singalong cassette player and a Sennheiser 441), but Phair cut the majority of her vocals on a U87 and a Sony C-37P. Her voice is stronger and thicker this time around—in fact, Phair at least doubled her vocals on every song and often laid down several vocal tracks. Reflecting the naturalism of her style, though, there are almost no effects on her voice. One or two songs have some reverb (Lexicon 300), usually on the plate or very small ambient customized presets that Wood tends to prefer. "There's a little bit of that," he says, "but almost all the vocals are just compressed, with no EQ and no effects."

True to his band-is-the-sound aesthetic, Wood didn't employ much in

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the way of effects or processing on the album, and sometimes he and Rice did a lot of fooling around to get interesting sounds. For example, the cut "Nashville" has a chorusy guitar sound that, on an inspiration of Rice's, the pair achieved live. Phair played her guitar through a miked amp while Rice stood on a chair 20 feet away from the amp, swinging a lavalier mic on a 20-foot cord in circles overhead. At the outside arc, they placed a room mic that was out of phase with the mic on the amp. The effect is something like the world's biggest Leslie. When Phair made a mistake halfway through, they tried punching in, but everything was off, so they realized they'd have to get one continuous take. Unfortunately, Wood says, "Liz messed up a number of times, so poor Casey's out there having to carefully swing this mic, because if he got too close, he'd smash into the other mic. We braced his arm up, but even so, by the time we got it right, his arm was totally numb. He gave his all."

Mixing was also a labor-intensive process (particularly on the title track, "Whip-Smart," which, due to it's repeating drum loop and the way they tracked the song, Wood ended up mixing in sections). Wood likes to mix to Idful's AEG Magnetophone 21 ½-inch 2-track, 15 ips, no noise reduction. "For a while, I was enamored of mixing down to DAT and then editing with Sound Tools," says this staunch analog fan. "It does give any studio a low noise floor. I liked it, and Sound Tools is a really user-friendly box. But I also knew that, man, the day that I had any kind of bread at all, I was going to jump to a better analog format, and that's what we did." Wood says they used the DAT for backups and generating rough mixes. He also admits that if they were doing something tricky and having trouble cutting it with razor blades on the ½-inch, they'd use Sound Tools, "but only as a last resort."

Whip-Smart took about a month of discontinuous work to record. Whether the album is indeed a transitional work or the development of a style that Phair will settle into remains to be seen. But by holding her own and making a low-key, quirky record, Phair proves you don't have to succumb to the pressure. She maintains her cred while charting some new territory, and she succeeds on her own terms. Sure, people will slag her for this and that, and Phair's success may be affecting those around her, but Wood is taking it all in stride. He has no intention of chucking it all to record metal bands in Hell A., the biz mecca where, Wood says, "at any moment, you might run into Axl Rose and get all your teeth knocked out." ■

—FROM PAGE 185, CLASSIC TRACKS

conversation, MTV aired their wonderful Eagles *Unplugged* program for the first time—and that show opened with a superb, Gipsy Kings-influenced version of "Hotel California."

"The interesting thing about cutting 'Hotel California,'" Szymcyzk (pronounced sim-zick) said by phone from his house in the Blue Ridge Mountains in North Carolina, "is we actually cut the basic tracks three different times over a period, with the third being the one we used. The first one was in the wrong key for Henley. Then we cut it in the right key, but it was too fast. Both of those sessions were done in L.A. at the Record Plant, and then the real version was done at Criteria [in Miami], where most of the record was done. It was cut on a beautiful afternoon in sunny Florida.

"The basic track was: [Don] Felder playing a 12-string acoustic which was also going to a couple amps we had miked, so we had it on three tracks—stereo from the amps and the dry acoustic in the middle; that's what the opening of the song is. Obviously, it was Henley on drums, [Randy] Meisner on bass. Frey was playing the reggae guitar chinks, and I don't really remember what Walsh was playing during the song part. In that era, I very seldom did guitars direct; I'd always mike the amps. The big solo at the end was Walsh and Felder, dueling guitars, with me in the middle in the control room, which is how we liked to work. We'd have the amps miked out in the studio, and they'd be in with me unless they needed some feedback effect where they needed to be next to the amp."

Szymcyzk said the basic track didn't feature any vocal at all: "From the time of *Hotel California* on, there were rarely finished lyrics by the time we cut the basics. With 'Hotel California,' I think there might have been a verse and a chorus and a few lines hither and yon, but main-

—CONTINUED ON PAGE 196

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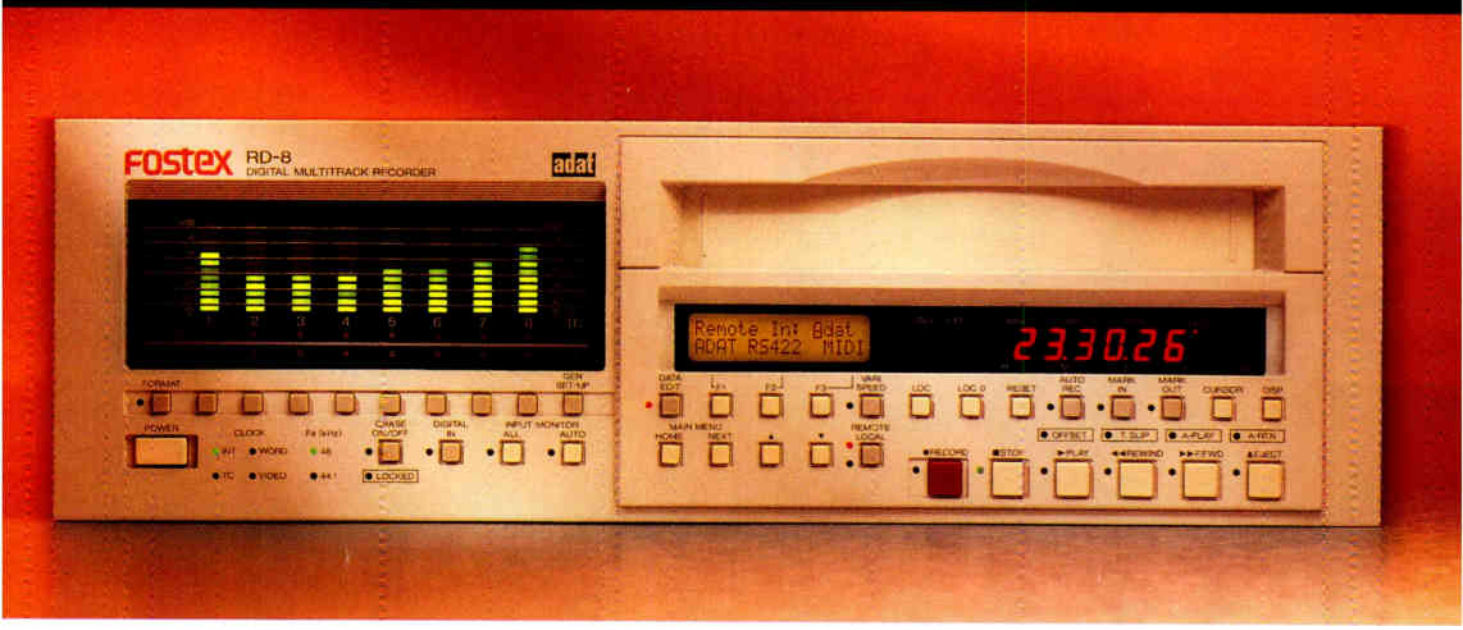

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—FROM PAGE 194, CLASSIC TRACKS

ly we were flying somewhat blind. Of course, with Henley it was doubly hard to get rid of a scratch vocal because he's the drummer, so his vocal would come in through the overhead and hi-hat mics. But their modus operandi became to work without a completed vocal. The basic track was usually constituted of five, six or eight takes, usually with a lot of editing between the takes—I think 'Hotel California' had 30-some edits in the basic, before we even started overdubbing. I always had my razor blade at the ready. The Eagles' nickname for me was The Big Lopper," he laughed.

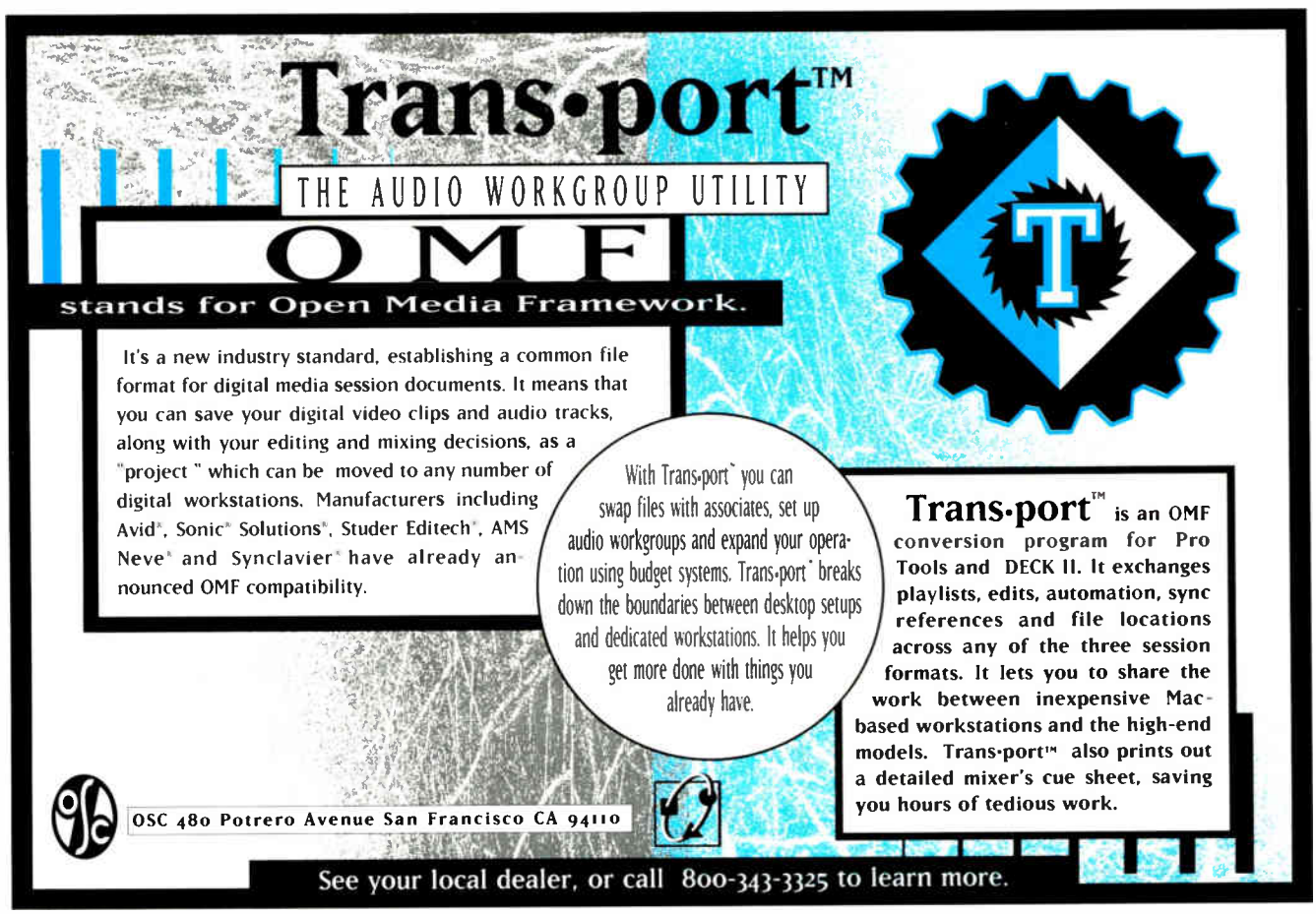
It was more than two months between the completion of the basic track and the addition of the vocal parts. According to Szymczyk, "Then, as now, Henley labored over everything to the *n*th degree, but when he pronounced something finished, by God, it was. He really took his lyric writing seriously, and it shows in the finished song. We always had other things to work on. We weren't in any hurry."

And when it finally came time to cut the vocals, the process was quite laborious: "During the course of this album, I was experimenting with comping vocals for the first time because Criteria had this great, one-of-a-kind MCI custom console that had some of the fastest—for the time—relays for switching tracks and switching channels. I would take four or five tracks on my 24, and I'd cut each one with a different take of the complete lead vocal, route them through the board and then pick and choose, going line by line, and assembling one great vocal track. I'm not sure I was the first person to do that, but I've been cursed by people for it ever since: '*You* taught those sons of bitches how to do that!'"

Szymczyk noted that the vibe surrounding the making of *Hotel California* was "excellent from beginning to end. It was a really fun record to make. It wasn't until the next record [*The Long Run*] that a lot of the tension started to come out. That was the one that did us in. But actually, I think [*The Long Run*] is my favorite because it was so damn hard to make and there were so many conflicts going on, that for me, personally, to get everyone through that and have them still be friendly enough to go on the road for two years after that was a hell of an accomplishment."

Neither the band nor Szymczyk believed that "Hotel California" could be a successful single because "it was so damn long [six minutes], and there was no logical place to slash it." But it was such a huge FM radio success right out of the box that radio essentially demanded it be released as the second single off the album (after the Number One hit "New Kid in Town"), and sure enough, it made it all the way to Number One in February of 1977. It's been a staple of "classic rock" stations ever since.

Szymczyk describes himself as "semi-retired" these days, though he has continued to work with Joe Walsh on his solo albums and taken on occasional projects here and there as it suits him. Clearly, life in the *slow* lane on his deck overlooking Mt. Mitchell agrees with him. And the legacy he helped create with the Eagles in the '70s should keep him comfortable for the rest of his days. ■



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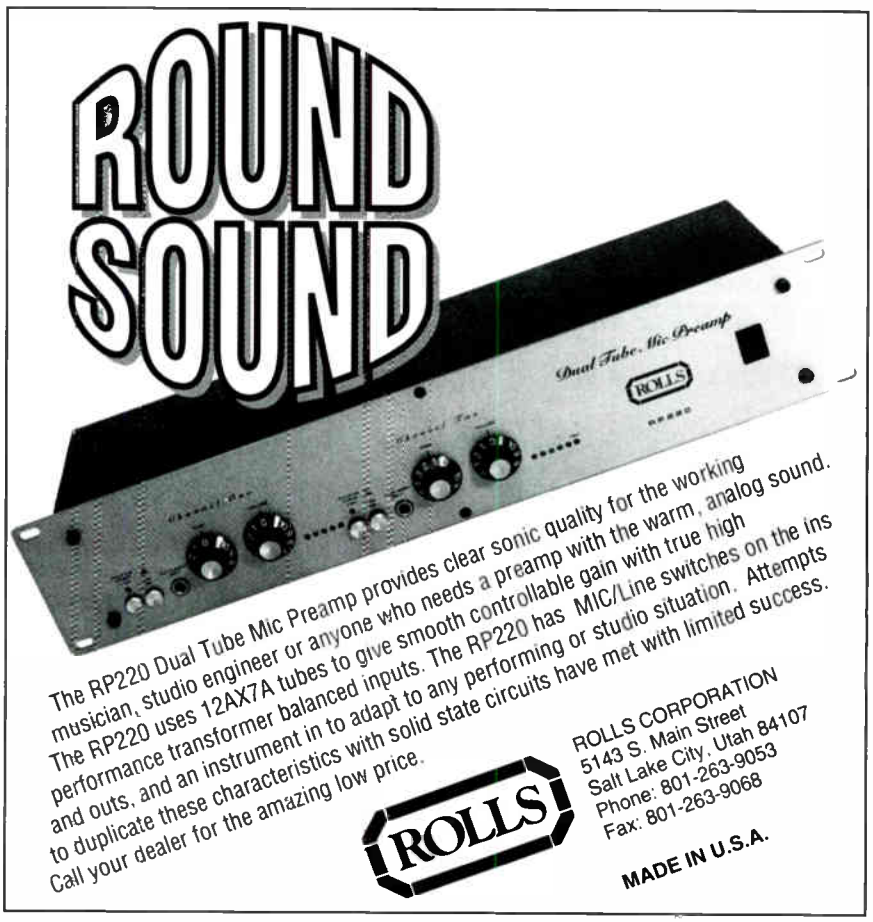
—FROM PAGE 185, BILL MILLER

When Warner offered Miller a contract, Richard Bennett was the first choice as producer. "My only parameters that I put around the project," Bennett explains, "was that it stay very tightly focused as a Native American album, as opposed to Bill going off into some of his other directions, which he does very well. He's got kind of a Dan Fogelberg side, and he does some other things that really are, perhaps, a bit more universal. But I really wanted to stay focused on Native American themes. I wanted to capture songs, I wanted to capture powwows, I wanted to capture his flute playing, and I wanted some kind of spoken-word story, a parable, like the Indians have. And I thought it came off well."

Engineered by Rocky Schnaars, *The Red Road* was recorded at Reflections and The Sanctuary and mixed at The Battery—all in Nashville. Schnaars brought his own gear. "I've got a bunch of old Neve [modules] and wacko limiters, and I just crate the stuff around town," he explains. "That's the great thing about Nashville—it's such a small town." For the most part, Schnaars tracked 30 ips to Ampex 499 tape on the Studer 827 analog recorder at Reflections. One song ("Kokopelli's Journey," a flute duet between Miller and Robert Mirabal) was recorded live-to-DAT as the musicians improvised at The Sanctuary. The album was mixed on the 44-input Neve 8068 board with GML automation at The Battery. The one exception was the song called "Praises," which was mixed on the Neotek Elite console at The Sanctuary, "because we couldn't beat the emotion of the rough mix," Bennett says.

For miking Miller's guitars and vocals, Schnaars used, "a modified [Neumann] tube 87—there's a guy here in Nashville, Fred Cameron, who sticks a tube with solid-state parts into your 87," he explains. "I used that and a Neve 1100, which is a module that came out of Ocean Way, then I went through an LA-2A, and then to tape with no EQ." For Miller's handmade double-chamber flutes, Schnaars used a "pair of AKG 451 overheads, backed off about 2½ feet over the instruments."

One especially powerful song off the album is the first track, "Dreams of Wounded Knee," a hammer-on acoustic guitar piece reminiscent of



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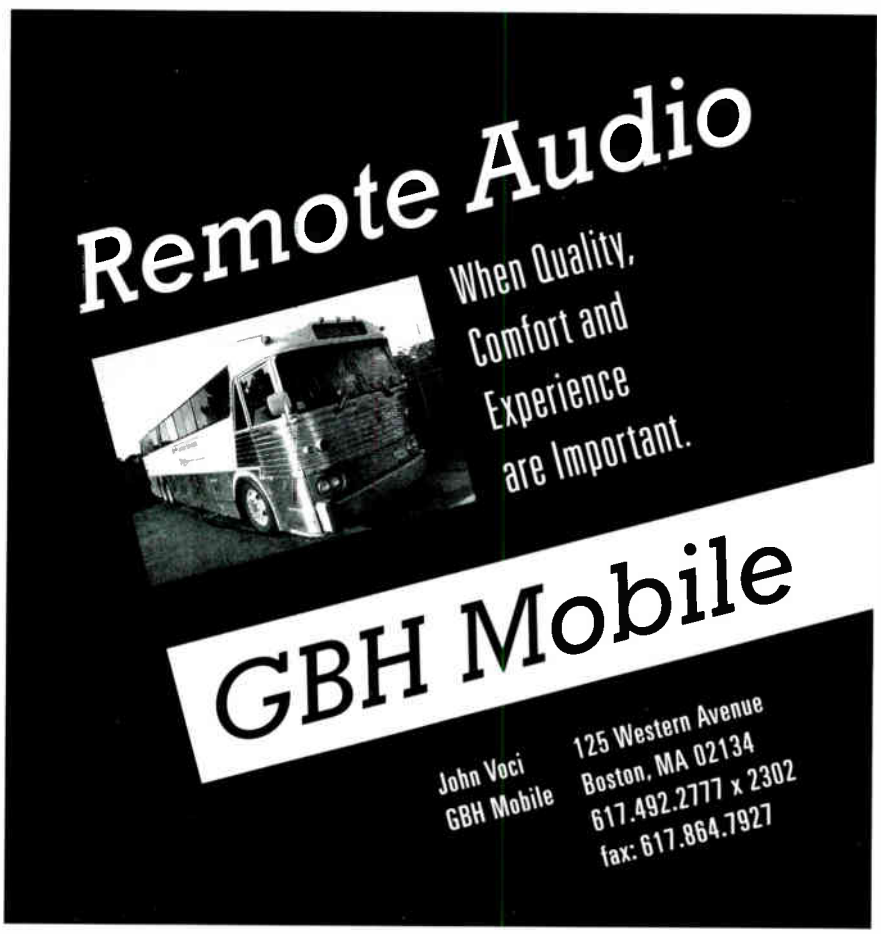

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Michael Hedges. The instrumental suite started in a Toronto hotel room after Miller saw some rare photos of the Wounded Knee massacre. "I had one of those handheld recorders," Miller explains. "I had just seen a photo essay on Wounded Knee, and it was very upsetting. I got up in the middle of the night after having these bad nightmares, and I thought I'd write a song about it, but I couldn't put it into words and I started hitting my guitar. And I thought that sounded pretty good. I didn't want to lose the feeling, so I turned the tape recorder on, and I hummed some string parts and other parts over the top of the chording process.

It's not every day that a group of Native Americans hold a powwow in Nashville, but that's what happened when Myron Pawasit and the Smokey Town Singers brought their big drum to The Row.

"I came back home and went into an 8-track basement studio of a friend of mine, David Hoffner, and asked him if he would help me out 'cause he's a great keyboard and synth player," Miller continues. "And I sort of just laid out the sequence of the song for him, and we made a real rough sketch on the 8-track. I brought that over to Richard Bennett, and he flipped out. Actually, the demo turned into a major production itself. Richard went over to the house with us, and we went back to the 8-track and we kept working on the demo."

Once the demo was polished and the song was charted for session players, they went into Reflections and cut the song in one take. "Everybody on that thing is live except for the chants coming in and certain wind things," Miller says. "The whole band sequence and the whole thing is live—even the thunder at the end was triggered on cue [from a sound effects library], live by David Hoffner."

"The body of this album was done live," Bennett says, "even the powwow thing, this piece called 'Praises' that Bill does with the Smokey Town Singers." It's not every day that a group of Native Americans hold a powwow in Nashville, but that's what happened when Myron Pawasit and the Smokey Town Singers from the Menominee reservation in Shawano, Wis., brought their big drum to The Row. Bennett explains, "The studio we cut in, Reflections, has one big room and several iso booths, so the singers set up their drum in the middle of the room, and then Bill went off in one of the iso booths with his guitar and did his performance."

"The powwow thing was an amazing experience," Schnaars adds. "We had 17 Native Americans come down from Wisconsin. They all sat around this big drum, which they struck with three-foot-long beaters that were made out of fiberglass taped with these colorful tapes. At the end of the beater is a deerskin envelope that has about half-a-pound of sand in it. They were just pounding that drum with these heavy beaters—needless to say, there's a little velocity. The whole thing was just surging like crazy. I miked it with a pair of 414s, but the transients were just ridiculous!"

The Red Road is more than just tribal drumming and chanting. There are sublime flute instrumentals, guitar/harmonica folk songs and even a honky tonk cowpoke tune ("Tumbleweed") co-written by Miller and Peter Rowan. But the underlying theme is Miller's personal history, his Mohican heritage. "I couldn't separate my heritage from my music," he says. "It took me years to finally get it out. I think Richard Bennett and Jim Ed Norman and the people at Warner Bros., who let me do what I had to do, really made a difference on the album.

"*The Red Road* was a piece of me that I don't think I'll ever be able to repeat again," Miller concludes. "It was very painful. My dad died during the making of the album, and I had to go back down that same road to bury him and go through a lot of different painful memories. So the album was a piece of me—a blood album. For my new album, I'm just real excited 'cause I want to share some of my other roots as a musician." ■

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Delay times. Know the sound of the 36 important time ranges between 0 and 170 ms.—where to set the delay to pan sounds toward the earlier speaker, create spaces, slapback and echos.

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Amplitude. Know when loudness is the only difference between two signals.

Time domain.. Channel-to-channel time differences shown over the 1 - 50 ms. range.

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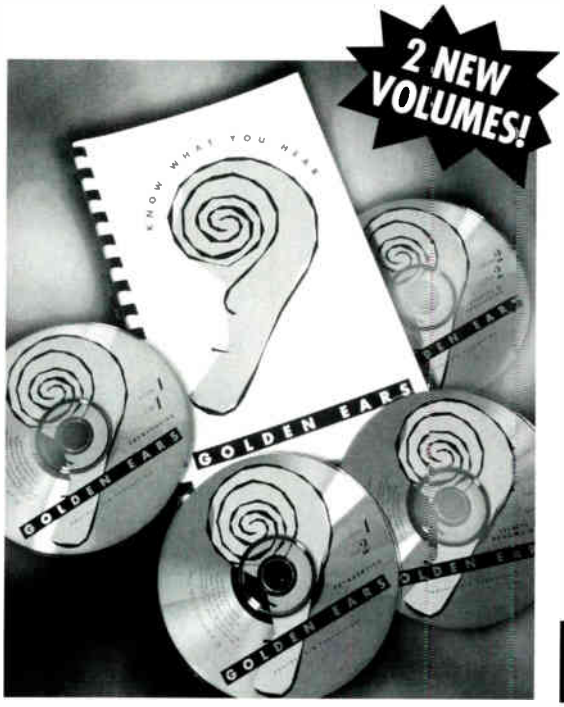
The a/b drills. Your mission is to pick up the difference between the two. Is it louder, distorted, compressed, time delayed, equalized, reverbed, etc. ...or identical?



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World Radio History

by Philip De Lancie

TAPE & DISC NEWS

OPTICAL DISC DEVELOPMENTS

Matsushita, the Japanese electronics giant that owns the Panasonic and Technics brands, is set to stir up the optical disc pot with the introduction of a phase-change recorder/reader that also functions as a four-times-speed CD-ROM player. As reported in *Optical Memory News*, the PD drive should be on the market "within the next year."

Phase-change is a rewritable optical-storage technology, which, unlike rival magneto-optical systems, creates discs that can be read with the same pickups that read conventional CDs. Like the existing phase-change drives that Matsushita markets for computer storage, the PD drive will read and write 650MB phase-change disks in the 5.25-inch (13 cm) form factor rather than the 12cm CD format. The combination of the two formats in one drive could be a step toward the long-awaited rewritable CD technology. According to *Billboard*, a prototype of the drive was displayed at October's Japan Electronics show in Tokyo.

Also on display was new quadruple-density CD technology from Sanyo that is targeted to video applications. According to *Billboard*, CDs in the Sanyo format will hold up to 135 minutes of MPEG-2 video. Consumer players are expected in 1996. In the shorter term, *Billboard* says Sony and JVC showed video-CD hardware planned for a 1995 introduction in Japan in the $600 to $700 price range.

VERBATIM JOINS SANYO FOR JOINT REPLICATION VENTURE

Verbatim Corporation and Sanyo Laser Products announced their intent to form a joint venture for the replication of CD-Audio and CD-ROM products. Sanyo has operated a Richmond, Ind., replication operation since 1986. Verbatim will contribute an undisclosed sum to expand that plant's annual capacity to 50 million "immediately" and 100 million within two years. Verbatim, a leading supplier of magnetic tape and disk storage products, will also contribute its substantial OEM marketing resources to the venture.

CONFERENCE UPDATES

The ITA has postponed its Information Superhighway '95 conference—originally scheduled for January—folding the event into its 25th Anniversary Spring Seminar, an executive-oriented event set for March 8-12, 1995, in Mission Hills, Calif. Call (212) 643-0602 for details.

In other conference news, the tenth anniversary of *inter*media is coming up February 7-9, 1995 in San Francisco. Organizers are projecting an increase in attendance to 25,000 at the multimedia conference and exposition, which will feature a Digital Arts Festival and *Multimedia World*'s Readers' Choice Awards ceremony, as well as 300 exhibitors in 85,000 square feet of space. The accompanying conference program will be organized into four tracks: creative, business, technical and markets. Call (203) 840-5634.

SPLICES

Harry Hirsch, founder of Digital House, which ceased operations in June, started a new CD-production service in New York City: **DIGI-ROM** will "guide and support clients through the full range of mastering, manufacturing and printing services for CD, CD-ROM, and real-time and high-speed cassettes"...San Francisco mastering room **Rocket Lab** added NoNoise capabilities to its Sonic Solutions system. Also at Rocket Lab, Ken Lee recently mastered the fifth KKSF *Sampler for AIDS Relief*, which features

—CONTINUED ON PAGE 221

World Radio History

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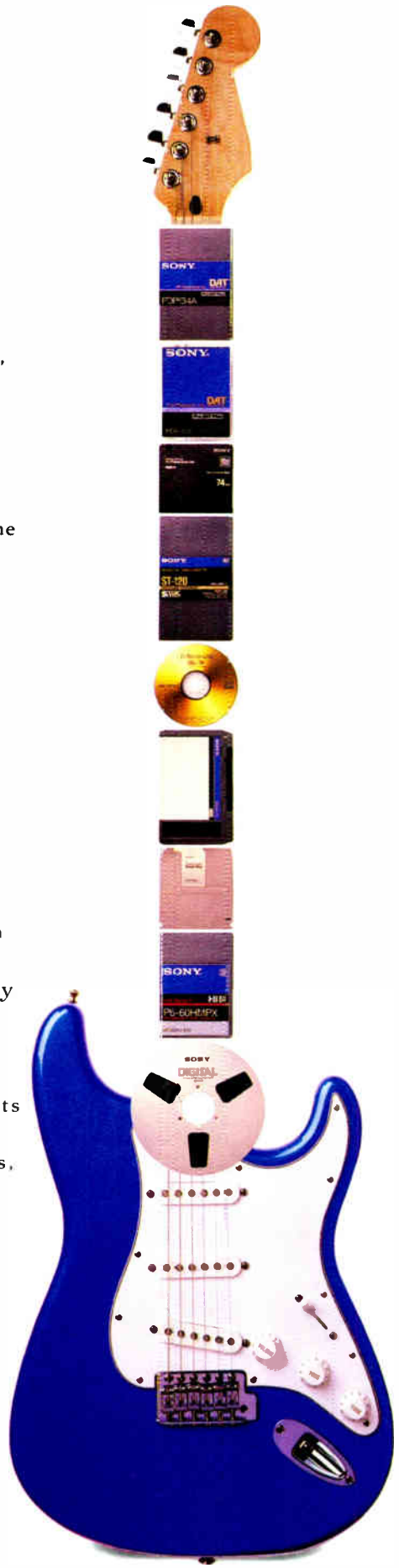

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World Radio History

COAST To

L.A. GRAPEVINE

by Maureen Droney

Just call me Joe: Very few people can pronounce the surname of Pacifique Studios' owners, but that doesn't stop the bookings at their North Hollywood facility, a favorite among engineers looking for quality gear at an affordable rate. The owners are the Deranteriasian brothers, Joe, Ken and Vic, and all are musicians in their own right. Originally from Armenia, the brothers traveled the world performing ethnic and "continental music" (continental, for those who don't know, is a mixture of European and American pop hits), became Australian citizens and finally

—CONTINUED ON PAGE 207

At Pacifique Studios in North Hollywood, the brothers Deranteriasian: (from left) Vic, Ken and Joe

PHOTO: MAUREEN DRONEY

NORTHWEST NEWS

by Jeff Forlenza

The Pacific Northwest is known for its scenic beauty and grunge music (Seattle, especially). But there's much more to the region than flannel and fog. There are plenty of talented musicians (in all genres), and there are state-of-the-art studios to track in. So come along as we tour a few facilities.

Scott Crane runs **Soundhouse Recording** in Seattle. Originally a 16-track studio, this facility recently reopened with a new Studer A827 2-inch, 24-track, a classic 40-input Trident 80B console, and a pair of large Tannoy 215 DMT speakers to go along with the selection of KRK, Tannoy and Yamaha near-field monitors. To accommodate the new speakers, Chips Davis redid the acoustics of the control room. Crane says the room is mainly used for tracking and that the iso booth is big enough (it has a 9-foot ceiling) to hold a drum set. Recent Soundhouse sessions included Brad Wood (Liz Phair's recorder/mixer) tracking a new album for Sub Pop artists Sunny Day Real Estate, and Pigface came in to record an acoustic version of their song "Suck" for Invisible Records with producer Martin Atkins (former drummer for

PHOTO: ANDY SAWYER

At Paradise Sound (Index, WA), Susan Jacobson tracked vocals for her big-band jazz album on Camelot Records.

World Radio History

COAST

Seattle's Soundhouse Recording recently installed a classic 40-input Trident 80B console and a Studer A827 24-track recorder.

PiL) and engineer Crane.

Robert Lang recently opened his own facility in Seattle with a distinctive stonework feel: Lang used 25 tons of rock on the new facility, including marble and granite floors, a seven-sided stone room (Studio B), a five-sided stone reverb chamber and a 188-gallon saltwater aquarium complete with reef. Equipment at **Robert Lang Studios** includes a modified 60-input API console with DiskMix automation and Otari recorders. Recent RLS sessions have included some of Nirvana's final studio sessions—they tracked six still-unreleased songs in January 1994, with Kurt Cobain's vocals on two tracks; Candlebox tracked "Far Behind" and "You" off their Platinum debut at RLS; and Sky Cries Mary tracked their album for World Domination Records with producer Ian Caple.

Paradise Sound Recording in Index, Wash., is a 24-track facility designed from the ground up by Chips Davis. The studio is situated on nine acres of timberland in the Cascade Mountains. Paradise gear includes a Harrison MR-4 32-input console, Otari MTR-90 24-track recorder, Alesis ADATs and a Macintosh Quadra 950 running Digidesign Pro Tools. Recent Paradise improvements include a room tuning by Bob Hodas with the Meyer SIMM® system and the installation of the Meyer CP-10S parametric EQ on the Ed Long CRM-100 main monitor system. Recent sessions at Paradise include Susan Jacobson

—CONTINUED ON PAGE 208

NY METRO REPORT

by Dan Daley

The River's Edge: It is 10 o'clock on a Sunday night, and I am in the front seat of a 1951 Hudson with all of 26,000 original miles on it. It's being driven by studio owner John Hanti, whose partner, Roy Cicala (Record Plant Recording founder, engineer of John Lennon's records and

—CONTINUED ON PAGE 210

At Brielle Studios in New York City, Jolly (including former members of the Dixie Dregs and Winger) tracked a new release for Major D Records. From left, drummer Rod Morgenstein, bassist Greg Yankou, co-producer/engineer Randy Whiteman, producer Paul Winger and guitarist Reb Beach. The project was then mixed by Tom Lord-Alge at the Power Station NYC.

PHOTO: STEPHEN CUSKLEY

World Radio History

What do you like best about your DA-88?

"Built-in headroom. It makes a big difference when you're trying to track quickly."

"MIDI synching is so easy and clean. It's hard to know where the virtual recording ends and the taped recording begins."

"It sounds great. Especially in the upper frequencies."

"Bouncing. I can bounce forever, it seems. The DA-88 just doesn't distort like other digital decks."

"We really like the convenience of the Hi8 format. You don't get tape stretch, you get much more time per tape, and it's really cost-effective."

"The Hi8 format is a superior recording medium, and it's a TASCAM."

"I can't help but notice the difference in the sound. Unbelievable."

"The TASCAM unit is clearly more dependable."

"I've had a lot of experience with TASCAM... the dependability and the value. It was a no risk investment for us."

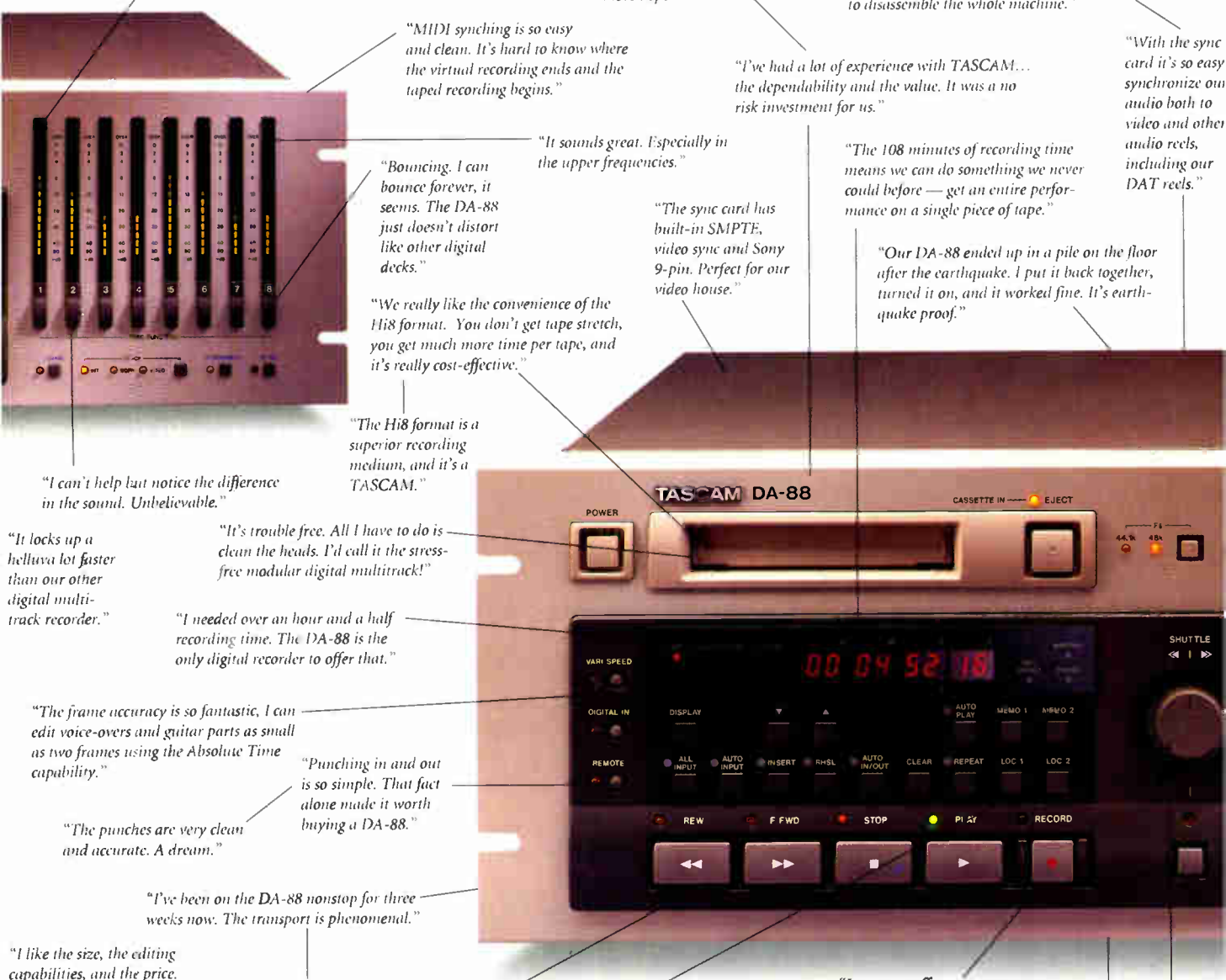
"I like having the A/D and D/A converters on an interface card because you can drop in a new card without having to disassemble the whole machine."

"With the sync card it's so easy synchronize our audio both to video and other audio reels, including our DAT reels."

"The 108 minutes of recording time means we can do something we never could before — get an entire performance on a single piece of tape."

"The sync card has built-in SMPTE, video sync and Sony 9-pin. Perfect for our video house."

"Our DA-88 ended up in a pile on the floor after the earthquake. I put it back together, turned it on, and it worked fine. It's earthquake proof."



"It locks up a helluva lot faster than our other digital multitrack recorder."

"It's trouble free. All I have to do is clean the heads. I'd call it the stress-free modular digital multitrack!"

"I needed over an hour and a half recording time. The DA-88 is the only digital recorder to offer that."

"The frame accuracy is so fantastic, I can edit voice-overs and guitar parts as small as two frames using the Absolute Time capability."

"Punching in and out is so simple. That fact alone made it worth buying a DA-88."

"The punches are very clean and accurate. A dream."

"I've been on the DA-88 nonstop for three weeks now. The transport is phenomenal."

"I like the size, the editing capabilities, and the price. I even like the way it looks."

"I just finished scoring two movies on it. Unbelievable machine."

"Two things. First, the DA-88 gives me a full one-hour and fifty minutes of record time. Second, the wind times are so wonderfully tight and quick... it takes my other digital recorder a day and a half to rewind."

"I like the auto-locator and rehearsal modes, and of course we're doing our next album on it."

"I can now offer my customers digital recording at analog prices."

"It's just faster. Speed counts. Time is money."

"It just feels better than any other recorder in its price range."

"We love the jog/shuttle wh It's working out great."

No wonder the DA-88 is the preferred digital multitrack.

It features the latest generation in digital multitrack recording technology. According to users, it's the best sounding, best built, most functional and affordable digital multitrack on the market. You're going to love the DA-88. Get to your dealer now and see why!

"It's the name. They make the best recording equipment, period."

"I wanted the serious machine for music production. That's TASCAM."

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"I'm focused on the TASCAM. It will become the standard. An I don't want to be left out."

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World Radio History

—FROM PAGE 204, L.A. GRAPEVINE
emigrated to Los Angeles, where, in 1984, they decided to build Pacifique Studios. Their original intention was to build a space in which to record their own projects.

Joe Deranteriasian explains: "We're all musicians, and we have been all around the world playing music. I play guitar, Ken is on drums and Vic handles keyboards. When we emigrated here in 1980 from Australia, we were playing around town, and Ken decided to go to school to learn engineering. Then we decided to open up a studio to record our own music, and we got into more sophisticated equipment. First, we were going to rent a space, and then we decided, 'No it doesn't work, because if you are going to build a studio and lease the building, after five or ten years they may kick you out.' That's why we found a place and built it from the ground up, ten years ago. First we bought the building, and then we hired Lakeside, and they drew us a plan for acoustical construction. We built the Trident [Series 80] room first, basically, for our own projects. But we were always short of money, and we started renting it out and we got popular! Everybody liked the room and the sound of it. Then after two years, we decided to have a mixing room, because all the mixers were tracking here and then going other places to mix. So we built the Neve room in 1987. First we got the Neve V60, and after two years we changed to the VR. So now we're stuck with two rooms!"

Pacifique's Studio A has a Trident Series 80 board with four Neve 1073 modules, five API preamps, API 550 and 560 EQs and a Neve 33609C comp/limiter along with a Demeter VTMp 2B and a good selection of Focusrite, GML, Yamaha, Lexicon and dbx signal processing. Studio B, with the Neve VR 72, has a full complement of outboard gear as well, including SSL and Neve stereo compressors, a GML 8900 comp/limiter and API, Summit, Tube-Tech and GML EQ.

The brothers have kept up their international connections (Vic is still a touring musician, while Joe handles booking and Ken does engineering), and recently Pacifique has hosted a large contingent of European artists, including the French sensation Veronique Sanson. Brother Ken has accumulated four French Platinum records for projects he engineered at Pacifique. Other recent clients have included Toto, Natalie Cole, Bobby Brown, Earth Wind & Fire and Ice T.

Your Place or Mine Location Recording in Glendale recently recorded a tribute to Willie Dixon at B.B. King's new blues club in the Universal City complex. Produced by Larry Guzzy and Shirley Dixon for the Blues Heaven Foundation, the show featured blues greats John Lee Hooker, Koko Taylor and Lowell Fulsom. Your Place or Mine also set up their "airpack" gear at Geffen artist Anna Magnuson's rehearsal studio to record tracks for her new album, produced by Don Fleming (Alice Cooper, Teenage Fanclub, Gumball). YPOM's owner, engineer Mark Linett, mixed a live performance by rock 'n' roll legend Jerry Lee Lewis for an upcoming ABC-TV *In Concert*.

Linett spent most of July immersed in the original 1969 Woodstock Festival, working with producer Alan Douglas. The two were mixing a three-hour Showtime documentary along with *Woodstock Diary*, the Atlantic CD reissue of the original 1969 Woodstock Festival, featuring previously unreleased performances by, among others, Joe Cocker, The Band, Janis Joplin, Jefferson Airplane and Sly & the Family Stone. The Showtime documentary was derived from the original 16mm footage, providing, according to Linnett, a sense of the festival with events in their proper order, instead of time-shifted for effect as they were in the original film release. The Atlantic CD was mixed from the original 8-tracks transferred to digital: Linett says that except for a few instances, not much cleanup was needed. "Of course," he says, "the first songs of every set were usually a mess because they had no soundchecks, but except for that, everybody was recorded pretty well."

Bell Page Music & Sound Design, based in West L.A., is a relatively young company with plenty going on. Chris Bell and Tom Page started writing together five years ago when Page was a creative director for the DDB-Needham agency and Bell had his own sound design company. Now the two are collaborating full time. They recently completed a 12-spot package for the new Apple Power PC campaign from BBDO-L.A. Each spot in the series is different, spanning the musical gamut from electronic pop to chamber music to 45-piece orchestras. Bell and Page recorded much of the project in their own studio with Pro Tools and Tascam DA-88s, mixing down to a Panasonic SV3700 DAT. The orchestral sessions were done at Capitol and Signet Studios with engineers Greg Townley and Avi Kipper.

Other 1994 projects included Bugle Boy jeans, AT&T and Lexus, and a second project studio has been completed to accommodate the growing workload. Plans are also in the works for a move to larger offices early in 1995. According to Page, "We're doing everything we hoped we would be doing and more. Business is good, and it's work that we love to do. There are so many different areas opening up these days; so many avenues of sound to explore. It's really an exciting time for sound design."

Dynamic Duo: Engineer Taavi Mote (U2, Madonna, Jimmy Jam & Terry Lewis) has hooked up with hit songwriter Jud Friedman (Whitney Houston's "Run to You," James Ingram's "I Don't Have the Heart"), who has moved into producing. The team recently recorded and mixed Melissa Manchester's first single ("In a Perfect World") from her new Atlantic CD and worked with Chante Moore on her second Silas/MCA release. Mote says about the collaboration, "We move fast when we work together, and the sessions have a lot of energy. We seem to listen in the same ways."

South Bay Beat: Dino M III Recording in Torrance has remodeled and upgraded, with the installation of a Malcolm Toft-designed MTA Series 980 console. Those of you up on your console history will remember that Toft was an owner of Trident and designer of the Trident A-range, TSM, Series 80 and DIAN desks. At Dino M III, the 980 is equipped with Uptown non-VCA moving fader automation. David Michaels, North American rep for MTA, says the 980 has been out just about a year, with 16 consoles already delivered, including one to Charlie Daniels in Nashville. A 32-in split console, with 94-in mix capability, the desk is, Michaels says, "a tremendous amount

World Radio History

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of value for the money.

"There is nothing like it in the price range," he says. "Basically, Malcolm took all that he's learned over the years and incorporated it into a very affordable, good console. I go back with Malcolm almost 20 years, and we've always been very concerned with the end user. Quite a bit of the shortcomings that we found over the years with Tridents have become improvements in this console." Studio owner/producer Dino Maddalone, who went through self-described "console hell" trying to choose a new board, says the 980 is "something to be reckoned with in the future." Maddalone, whose work with Spiders & Snakes and Precious Death were both nominated for Best Production at 1994's L.A. Music Awards, is set to produce several projects on his new console, including Bride, the number one-selling Christian rock act in the country.

Euphonix has new offices in both L.A. and New York City. The new L.A. address is 11112 Ventura Blvd. in Studio City ([818] 766-1666, fax: [818] 766-3401), a location the folks at Euphonix say is easily accessible from Hollywood and the media districts in the San Fernando Valley. According to Rick Plushner, VP of sales, "The atmosphere at the new office more closely resembles that of a typical L.A. recording studio than a business office. A large portion of the new office is dedicated to a fully equipped 48-track demo studio with indoor and outdoor lounges."

Andy Wild, VP of international sales and marketing, adds, "The demo rooms are critical to the operation because engineers, musicians and producers need to see the system for themselves to fully understand the advantages and the benefits the CS2000 can offer. These rooms are available not only for customer demonstrations but also for console training."

Fax your L.A. news to Maureen Droney at (818) 346-3062. ■

—FROM PAGE 205, NORTHWEST NEWS

recording her big-band jazz album, *Timeless*, with producer Jan Kurtis and Paradise chief engineer Pat Sample for Camelot Records.

Bad Animals/Seattle, the facility co-owned by Ann and Nancy Wilson of Heart and Steve and Deborah Lawson, stays busy. Studio X was the location for the live recording and music video shoot for Soundgarden's single "Fell on Black Days." The band recorded the track live while director Jake Scott filmed the song's video. Famed cartoonist Gary Larson visited Bad Animals with jazz guitarist Bill Frisell to record voice-overs and music for his *Tales From the Far Side* animated TV special; engineer Ed Brooks handled the tracking. In personnel news, Dave Howe joined the Bad Animal team as a senior sound design engineer. Howe, accredited with the C.A.S., comes from a position as senior re-recording mixer/sound editor at Universal Studios in Florida.

Room One Recording Studios (Tacoma, Wash.) recently celebrated its first year of business. The room was designed and built by owners John Atten and Brian Parker, with technical assistance from David King. Room One is a 16-track, 1-inch facility featuring a Soundcraft Series 600 console and Otari MX-70 recorder. "When we were planning this whole thing," Atten says, "we realized there was a glut in the Seattle/Tacoma market for 24-track studios. So we figured we'd go with 16 tracks and put them in a room that would rival the best rooms in the area, allowing us to compete rate-wise with local project studios, yet provide the client with the overall sound quality of the larger studios in the region." So far, business has been good at Room One, with sessions including acclaimed producer Neil Kernon (Dokken, Queensryche) tracking industrial rockers Rorshach Test.

Brothers Jerry and Rif Rafson own and operate **Dome Studios** in Fairbanks, Alaska. Dome has a 500-square-foot main room and a 150-square-foot control room featuring a Hill 24x8 mixing console, a Tascam MS-16 1-inch, 16-track recorder with dbx noise reduction and a Panasonic SV-3500 DAT recorder. The Rafson brothers have a record label, Goldstream Records, and publish as Minus Forty Music. Dome serves as a production facility for their own label and as a rental studio for clients. Recent Dome clients include Alaskan blues brothers Larry "The Raindog" and Lindy Raines, and jazz vibe/piano player Clyde Phipps. ■

World Radio History

PHOTO: JACKIE WHITE

Panelists at the Grammy Recording Forum at the recent AES convention in San Francisco: (L to R) David Frazer; Michael Greene, president/CEO of NARAS; Bill Bottrell; Roger Nichols; Hank Neuberger, chairman of NARAS board of trustees; Phil Ramone and Shelly Yakus.

MANAGING THE MIX

1994 GRAMMY RECORDING FORUM

by Maureen Droney

It took a while to get Shelly Yakus off his portable phone and up to the podium, but the 6th Annual Grammy Recording Forum at the 1994 AES convention managed to start on time anyway. Yakus, now VP and director of engineering at A&M recording studios and a producer/engineer whose credits include U2, Stevie Nicks, Tom Petty and Don Henley, was one of the five members of the panel for what has become an annual event at AES. Moderated by Roger Nichols, who probably needs no introduction (multiple Grammy-awards, long-time engineer for Steely Dan, a degree in nuclear engineering, etc.), the topic this year was "Art & Science: Managing the Mix."

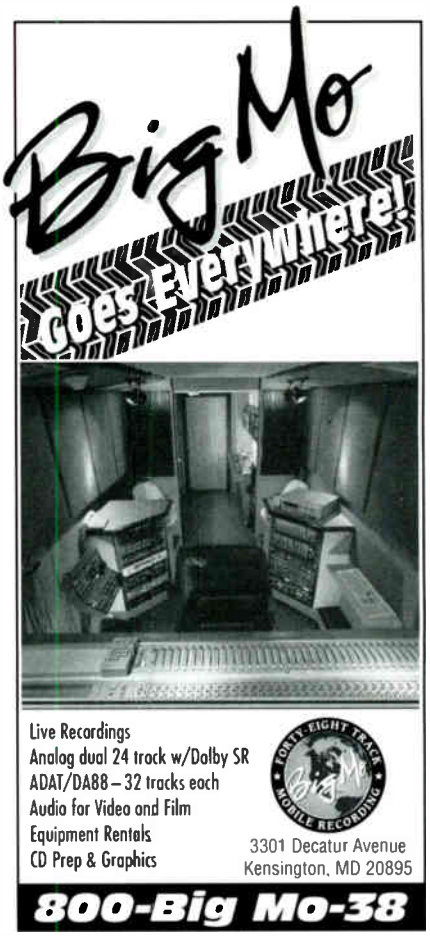
Besides Yakus, the panel included Bill Bottrell, currently hot on the charts with Sheryl Crow, and previously producer/engineer for Michael Jackson, Thomas Dolby, Madonna and the Traveling Wilburys; David Frazer, the Northern California-based engineer known for his work on hits like Aretha Franklin's "Freeway of Love" and Whitney Houston's "How Will I Know"; and veteran producer Phil Ramone, who should also need no introduction and has lately been in the spotlight for his work with long-distance EDnet recordings for Gloria Estefan and Frank Sinatra.

Each engineer played a sample of his work—from Shelly Yakus' recording of Tom Petty's classic "Refugee" (check it out guys, the bass drum is out-of-phase with the snare!) to David Frazer's ballad by Mariah Carey titled "I Don't Want to Cry." Said Frazer, "I don't know why I chose to play this one, I just really like the vocal!" The session then opened up to questions from the audience. (This writer would like to suggest a trap door next year that removes audience participants who start their questions with "Well, when *I* do a mix...")

Although those present may have disagreed on the virtues of analog and digital, they were unanimous on the importance of keeping passion and feel in the recording process. Said Ramone, "Music and feel come first. Don't get in the way of who it is you're recording." Yakus talked about avoiding what he called "the sameness disease" and Bottrell commented that often there is too much emphasis on control. Bottrell said, "You try too hard for perfection and when you finally achieve it, you will have achieved the same perfection that everyone else has."

All panelists agreed that rough mixes made during the recording process are a good indicator of direction. According to Ramone, "The rough is the Polaroid of where we are going, sometimes we lose sight of it." Added Bottrell, who often ends up using rough mixes as his final masters, "Make your roughs to your final format; when it starts to sound like a record, I put it on tape." The always iconoclastic Bottrell also commented that he believes there is too much control in music these days: "Lack of control is what we need!"

The panelists were remarkably open about the fears that sometimes surface during a mix. Commented Yakus, "Sometimes you're fighting for your life, with the artist standing



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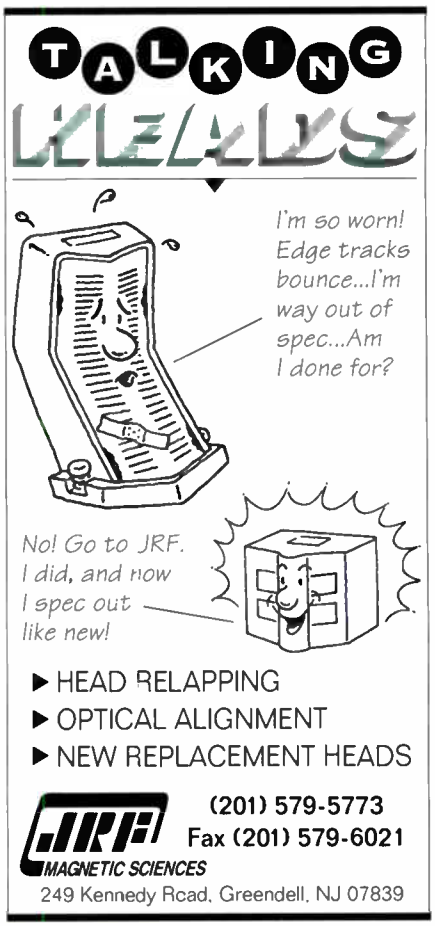

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behind you going, 'Where's my record?' and the clock ticking at $200 per hour, so you get desperate and try a lot of things. It's like, 'I don't know, I just kept hitting buttons 'cause I was scared shitless!'" Nichols chimed in with a story about longtime client Walter Becker making him try every possible direction on a mix, then finally reverting to the mix Nichols had when Becker arrived at the studio. When the frustrated Nichols asked "Why do you do that?" Becker replied, "Because I can't tell what's good, so I have to eliminate all the bad. What's left is the record!"

Maybe Phil Ramone summed it up when he called himself and his colleagues "musical engineers"—an apt term, don't you think? Oh, and kudos to Hank Neuberger, chairman of the Academy and a Grammy-winner in his own right, for his pithy introductory comments and his facile handling of both the panelists and the sometimes long-winded questioners. It was Neuberger who, in his introduction, pointed out the importance of sound as well as content for the longevity of recorded music. ■

—FROM PAGE 205, NEW YORK METRO

possibly the sweetest person in the pro audio business) is in the back seat, already regretting the third martini that accompanied our *paella* dinner at a Spanish restaurant in Hoboken. The lights of Manhattan ripple on the dark waters of the Hudson. If the vintage auto's radio were on, I suspect it would yield the ghostly echo of a Murray The K broadcast on WINS from 1959. It's that kind of car and that kind of night. It's New Jersey.

While the Manhattan studio scene has been relatively static in the past couple of years, just across the Hudson a whole other scene has been taking shape. A surge of alternative music; a waterfront enhanced by less expensive, roomier housing; a burgeoning club scene led by Maxwell's; and new water taxis that make Manhattan more accessible have caused recording in Weehawken, Hoboken and Jersey City to blossom.

Last year, Hanti put his established Weehawken rehearsal space together with a mobile unit owned by Cicala and created HWII (It Is What It Is, a favorite Lennon epigram) Inc. The cramped control room/truck box containing a vintage 1974 API console opens onto a room so spacious that most Manhattanites could only dream about it. "It's like a new East Village in the area," says Hanti, who also runs SST, an equipment and touring van rental operation on the site. "The restaurants are just as good, and the parking is easier. That famous New Yorker cartoon that showed Manhattan so large and everything over the Hudson as small is no longer valid. Or funny."

SST is able to keep its rates within the budget of alternative and aspiring acts, generally under $1,000 per day, including engineer. "And there's a lot of support networks opening up here," Hanti adds, citing the water taxis and Def Leppard's management company a few blocks away.

Rob Grenoble's Water Music has entered its 15th year in Hoboken. The two-room, Neve and API facility is thriving because, Grenoble says, affordable Bohemian loft living in Hoboken—where *New York*

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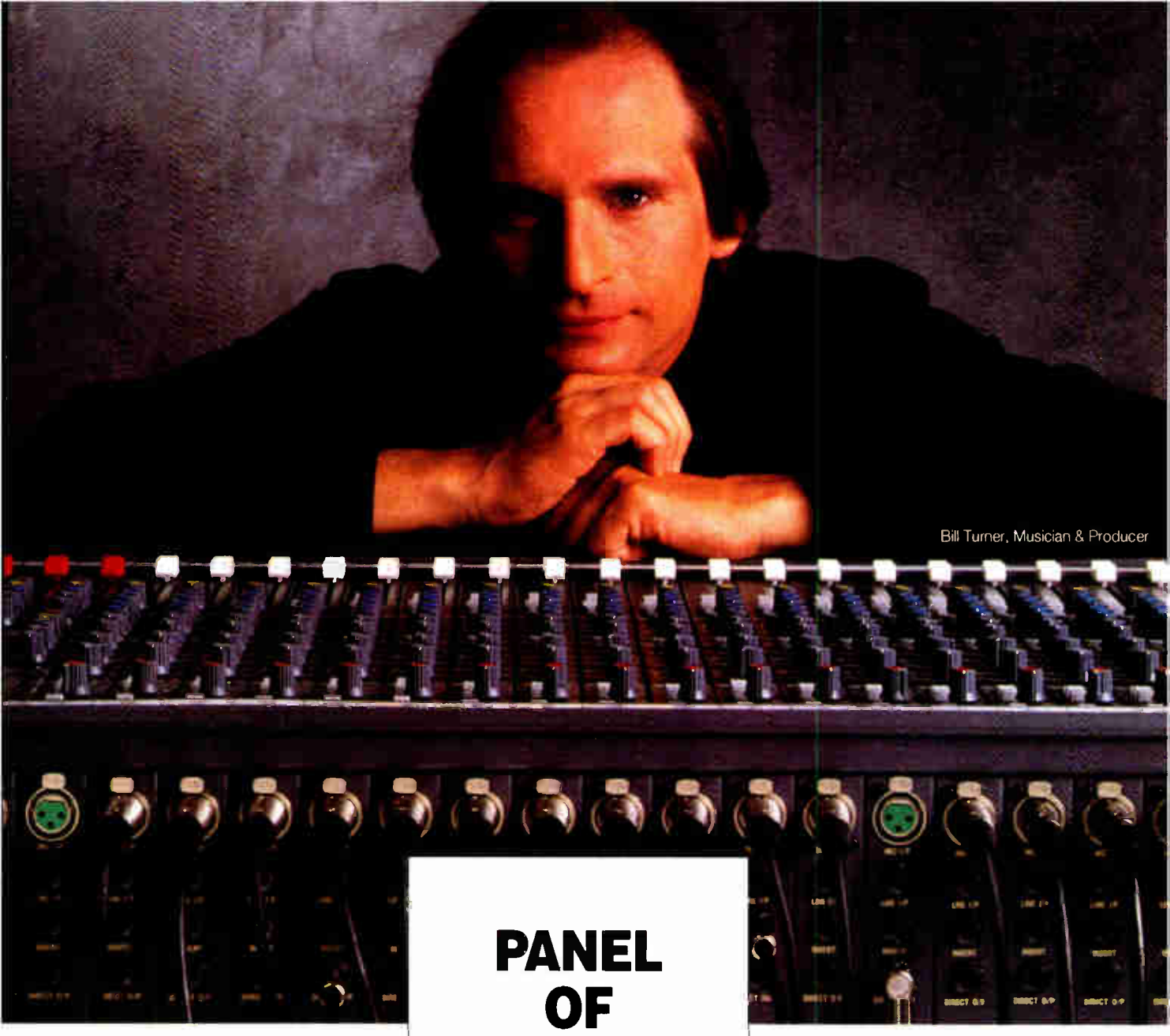

PANEL OF EXPERTS.

Bill Turner is an expert on professional sound studios as well as being a renowned session musician. Among his noteworthy accomplishments, he played lead guitar with Bill Haley, and most recently toured Europe with a revival of the original 1954 Comets band. He currently performs and records with his own band, Blue Smoke.

Bill is equally talented as a producer in his Brooklyn, New York, studio, Bill Turner Productions (BTP). "Being an independent producer, we often have to create the product on location and many times outdoors. This is the trickiest...anything can happen outdoors. We eliminate a lot of the 'gremlins' by using only the parts and connectors we feel are the best...and that translates to Switchcraft. We never leave the studio without Switchcraft."

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Times pop music critic Robert Palmer once found himself playing for a local band called the Insect Trust—attracts a steady stream of talent. "It's also less expensive to get [a studio] started here," he says. Any Manhattanesque elitist tendencies tend to get left on the PATH train seats like a day-old copy of the *Daily News*, and many out-of-town clients never even experience it. "The only people with Manhattan attitudes really are people from Manhattan," Grenoble says. "In L.A., it's not unusual to drive an hour to a studio, so five minutes [from Manhattan] for most people isn't a problem at all."

Not everyone is quite as sanguine on the waterfront's immediate prospects. Reggie Lucas, who produced Madonna's debut record and who has owned **Quantum Sound Recording** in Jersey City since 1985, says that while the phone poles are up, the wires have not yet been strung. "The studios and clubs and musicians are here, but Jersey is very underdeveloped as far as networking between them is concerned," Lucas explains.

Quantum has condensed itself from three rooms to one over the years, and the focus is now mainly on Lucas' own production and composition work. And while he believes that New Jersey still suffers from negative perceptions as far as the industry is concerned, that's beginning to change. "With the proper capitalization and a focus on running a commercial studio rather than a hybrid one, it can definitely work," Lucas states. "The problem with a lot of Manhattan studios is that they make the expensive leaseholder improvements but they don't own the space. In Jersey, the space is affordable enough to make true studio ownership a real possibility." ■

SESSIONS & STUDIO NEWS

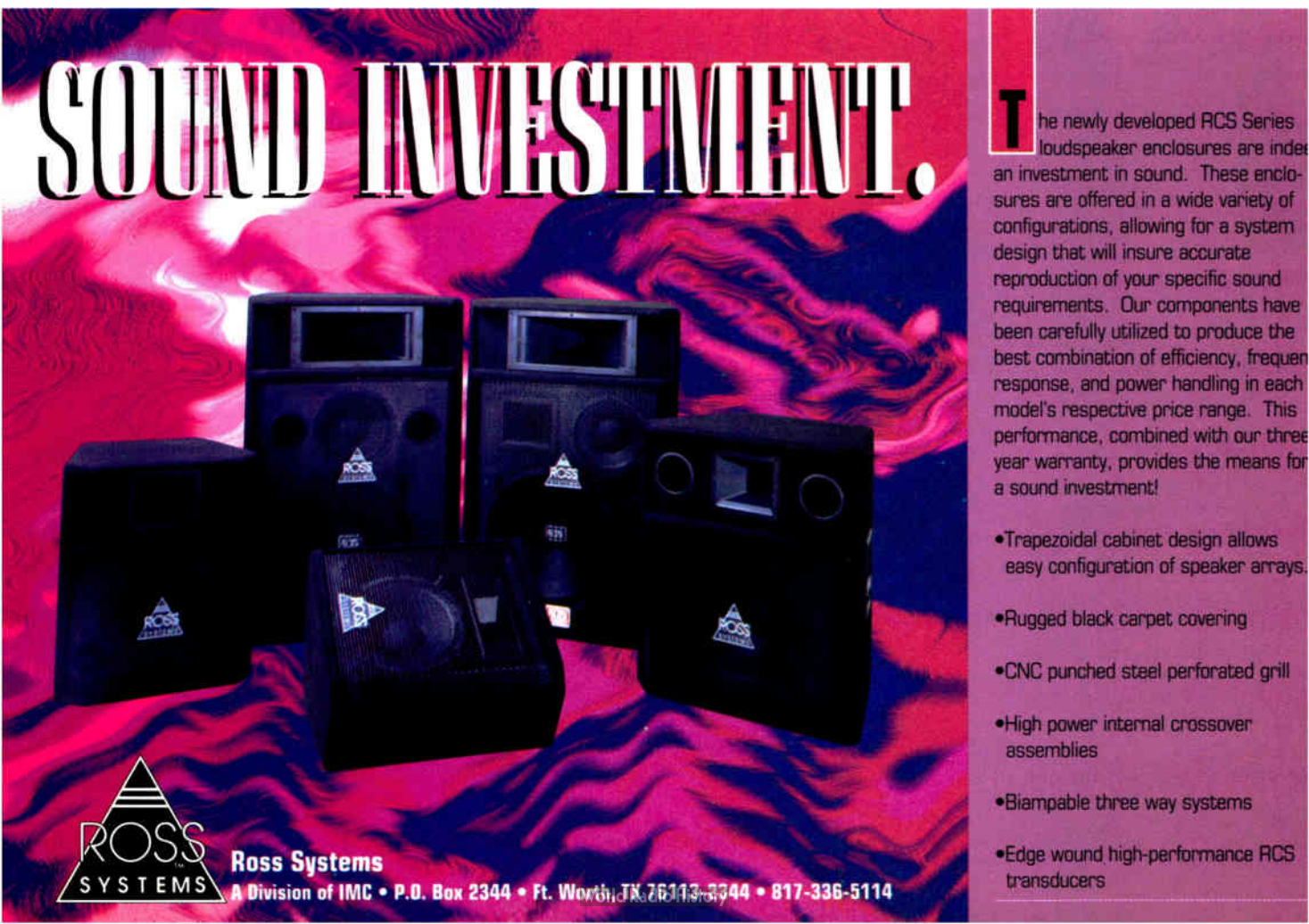
by Jeff Forlenza

NORTHWEST

Canadian alternative songwriter **Suzanne Little** was at San Francisco's **Brilliant Studios** working on her solo debut for Nettwerk Records. Norm Kerner produced the sessions, which included guest musicians **Bruce Kaphane** (of American Music Club) and **Chuck Prophet** (formerly of Green on Red)...Hard-rock producer **Michael Wagener** (Ozzy Osbourne, Scorpions) was at San Francisco's **Hyde Street Studios** overseeing vocal overdubs by the group **Testament** for the feature film, *Strange Days*...Up in Redmond, WA, Brazilian supergroup **Latin Expression** tracked their new CD at **Triad Studios** with engineer **Larz Nefzger**...Northwest rockers **Diamond Eye** completed mixing their self-produced album at **Red Carpet Treatment** (Portland, OR) with engineer **Gavin Pursinger**...

SOUTHERN CALIFORNIA

Hard-rock producer **Mike Clink** was at **Rumbo Recorders** (Canoga Park) doing overdubs for Guns N' Roses guitarist **Slash**'s solo release on Geffen...At **SoundCastle Studios** (L.A.),



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IRS recording artists Dada remixed their latest album with engineers Steve Cormier and Adam Weiner...At L.A.'s Skip Saylor Recording, football star Deion "Prime Time" Sanders was in with rapper/producer DJ Quik and engineer Chris Puram tracking for Death Row/Interscope Records... Tom Jones was recently at Sunset Sound (Hollywood) working with producer Richard Perry and engineer Kevin Becka on the song "I Don't Think So." Perry and Becka cut tracks on the API console in the B room and did overdubs on the Amek desk in Sunset's C room... Singer/songwriter Arnold McCuller was at Walden II (Hollywood) recording his debut for Coyote Records with producer Dana Walden and engineers Frank Roszak and Justin Walden. Guest artists included Bonnie Raitt, Tower of Power Horns and Rita Coolidge...

NORTHEAST

Barry Manilow recorded five songs for his latest album (*Singin' With the Big Bands*) at The Edison in New York City. Manilow co-produced the various big bands with Phil Ramone from the Edison ballroom. Edison chief engineer Gary Chester used vintage microphones to create an authentic period sound...At Music Palace of Long Island, NY, engineer Andre Debourg mixed Salt N' Pepa's Woodstock performance, from the SSL 4000 G Series console and the Studer D827 digital multitrack...The engineering team of Paul Kolderie and Sean Slade were mixing EMI artists Radiohead from the automated Neve at Sound Techniques in Boston. Dave Kirkpatrick assisted the 48-track analog mix sessions...Baltimore's Naked Blue were at Showplace Studios (Dover, NJ) tracking and mixing their latest Viceroy Music release. The sessions were produced and engineered by Ben Elliott on Showplace's Amek Mozart console...

SOUTHEAST

At Music Mill Recording Studio in Nashville, producer Brian Ahern was doing overdubs with George Jones for his MCA duet album with engineers Donovan Cowart and Todd Culross...At Nashville's Midtown Tone & Volume, Blackhawk was in doing pre-production for their second album with engineer Mike Clute and producer Mark Bright...Power pop duo Local H were at Reflection Sound Studios (Charlotte, NC) recording their Island Records debut with producer Steve Haigler and engineer Tracey Schroeder...

NORTH CENTRAL

At Chicago's Streeterville Studios, Alligator recording artist Carey Bell was working with label owner/producer Bruce Iglauer and engineer David Axelbaum. Also at Streeterville, film critics Gene Siskel and Roger Ebert were doing vocal overdubs for the animated TV show *The Critic*, with producer Al Jean and engineer Fred Breitberg...Producer Mike Crooker and engineer Greg D. Feezel mixed the new CD from Indian Rope Burn at Electro-Sound Recording Studios in Kent, OH...

SOUTHWEST

Texas Tornado-man spins alone: Doug Sahm was at Arlyn Studios (Austin, TX) working on a solo project for Antone's Records with producer Derek O'Brien and engineer Stuart Sullivan...Jive recording artists Fu Schnickens were at Planet Dallas working on their latest CD with producer Rod Kirkpatrick and engineer Rick Rooney...Rob Halford (former vocalist of Judas Priest) was at Phase Four Studios (Tempe, AZ) tracking his new band, Fight, with producer/engineer Attie Bauw on the Neve VR72 console...

STUDIO NEWS

Soundworks Recording recently opened in Decatur, AL. The 1,800-square-foot facility features 32 tracks of Alesis ADAT, a Soundtracs Logic 8 console and vintage Tube-Tech and Ampex mic preamps. Soundworks is designed to meet the needs of mid-budget music and album productions...Producer/guitarist/educator Michael Brewin recently began recording audio sessions from his Rock-N-Productions, a digital studio he put together in Tigard, OR. R-N-P equipment includes Tascam DA-88 MDMs, Macintosh hardware and MOTU software, Lexicon and Behringer effects processors, and various MIDI equipment...Muscle Shoals Sound Studios (Sheffield, AL) recently celebrated its 25th anniversary with the addition of the GML Series 2000 Moving Fader automation system for the vintage Neve 80 Series console in Studio B. ■

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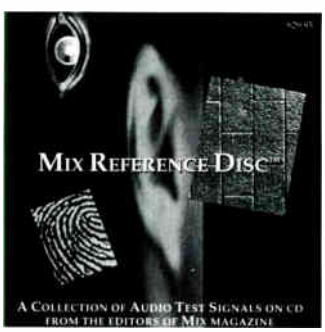

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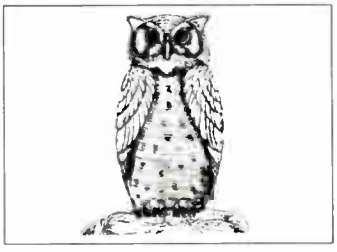

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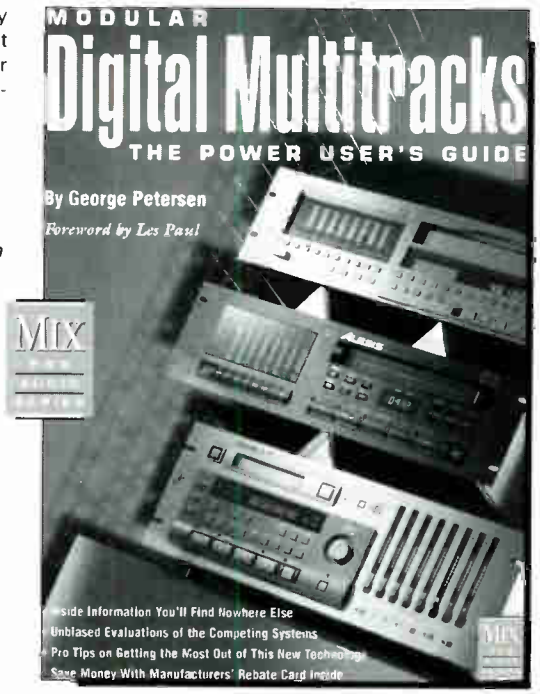

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—FROM PAGE 60, BASS APPLICATIONS

end and the low end and the direct separate. That way I would have more control over it in the mix. I would re-compress all of those when I would use them. We would always tend to boost the high mids.

"Sometimes we might change basses in the middle of a song, for a particular section," Taylor adds. "Doug might be playing a 12- and then he would switch to a four-string for another section. This set-up would allow me to try and come as close to matching that, so you wouldn't feel that something had completely vanished. A lot of times, with the 12- and 8-string basses, I would get Doug to double the 12- or 8-string part with his 4-string Hamer bass, which was one of the finest, cleanest basses I ever heard. It takes somebody who is really good, when you start doubling the low end of an instrument, because the sound waves are so far apart, any variation makes the attack or intonation very apparent."

Recently, Taylor became a big fan of engineer/designer John Cuniberti's Re-Amp, which is a tape recorder-to-instrument amplifier interface. The Re-Amp allows him to take a clean instrument signal (in this case, the bass guitar) and try out any number of amps and tonal settings. "The cool thing about the Re-Amp is you can plug the player in and he's ready, as long as he's got new strings on his bass and it is in tune. There is no need for any mics, or need to EQ his amp; he's ready to go," Taylor says. "A bass player would be smart to have one of these. When they do a session, he can just say that this is what he uses for a direct. He plugs it into the patch bay and goes. When the track is done, he can help with the sounds and the miking of the amp. The bass player is involved in the process of getting his own sound again, without having to stand around and play a part over and over again while someone else is tweaking it. After all, we are making this together."

DAVID Z

David Z's production and engineering credits include some of the biggest and most innovative artists of the last 15 years, particularly in the R&B/pop arena. For starters, Z worked on a number of classic Prince albums, including *Purple Rain* and *1999*. He shares production credits with the Purple One on the hit single "Kiss." Other artists he's worked with include Janet Jackson, Nenah Cherry, Jody Watley, Fine Young Cannibals, Jermaine Jackson, Tevin Campbell and Lipps Inc. Z has also produced and/or engineered Big Head Todd & The Monsters, Billy Idol, Timbuk 3, and, most recently, Collective Soul. Currently, Z has relocated to Memphis, where he is handling A&R and production chores for the new BMG-distributed House of Blues record label.

"Number one, there is nothing like a good bass with a good tone. It has got to have a pure tone. There is no substitution, unless you are going to use a synth bass," Z emphasizes. Concerning bass recording techniques, Z points out that a common technique, when a bass player is doing popping and funky licks, is to "take away the middle, like 1 Hz. That kind of gives it a warm pillowy

> **"I like to split the signal and use two different faders for the bass, one would be a tightly compressed signal with a lot of midrange to really sock it through, and the other would be very lightly compressed, but with a lot of bottom."**
> **—David Z**

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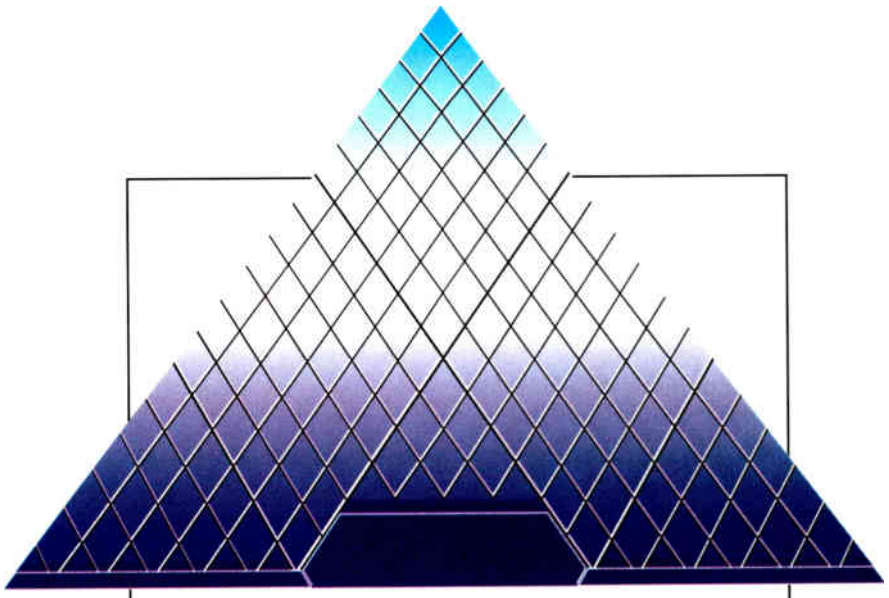

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sound, yet there is a lot of high end in there, so the pops can come out, but it isn't too forceful.

"I like to split the signal and use two different faders for the bass," he explains, "one would be a tightly compressed signal with a lot of midrange to really sock it through, and the other would be very lightly compressed, but with a lot of bottom. I might have one with compression and one without. I can EQ them totally differently. That way, I can combine the amount of each element, to make it work on lots of different sets of speakers.

"Anybody can get a bass to sound huge on a big set of speakers, but you have got to have it translate to all kinds of small speakers and really horrible, shitty speakers," Z says. "I believe in the shitty speaker syndrome. For my home system, I have some big old KLH bookshelf speakers. They are really old and grungy, but I know what they sound like. I'm a bass fanatic and that is the thing I really fight to get right. I love heavy bottom, but it can't be too heavy, because it makes everything a mess.

"Sometimes I will cut the bottom off with a filter, like below 30 or 40 Hz," he adds. "Then you can boost a little more without muddying up the super sub-lows. I would probably boost it around 100 cycles. You have got to be careful though. If you are mixing a dance record for the dance floor, you almost need the subs in there. You have got to be kind of careful, if it is going to end up in a club, or on some huge speakers. You have got to translate to that, too.

"I have to mix on a lot of different systems," he explains. "The big system in the studio is for the sub-lows. Then I have to switch to crappy speakers to get the midrange right. Then I might have to switch to some good NS-10 midrange and high-end speakers to get the high end right. I have a pair of these Little David speakers that are super-hyped in the high end and the low end, but you get a totally different picture than a Auratone, or something like that. It is good to get it to sound right on every system you can. Bass is very elusive. You want it to have power and punch, without vibrating the speakers till they rip. It is a fine balance." ■

Rick Clark is a Memphis-based writer and musician.

TAPE & DISC

—FROM PAGE 202, SPLICES

performances by Carlos Santana, Craig Chaquico and Jim Chappel...Hollywood's **Future Disc Systems** used its DCC mastering suite to prepare a release in that format for the Boyz II Men album *II* on Motown...Dave Radin mastered the new Tom Brown CD, featuring Herbie Hancock and Omar Hakim, at **Trutone** in Hackensack, NJ...**CMS Digital** (Pasadena, CA) reports mastering work by Robert Vosgien for The Lightning Seeds and Ana Gabriel...**Neuse River Sales** of Oriental, NC, has been appointed exclusive Northeast region sales representative for **Gauss** and **Electro Sound** (Sun Valley, CA) high-speed duplicating systems, test gear and loaders. Gauss also reports the sale of a second MAX digital bin system in Russia, this time to **Sojuz Duplicating** in Moscow. Electro Sound, meanwhile, sold Series 9000 cassette-duplicating systems to **Classic Sound** (Norcross, GA), **Christian World Duplicators** (Oklahoma City, OK), and **ABC Home Video** (North Hollywood, CA), which also bought a CD-9002 loader. Overseas sales for Electro Sound include **Vitacolor Industries** in Manila, the Philipines, and **E.S.K.K.** in Warsaw, Poland, where a CD-9002 was also purchased...**Saki Magnetics** (Calabasas, CA) reports sales of its replacement heads to five music and spoken-word duplicators in Australia, including **EMI Manufacturing** and the **Australian Broadcasting Company**. **Technical Workshops** in Melbourne was appointed Saki's distributor in Australia...**Versadyne** (Campbell, CA) reports two sales in its 1500 Series line: a complete turnkey system to **Jose Chavez Rubio** of Pachuca, Mexico, and an additional dual-slave unit to **Exxel Recording and Duplication** of Oceanside, CA...Los Angeles digital mastering and cassette duplication company **52nd Street** relocated its corporate offices to Carlsbad, CA. Production facilities will remain in Los Angeles....**Eastman Kodak** (Rochester, NY) announced a licensing arrangement allowing **DMI** (Huntsville, AL) and **WEA Manufacturing** (Olyphant, PA) to replicate Photo CD discs without approval before replication or release of product...**Accurate Sound** (Menlo Park, CA) is marketing a modified version of the ALEA CD-Maker that features a Yamaha four-times-speed CD recorder and a built-in DAT drive. ■

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—FROM PAGE 86, MARK MOTHERSBAUGH

but there may be time available and a possibility where we put albums of music on Internet and people can download them for a fee.

Bonzai: What pieces of your gear would make the readers drool and lust for the power?

Mothersbaugh: I would worry about people who drool and lust for equipment, but I guess that's easy to say if you are making payments on just about everything. I think it's a great time because just about any one of these boxes can do all sorts of things. A Kurzweil, for instance, the K2000—you can both sample and play samples and also play back patches that already exist. The Kurzweil and these Roland samplers are all connected to the same SCSI chain. You can load off of CD-ROMs into any of these, and they are starting to talk to each other somewhat. The Kurzweil can read the Roland MO disks. It's wonderful that all the new stuff talks to each other, shakes hands, and there are universal computer formats now so that you know you're going to get a piano when you make a certain request, no matter what software you're using or what piece of gear you have.

Bonzai: Do you still use any of the old Moog synthesizers?

Mothersbaugh: We've got a big collection of old analog stuff. In the old days, people were trying to figure out electronic music—like this TVS-1 here is a mutant, an Oberheim with a great little sequencer. It's the filters—there's really nothing that accomplishes that sound in modern synth sounds. The old sequencers weren't quantized, so if you didn't exactly tune each knob, you could get microtones. You miss that when everything is so cleaned up, even if you don't want it to be.

Bonzai: Any new stuff that we haven't heard about?

Mothersbaugh: Actually, I'm interested in a new keyboard controller that throws away the concept of your seven white notes and your five black notes. It has what looks like those old stops on Wurlitzer organs that were like a tab, like a little diving board, and there is a whole row of them in a horseshoe pattern. It has rows of seven, offset slightly. They had one at the last NAMM show, but it wasn't hooked up and working. I'm trying to get them to send me one.

Bonzai: You had a couple of "Hard Core Devo" albums come out on Ryko–Disk a few years ago. Are there more things in the Devo beehives that people will have access to?

Mothersbaugh: I'm sure there will be. There are whole areas of our history that are parallel to what's going on now in music, including ambient and trance kind of stuff. There was a period of three years in between writing pop songs where our experimentation took place in an ambient, trancy kind of dance mode, as far as the style of the music. We have an archive, and it's just a matter of going through it and pulling out the best stuff.

Bonzai: How many hours of Devo are in the archives?

Mothersbaugh: Timewise, there are thousands of hours, but you'd have to go through it to find what you'd even want people to know about. Some of it would be humorous, especially because so many of our songs that came out on albums were often different earlier. Like "Dumptruck," nobody ever heard that, but it became "Girl You Want" at one time and made the Top 20.

Bonzai: You made a lot of money with Devo, but you spent it all on the production and the touring, didn't you?

Mothersbaugh: Yeah, we didn't know that you were supposed to keep some of it for yourself. We were totally having fun, making films that we financed ourselves, staging these great tours. We'd spend all our profits on an album having the record company do a die-cut, fold-out stand so you could fold this thing out of the back of your album and stand it up. That's the money that would have bought us our swimming pools and stretch limos.

Bonzai: After that period when you were concentrating on your visual art, did you just decide to go and make some money?

Mothersbaugh: What happened was that Devo kind of broiled somewhere in the mid-'80s. We peaked commercially as far as music that related to the radio. Somehow in 1980, somebody thought that the guys who wrote "Mongoloid," "Can You Take It" and "Jocko Homo" should be allowed to sell out the Forum,

PHOTO CREDIT: ENIGMA

"I like CD-ROM because it gives us a chance to use effects that you can't use for television, film and radio."

Radio City Music Hall, play at big festivals and The Budokan, all over the world. It was great; it was a nice couple of years. I recommend it to anyone: Go ahead and be a rock star for a year or two. It's fun. Then after that, we wrote a song with John Hinckley. And it kind of turned back into where it came from.

Bonzai: John Hinckley?

Mothersbaugh: You remember, he took a shot at Reagan and winged him. We had been reading the *National Enquirer* around the time that he was arrested. I liked the poetry that he was sending to Jodie [Foster], and we were at Cherokee working on an album called *Oh No, It's Devo*. It was kind of a dark period for us, anyhow, and we called up Bethesda Maryland Hospital, where we read that he was staying. Wouldn't you know, just by being persistent and saying that we were with the band Devo—it either caught them off guard, or anyone could get to him—we actually got to John Hinckley and talked to him. He said that he was a Devo fan, which didn't make me feel good at first. He only bought the first album, so that was okay. We figured he had lost interest, so we wouldn't be next on his list.

But he let us take a poem that he had written, and we used it for the lyrics and turned it into a love song. It was not the best career move you could make. We had the FBI calling

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up and threatening us. They told us, "Well, you know he gets 500 death threats a week, and his fans are going to be your fans, and you better not publicize this song." Our record company called and said, "Wait a minute, we're getting calls from the FBI. Is this really the John Kinkly they say it is?" My manager said, "Mark, you can't do it. Neil Young never would have done it, Bob Dylan never would." None of his other clients would have done it. Tom Petty wouldn't. It was like, why did we do it? But if people told us we couldn't, that just gave us all the more determination...you know, *Spinal Tap* syndrome.

Bonzai: When was the last time you guys performed together?

Mothersbaugh: About three years ago, we did a tour in Europe. It was *Spinal Tap,* deja vu. For me, I was in this horrible tour. Oh, it was okay, because the audiences were great and we hadn't played in Europe for a few years. They were excited, and it was fun, but we'd play in Sweden, and the next day we'd have to take a bus. It was supposed to be all planes, but the next day we were on a bus driving to Madrid. Stay there just long enough to play a show, and then we'd drive to Norway and then drive to Italy, then up to England. It was a ridiculous tour, and it went like that for 35 days. We were watching *Spinal Tap* in the bus and checking off the identical things that happened to us. "Yeah, they fucked our album cover..." We got up to about 30 check marks.

Bonzai: Since you can so easily come out of the mothballs, I guess you must have billions of loyal fans?

Mothersbaugh: I don't know. There are people who grew up in the era when we were writing music. For me, it's the Stones and the Beatles, because that was my time period. Unfortunately, another generation got Devo instead of the Stones. [Laughs] That's their problem. But they are all over the place, yeah.

Bonzai: As an artist are you more or less fulfilled now?

Mothersbaugh: I'm in a nice part of my life, actually. I get to do all sorts of different kinds of things. I have an art show coming up in Detroit with paintings and prints. Musically, commercials can sometimes be great to work on and sometimes they just suck. Sometimes, it's a bad idea from the beginning, but the best thing is that they only last a couple of days and everybody's really nice. What else...I'm working on CD-ROM projects, and I get to act. People call me up for the funniest stuff.

Bonzai: What about your *Muzik For Insomniaks?* Any plans to release your solo music?

Mothersbaugh: Yes, I'm starting a label, MUTMUZ, and the first releases just came out. And there will be some Devo things.

Bonzai: Do a lot of kids apply for work here?

Mothersbaugh: Yes, people are starting to find out about Mutato. They watch *Rug Rats* on Saturday mornings, or maybe they saw Michael Tolkin's *The New Age.* I guess they figure we're having some fun. Yes, people are looking for work on this planet.

Bonzai: What advice would you give to the youngsters, composers in their formative years hoping to emulate your spectacular lifestyle?

Mothersbaugh: Learn your computer and remember your dreams. ■

Q: Are we not men? A: We are Bonzai.

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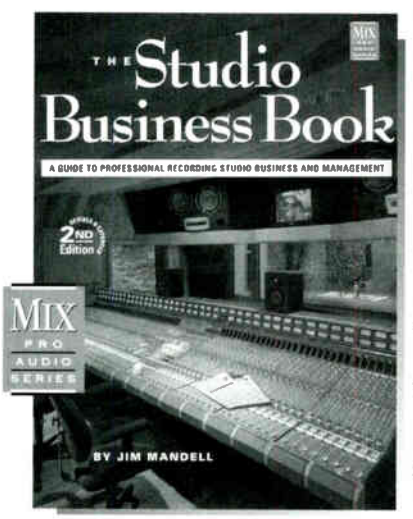

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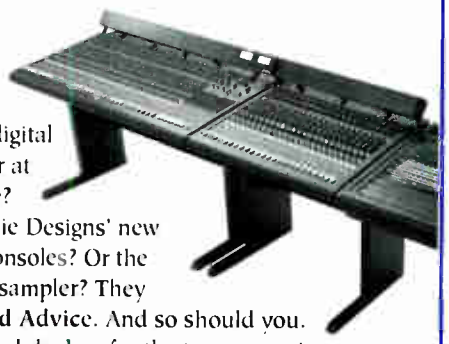

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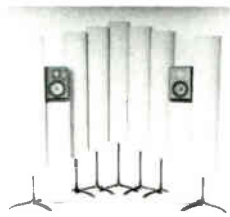

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(24+) CORAL SOUNDS STUDIO, 16 Milling Avenue, Sea Lots, P. O. Box 783, Port of Spain, Trinidad, West Indies.

Manager*: Mike Schuler. *Dimensions*:** Studio 48' x 30' w/20' ceiling. Control Room 24' x 12'. ***Console: Auditronics 26 x 24 with 8 Focusrite ISA-110 module rack ***Recorders:*** Otari MTR-90 24-track with Dolby SR 24-channel, Otari MTR-20 1/2" with Dolby SR 2-channel connected, (2) Panasonic SV 3700 Dat Machine, MCI 1/4", (2) Tascam 1 22 ***Reverbs:*** Lexicon 200, Lexicon Prime Time II, Yamaha REV 7, (2) Yamaha SPX90, ***Outboard:*** Eventide H969 Harmonizer, (2) Aphex 103 Aural Exciter, Orban 516 Sibilance Controller, (2) UREI 1176N limiting amplifier, (2) UREI LA-5 audio leveller, Orban 622B Parametric equalizer, Studer A727 Compact disc player ***Microphones:*** (2) AKG The Tube, (2) Neumann U87, (2) Shure SM7, (2) AKG 414 ***Amplifiers:*** BGW 75, BGW 250E, BGW 75A, (2) JBL/UREI Room EQ ***Speakers:*** (2) Altec Super Reds 604E, (2) Yamaha NS-10M, (2) Visonik 9000, (2) Mastering Lab crossovers. ***Musical Instruments:*** Oberheim Matrix-12 synth, E-max sampler/synth, Yamaha DX7II FD, Prophet-2002 sampler, Akai Linn MPC 60 drum machine/sequencer, Linn drum machine, Roland electronic drum kit, Kawai baby grand acoustic piano, extensive library of E-max, Akai Linn and DX7 diskettes and cartridges ***Other:*** Sound ideas CD effects library, Complete Set professional percussion instruments, AKG headphones, Countryman Direct Boxes. ***Rates:*** Special Introductory rate of U S $40/hr (or even less for quantity block bookings), which includes engineer with 15 years of experience and all equipment/instruments. Top-quality accommodation in relaxing and sunny locations available at surprisingly reasonable rates. ***Specialization & Credits:*** Relax in a Caribbean Island studio with a room purpose-built to professional specifications. Our largest international project to date was for Mr. Jean Michel Jarre from France who used a fifty-member local steelband orchestra for the main tracks on his album "Waiting for Cousteau," which was used as the focus for a live show in Paris attended by two million people. We are "The Home of the Calypso Rhythm and Steelband Drums," in A MODERN 24-TRACK STUDIO WITH 24-CHANNEL DOLBY SR. & EIGHT FOCUSRITE ISA-110 EQUALIZER MODULES, but welcome all types of music and projects and do our utmost to make all clients feel welcome and comfortable for their entire stay on the Island.

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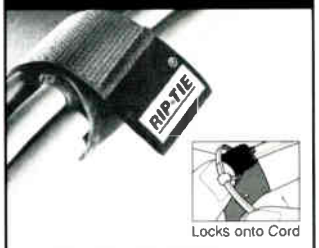

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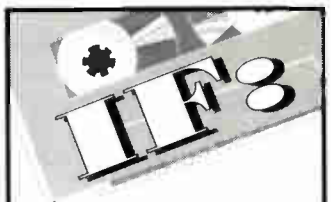

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MIX
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Page 226

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World Radio History

FEEDBACK

QUAD HORRORS

I attended the Pink Floyd concert in Foxboro, Mass. As an electrical engineer and aspiring sound engineer, I have always been impressed at how the band uses technology to enhance their art.

Unfortunately, the thousands of fans who were unlucky enough to be seated in proximity to the quad speakers were denied the opportunity to be fully immersed in the Pink Floyd experience. Every time the quad speakers kicked in, the increased sound level (relative to the sound level from the FOH cabinets) made it feel as if a completely unrelated sonic event suddenly occurred in the midst of an otherwise enthralling show.

I am sure that those who sat in the "sweet spot" were treated to a unique and pleasing experience, but believe me, their enjoyment came at the expense of those forced to sit in the sections surrounding the quads. My opinion is that quadraphonic sound is unsuitable and unnecessary for a stadium event. If a band insists on playing through a quad system, then they should leave the sections adjacent to the quad speakers unsold and roped off; or reduce the price of these "aurally obstructed" seats and label the tickets accordingly. Anything less is just a ripoff.

Matt Nelson
Tiverton, RI

CAIG CORRECTION

Having read "Preventive Maintenance for Your Studio" in the November '94 *Mix*, we at Caig Laboratories would like to clarify some incorrect information regarding our company and the use of our products mentioned in the article.

First, the article mentions using pencil erasers to clean contacts. Erasers are highly abrasive and will remove the precious metal plating. Further, the glue in erasers leaves behind a film that is extremely difficult to remove and can later cause intermittents. Rubbing an eraser back and forth across the contacts can also be a potential static generator. We recommend the use of a suitable chemical cleaner on edge connectors, such as Caig's ProGold. It is nonagressive and protects plated surfaces and their base metals.

The author mentions our former Cramolin product line, which contained ozone-damaging VCCs and CFCs. Due to EPA and product liability considerations, Caig Laboratories discontinued its Cramolin (red) R5, R100L, R5L and (blue) B5, B100L, B5L. These were replaced with environmentally safer, higher-performance products. DeoxIT is the alternative to the Cramolin Red, and PreservIT replaces the Cramolin Blue. ProGold, our newest generation product, has the unique ability to deoxidize, clean and preserve the outer surfaces, and will penetrate the plated surface to condition, clean and preserve the base metals as well. DeoxIT, PreservIT and ProGold are available in environmentally safe aerosols, precision dispensers, wipes, pens and bulk containers.

Use caution when working with solvents. Because of environmental concerns, chemical manufacturers have reformulated most of their aerosols and cleaning fluids. In the past, Freon TF (a plastics-compatible and nonflammable solvent) was the standard agent for cleaning, and also served as the carrier solvent for many contact cleaners as well as other cleaners and lubricants. Unfortunately, all the substitutes have disadvantages. They are either flammable and evaporate slowly, or they may attack and soften some plastics. Caig offers environmentally safe aerosol products, wipes, pens and other 100% concentrates that do not require solvents. Until the chemical industry produces a solvent whose characteristics match those of Freon TF, we suggest that you test all new cleaners before using them on any electronic hardware.

Also, the article refers to us as "Caig Laboratories of Escondido, Calif." We moved several years ago, and are now in Rancho Bernardo, near San Diego. Our new phone numbers are: (800) CAIG-123, (619) 451-1799.

Mark Lohkemper
President,
Caig Laboratories

GROUND CONTROL TO PHILLY NICK...

I enjoyed the article "Nick Martinelli, the Road from South Philly" in your June 1994 issue, with one major exception: On page 98, column two, paragraph two, where the statement is made, "I've used Westlake a lot. I liked Ground Control before they closed that." I feel a retraction needs to be printed stating that Ground Control did *not* close. We are alive and well.

Dona Fischer
Studio Manager,
Ground Control Studios
Burbank, CA

[Editor's Note: Sorry for the error! Indeed, Ground Control is one of L.A.'s busiest studios, with lots of post work for TV and film. The facility has four studios, including a 79x40-foot scoring stage.]

CALL 911! CALL 911!

Regarding your July '94 cover photo...What's wrong with this picture? If I was the owner of this SSL console and I caught my engineer leaving his coffee cup right next to the phone, right next to my console, heads would roll! Please tell these people to get that coffee cup away from the board before it's too late!

Wayne Kraft
Willoughby, OH

[Editor's Note: Good point. We share your concerns. However, those who don't should consult the maintenance article in the November issue: Page 154 includes first aid instructions for dealing with coffee spills.] ■

World Radio History

—FROM PAGE 44, AES REPORT

the health of the industry? The one infallible indicator is *swag*—all the cool, free promo items. Well, AES had plenty of swag—T-shirts, pens, hats, screwdrivers, mouse pads, DAT tapes, CDs, buttons—and even raffles for DCC players, digital converters and studio monitors. Judging from the amount of swag doled out in San Francisco, 1995's gonna be okay. Trust me.

Our coverage of AES continues next month: Mark Frink reports on the sound reinforcement highlights, and Paul Potyen looks at new developments in multimedia, which one company president was heard to call "the first zero-billion-dollar industry." Of course, we'll present more hits from AES in our new-product sections in the months to come. See you at the next AES, Feb. 25-28, 1995 in Paris. ■

—FROM PAGE 37, AES TOP TEN

guitars and cello) from an album I just produced. Yow! Are these really only $449/pair?

Lexicon PCM80: The successor to the PCM70 had to be amazing, and Lexicon (Waltham, Mass.) took its time and got it right: true stereo processing, analog and digital I/O, PCMCIA card memory, lush reverbs, *usable* effects presets, SIMM sockets for expanding delay memory and a unique Dynamic Patching™ matrix that has to be heard to be believed.

Philips Sound Enhancer: Philips outboard gear? Philips Key Modules (San Jose, Calif.) showed its Sound Enhancer Professional, a "does everything" box that includes a 20-bit A/D converter, 20-bit D/A converter, AES-S/PDIF format conversion, and lots of cool digital-domain processes: sample rate conversion, mono-to-stereo synthesis, soundstage widening/narrowing, jitter removal, quantization noise shaping, digital fader, high-res digital metering, lowpass filter, L/R balance adjust, compression/expansion, ±12% pitch shifting and record scratch/click removal. So what would *you* pay? Retail is $2,200! Even more astonishing is the consumer version (no AES digital or XLR analog connections), which is $1,100.

Tannoy AMS-10A Monitors: Tannoy (Kitchner, Ont.) hotrodded its 10-inch dual-concentric driver, placed it in an enclosure with 400 watts of biamplification, and came up with a beast that combines accuracy and the ability to deliver 124dB SPLs. No problem with headroom on these pups. I hope Tannoy ships the AMS-10As with ear protection warnings!

Technomad: Newcomers Technomad (Northhampton, Mass.) offer a series of lightweight sound reinforcement speakers in road-tough, molded polyethylene enclosures, loaded with E-V and/or Radian components. Prices begin at $725, and systems include watertight shipping lids/covers, integral flypoints/handles and internally molded horns, ports and stand sockets. Technomads are available in basic black, white or your choice of garish colors.

Z-Systems Z-Link: Everybody knows about Yamaha's ProMix 01 digital console, but tucked away in a corner of the Yamaha booth was Z-Link, a $349, pocket-sized sample rate converter (from Z-Systems of Gainesville, Fla.) that transforms the mixer's not-so-handy 48kHz digital output to CD-ready 44.1 kHz. Very cool, and priced right. ■

—FROM PAGE 36, SONY PCM-800

cosmetic standpoint, Sony opted for a gray finish, replaced the DA-88 push-on power switch with a VCR-style rocker switch and swapped the position of the "play" and "stop" keys. However, look at the PCM-800's back panel to see the real differences. The PCM-800 replaces the unbalanced RCA jacks and (+4dB) D-sub multipin analog connections on the DA-88's A/D and D/A cards with balanced, +4dBu inputs and outputs on standard XLR connectors.

The Sony recorder uses the same Crystal A/D and Analog Devices D/A converters as the DA-88. However, the PCM-800's digital I/O configuration is different: Two 25-pin D-sub connectors carry eight channels of AES/EBU digital information (on stereo pairs), and the recorder includes breakout cables with XLR connectors for interfacing with other digital devices. A second BNC word sync output ensures accurate data transfers, while a fiber-optic jack outputs data on errors in the AES bitstream.

In offering the AES/EBU ports, Sony has eliminated the TDIF-1 (Tascam Digital InterFace) connector from the PCM-800, so direct transfers from a PCM-800 to a DA-88 are impossible, unless you have Tascam's optional IF-88 AE AES/EBU interface. Cloning tapes from one PCM-800 to another is a simple matter of connecting the AES/EBU breakout cables.

Several PCM-800 options are available. Essentially identical to Tascam's RC-848, Sony's RM-D800 ($1,500) is a full-function autolocator/remote unit, with the ability to control up to eight PCM-800s. The DABK-801 sync board ($800) is similar to Tascam's SY-88 sync card and adds SMPTE timecode chase, 9-pin RS-422 control, MIDI Machine Control, timecode generation and MIDI sync capabilities. A minor difference between the two cards is that the DIP switches for selecting timecode and sync modes have been moved to the back panel of the Sony card, making them accessible from the outside of the machine, while the SY-88's internal DIP switch requires removing the card to change sync modes.

A few unanswered questions remain: Will Sony XLR input/output boards or SMPTE sync cards be available to DA-88 owners? Will Sony offer other options, such as a mini-remote or meter bridge? Such questions are bound to be sorted out before the first PCM-800s roll off the assembly line in February or March.

I am, however, sure about one thing: The Sony PCM-800 does NOT spell out the letters "Tascam" when it powers up. Just to be sure, I checked the display model at AES. You gotta be careful about these things.

—*George Petersen*

World Radio History

REASONS TO CHOOSE THE MACKIE 8•BUS–PT 1

Lately, several big pro audio companies have gone out of their way to "mention" us in their own 8-bus console ads. Many satisfied Mackie owners have urged us to shoot back with hardball comparisons of our own. But that's not our style.

Greg believes that if a product is really good, it should speak for itself — without resorting to slagging the competition. First in a series, this ad details some of the features that we believe make our 8•Bus the best recording or PA console values available today for under $20,000.

Apparently we're not alone in our belief. In competition with several of the very consoles that keep "mentioning" us in their ads we recently won a coveted *MIX* magazine TEC Award for Small-Format Consoles. As well as *LIVE! Sound* magazine's Best Small Club Front of House Mixer Award. Both awards were the result of pro audio industry balloting by folks like you. Not negative advertising.

Learn more about the 8•Bus Console. Call us toll-free for our detailed, 24-page 8•Bus brochure.

A Comprehensive equalization for creativity and problem-solving.

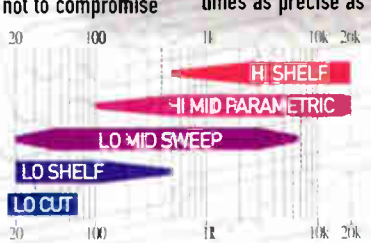
To quote Electronic Musician magazine[1], *"It's no secret that the versatility and pristine sonics of the 8•Bus EQ have astonished jaded pros and home hobbyists alike. The 4-band EQ section includes two shelving controls fixed at 12kHz and 80Hz; parametric high-midrange EQ with a 500Hz to 18kHz sweep and a bandwidth that can be adjusted between three octaves and one semitone; and low midrange EQ with a 45Hz to 3kHz sweep. A full 15 dB of boost or cut is provided for each band. In addition, an 18 db/octave low-cut filter is set at 75 Hz. That's a heck of a lot of firepower!"*

No kidding. But we also like that part about pristine sonics. One of the reasons that the 8•Bus Series took so long to ship was that Greg was determined not to compromise EQ sound quality.

The biggest gun in the 8•Bus' EQ arsenal is its true parametric high midrange EQ. Conventional sweepable midrange has a fixed bandwidth of about 2 octaves. No matter how high or low in frequency you sweep it (or how much you boost or cut it), 2-octave EQ's *contour* stays the same. Sort of like being asked to paint a picture with only a bucket of bright yellow paint.

By letting you vary the bandwidth, the 8•Bus' parametric EQ gives you the equivalent of a full rainbow of tonal "colors" in your artistic pallet. Spreading midrange EQ over three full octaves transforms it into an extremely subtle — yet extremely dramatic — effect. Sweet and natural-sounding, it can unobtrusively change the character of a track without noticeable tonal intrusion. And, for those times when you want what can only be called surgical EQ, our hi mid can be dialed to as narrow as 1/12-octave — four times as precise as a 1/3rd-octave graphic equalizer! It's like having a delicate artist's brush for erasing or enhancing tiny details. Between three octaves and 1/12-octave is a vast range of tonal colorations, nearly all possible only with parametric equalization. And, since our "HI" mid's sweep range extends from 18kHz all the way down to 500Hz, your creative palate extends over six octaves – to our knowledge the widest midrange sweep currently available in a comparably priced console.

24•E Expander — 32•8 Console



B VLZ Circuitry for very low noise.

Why ship 8•Bus consoles with monster 220-Watt Power Supplies? Partially because we love to over-engineer things for added performance. But also to better enable Very Low Impedance (VLZ) circuitry in critical places like our mic preamps.

At room temperature, all electronic components create thermal noise that can cumulatively become audible and objectionable. We design around thermal noise by making internal circuit impedances as low as possible everywhere possible. For example, resistor values in our mix bus are 1/4 the value of those typically used — hence thermal noise is proportionally lower. Another VLZ advantage is that low-impedance circuitry is more immune to crosstalk problems.

Achieving VLZ requires thoroughly buffered circuitry and creates high current consumption. That's one more reason that the 8•Bus console comes with a massive, 31-pound, power supply.

[1] September 1994 issue, page 64, in a sidebar to an article on The British Invasion (of consoles). We urge you to read the whole thing so that we don't get in trouble for quoting stuff out of context.

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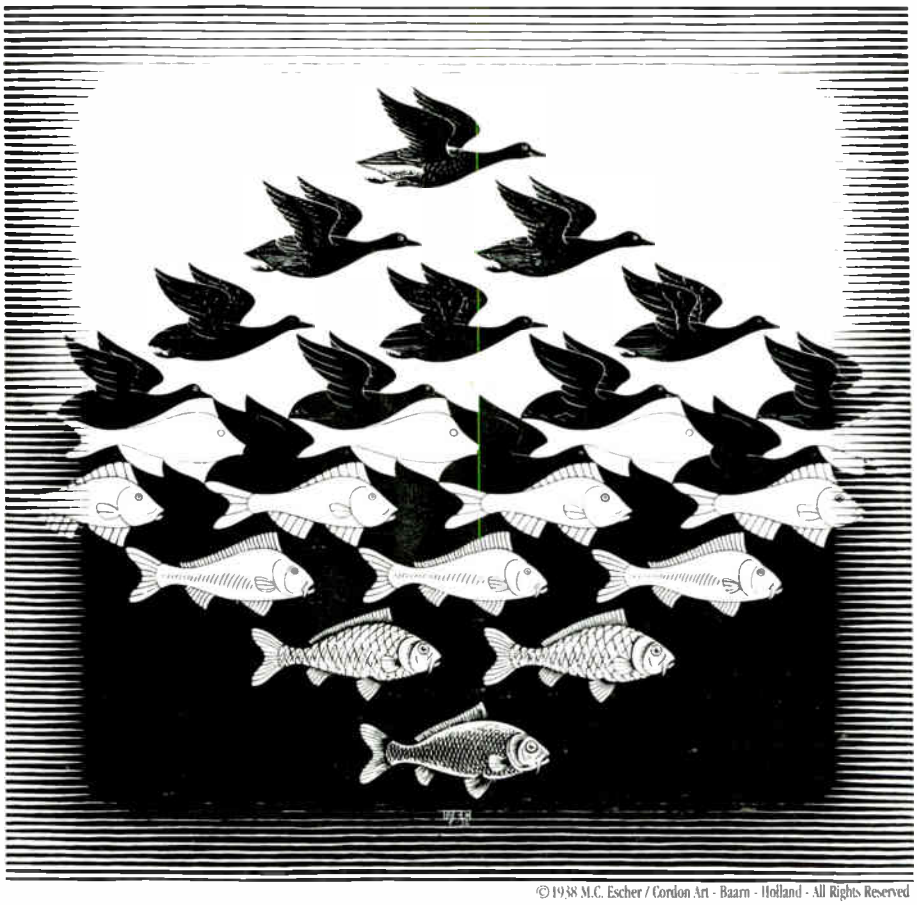
If you think only your eyes can play tricks on you...



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Study the illustration. Are the geese becoming fish, the fish becoming geese, or perhaps both? Seasoned recording engineers will agree that your eyes *and* your ears can play tricks on you. In the studio, sometimes what you think you hear isn't there. Other times, things you don't hear at all end up on tape. And the longer you spend listening, the more likely these aural illusions will occur.

The most critical listening devices in your studio are your own ears. They evaluate the sounds that are the basis of your work, your art. If your ears are deceived, your work may fall short of its full potential. You must hear everything, and often must listen for hours on end. If your studio monitors alter sound, even slightly, you won't get an accurate representation of your work and the potential for listener fatigue is greatly increased.

This is exactly why our engineers strive to produce studio monitors that deliver sound with unfailing accuracy. And, why they create components designed to work in perfect harmony with each other. In the laboratory, they work with quantifiable parameters that do have a definite impact on what you may or may not hear. *Distortion*, which effects clarity, articulation, imaging and, most importantly, listener fatigue. *Frequency Response*, which measures a loudspeaker's ability to uniformly reproduce sound. *Power Handling*, the ability of a loudspeaker system to handle the wide dynamic range typical of the digital domain. And, finally, *Dispersion*, which determines how the system's energy balance changes as your listening position moves off axis.

Models pictured (L-R)
3-Way 10" 4410A, 2-Way 8" 4408A and 3-Way 12" 4412A

The original 4400 Series monitors have played a major role in recording and broadcast studios for years. Today, 4400 Series "A" models rely on low frequency transducers with Symmetrical Field Geometry (SFG™) magnet structures and large diameter edgewound ribbon voice coils. They incorporate new titanium dome tweeters, oriented to create "Left" and "Right" mirror-imaged pairs. Refined crossover networks use conjugate circuit topology and tight tolerance components to give 4400A Series monitors absolutely smooth transition between transducers for perfect imaging and unparalleled power response.

If you're looking for a new pair of studio monitors, look into the 4400A Series. We think you'll find them to be a sight for sore ears.

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