

# MIX

PROFESSIONAL RECORDING · SOUND AND MUSIC PRODUCTION

## SOUND FOR PICTURE SUPPLEMENT

- Sony Pictures' Michael Kohut
- Scoring For Film and TV
- Music Mixing In Surround



### REMEMBERING BAND RECORDED BUDDY HOLLY

## SOUND REINFORCEMENT Product Hits From NAMM

## What's New In Studio Monitors

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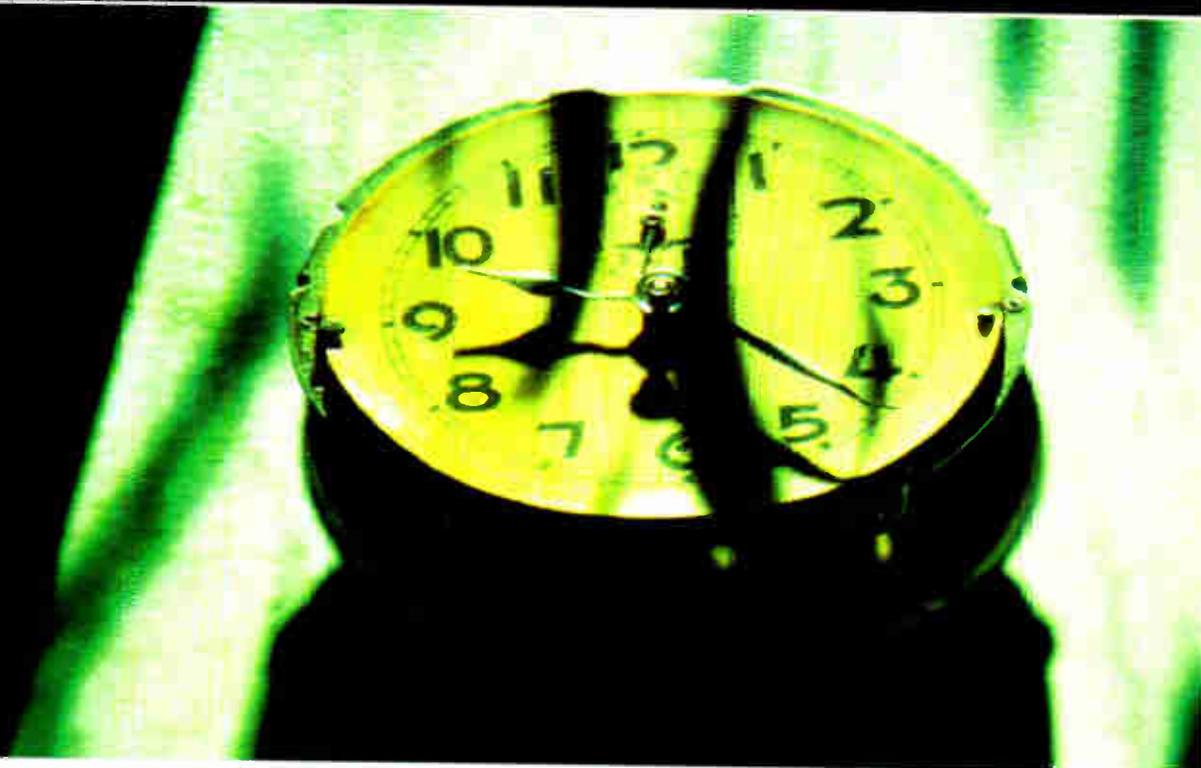
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For more information about the BRC, see your Authorized Alesis Dealer or call 310-841-2272.  
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■ Every once in a while a product comes along which not only meets the ever increasing demands of the market, but one whose smooth commercial styling, ergonomics, durability and outstanding performance demands respect. Introducing MR. LIMPET. ■ The LIMPET is a unique, compact design that combines a very high current toroidal power supply, fully discrete amplification stages, and ultra wide (10 Hz to 80 kHz) bandwidth capabilities in a very affordable system.

■ Built using a one piece high pressure die-cast metal housing, the LIMPET is not only very rugged electrically and mechanically, its internal construction takes advantage of the industry's most advanced assembly techniques. ■ The LIMPET amplification system can be used with a wide range of TANNOY professional reference monitor systems, and provides the user with a number of improvements in both the performance of the loudspeaker system, and its flexibility. ■ Each single channel LIMPET system delivers an enhanced stereo image because the channels are fully separated - no power supply sagging due to inter-channel coupling, no crosstalk, no interference. Almost any kind of input level and connector can be used, since the LIMPET offers a balanced or unbalanced "combi" connector that can utilize either 1/4" or 3 pin jacks. ■ The ultra-low noise input section

can accommodate either 0.775, 1.0, or 1.5 volt drive levels with no performance sacrifice. ■ The LIMPET's universal power supply, equipped with an industry standard IEC connector easily deals with almost any voltage, making the LIMPET a true global traveler. Finally, you can take your monitors wherever your work takes you, and not have to worry about cumbersome and troublesome adaptors, power converters, or strange electrical systems. ■ In addition, the unique and proprietary soft-clip circuitry and the significant reserves in the power supply ensure that no damage will occur to the drive units while providing the headroom needed for even the most demanding requirements. ■ The LIMPET is ideal for professional recording, broadcast/post production facilities, remote and live recording reinforcement applications, and finally gives the private/home recording studio truly reference quality performance unequaled at twice the price.

■ Instead of settling for the ordinary, get a LIMPET and get a real grip on your reference monitor performance.



# Post : Perfection

“...with the grace of Studer”

(Four tales of Dyaxis)

*François Deschamps on Optical Plug&Play*



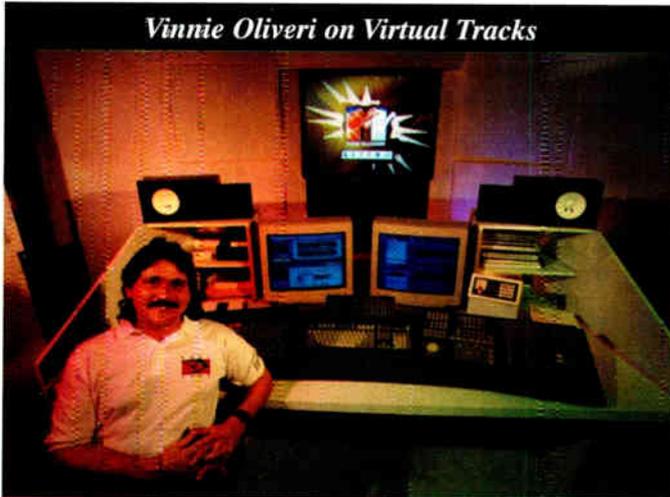
AT CINAR STUDIOS IN MONTREAL, THROUGHPUT AND PROFIT ARE SYNONYMOUS. “We’ve got 9 systems and we’re growing. We have 200 hours of Dyaxis media on-line constantly. We can switch 42 hours in 8 seconds. Optical Plug & Play delivers the efficiency our business demands.”

*Rob Mason & Jay Yeary on Reliability and Speed*



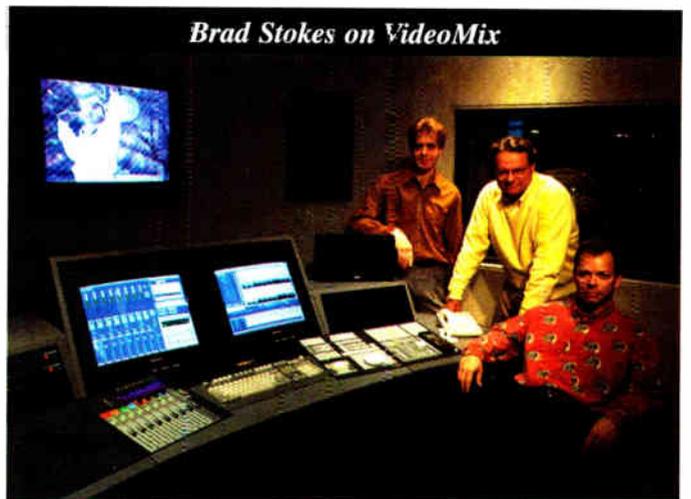
AT TURNER PRODUCTION IN ATLANTA, SPEED AND RELIABILITY IS CRUCIAL. “Due to the rapid growth of our sound design team, the user interface must be intuitive, fast, and efficient. Dyaxis meets our criteria. We like the fact that everything is right up front and nothing is buried in pages.”

*Vinnie Oliveri on Virtual Tracks*



AT POST EDGE ON MIAMI BEACH, PRIDE IS COMMENSURATE WITH CREATIVITY. “Virtual Tracks removes all creative barriers. Whatever we hear, can be made to happen. We do lots of work for MTV Latino and they always need instant revisions. Virtual Tracks makes it easy. It’s an elegant editing interface. We just ordered our third Dyaxis.”

*Brad Stokes on VideoMix*



AT VISUAL MUSIC & SOUND IN MINNEAPOLIS, CORPORATE AMERICA BUILDS ITS IMAGE. “For fast locating and precise hits, nonlinear video is the only way to go. VideoMix is slick... Video appears as just another track in the editor. The speed and flexibility of the Post Trio has really given us an edge.”

- VideoMix nonlinear video track
- Automated digital mixing
- Unlimited tracks and layers
- Superior sonic quality
- CD mastering



POST:TRIO

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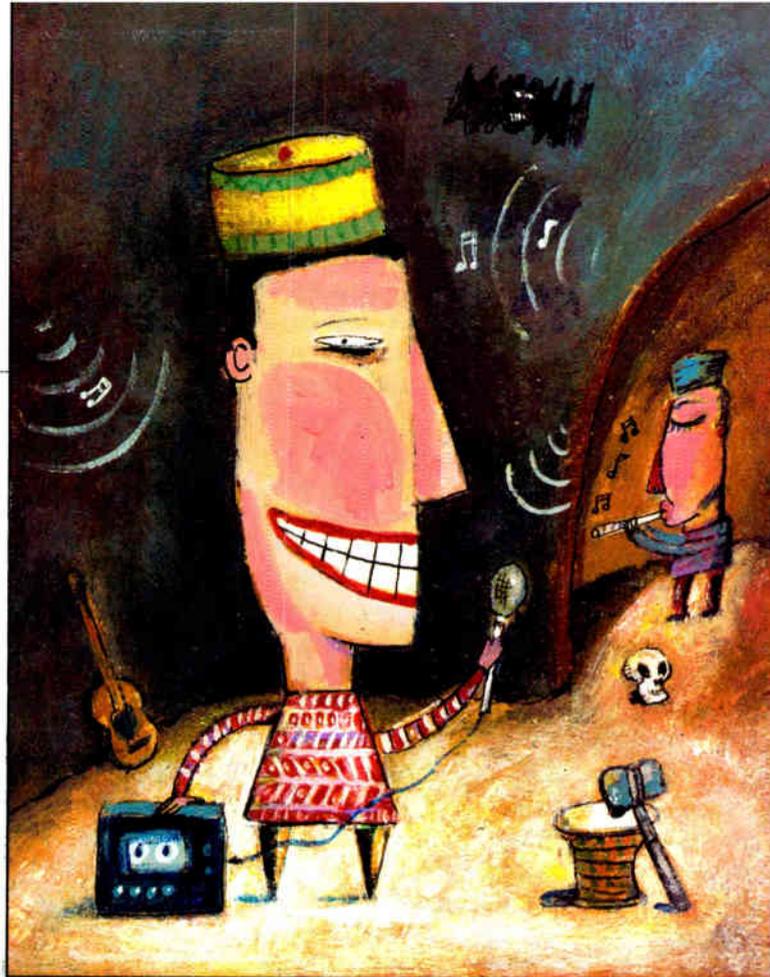
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PHOTO: STEVE BARNINGS

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**Cover:** The first Euphonix CS2000 Film Console, this one configured for two operators, was installed in Audio A at Crawford Audio Services in Atlanta to handle a variety of work, from TV programs to film mixes to spot production. All audio (24-track DASH, 32-track PD, 24-track analog, MDM, DAT, etc.) and video (D1, D2, Digital Betacam, etc.) record/playback formats are available. LCR monitoring is handled by Dynaudio Acoustics M-3s; surrounds are Dynaudio BM-5s; the subwoofer is custom-designed. Original room design by John Storyk, with diffractal rear wall by Peter D'Antonio. Photo: Douglas McGukin



# MS1202 VLZ

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



# NEW MS1202 VLZ

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

## MS1202 VLZ

4 mono mic/line chs. with

studio-grade mic preamps

4 stereo line-level chs.

2 aux sends per ch.

2 stereo aux returns

Aux 1 master level

Efx return to Mon. 1

Aux 1 pre/post switch

3-band EQ w/Lo Cut filter

Mutes on every channel

Extra stereo bus via Mute

Easy metering via PFL Solo

Control Room monitoring

XLR & 1/4" outputs

Multi-way metering

Headphone output

4 channel inserts

Sealed rotary controls

Built-in power supply

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

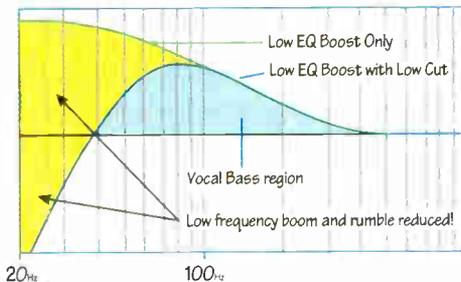
• A 50-page manual written in easy-to-understand language. It includes step-by-step hook-up and operating instructions, a glossary of pro audio terms, hints and tips on everything from phantom power to balanced lines and numerous attempts at lame jokes (Dense, boring, humorless manual translated from another language available upon request).

• Tech support from real people. No trips through a voice mail maze: no endless waits on hold. If you need help or advice at any time you'll quickly get through to a pro audio veteran who knows the MS1202 VLZ backwards and forwards.



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

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



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

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

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

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

**PFL SOLO** makes level setting easy. Just push a solo button, watch the famous Rude Solo LED

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

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

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

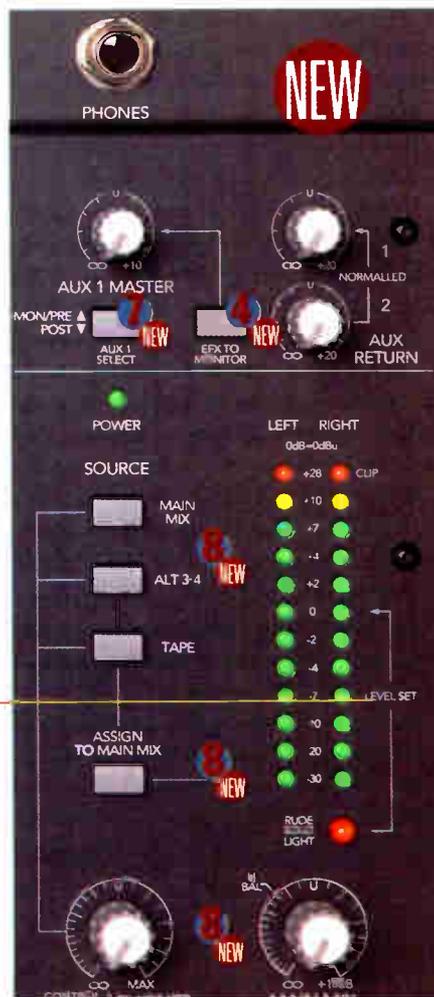
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NOW EVEN AS  
YOU READ THIS!

# NEW

## WE'VE ADDED A DOZEN NEW

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

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



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# MS1202

# NEW VLZ

World Radio History

USE HEADSET SERVICE CARD FOR MORE INFO

# MS1202 VLZ

12x2 MIC/LINE MIXER

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

12-CHANNEL H

# IMPROVED MS1202

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



For 5 years, our Micro Series 1202 12-ch. mic/line

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

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

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

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

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

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

Visit your Mackie dealer (the new MS1202 VLZ's in stock right now) or call us toll-free for detailed information. See us at NAB Booth #S-1245

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

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

### AN ESSENTIAL PART OF ANY PRO AUDIO TOOLKIT.

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

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

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

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

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

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

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

**IT TAKES UP UNDER ONE SQUARE FOOT OF WORKSPACE, BUT WE DIDN'T COMPROMISE.** The MS1202 VLZ is directly descended from our 8-Bus consoles. Same high headroom & low noise. Same electronic components. It's designed to play in the big leagues with digital multitrack recorders, workstations and hard disk recorders. Yet its suggested retail price is just \$429\*.



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

\*Suggested retail price. Slightly higher in Canada and in Alpha Centauri

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# FROM THE EDITOR

## BOYCOTT NAB!

Let me apologize about the misleading title (only a fool would miss the National Association of Broadcasters convention, the premiere showcase for state-of-the-art production tools), but the title "Implications of IEEE 1394" is about as glamorous as a solder sponge.

What is IEEE 1394? Apple calls it "Fire Wire"; the official IEEE designation is 1394. It will profoundly influence the way we work, and it's coming soon to just about any audio, video or computer device that contacts a digital datastream. In fact, while at NAB, put IEEE 1394 on your list of buzz words *du show* and keep a third eye peeled for new products.

Adopted after five years of development, 1394 is a high-performance serial bus. It's almost SCSI on steroids, but its implications go much further: Included in the spec are backplane and cable versions. Currently, the cable interface limit is 200 Mb/sec, but expect to see 400 Mb/sec later in 1996 and 1,000 Mb/sec chip-sets in a year's time. In terms we audio layfolk can comprehend, a 400 Mb/sec interface has enough bandwidth to run uncompressed D-1 digital video and 24 channels of CD-quality audio—with ample room for other data, such as SMPTE timecode.

Is this merely futurespeak? Sony's consumer Digital Handycam has a 1394 port—you can buy it now. Expect 1394 ports on digital videodisc products. Texas Instruments is selling 1394 chip-sets and should offer laptops with 1394 ports by mid-year. To upgrade existing PCs, peripheral companies have 1394 adapter cards in the works. And when Apple, IBM, Microsoft and Sony all agree on something, you'd better believe it's gonna happen. Today's connection standards—Centronix parallel, RS-232, SCSI, Apple Desktop Bus—are gonna fade faster than the 286 PC

market. There are obvious advantages to a single interface standard, and once the audio community figures this out you can add a few other names to the endangered interface list: AES/EBU, S/PDIF, SDF, MADI and MIDI—to name a few.

Besides bandwidth, 1394 advantages include: digital interfacing, so superfluous conversions are unnecessary; each node in a system acts as a repeater, allowing the formation of tree topologies, with up to 16 hops and 63 nodes; wiring is via three shielded, twisted pairs; hot-pluggable—add or remove devices without powering down; max cable length between devices is 14 meters; and no terminators or device IDs.

The IEEE 1394 bus is fast, expandable and cheap: Today's \$20 chip-sets will be \$12 this summer and \$5 next year. It's an important step today but an essential key to tomorrow's technology. Finally, here's a standard that can take us into the next century.

And in keeping with this month's NAB theme, we present our twice-yearly "Sound for Picture" supplement, anchored by Mel Lambert's interview with Michael Kohut, vice president of Sony Pictures Studios and recent recipient of the Cinema Audio Society's Lifetime Achievement Award. Larry Blake preps the music industry on surround sound mixing, and we offer an in-depth look at scoring for film and television, with profiles of Mark Mancina and Christopher Franke. Complete NAB coverage will appear in future issues, so I'm off for the show.

I've got a bus to catch.



George Petersen

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## Record/Edit

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

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

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

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



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

## EVEN MORE FEATURES:

Balanced 1/4" TRS in/out

Switchable +/-10dB line levels

8 in 8 out + stereo master (DR8)

8 in 16 out + stereo master (DR16)

## Media

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

Data backup is achieved through standard audio DAT or Exabyte.

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

# Now You Can See It.

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

## OPTIONS:

SuperView™ SVGA card - \$699

ADAT interface - \$299

MIDI interface - \$299

S.M.P.T.E. read/gen - \$379

RS422 video sync - \$299

BiPhase film sync - \$299

2nd SCSI port - \$299

MT8 MIX controller - \$799

8 channel 3 band parametric EQ - \$550

16 channel 3 band parametric EQ - \$699

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



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

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

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# CURRENT

## AMS NEVE UNDER NEW OWNERSHIP

The AMS Neve family of corporations, including AMS Neve, AMS Neve Inc. (formerly Siemens Audio Inc.) and Rupert Neve Canada Inc., was acquired by its managing director, AMS founder Mark Crabtree. Under the new agreement, AMS Neve will continue a close business partnership with Siemens, which will supply turnkey systems incorporating AMS Neve equipment. Product support and development will continue unaffected.

Potential buyers began making inquiries soon after the companies merged in 1992; after significant offers were made recently, it was decided that Crabtree made an ideal candidate for ownership. According to AMS Neve director of sales and marketing, Frank Massam, "[Crabtree] has done a lot of restructuring work to shape the company into the size and success that it is today, and we didn't want to jeopardize that by accepting an outside offer. One of the reasons we've been so successful is our broad product range. We plan to evolve both and actively market both [product lines]."

## WELCOME TO NAB

NAB '96 is taking place this month, from April 13-18 in Las Vegas. This year's convention, held at the Las Vegas Convention Center and the Sands Expo and Convention Center (Multimedia World), features nearly 200 sessions in 11 conferences on a range of industry topics, including multimedia, teleproduction and broadcast engineering, radio and television management, and sales and marketing. More than 1,000 exhibitors and 80,000 attendees are expected at NAB '96 and NAB Multimedia World events. For more information, call 800/890-6227.

## RECORD CD-ROM SALES IN 1995

Woodstock, VT-based InfoTech recently reported 1995 CD-ROM drive sales totaling 38.7 million units, up 140% over 1994 sales. The figures, which represent sales across all computer and TV set-top platforms, reflect a fifth consecutive year of triple-digit sales growth, according to

preliminary figures released by the marketing research firm. Europe had the highest 1995 regional growth rate at 273% over 1994; however, more than 50% of CD-ROM units were sold in the United States.

The most significant contributor to the growth rate was the attachment of CD-ROMs to desktop PC units, with OEM sales accounting for 70% of units sold in 1995. Other determinants included CD-ROM-equipped TV set-top systems (video games in particular) and notebook PCs.

Figures are expected to level somewhat in 1996. InfoTech forecasts worldwide PC-based CD-ROM drive sales of 49.5 million, an increase of 51%; TV set-top CD-ROM unit sales are expected to approach 10 million.

InfoTech's complete study of the worldwide CD-ROM hardware and software industry is presented in the *Optical Publishing Industry Assessment*, Eighth Edition. For information, call 800/763-2097.

## DEADLINES ANNOUNCED FOR TEC ENVIRONMENTAL AWARD, SCHOLARSHIPS

The Mix Foundation for Excellence in Audio has announced a deadline of Friday, August 2, 1996, for submitting applications for the 1996 TEC Award for Environmental Merit and the TEC Awards Scholarship Grant.

The TEC Award for Environmental Merit was established by the Mix Foundation for Excellence in Audio to recognize companies in the audio industry that have successfully addressed significant environmental issues. BASF Corporation received the recording industry's first Environmental Merit Award last year for its EcoShuttle tape packaging system, which is designed to cut down on waste products in the delivery and return of tape.

The Mix Foundation and the Recording Industry Environmental Task Force are accepting applications for the Environmental Merit Award, be presented at the twelfth annual TEC Awards in November. Interested

## AES WINS EMMY

The Audio Engineering Society received an Emmy Award for its participation in the development of international standards for digital audio transmission. The National Academy of Television Arts and Sciences (NATAS) recognized the AES for "outstanding achievement in engineering development for standardization of a serial digital audio transmission."

The award commemorates the development of the AES3 digital interface, more commonly known as AES/EBU. The standard is a result of a collaboration between the AES and the European Broadcasting Union, which began in 1980; the interface was first released in 1985, then revised in 1992.

## GARWOOD PLANS IN-EAR CLINICS

Garwood Communications announced plans to sponsor in-ear-monitoring clinics throughout the U.S. in 1996. The clinics will be led by well-known monitor engineers, including Rob Colby

—CONTINUED ON PAGE 16

companies should send a letter, no longer than 750 words, explaining why they should be considered. Please include a contact name and phone number. The deadline for all submissions is Friday, August 2, 1996. All information should be sent to MFEA, 6400 Hollis Street, Suite 12, Emeryville, CA 94608. For more information, call 510/939-6149.

Administered by the Mix Foundation, the TEC Awards Scholarship Grant was created in 1995 to award funds to deserving individuals pursuing careers in audio and currently enrolled in an audio program. Last year, William Carpenter of San Francisco State University and Alexandra Loubeau of the University of Miami became the first two recipients of this new grant program.

If you are interested in receiving an application, send or fax your name, address and phone number to MFEA, 6400 Hollis Street, Suite 12, Emeryville, CA 94608; fax 510/939-4022. No phone calls please.

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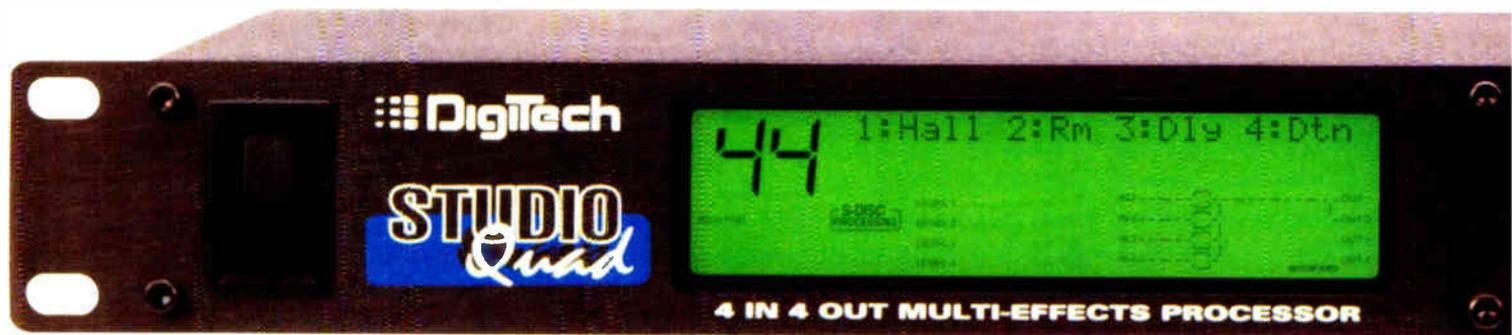
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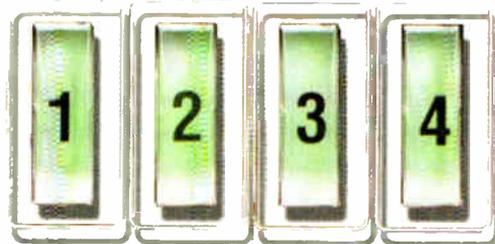
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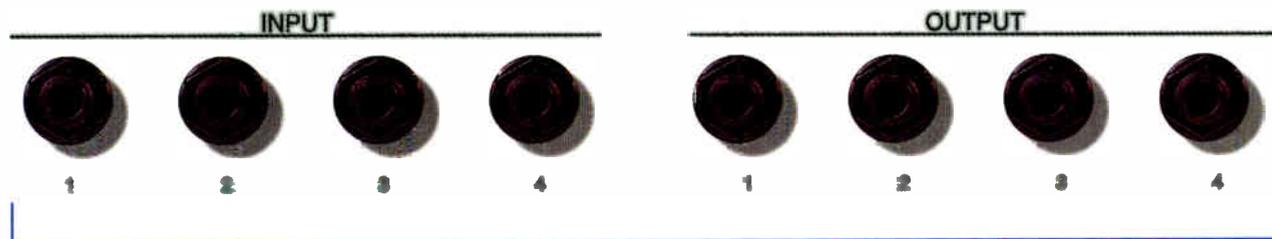
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# INDUSTRY NOTES

**Night Technologies International** (NTI) in Provo, UT, named **Richard W. King** as president and CEO... **David Frederick** was named director of product marketing at **TimeLine Inc.** in San Diego, CA... **Yamaha Corp.** (Buena Park, CA) promoted **Jim Presley** to the position of marketing manager, pro audio products. Mr. Presley previously served as marketing manager, portable keyboards... **Quested Monitoring Systems Ltd.** of London announced the appointment of new distributor, Toronto-based **Studer Canada Ltd.** For information, call (44) 181-566-8136... **Stu Moffitt**, recently of **Carver Corp.**, was brought on board as western regional sales manager for the audio division of **Crown International** (Elkhart, IN)... **David McNutt** was promoted to the position of managing director of communications at **Mark IV Audio** in Buchanan, MI... **Digidesign** has moved to a new location: 3401-A Hillview Ave., Palo Alto, CA 94303. Phone 415/842-7900; fax 415/842-7999... **Richard Elen** was named vice president of marketing at **Apogee Acoustics** in Santa Monica, CA... **KAO Infosystems** (Plymouth, MA) announced the appointment of **Vincent Boragine** to managing director, west coast product distribution services... **Bob Ulius**, former manager of **Leo's Pro Audio** in Oakland, CA, joined **T.G.I. America** (Kitchener, Ontario) as national sales manager of its professional products division, and will be based in Sacramento, CA... **Soundcraft** moved to a new location. The address is 8220 Remmet Ave., Canoga Park, CA. Phone 818/227-1800; fax 818/884-2794... **Jeff Alexander**, recently of **Neumann**, joined **Paramus**, NJ-based **Crest Audio** as division manager of touring sound products... **KH America** announced that **Ray Lepper**, managing director of **KEF Audio**, will assume the role of acting president during the company's ongoing search for a president. **KH America**

(Holliston, MA) distributes **KEF**, **Celestion** and **NAD** in the U.S. In related news, Holliston, MA-based **Celestion Industries** recently named **Online Marketing** (Wadsworth, OH) as "Rep of the Year/Quota Busters" for 1995... UK-based **Cedar Audio Ltd.** moved to larger facilities. The new location is at 9 Clifton Ct., Cambridge, UK CB1 4BN. Phone (44) 1223-414117; fax (44) 1223-414118... **The Olsen Group Inc.** of Scottsdale, AZ, was named exclusive worldwide distributor of **Wright Microphones & Monitors Inc.** For information, contact Olsen at 612/998-6929... **Digital Audio Research** in Surrey, UK, named Moscow-based **Elbor Ltd.** as its distributor in Russia. The appointment marks **DAR's** first venture in the Russian and CIS market sector in its history... **Exton**, PA-based **MediaFORM** hired **Joe Alfonsi** as director of multimedia development and **Mark Hulswit** as head of North American sales... **MIDIMAN** hired **Woody Moran** as U.S. sales and marketing manager. In other **MIDIMAN** news, the company moved into expanded headquarters. The new address is 45 E. St. Joseph Street, Arcadia, CA 91006. Phone 818/445-2842; fax 818/445-7564... **QMI** (Holliston, MA) named **Crescendo Associates** of Hollywood, CA, as the **NEXO** Representative of the Year for 1995. **QMI** is the exclusive U.S. distributor of **NEXO** products... **Glendale Post** in Glendale, CA, promoted **Garret Maki** from vice president of operations to the post of senior vice president and general manager... **Technomad Inc.** of Northampton, MA, appointed **Irvine**, CA-based **New Times Marketing** as sales representative for southern California... **Drawmer** announced an expansion of its headquarters in Yorkshire, UK, adding 10,000 feet of manufacturing space and an enlarged research and development facility... **Trew Audio** in Nashville is the newest authorized **Nagra** service center. For more information, call 800/241-8994. ■

—FROM PAGE 12, CURRENT

(Genesis, the artist formerly known as Prince) and Jerry Harvey (Morrisey, Van Halen, k.d. lang). If you are interested in hosting or attending a Garwood in-ear monitoring clinic, call Don Holloy at 215/860-6866.

## UPCOMING SHOWS

**EnTech '96** is taking place April 23-25 at the Sydney Exhibition Center in Sydney, Australia. Call (61) 2 876-3530 for more information.

The Fourth Annual **DRTV Expo & Conference** will take place at the Long Beach Convention Center in Long Beach, Calif., from April 30 to May 3. For details, call 714/513-8656.

The 100th **AES Convention** will be held in Copenhagen, from May 11-14. Call 212/661-8528 for details.

The **NSCA Conference and Expo** will be held May 12-14 at the America's Center convention facility in St. Louis. For information, contact the **NSCA** at 800/446-NSCA.

## NEW WEB SITES

**Monster Cable** announces a Web site at <http://www.monstercable.com/>. Features include product information and news about the latest **Monster Music** releases.

**Opcodes** new Web page provides product information, downloadable software and news. Located at <http://www.opcode.com>

**QMI's** home page features information about **NEXO**, **Drawmer** and **Soundfield** products. Visit <http://www.qmipro.com>.

**Rane Corporation's** new site includes product photos, data sheets and owner's manuals. The address is <http://www.rane.com>.

**Sennheiser Electronics Corp.** and **Neumann USA** announced a Web site at <http://www.neumannusa.com>. There, find product information and e-mail response buttons.

The new **SunStudio** page includes a musician's exchange, merchandise catalog and links to related sites. Visit <http://www.sunstudio.com>.

## CORRECTIONS

The "Computer-Based Production" feature in the January *Mix* listed an incorrect location for **Innovative Quality Software**, manufacturer of the **SAW Plus**. The company is located in Las Vegas, not Louisville.

The January '96 *Industry Notes* contained an incorrect spelling for the name of **Bag End** co-owner **James Wischmeyer**. *Mix* regrets the errors. ■



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ILLUSTRATION AD MCCAULEY

I have one brother who works at Digital Domain, flogging computers into lying to your eyes on the big and little screen, another who is president of THD, a Seattle company that makes very high-end tube guitar amps, and one more who works in D.C. He...uh, he uses a lot of encryption. All of us stay in touch through the Net, and the THD brother and I design THD's products through the Net. Two more of my companies—Marshall and Intelligent Devices—also design across the Net. All of my vendor business is now done with e-mail. Almost all of my press interaction is now handled through e-mail. It has become a fully integrated part of my life.

So you can imagine my reaction last week when I experienced my first e-mail security breach. The D.C. brother sent me (via MSN) a picture along with a little note telling me it was a snap

of my father flying a kite on the beach of some paradise resort somewhere where I was not, while I *was* in the worst snow storm in history here in Maryland. He sent it via the Net, to my AOL account. AOL now shows you pictures while they are being downloaded, so I read the note—"Dad flying a kite"—and watched the image ("KITE3.JPEG") begin to appear from the top down as it came in.

Interestingly enough, my father, who has looked remarkably like Papa Smurf for the last decade or so, now looked much more like a 16-year-old blonde cheerleader. What were they *doing* on that vacation while I was iced in for 18 straight days? What had he been eating? Actually, as the picture continued to develop—top to bottom as it does while downloading on AOL—I then saw

that he was wearing official Alabama state trooper sunglasses, a little gold, white and blue high school cheerleading outfit, and wait—no, she was wearing the *top* of a little cheerleading outfit—but nothing from the waist down. This was clearly *not* my father's Oldsmobile! There she was—sitting on a fence in, well, a very educational position. It is inappropriate to explain how graphically pornographic this image was here, but I will tell you that I didn't know that she was wearing matching gold, white and blue gloves until the bottom of the image appeared.

Confused, I called my brother. It took two conversations before he even understood what I was trying to tell him—he just thought I was pretty strange asking the questions that I was asking about a picture of my father, while I thought it was pretty strange that he had sent this while calling it a

BY STEPHEN ST. CROIX

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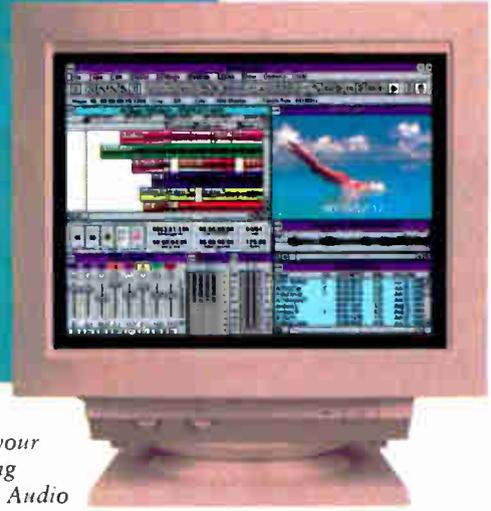
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*Alan Howarth, Sound Designer on such films as Halloween, Stargate The Mask.*



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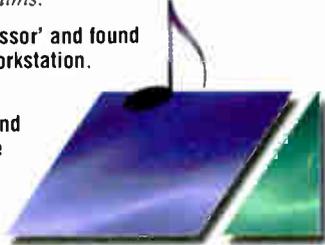
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picture of my father. To add to the problem, this image came in while I was showing an old friend, his new wife and his 6-year-old daughter how AOL worked. Nice, huh?

So what the hell was it all about? Nobody knows yet. AOL was immediately responsive when my brother and I logged complaints, and they assigned someone to research it for me. She in turn immediately e-mailed me with a request to forward the note and attached file in question to her, which I did. I have not heard another word. She is in contact with my brother, but without resolution. My brother has been in contact with *The Washington Post*, and a reporter who happened to be doing a series of articles about the Net called and interviewed me, and will have covered the story himself by the time you read this. Lots of questions, lots of no answers.

The technical quality of the image was stunning, so if it was a girl sending a friendly little message to her boyfriend to tell him it was time to come home, she has very impressive image manipulation tools, a very high-

quality compressor, and some serious pro palette optimization tools. In fact, I don't think I have ever seen an 8-bit image with 12:1 compression look this technically good before. Actually it was so good that I now feel

**I now encrypt  
everything I send,  
and I strongly  
suggest that you  
do the same.**

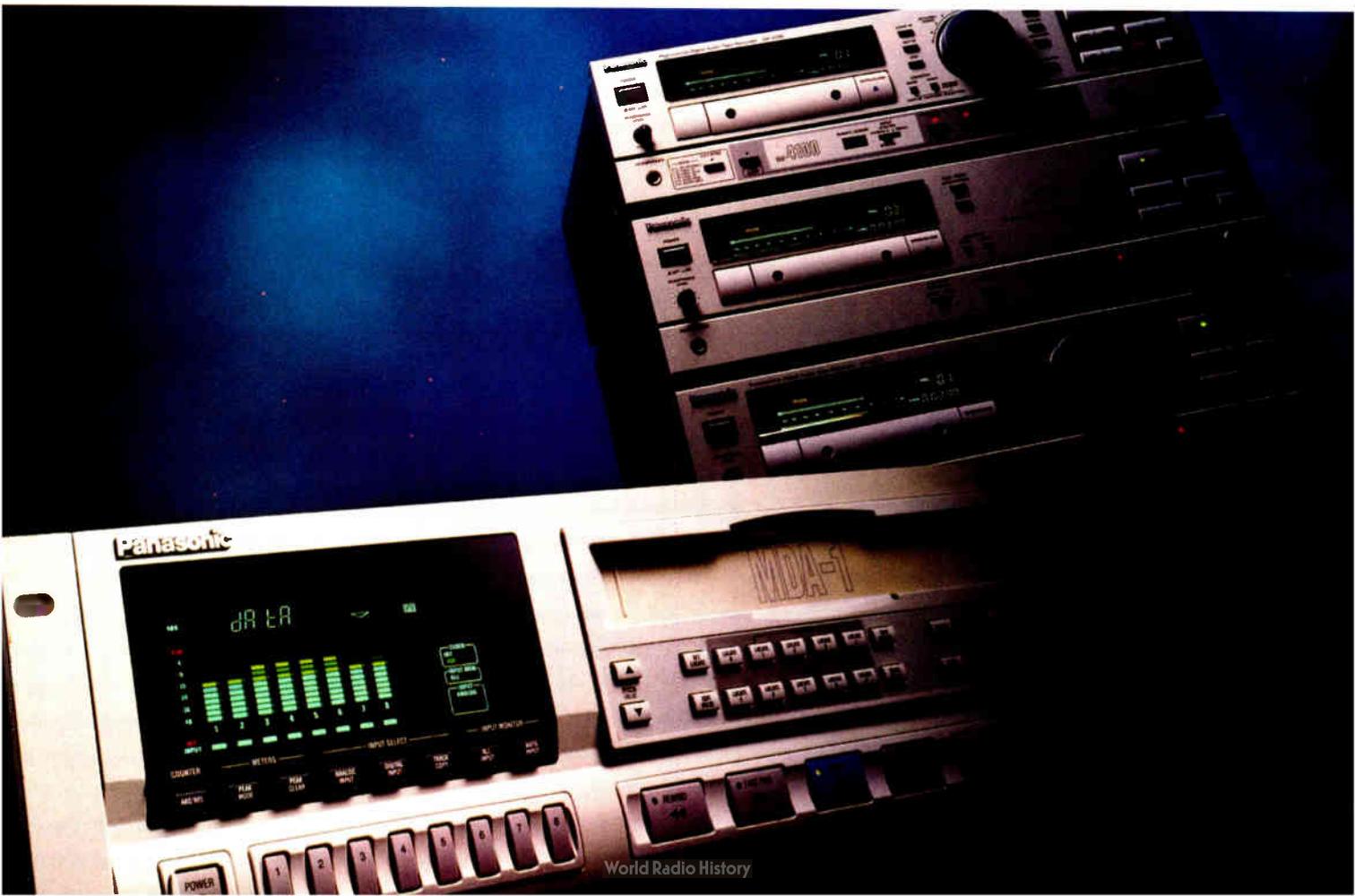
**The Net is not safe,  
and it is certainly  
not private!**

it is unlikely that this was a private message. I think it is a professional image.

I have no idea if high school gynecological imagery is illegal, and frankly the rights of use and applica-

tion issues for online communications are not my main concern here. I am not using this column for a forum on rights of free speech vs. censorship. All I will say is enough for you to understand my reference points: I do not believe in censorship, I do not believe in wholesale monitoring of private communications in any way. I do not accept the "back door" chips arguments. I *do*, however, support court-ordered, directly targeted monitoring, tapping and other case by case specific surveillance. I also agree with the concept that children, real children, should be shielded from exposure to material and images that may be disturbing or confusing to them. Whether this is the domain of the government, parents or the communication services themselves is the type of issue that I would not dream of tackling here.

The point is that what happened here is very, very bad. One of the following must have happened: The Net (MSN?) screwed up and embedded the wrong image in my file (not real likely because the Net actually does imbed the attached file into the text upon uploading); AOL messed up and



slipped some pointers (AOL does *not* imbed attached files, but "attaches" them to the note text with a pointer, using proxies for management); or a hacker got in somewhere and did this on purpose.

Now those of you who read me regularly know that I have a mild but well-thought-out view of any hacker who invades privacy for any reason, be it curiosity, blackmail, theft, changing grades, terrorism, adjusting bank account balances or simply as a harmless teenage game: Death. Not life, *death*. No exceptions, no deals, no pleas: mandatory death. Preferably by 100 hours of slowly decreasing blood pH. Think about it. This is a proportional punishment. Look at the crimes that earn death now, and how many people they affect. And how many can this type of invasion affect? Did I mention how I feel about anyone who writes a virus?

So what happened? If AOL slipped some pointers, did *everyone* get offset by one that day? Did I get the image intended for the person before me, and did the next guy get the picture of my father? I can't extract this information from them yet, so we can only

wonder. Who *did* get the image intended for me? What if it had been something very sensitive? What if the picture of that cheery leader was an innocent private message for a close friend? What about her privacy issues? Look where it ended up, on the pages of thousands and thousands of copies

**Privacy is guaranteed  
in this country, but the  
explosive growth  
of technology  
is making it impossible  
to enforce.**

of this magazine, even if only by description.

All of us in this industry gravitate toward technology. Most of us use the Net, WWW, AOL or some form of electronic communication by now, and many of us do daily business on it. I can't stop, and I guess that you

can't either. Fast, virtually free worldwide communication is too big to turn your back on. So I'm not advocating that. I am just passing along a friendly warning: Don't turn your back on the problem as you turn to embrace the idea.

I now encrypt everything I send, and I strongly suggest that you do the same. Think carefully. The Net is *not* safe, and it is certainly not private! Innocent or malicious, what happened is not acceptable. Privacy (with the exception of criminal investigations) is guaranteed in this country, but the explosive growth of technology is making it impossible to enforce. So it is up to each of us to do our part to ensure privacy for ourselves and others wherever we can. Encryption is one step in that direction.

Crosstalk has never been good, but this expands the definition to new horizons! I don't want to read your mail any more than I want you reading mine. ■

*Stephen St.Croix doesn't want his Dolby FAXed guitar part to end up in a Bolivian laxative commercial because some hacker booked in.*

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# TOMORROW'S TALENT

## REPORT FROM AN AUDIO EDUCATION SYMPOSIUM, PART 2

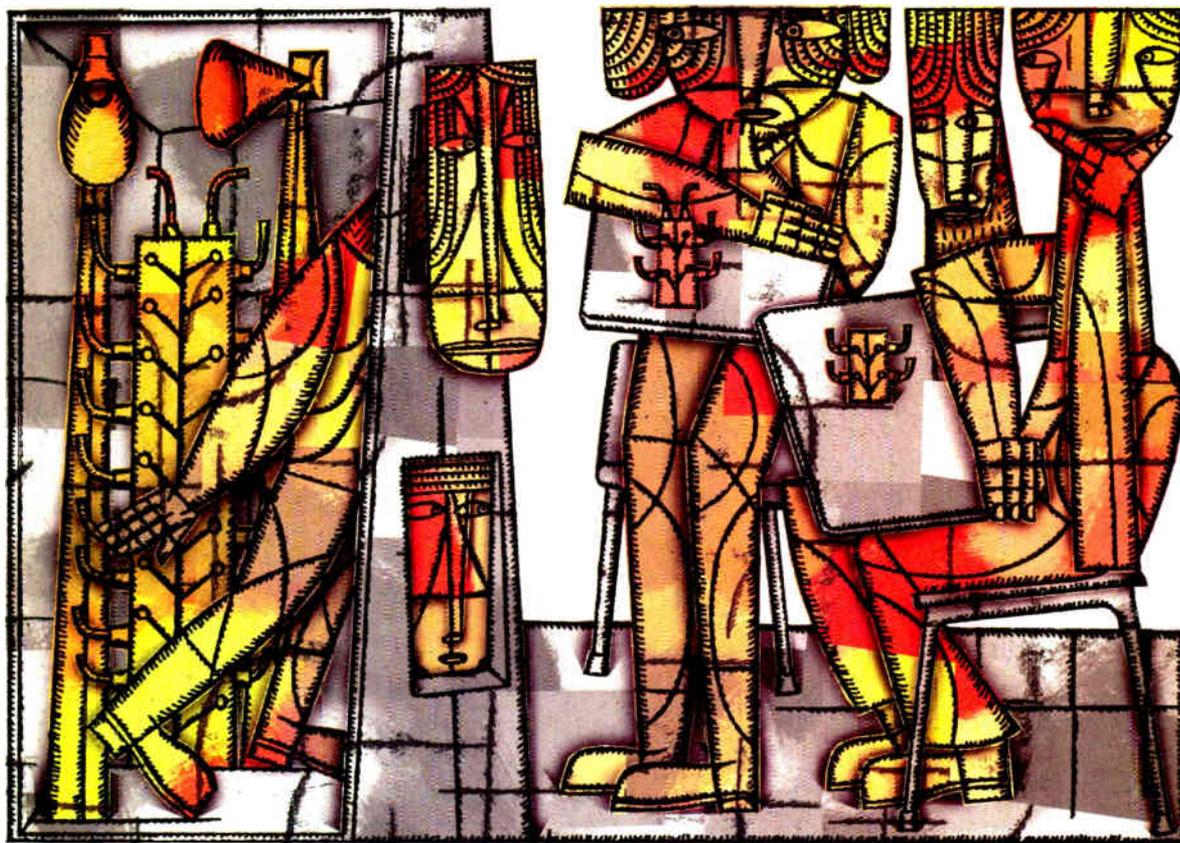


ILLUSTRATION: RICHARD DOWNS

In last month's "Insider Audio," we began a transcript of a meeting on the role of education in preparing people to enter the audio industry. The meeting took place at the fifth annual Parsons Audio Conference, held last fall in Wellesley, Mass., and was moderated by yours truly. Participants came from all facets of the industry, and the discussion was frank, often funny, and left everyone with plenty of food for thought. We'll conclude the transcript this month. For detailed biographies of the participants, see last month's column.

**Lehrman:** How can manufacturers help schools do a better job of preparing students? What is it that educators are not getting, or not getting enough of, from the industry? Is it money, is it gear, is it peo-

ple coming by and sharing their experiences?

**Robin Coxe-Yeldham** (Berklee College of Music): More important than getting the stuff is being able to call them up and get some real answers, not just have to deal with whatever schmo Digidesign decided to let answer the phone in customer service. *[laughter]*

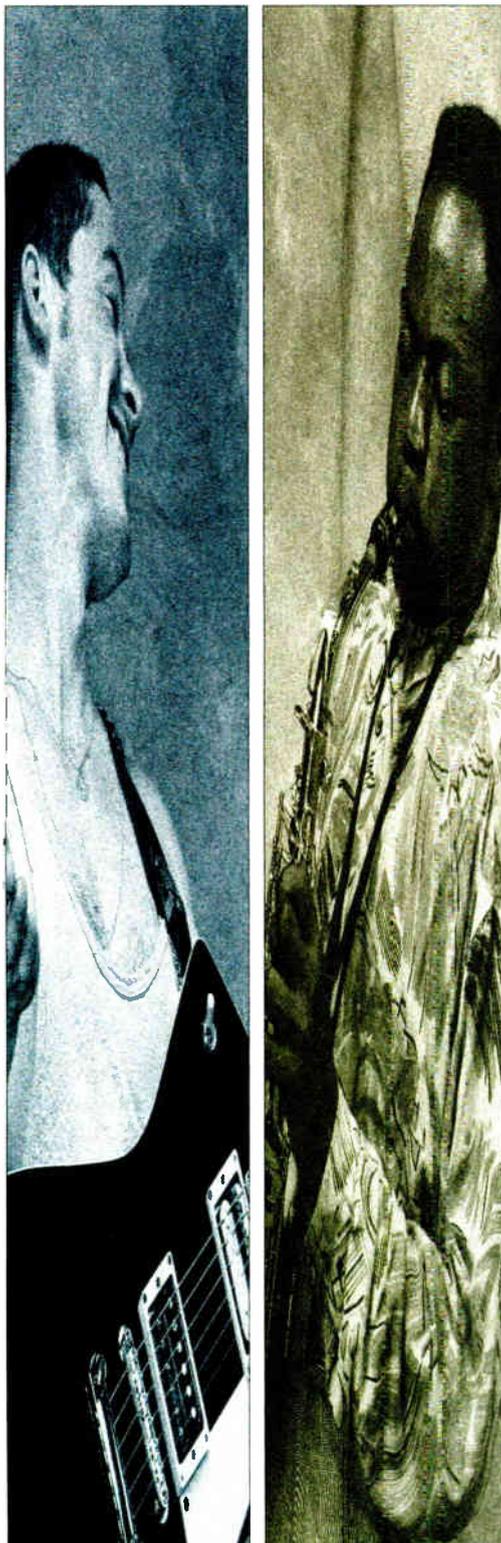
**Lehrman:** Not to be too specific.

**Coxe-Yeldham:** Regardless of the size of an educational institution, when you have a fair pile of certain manufacturers' things, you're putting a lot of toys in front of a lot of potential buying power. There doesn't seem to be that sensibility or understanding from a lot of the manufacturers. It doesn't necessarily come down to doing any more than giving us a reasonable break

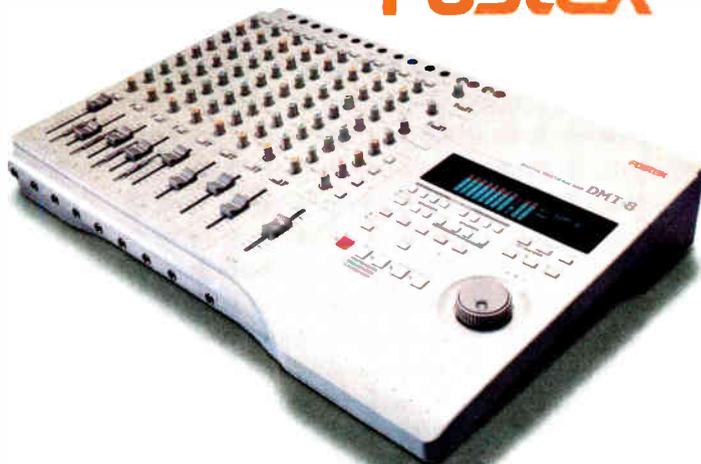
on purchasing stuff, but they also have to give us the actual support we need to keep it really running smoothly and at top-level. A classroom is not the place to beta-test.

**Bill Scheniman** (Berklee): I would like to see a change in attitude, so we can abandon our role as supplicants and be acknowledged as partners in the process—not just as weasels who are trying to get a hundred bucks off on a reverb. We have a wealth of information. We are creating the environments that people will be working in, and we have unique and valuable insights into how people work and learn, whether the interface is designed well, whether the manuals are being written well. We have financial constraints that have to be acknowledged; yes, we're the guys who always need a break because we don't have much money. But

BY PAUL D. LEHRMAN



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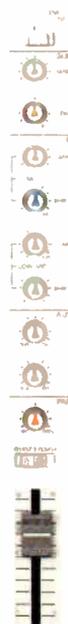
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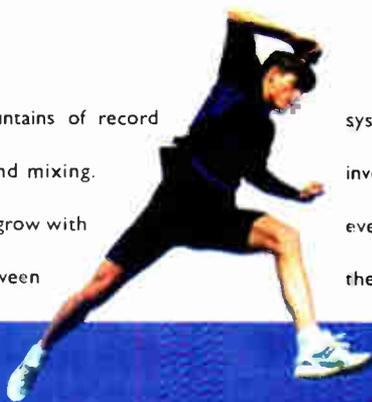
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let's get that part of the conversation over with and get on to the real work of making better equipment and better people to run it. In film it happens: They got a jump on us of about 25 or 30 years of turning movies into "cinema" and learning to teach it. Film schools have the cooperation and constant presence of Kodak, and the acknowledgment that "your teachers are really smart, and we want to know what they know." When's the last time anybody here heard from a record company who wanted to come in and talk to your kids? Who has a Sony scholarship, or a Warner Bros. scholarship?

**Mark Parsons** (owner, Parsons Audio): We're in the middle of the relationship between the educators and the industry, especially when educators come looking for free stuff. And as far as I'm concerned, if you can get free stuff, that's great. I sometimes act as an intermediary, or an observer, or sometimes I help schools approach manufacturers directly. I know the manufacturers' thought process, and I've seen it again and again: I call them up and say, "So-and-so wants a deal." I make the case that they're graduating a class of so many, of whom 1.5 percent may end up being significant buyers, but probably not. [Laughter]

I'm being ironic, but let me rewind. In fact, they do respond seriously, up to a point, but nowhere near the point that you imagine. They do not value the personal relationship that much—about you as people, or your students, or what you're doing—from a business standpoint. I know there's something you want to buy and you want to develop something out of the transaction, whether it's a beta relationship, or to get the company in to show their products to the students. And I can predict, usually within milliseconds of when I first talk to you, what you'll get in terms of percentage. I won't tell you what I predict, because it's usually a lot less than you would like to think, and I want to go through the whole process to see if there's a chance that I, as your advocate, can get more. But I usually am right—you can't get much of a deal. So there's a process of mutual education that has to happen. As faculty and administrators, you are learning about that every time you approach one of these transactions.

**Martin Polon** (consultant and writer): I did a study on the audio business' re-

—CONTINUED ON PAGE 250

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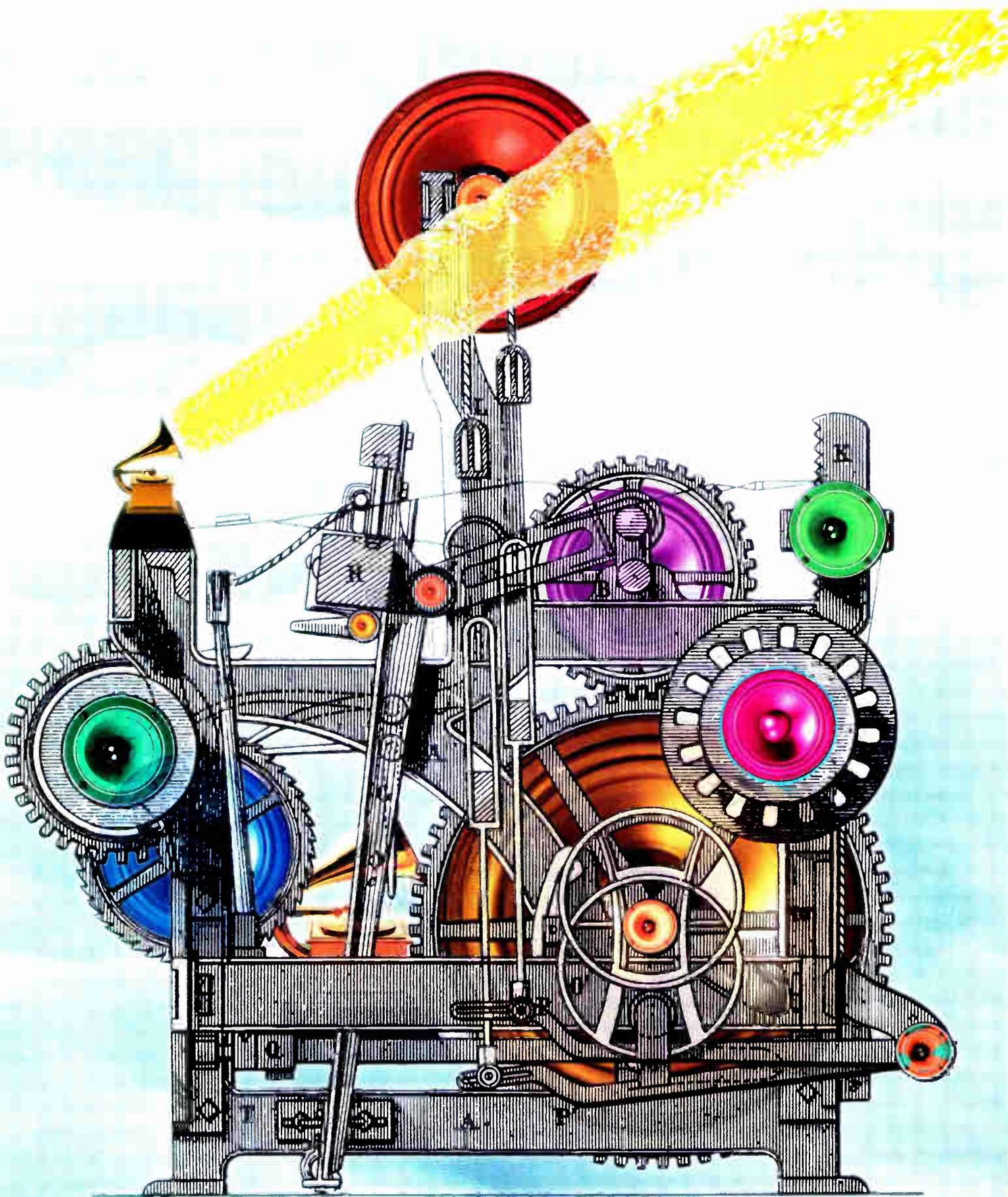
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# THE DREAM MACHINE

BY SARAH JONES

Ask a hundred audio professionals to describe the ideal reference monitor, and you'll get as many answers. So, we narrowed the field down to seven, all nominees for this year's Grammy Award for best engineer. The nominees we spoke to represent various backgrounds—their projects range from the familiar harmonies of The Eagles to White Zombie's grinding metal grooves to the drama of Carl Orff's *Carmina Burana*—yet they revealed common concerns when it comes to monitoring.

One of the issues facing these independent engineers is finding familiarity in diverse environments. Some find a constant in their monitor; to others, it is the biggest variable. Most mix only on reference monitors, avoiding mains except for occasional A/B comparisons, or to check for ultralow-frequency problems such as rumble or air-conditioning noise, or, when necessary, to “hype” artists or producers. Healthy hearing appears a priority; nearly everyone we spoke to mixes

at low-to-moderate levels and has reduced those levels over the years.

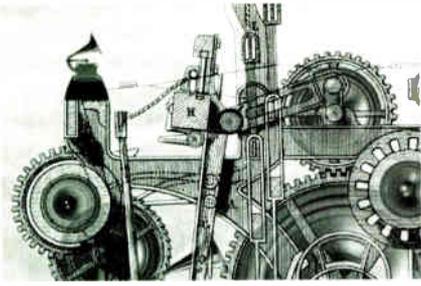
As for the “right” system, that's where the similarities end. A product favored by one person is often avoided by another. Read on to find out about the speakers these engineers love (and *don't* love), as well as their tried-and-true tricks and their visions of the perfect monitor.

## LARRY ROCK

Like many engineers, Larry Rock's training comes from experience. A trumpet player with a background in electronics, he engineered for 13 years at WFMT, a classical radio station in Chicago. He has worked on syndicated broadcasts for a number of opera companies and orchestras: the Chicago Symphony, the Philadelphia Orchestra, the Lyric Opera of Chicago, the Milwaukee Symphony and the St.

**GRAMMY  
NOMINEES  
SPEAK OUT  
ON REFERENCE  
MONITORS**

ILLUSTRATION BY TIM GLEASON



Louis Symphony, to name a few. For the past six years, he has been doing freelance work, mostly for BMG Records, where he and the late William Hoekstra were nominated for a Grammy for two St. Louis Symphony recordings, *The Typewriter and Other Leroy Anderson Favorites* and Carl Orff's *Carmina Burana*.

"Speakers are really the weakest link of all," Rock says, "because they are the most variable aspect of sound reproduction. Microphones and electronics work a certain way and may have certain limitations, but the limitations are more easily quantifiable, compared to the variations in environments from listening room to listening room. I try to be conscious of how people are likely to be listening to what I am recording, mixing, whatever. I think in the classical world, there's probably more of a tendency for the consumers to have perhaps better, more elaborate speakers, but they're still listening in living rooms that have characteristics that are not necessarily ideal compared to the ideal control room.

"I'm usually working at concert halls and have to set up control rooms in green rooms [backstage waiting rooms] and so on, I usually try to re-create, in effect, what I would call a typical listening room—a living room-type situation, where you don't completely dampen the room, and leave some of the reflections to correspond to what a typical living room would be like. RPG Diffusers has a line of studio treatment devices that are easy to transport and install, even on a temporary basis, that make speaker monitoring much easier.

"I tend to use consumer-type speakers—high-level but not something that's designed only for recording studio control room monitoring. I've been using Martin-Logan hybrid loudspeakers in the last few years. What I like about them is that because of the electrostatic panel being tall, it works well in a room where I have a mixing console in front of me, or an editing computer monitor. The other common speaker in my business—the B&W 801—is a good speaker, but many times we find our-

selves wanting to raise them off the floor so that they aren't just dispersing into a table or mixing desk. But the problem is, the speakers don't really sound the way they were designed to sound when they're much off the floor.

"What I look for, and what I particularly like about the Martin-Logans, is the electrostatic panel. One of its innate characteristics is transparency across a wide dynamic range. Other than not having obvious colorations—I suppose that would have to be the top priority—having a speaker that sounds as good at low levels as it does at high levels is very important to me.

"I used 801s for years, because they were a size that was movable. Then when the Martin-Logan Quest model came out, that was the first one of that line that I started to use, but they're still a little bit on the large side for some of the rooms that I've been in. There's a newer model of the Martin-Logan—SL3—which is a little smaller than the Quest and really seems to work well in most rooms. Over the years, I've used the Threshold power amps, and the Hafler power amps.

"I tend not to monitor too loud. For the very important reason, again, there are very few people out there who are going to listen consistently at very loud levels, and if you mix so that everything sounds appropriately balanced at the highest level, then it may not sound as good at lower levels. By the same token, if you listen too low, then you tend to bring up spot mics too much. My overall theme is moderation: moderation in monitoring levels, moderation in the amount of absorption and control of your listening environment."

#### TERRY DATE

Terry Date got started mixing in the early '80s, at a Seattle studio that later became Bad Animals. The Seattle scene was beginning to come alive, and Date was working with early heavy metal bands such as Metal Church, Mother Lovebone and Soundgarden. From there, he branched outside the Seattle area in search of regional music—co-producing in addition to engineering. He (along with Ulrich Wild) was nominated for a Grammy for White Zombie's second Geffen release, *Astro-Creep 2000: Songs of Love, Destruction and Other Synthetic Delusions of the Electric Head*.

"I am pretty much a [Yamaha] NS-10 person. And I'll use big speakers in a studio, [but] there aren't a lot of studios I go into where the big speakers sound

great, so I use them more for a thrill factor than anything else. And I try and check everything I do in some kind of car someplace, usually a rental car since I'm on the road all the time. In the studio, it's NS-10s exclusively. I need as much consistency as I can get, from project to project, because everything else around the speakers is always different.

"I never mix on mains. There's a couple of studios that I've been in where I really like the way the mains sound, and I trust them really well, and when I'm doing early-on low-end stuff, I'll get up on the mains a little bit. Usually, the only time they get used is when the band comes in and wants to listen. They always want to turn up on the big speakers loud, and then I leave the room. Another thing I'm doing is using the NS-10s and a little [Community] subwoofer with them, so we can get a little low end into them at loud volumes.

"In the early days, I listened really loud, and I still listen loud quite a bit, but I've learned to listen quietly also, especially on the NS-10s, because you can hear the high end a little bit better at lower levels. I still like to listen pretty loud—if you're looking at a little meter, I would guess over 100 dB. The type of music I do is usually really powerful; it's loud and noisy, and I don't think anybody who listens to it listens to it at really low levels anyway, so I like to rough it in at loud levels, and get more specific down low.

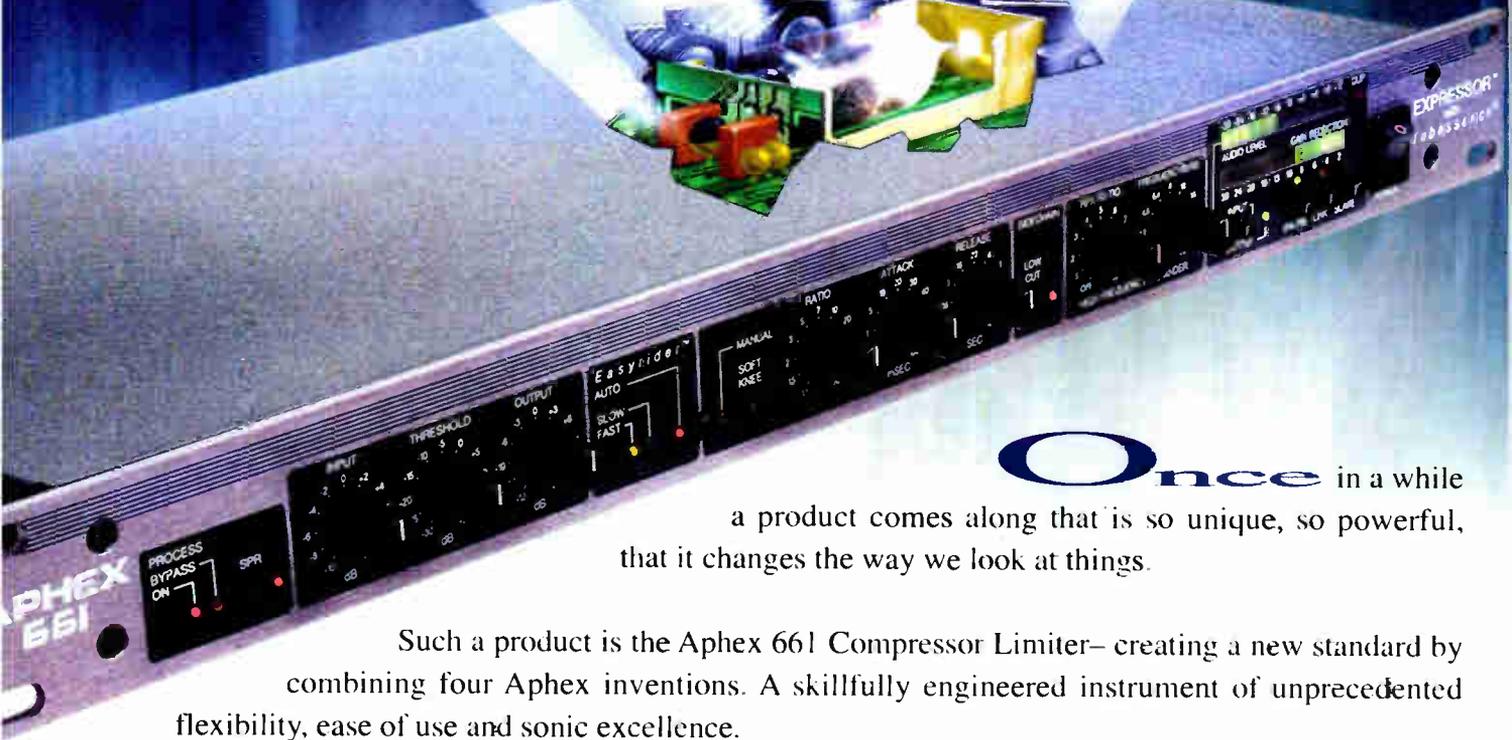
"If I know where the problems are, and I'm used to something, it doesn't really matter how accurate the speaker is to me. Because there are so many things that influence how you hear. The NS-10s give me the constant in so many different situations. So the perfect monitor to me is the one that I'm using, the one I'm used to.

"A lot of people spend a lot of time trying to do something one better than what was working before, but I would just say that if something is working for you, and if it's comfortable for you, then stick with it. If you're thinking about technology too much, then you're not really listening to what you should be listening to. The most important thing is what goes into the speakers, not what comes out of them."

#### RICHARD DODD

This year marks Richard Dodd's 25th year as a recording engineer. A Nashville-based freelancer, he's mixed Tom Petty, the Traveling Wilburys,

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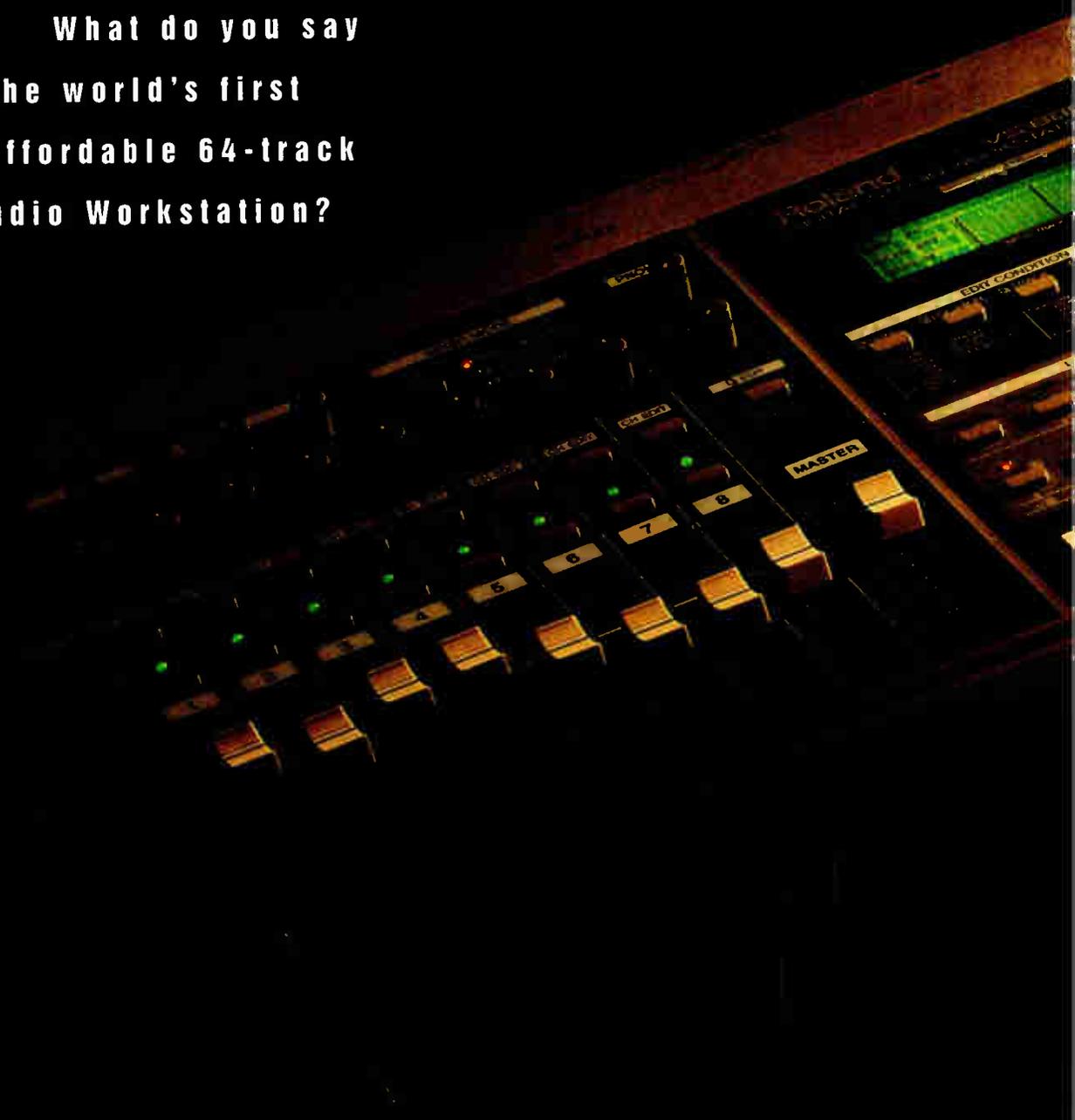
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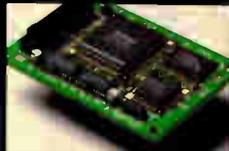
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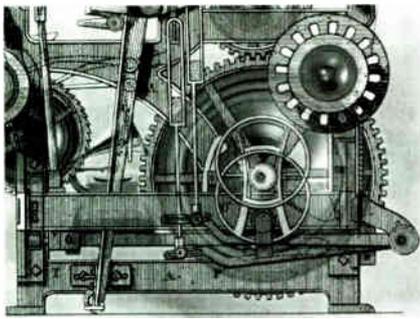
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George Harrison, Jeff Lynne and Roy Orbison; his producer credits include Billy Pilgrim and Clannad. His recent work with Dave Bianco, Stephen McLaughlin and Jim Scott on Tom Petty's *Wildflowers* (Warner Bros.) earned him a Grammy nomination for Best Engineered Album. His current monitors of choice are Tannoy PBM-8s and KEF C-55s, powered by a Revox amp.

"My favorite characteristic [of the Tannoys] is they are colored, but colored in a real-world manner. NS-10s can be exciting when they're loud, very exciting, without doing too much damage to your ears; that's probably why they're popular. I have, at the moment, the standby of the Tannoys and the

KEFs. But you can't turn the KEFs up, be excited or anything, because they blow up too easily. And they don't give you anything but what you've got; for a small speaker, they're really boring. But they do help you a lot with balance. I tend to come back to the Tannoys every time: They seem to be more consistent room to room, amp to amp and volume to volume. The system in my car which, locally at least, I always have with me, is probably my ultimate test, because I know it so well. I probably do more listening in the car than anywhere else."

Dodd, unlike many freelance engineers, does not travel with his monitors. "The reason behind that is that in a different environment, the same speakers are different. You take something that you know and love, put it in a different environment with a different power amp, and they're no longer the things you know and love. I tend to give people credit for what they've got, and can work from there. And also, it's a new experience, as well. After 25 years, a little bit of spice is a good thing.

"In my own studio," Dodd says, "I

rely on smaller near-field monitors only. So, when I'm working in someone else's studio, then the mains are whatever they are, and then I assess them briefly, as to what element of them they're going to be useful to me for. And use them then. It depends on the style of music you're working on, as well: If you're working on an orchestral thing, and you're faced with a large monitor system which is horn-based, they're absolutely useless, in my opinion, because the crossovers are so defined that you find the oboe or something just leaping out of one part of the speaker, and it's totally out of balance, because it just happens to hit right at the crossover point. Usually, I'll use big speakers to impress people.

"I think [my] overall monitoring level over the 25 years has come down significantly. And the duration of monitoring accurately—because of age, I think, in my case—has come down. I'm blessed, fortunately, with as good of hearing as I had 25 years ago. But it doesn't last for 18 hours like it used to, which is a shame, but it means I get home to the family.

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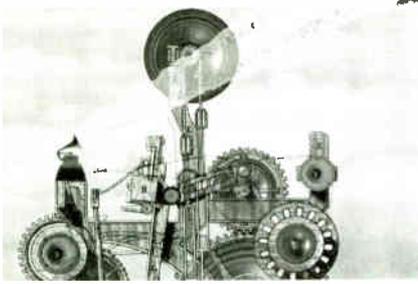
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the same in any environment, at every volume, and fit in my pocket. So I could take it with me, and be sure that I've got an exact, precise monitoring system wherever I am. That would be perfect. Somebody's going to say, well

just get yourself a pair of headphones. But unfortunately, that's a whole new world.

"The environment has probably more to do with what you hear than the actual driver itself. You could pick some speakers up from 25 years ago, and give them the right environment and the right amplification, and they could sound every bit as good, if not better and more accurate, than a 'state of the art' monitoring system today. It's the whole package.

"I know there are some people who'll swear by a certain speaker, and good luck to them. They're not wrong, they're right—for them. Me, I don't

know. I like the excitement of finding out. The whole prospect of what speakers to use is such a can of worms. Basically, if you're enjoying it, and you're making other people enjoy it, something's right. And if you're not, well, something's wrong."

#### ELLIOT SCHEINER

Elliot Scheiner has been engineering since 1967, when he worked with Phil Ramone at A&R Recording in New York. A partial list of his engineering credits includes Steely Dan, Billy Joel, Van Morrison, Rufus and Chaka Khan, and George Benson with the Count Basie Orchestra. Producer credits include Jimmy Buffett, Exile and Bobby McFerrin. His Grammy nomination is for his mixing with Rob Jacobs on The Eagles' *Hell Freezes Over* (Geffen).

"I used to carry monitors; I don't anymore. Now I use NS-10s. They're more realistic; it forces you to make things sound good. It's not a great-sounding speaker. It's a real workhorse, so you know that when you get a mix or if you get anything sounding good on those, it's going to relate to the outside world. When I originally started mixing, I was using KLH-3s. And then when I started working with Steely Dan, they wanted to monitor on Dynacos. I used those for a while and then I moved on to Visoniks, because they were using the Visoniks. I used to carry around a pair of Visoniks, and I ran into the problem where stuff just sounded too good on them and didn't relate to other systems. And then I started using Dynaudios and ran into the same problem. They're one of the best-sounding speakers I've heard. So I'm back to using NS-10s.

"I always check in a car. I always get a [rental] car based on the system that's in it. I usually get a Ford, because I like the way their systems sound. When I'm at home, I'll ref in my car; I have a Nissan Pathfinder, and the system is great in there.

"I never mix on mains; most mains to me just don't sound good. And I mix at a very soft level. The only time I play back on big monitors is if somebody wants to be hyped. And even then, I'm hesitant, because you end up playing back on a big system that's supposed to be great, and your stuff doesn't sound great.

"[In an ideal monitor] I'd like to see something that doesn't have too much top and bottom. A lot of the newer monitors really glorify the top and the bottom, and not much in the midrange.

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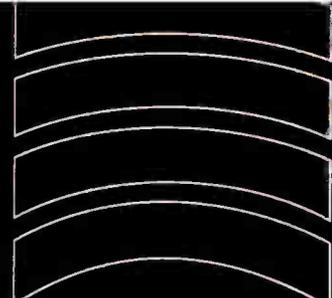
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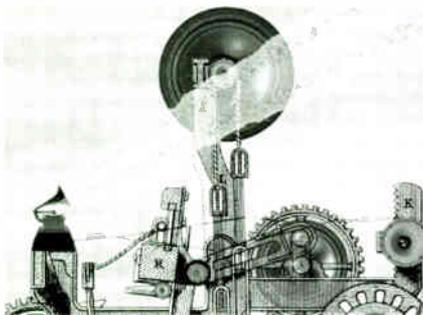
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#### AL SCHMITT

Al Schmitt's work on Dr. John's *Afterglow* (Blue Thumb) earned him his fifteenth Grammy nomination. This industry veteran has worked with such legendary performers as Frank Sinatra, Barbra Streisand, Quincy Jones, Liza Minelli and Dianne Schuur and was getting ready to do a McCoy Tyner album when *Mix* spoke with him about reference monitors.

and that's the problem I've run into with a couple of these systems, where you end up putting too much midrange into the mixes. So I'd like to see a speaker that's a little more even all across."

Scheiner monitors at 75 dB. "I've monitored at a low level for so long, and I believe it saved my ears. The louder you monitor, the more you're going to punish yourself. Also, it's less fatiguing monitoring at low levels. I can mix for 12 hours a day and I'm still pretty good, whereas, if I'm forced, when somebody wants to hear stuff louder every now and then—if a quarter of my day is spent monitoring things louder—it fatigues me."

"The monitors I use are kind of a hybrid: they're made by the Mastering Lab, with 10-inch Tannoys. The crossover network and the enclosures are Mastering Lab. I've been using them for maybe the last three or four years, and I'm just totally knocked out by them. It used to be that [during mastering] we were either taking out bass or adding bass, or adding some top end, or whatever, when we were all going through the NS-10 fad. Before the NS-10s, I used Mitsubishi monitors, and I liked those a lot. Unfortunately, they stopped making them, and you couldn't get parts, so I stopped using those, and I started using the NS-10s, because you could find them in every studio. So now that I have these [Tan-

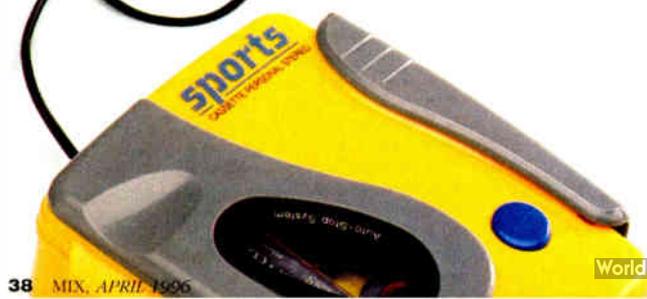
noy/Mastering Lab] speakers, I ship them everywhere I go, so they go with me like a briefcase."

Schmitt does not reference on car or portable systems, and he doesn't spend much time on mains. "One percent. Very, very little. Everywhere you go, they sound different. A lot of studios, they're boomy, or they have no relationship to what's really going on. Once in a while, I'll switch up to see how they relate to my speakers, but it's rare.

"Years ago, I was listening a lot louder, and I was listening on the mains. I don't listen as loud anymore. I don't have a set level, and I will crank it up if the artist or producer wants to hear it loud at times, but most of the time I monitor very softly. I think that's basically the change, plus I have my own speakers. I might work in 40 different studios in a year, so it's really important that I have a place to focus in on, and that's my speakers, you know, that's what keeps everything uniform for me.

"I'd love to see everybody have the speakers I have, and that would be ideal for me, to be able to go every-

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where, and there could be some sort of standard system. A lot of the independent engineers have their own speakers and bring them around with them, or they rent. I don't find near as many people using the NS-10s anymore as they used to. Everybody was using them for a while, but here we were, doing an album that maybe cost \$350,000 to do, and have 60 musicians in the studio, and we and everybody else were monitoring on \$300 speakers. What's wrong with this picture? Now that we've gotten away from that, and engineers are using better monitoring systems, whether it be the Genelecs or Mastering Lab speakers, or the Manley speakers."

#### TONY FAULKNER

"It's surprising, really," says Tony Faulkner of his Grammy nominations for engineering the Anonymous 4's recording of *The Lily and the Lamb—Chant and Polyphony from Medieval England* (Harmonia Mundi) and the St. Petersburg Philharmonic's performance of Prokofiev's *Alexander Nevsky* (BMG/RCA Victor). "I'm just working from my kitchen table, in a suburb of

London." Faulkner's "kitchen table" is Green Room Productions, a self-run (with the occasional help of students and temporary workers) production company that records more than 70 classical albums yearly, mostly for independent labels like Harmonia Mundi and Hyperion, and corporate clients such as BMG and Warner's.

"I use Quad electrostatics, which is something you'd never use in the rock business at all, because they're not quite loud enough. But for classical music, they're very transparent, with a very clean, clear sound. I've got B&W 801s which we run as well, because quite a lot of producers know them better than they know the Quads. I've also got some Tannoys, which come out for doing very loud stuff. I use mainly big tube amps; we've got a stereo 834 E.A.R., and we've got two big mono blocks, which are about 300 watts a side. And I also have a big Threshold S/1000s.

"We do quite a lot of listening on headphones, because when you work on location doing wide dynamic range material, you get quite a lot of outside noise. And if you listen on headphones

you'll get more dynamic range, and a lot of the producers I work with are very used to wearing headphones all the time. I don't like to listen to them all the time because otherwise you just make albums that sound good on headphones, and most people don't listen on headphones."

Faulkner prefers to monitor at relatively low levels. "With classical music, it has a very wide dynamic range, which means that if you turn them up too loud, when the orchestra plays fortissimo, you will actually blow yourself out of the room. We're trying to reproduce the way people listen at home, and most people don't listen at the sort of volume that actually gets the neighbors beating about your door.

"For me at the moment, the ideal speakers are actually the Quads. If I could wave a magic wand, I would have Quads with another octave of deep bass. They don't have a lot of deep bass, because in order to make them have a deep bass they'd have to be twice the size and a lot more expensive and a lot more awkward to move and then no consumers would buy them either, because they'd just be



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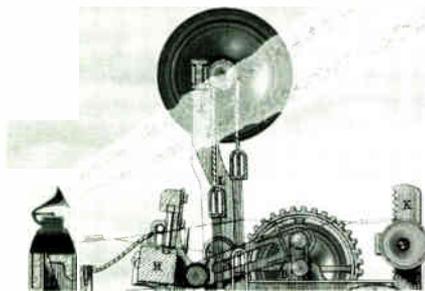
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completely out of reach.

"I rely on the microphones a lot. It's the sort of music I record. Once you start meddling and putting out lots of microphones and lots of tracks and playing around with it afterwards, then

you're very dependent on the quality of your monitoring, and if you've got it wrong then you can really screw the album up something terrible. My idea is, if possible, to keep my hands off the whole thing completely and make it as transparent as possible."

#### BRUCE SWEDIEN

Bruce Swedien's career spans nearly four decades. He started out in Chicago in the late '50s, at the end of the big band era. There, he worked at Universal, recording legends such as Count Basie, Duke Ellington, Woody Herman and Stan Kenton. In 1975 he moved to Los Angeles, and spent 17 years there

before heading east, where he is currently based. He is probably best known for his producing, writing and engineering with Michael Jackson, most recently on the Epic release *HIStory*, for which Swedien received Grammy nominations as both producer (with Jackson) and engineer.

"When I started in the business, there was no such thing as near-field monitoring. Most of the control rooms that I started work in were built for mono, so they were very, very small, and with a single loudspeaker. Pretty soon, we were trying to fit two speakers in where one was, and so the control rooms have gotten much larger. Consequently, the monitoring setup is much more sophisticated.

"What I use for my own monitoring, for near-field, is a pair of custom-made Westlake BBSM-8s. And I absolutely love them. The BBSM-8s are passive bi-amped, and four mono block Class-A Electrocompaniet's power those speakers. Then, for my reality check, I use Auratones. The amp I use for those is a McIntosh 2105. I even have a little radio transmitter that I carry around with me in my stuff, so we plug that in, and we can listen to the mix on the radio, any kind of radio." He carries his custom monitors, plus two 7-foot outboard racks and 105 microphones, everywhere he goes. "Quincy Jones says that moving me from studio to studio is like moving the 5th Army."

Swedien monitors on mains only about 10% of the time. "I usually use the big speakers to check for low end and so on, but having been in the business a few years, I've been very fussy about my hearing. I never monitor more than at an SPL of 85 dB for a long period of time. If I do crank it on the big speakers, it'll be for less than ten minutes out of the hour. I try to observe the OSHA standards.

"The main thing for me, of course, would be musicality. I am more interested in a speaker that has wide spectral range, so I can monitor at an SPL of 90 or less and hear the full spectrum.

"The one thing that I think frightened me early on was the fact that *any* hearing damage is irreversible. It doesn't go away. The most important thing is to protect your hearing. If you're planning to hang out in these studios as long as I have and ignore that, you're going to have a very short career. And I think I'm a good example of how that works." ■

*Sarah Jones is Mix's editorial assistant.*

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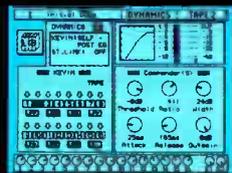
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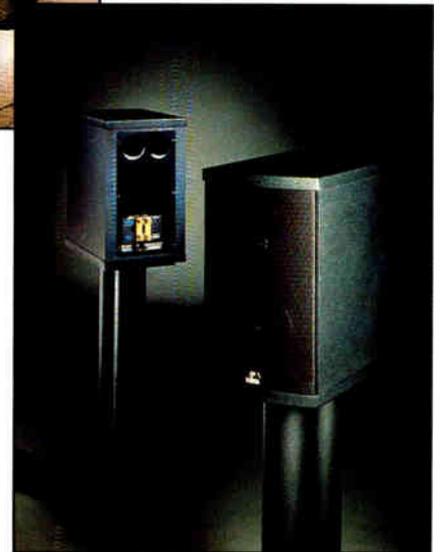
**Left: KRK K-RoK monitors with RoK Bottom subwoofer. Below: Platinum Audio Session-1.**

# What's New IN STUDIO MONITORS

BY GEORGE PETERSEN

The science of studio monitor design is anything but static. New innovations and approaches are constantly refining and changing the way we all hear in the control room, outboard vehicle or broadcast booth. Here's a look at some interesting new monitors that have debuted recently.

**Genelec 1039A**

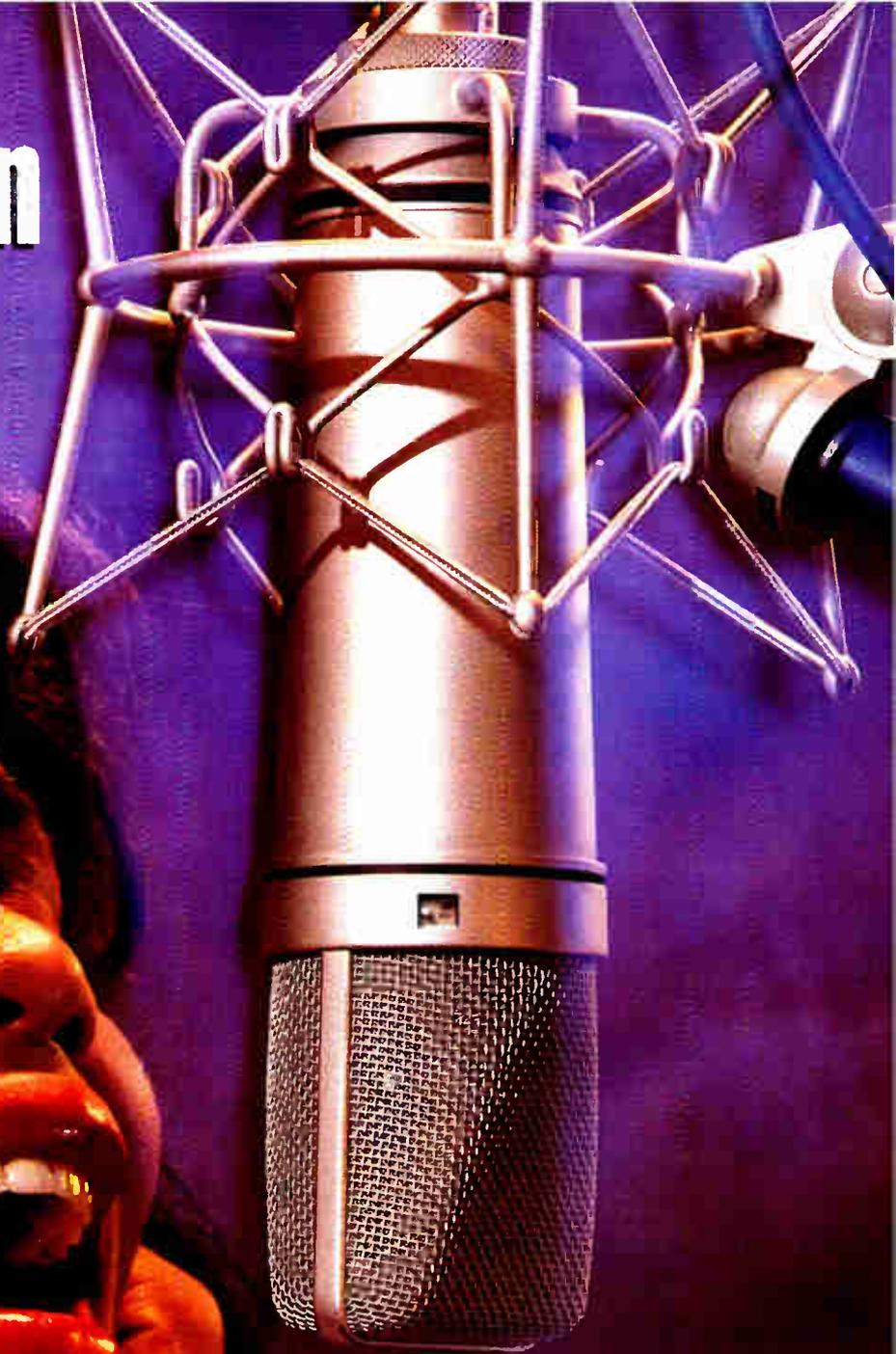


**Ambiance Acoustics** (San Diego, CA) just released an updated version of its California Cube system (\$1,995), which combines two compact, vented enclosures, each with four 4-inch full-range drivers and an outboard active system equalizer/processor that installs between the mixer and the power amp.

The ELF-P18 self-powered subwoofer from **Bag End** (Barrington, IL) offers low-frequency response down to 8 Hz in a 3-cubic-foot enclosure. System accepts Left, Center and Right signal inputs, combines them to drive the built-in ELF integrator and 400-watt power amp, and has an adjustable 3-channel highpass line-level output for front monitors. Amp and driver are optimized for maximum output and low distortion.

New from **Barbetta Electronics** (Moorpark, CA), are the Diva 3.22 and Diva 4.1 Omnifield Monitors. Priced at \$2,495/pair, the 3.22s have a 6.5-inch woofer; the \$3,495 4.1s have an 8-inch woofer. Both use silk dome tweeters and are self-powered, bi-amped systems. Total RMS power is 180 watts, and each of the individual amps are rated at 0.002% THD.

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# ASSISTANT ENGINEERS

**T**hey have had many names over the years—apprentice engineers, assistant engineers, second engineers, runners, interns and the ever-popular “hey, you.” The connotations of these labels range from paternalistic to outright condescending (i.e. the Britishism “tea boy”—yeesh!). Yet even as they ran for coffee, the assistant/apprentice/second has been one of the few threads that has run consistently through a half-century of professional recording. Their value over time has only increased, as have their responsibilities and their workloads. Assistant engineers have become the interface between the peripatetic freelance engineers that now dominate the industry and increasingly technologically diverse and complex studio environments. Their spare time—a comical concept to start with for assistants these days; my informal survey shows they rou-

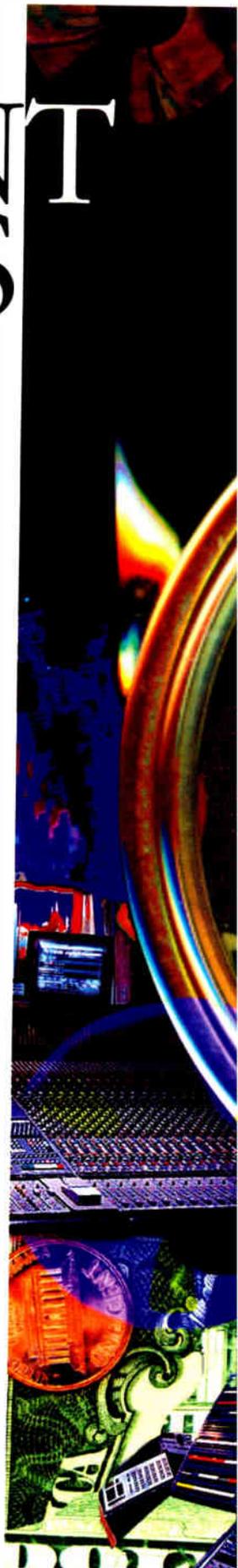
tinely work 60 to 80 hours a week on average—is filled by reading trade magazines and manuals, and if there is any time left over, they might be able to get in a couple of hours on a demo project of their own to hone their chops or become familiar with a piece of rental gear five minutes before the session, and maybe, just maybe, squeeze in a personal life. And increasingly, they’re working not only to pay the rent but also to pay off school loans from a plethora of techno-universities that many have found necessary just to get in the front door.

The educational background of assistants occupies a curious place among the perceptions of studio owners. On one hand, the schools are often derided as not preparing graduates for anything approximating real life. As Lou Gonzalez, owner of Quad Recording in New York puts it, “It shows that the [assistant] wants the job bad enough, but once they get into a studio, you have to retrain them.”

On the other hand, with the technology base as diverse as it is, studio owners use a techno-diploma as an indicator that a prospective assistant has at least fundamental grounding in audio and has had some hands-on experience with equipment. Another aspect, less well-known, is that during the probationary internship that virtually every assistant undergoes, the school’s or the parents’ insurance often carries over for that period, relieving the studio owner of that burden. “That’s among the reasons that, if you haven’t gone to school for this, you don’t even get in the door here,” said Howard

BY DAN DALEY

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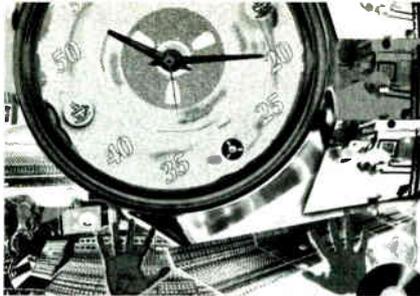




Schwartz of audio post house Howard Schwartz Recording in New York.

Pay for assistants varies widely from minimum wage (interns work for free or in some cases, such as at HSR, with transportation and food allowances, for two to six months, on average) to upward of \$12 an hour. Assistantships can last a year or ten, depending on the assistant and the studio. By then, the assistant has usually attained a sort of quasi-staff engineer position at a studio, often being placed as the primary engineer on projects that come in without a specific engineer. An increase in in-house productions at studios has also contributed to more assistants landing in the driver's seat on occasion.

Putting assistants into first-engineer positions when possible is a practice many studios follow for a variety of reasons. Joel Levy, owner of Criteria Recording in Miami, says, "Often an assistant establishes a relationship with a client, and the client asks for them specifically. That helps cement the bonds between a client and the studio." Schwartz says that in the audio post business, engineers function as much as salespeople as they do technicians,



assembling followings within the industry that enhance their value to studios. Assistants are, in effect, sales-trainees. "We rarely have outside engineers in post," he says. "Our top mixers have come from within, from the ranks of assistants, and we encourage assistants to become clones of the 'A' guys," he says. "They're going to inherit the business, and let's face it, mixing is 10 percent ability and 90 percent personality, so you're looking for that in an assistant, too."

Assistant engineers are being poured out of numerous universities at ever-greater rates. Garry Jones, senior vice president at Full Sail Center for the Recording Arts in Orlando, Fla., says that graduating classes have been getting larger with each successive year, and he expects that that's true for audio

academia in general. Full Sail's 1995 enrollment was 750; the 1996 school year is expected to host 1,025 students, based on already processed applications, he says. Jones states that Full Sail's placement rate of its graduates into paying assistant engineering positions is approximately 85%, which has held steady even as enrollments increase. That rate does not include unpaid internships.

This is substantial cannon fodder, although what happens to these graduates varies according to their ambitions and fate. One of the newer wrinkles, one which helps absorb increasing numbers of what Jones neutrally calls "entry-level people," is that many go immediately into business for themselves with personal studios, pursuing production careers. Many studio owners take very active roles in encouraging their careers for both practical and altruistic reasons. Rose Mann-Cherney is studio manager at Record Plant in L.A. and wife of engineer Ed Cherney ("I'm married to the studio and Ed," she says, laughing even harder when her ordering of the two is pointed out to her). "I cultivate their ca-

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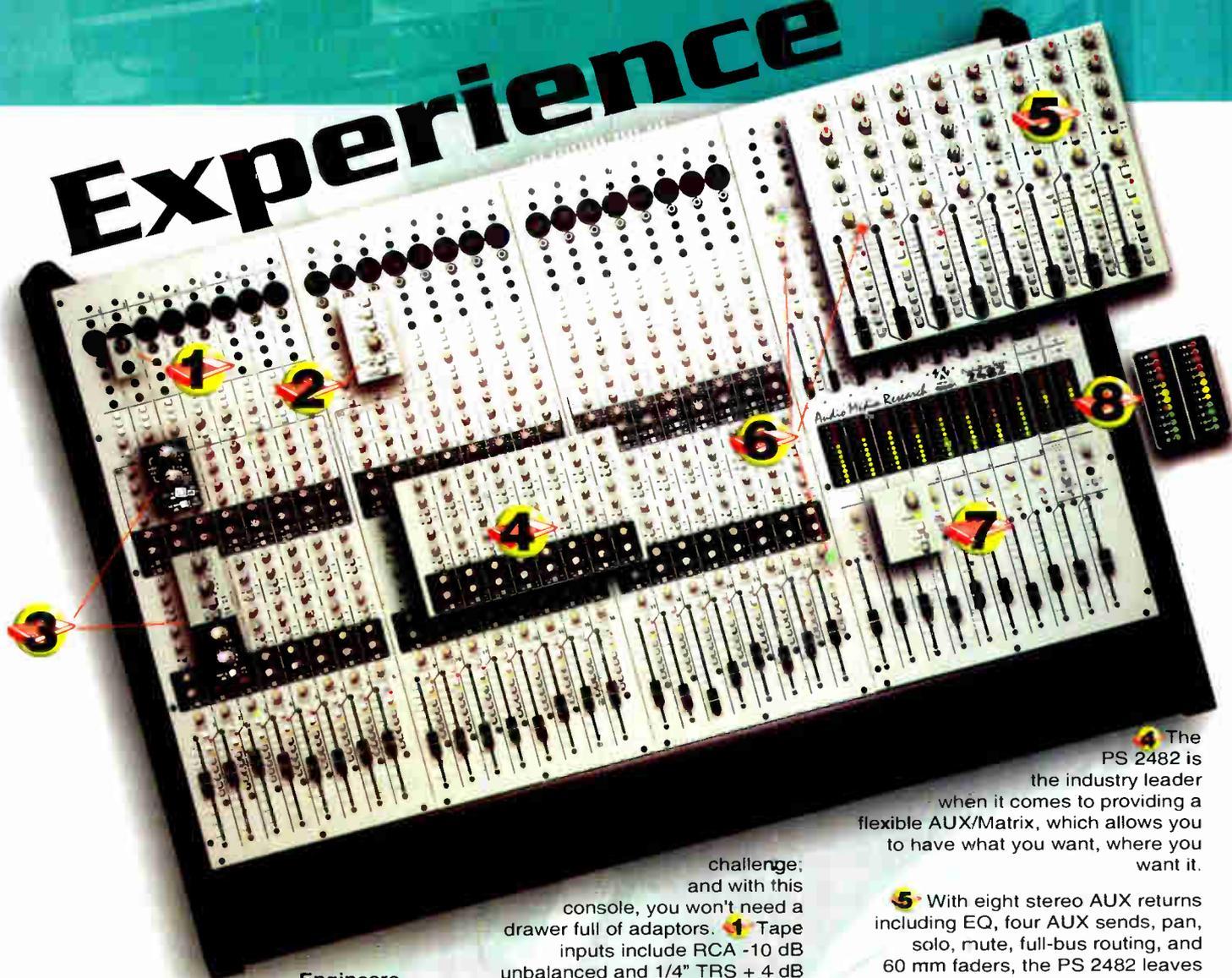
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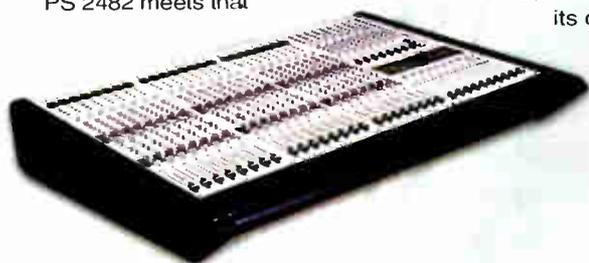
**4** The PS 2482 is the industry leader when it comes to providing a flexible AUX/Matrix, which allows you to have what you want, where you want it.

**5** With eight stereo AUX returns including EQ, four AUX sends, pan, solo, mute, full-bus routing, and 60 mm faders, the PS 2482 leaves other consoles "out-in-the-cold."

Other functional niceties that make this console a gem to use in the studio are **6** bi-colored LEDs on all signal paths, so you can see the signal status at a glance, in and out of the console. **7** All eight buses have a mute switch, a bus/L-R switch, and a pan for stereo placement in the mix path. **8** Peavey's exclusive Delta Vu™ metering gives you the most accurate measurement of levels to the stereo mix.

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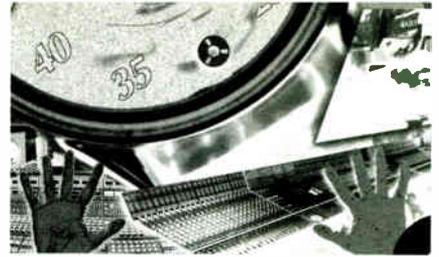
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reers and try to get them gigs as engineers," she says, starting runners at \$5 per hour. "You want to promote from within; if you don't have good seconds, you have nothing at a studio. Along with the equipment, they sell the studio."

"You need to have your assistant engineers be as good as possible," says Quad's Gonzales. "The big change in that end of the business occurred years ago, as staff first engineers were phased out. The responsibility that falls on assistants now is tremendous. I just got an SSL 9000 J, and not many people know how to work that automation. My assistant [engineer] better know how."

Studio owners all say that they inevitably have to do additional training on even well-schooled assistants, if only to acquaint them with that studio's particular methods. Some studios, such as Washington, D.C.'s Omega, combine generalized audio classes with studio operations. Others, like Village Recorder in Los Angeles, are starting more formal in-house training programs for their staff. "A studio's graduate class of engineers says a lot about the studio itself," says Jeff Greenberg, CEO of Village Recorder, citing former assistant engineers over the course of the studio's quarter-century-plus, like Rob Jacobs (The Eagles) and Frank Wolf (Randy Newman).

Smaller studios vary little from their larger counterparts when it comes to addressing assistants, although pay scales are usually at the lower end of the spectrum. For instance, War Zone, a hand-owned studio in Chicago, pays assistants between \$5 and \$6 per hour and does not pay for internships, according to studio manager Doug Woodbury. "Staff seconds aren't really all that common at a lot of smaller studios," he observes. "But the trade-off might be that they have more opportunity here to get hands-on with the equipment and with their own projects. And the in-house production that goes on here gives them more opportunities for first engineering."

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have a tradition of staff assistant engineers. Rather, the city has evolved a team approach in which freelance engineers pair themselves with their own itinerant assistants and travel from studio to studio. That may be changing as the level of technology and investment heats up there; Steve Tolson, studio manager for Masterfonics, which opened its \$3 million, Hidley-designed, 9000 J Series-equipped The Tracking Room (profiled in last month's *Mix*) in December, says the studio is considering the idea of staff assistants. "The learning curves are rising dramatically," Tolson observes. "But the team approach has worked well in Nashville for a long time and probably will for some time to come." This also simplifies things for the studio's bookkeepers; seconds in Nashville invoice the client—usually the record label—as do first engineers and producers. Most assistants say this arrangement is fine with them; they report no major delays in payments over time, and the rates they command—as much as \$15 to \$25 per hour—are more than double the national average.

Chris Davie, a Middle Tennessee State University music program graduate who assists engineer Justin Neibank, notes that the down side of this higher rate is unbillable hours doing setups and other tasks, along with increased responsibility in the production-line pressure cooker that is country music. But the benefits are clear: An association with a well-regarded engineer often leads to first-seat positions on at least parts of records and the fattening of the all-important credit file. Davie says even the influx of New York and Nashville engineers hasn't changed this Nashville tradition...yet. "It's a new thing for them," he says. "But I can see where the studios will want to move toward staff seconds in the future. There's just too much new equipment."

Assistants can stay assistants for a long time in Nashville, not unlike their counterparts waiting for a seat on the session musicians' A-Team. Waiting led assistant engineer and Belmont University music program graduate Nick Sparks, 29, to start a side business renting ADAT decks for transfers, which he says compensates for the competitiveness among freelance seconds in town. On the other hand, the proliferation of personal studios, a late-arriving trend in Nashville, allows seconds to move up faster, albeit usually at the same assistant engineer rates. "For every closed-

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off opportunity in country music, there's an opening one in an alternative genre down here," Sparks says.

#### FEAR OF FLYING

All this might be contributing to yet another new trend in assistant-dom, what Mann-Cherney calls "fear of flying"—the compunction to remain at the assistant level rather than venture out into a freelance world. "I do feel safer in this environment," admits Kyle Bess, 30, a seven-year assistant at Record Plant who started with studio owner Rick Stevens at his previous facility, Summa. "There's no staff positions; the gigs are locked up, and the schools are cranking out assistants," continues the Full Sail graduate. "But the experience I've gotten here is amazing—I worked on and off with Prince for nearly four years, I do vocals with David Foster.

Mike Shipley once told me that six months' assisting was too long, but you do what you think is right to pursue what you want. Some actors wait tables all their lives. I'm an engineer, but that doesn't mean that the phone will ring the minute I go freelance."

Criteria's Levy understands the syndrome. "After a while they just leave and go on to other careers," he says. "Some stick around as long as they can. In a way, I can't blame them. There's only so much freelance work to go around."

#### VOICES

Just as the studio looks to engineers to show the studio's best face to the world, the assistants look at their time there as more than just a learning experience. "It's a networking thing, too," says Mike Rew, 28, a former construction worker who has worked at Quad Recording for a year. "This is also your chance to make contacts and build up your own client base. The freelance market looks pretty good to me from here, and I figure to assist for another two years at most before going out on my own."

Home studios have also come to

offer assistants opportunities to become first engineers, even as they remain on staff. Jeff Thomas, 30, a second at Village Recorder, says he finds engineering work in his off hours at personal and project studios. "It's another way to build revenue and a reputation," he says.

The proliferation of independent record labels means that virtually everyone has a band and a deal. Jason McNinch, 22, an assistant at War Zone, still assists at the studio despite his band being signed to indie label Invisible Records. "The reality is, you take whatever opportunities there are to make money in music," he says. "And as an engineer and a musician doing independent records, I often get credits on those records as both an engineer and a musician."

Technologies will change. The studio industry will continue to undergo major shifts in business and geography. But assistant engineers—by any name—will likely always be a part of the process, if for no other reason than to explain why the left channel isn't working. How do they always know? ■

*Dan Daley is Mix's East Coast editor. He has a personal digital assistant.*

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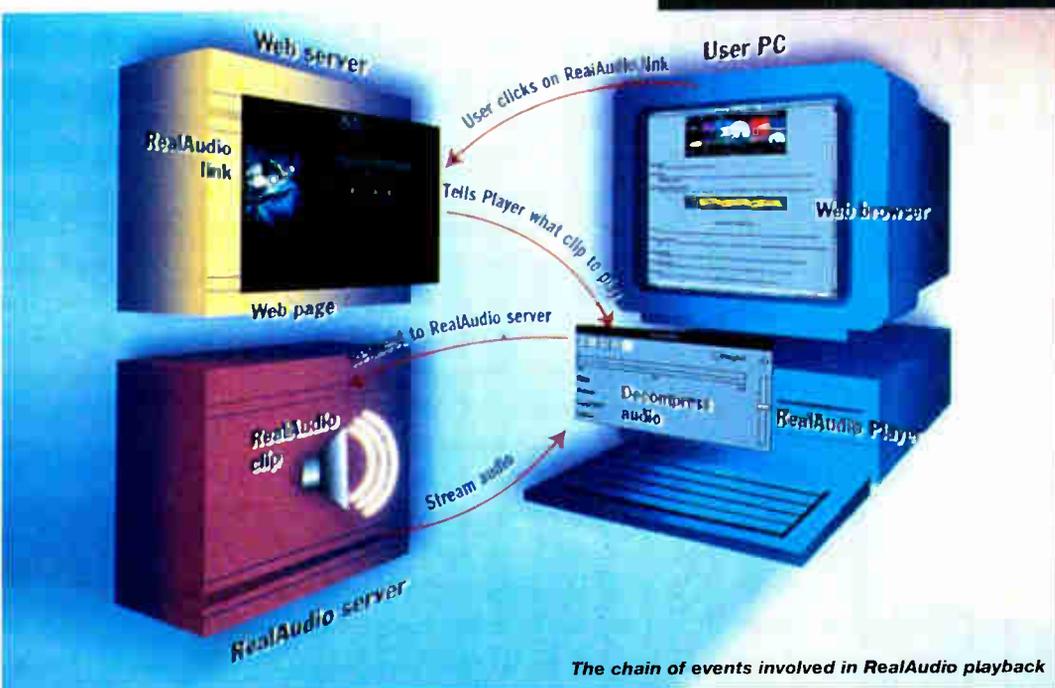
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## GOES REAL TIME



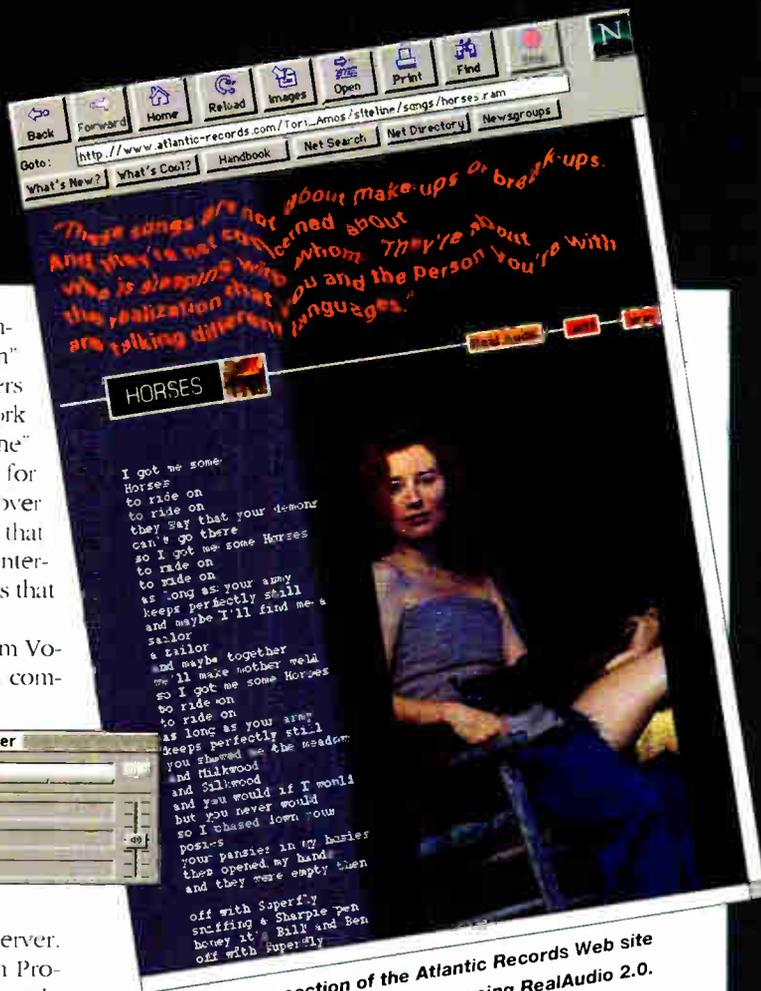
The Internet may well be a unique and wonderful vehicle for information exchange, but getting at that information, and saving it to one's own machine for later reference, often feels more like swimming in molasses than "surfing." This is particularly true if the saved information is not merely text but graphics, audio or video; these data types generally involve file sizes that dwarf those of text-only information. Delivering those files over the existing infrastructure—regular phone lines and modem—is akin to trying to suck icebergs through a straw.

Until recently, audio files available for sampling on the Internet could not be played back until the entire file was downloaded from the server to the client (end-user). These files can take awhile to download (about an hour-and-a-half for one minute of stereo Red Book audio using a 14,400 bps modem; less for compressed files), so only the most patient (or idle) were able to hear them. This limitation undermined the Internet's great potential as an alternative way to expose the public to music, especially music that doesn't get played on the radio.

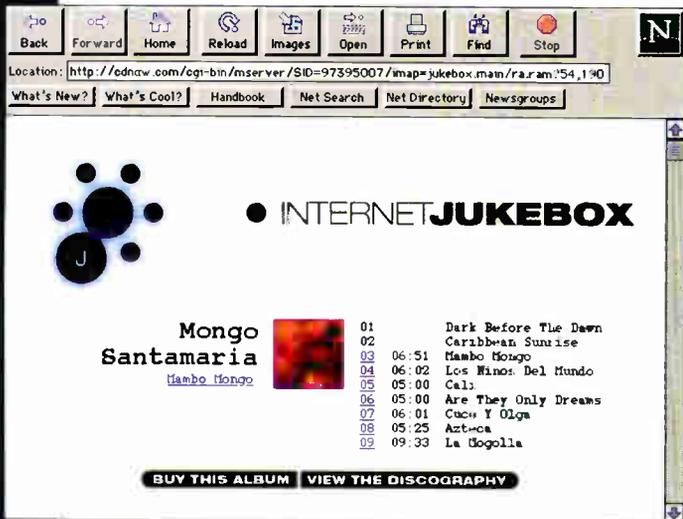
BY PHILIP DE LANCIE

During the last year or so, however, a number of enterprising companies have figured out ways to "stream" audio over the World Wide Web, meaning that users can listen to audio directly as it comes over the network to their computers, without the wait. These "real-time" audio technologies are sparking increasing interest for broadcasting (radio and special events programming over the Internet), Web-based multimedia (such as music that begins playing when you go to a given page) and interactive applications such as record company Web sites that allow users to sample song excerpts.

One of the newest offerings in the field comes from VocalTec (Northvale, N.J.), whose new I-Wave product complements its popular Internet Phone application. According to VocalTec, I-Wave's unique advantage is that, as a TCP/IP-based system, it uses existing Web servers rather than requiring the purchase and maintenance of a separate audio-on-demand server. VocalTec is a newcomer, however; RealAudio from Progressive Networks (Seattle, Wash.) has become the early leader in the field, and RealAudio servers are already in



The Tori Amos section of the Atlantic Records Web site features real-time audio playback using RealAudio 2.0.



CDnow's Internet Jukebox uses RealAudio to allow albums to be sampled online before purchase.

use on a number of record industry sites (see sidebar). While Progressive Networks has developed its own proprietary compression schemes for squeezing the audio over phone lines, competitor Xing Technology (Arroyo Grande, Calif.) has built on its expertise in software-based MPEG encoding/decoding for its StreamWorks system. To get a feel for what the systems do and how they work,

I spoke with Xing's founder and president, Howard Gordon, and with Phil Barrett, VP of software development at Progressive Networks.

**What exactly is the product, and what is it designed to do?**

**Phil Barrett:** The RealAudio system is a client-server application that allows for the delivery of streaming audio and multimedia on the Internet. That means that someone who wants to hear an audio clip over the Internet can simply click and the audio will start playing. Let's say you are surfing around the Net, and you find a page that has a RealAudio link in it. You click on that link, and the Web server hands information about that RealAudio clip to your Web browser, which then knows to launch the RealAudio player or, in the case of Netscape 2.0, talk to the RealAudio plug-in. A special URI [universal resource locator] is handed to the player, which then hands the information to the RealAudio server, which starts playing the clip. There is an internal buffer in the client memory that starts filling as the first "packets" of the audio data reach your machine from the server, and as soon as the buffer is full enough, the audio starts playing.

The first piece of the overall system is the RealAudio player, which is the software on the client machine. It can be used as a discrete player, but with RealAudio 2.0 we have also introduced support for Netscape plug-ins and for Macromedia ShockWave, as well as for synchronized multimedia and scalability. Further down the road, we will introduce support for Internet Explorer OCXs. These are all



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different ways of embedding the player technology into the Web pages. So instead of seeing the player, you may see a start button in one place and a volume control somewhere else. It allows the author of the page to integrate the individual components of the player's user interface into the overall look and feel of their page. The player is free, and while we may have a more full-featured player in the future that we charge for, we will always have a free player. We think that is super-important.

The next component is the RealAudio Server, which delivers the audio. It runs on UNIX, Windows NT and Macintosh platforms. We have a number of different price points. Our Personal Server, for people who are setting up personal sites, is \$99. It is currently in beta and runs on Windows and Macintosh machines. Then we have a 10-stream server that lists for \$1,495, and then we have 40- and 100-stream servers. The 100-stream server, which lets a hundred people listen simultaneously, is about \$10,000.

The third piece is the RealAudio encoder software, which is a file conversion utility that takes digital audio and turns it into RealAudio. The RealAudio encoder is free.

**Howard Gordon:** StreamWorks was originally designed as a live audio and video delivery system. The first commercial applications of it were with financial news programming for NBC and for Reuters over private data networks. We extended that live video functionality to support audio-only as well as video, and to add an on-demand component so it wasn't limited just to live feed, and also to support lower data rates, so that it could run over the Internet. MPEG 1 and 2 are the formats that we use for our compressed audio, so the client software is actually doing real-time MPEG decompression. MPEG unfortunately doesn't provide for really low data rates so we also have an MPEG derivative format for 8 kHz that uses the same kind of coding schemes.

The Internet side we launched officially in August and have been shipping since that time. The client software is basically provided under a personal evaluation license that we do not charge for. The live encoder and the server needed to set up as a live broadcaster is typically in the \$5,000 to \$10,000 range.

*What factors influence playback quality and scalability to different end-user platforms?*

**Barrett:** We currently have two levels

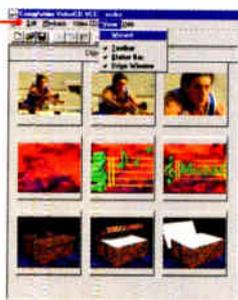
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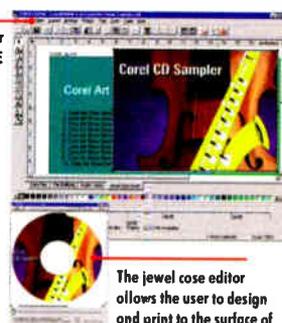
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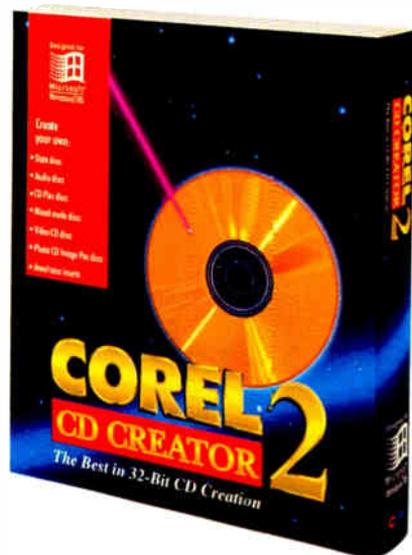
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of delivery, both based on proprietary compression schemes that we developed. We have what we call "near-FM" quality at 28,800 bps and what we call "voice quality" delivery at 14,400 bps. In general, lower bit rates cause you to have more artifacts. In fact, no compression scheme out there does really well at 14,400 for really complex signals. With a signal like a full orchestra, for instance, there are so many different frequencies and the signal is so complex that you have to throw away key information in order to get the bit rate down to where it will work with a 14,400 modem, and you wind up losing some quality. So for 14,400, we decided to focus on voice, and our algorithm does a good job of modeling the human voice.

Our 28,800 algorithm is designed to more faithfully reproduce a larger number of frequencies in the input signal, so we actually have fairly artifact-free reproduction. That is the product that we have currently released in beta version. One thing that differentiates our approach from our competitors is that our design allows new decoder algorithms to be plugged into the player, which will allow us to take advantage of advances in the state of the art.

We also support a concept called "bandwidth negotiation," where the player and the server say to each other, "What have you got and what is the best that we can deliver?" If you have both 14,400- and 28,800-encoded material on the server, the player will figure out which one it can play. If it is on a 28,800 connection, it will play the higher-quality one. The goal is to make it a completely simple experience for the end-user to click on a link and get the best possible quality.

**Gordon:** We are currently able to deliver over a very broad bit rate and quality range. If somebody has an ISDN connection, they can actually get a stereo 44.1kHz signal, which is better than FM and maybe approaching CD-quality. With MPEG, you can set the bit rate to whatever you want, anywhere from 16 kilobytes for mono all the way up to 384 kilobits for stereo. We tend to operate mostly in the 16- to 112-kilobit range, though we can certainly run at higher data rates.

There are two different ways that the system can scale delivery to the setup of individual clients. The server itself actually has the capability of taking a stream that originates at one bit rate and reducing its bit rate on-the-fly, but the server can also accommodate



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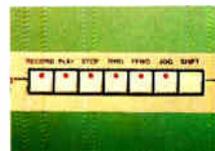
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different feeds, and a typical broadcaster may actually generate two or even three different feeds. One would be targeted at 14,400 modems, one at 28,800 modems and another for a higher data rate, like ISDN. So it is fairly typical that multiple bit rates are available at the same time off the server.

*To use the system, what does the end-user need in terms of player software, CPU power, available connection speed, etc.?*

**Barrett:** They need the player, which is available from our site and is also bundled with most Web browsers. The player works with all browsers, but the plug-in versions are designed specifically to work with either Netscape 2.0 or ShockWave. Once you install the RealAudio player, if you go to a site that has RealAudio, all you have to do is click and play. As far as the connection speed, you can pretty much rely on getting 14,400, and there are a lot of providers now that use 28,800. The 14,400 will work all the way down to high-end 386 PCs and broad-based Macintoshes. The 28,800 algorithm is a little bit more CPU-intensive at this point; we are fine-tuning it right now, which is a lot of what the beta program is all about. We will support all 486 DXs and Pentiums and a large percentage of the Macs, certainly all the PowerPCs.

**Gordon:** The client needs a PC, a Mac or one of a few different UNIX systems that has built-in sound or a sound card. They need the player software, which they would download from our Web

site or others. The installer for the player will correctly configure the client software as a "helper application" for the browser, which is software that gets launched by the browser to help with a certain data type. We are also bringing out a plug-in for Netscape 2.0.

There is a fairly broad range of CPU speeds over which the system will work: I have heard of our stuff being run on 386 PCs. Basically, the faster the CPU, the higher the fidelity and the greater the bandwidth of the feed that you can decode. Generally, as you get into Pentium and Power PC processors, you get full fidelity at all data rates. The lowest modem/connection speed you can use is 9,600 baud.

*What is the process of prepping the audio for delivery with the system?*

**Barrett:** You just do a File>Open, and then hit the encode button. Our new encoder for Windows—our Mac encoder will have similar features fairly soon—allows you to select your source, which may be a sound file in PCM, AIFF, Sound Designer, WAV and AU (UNIX) formats, or it may be a sound card so you can plug an audio source and start encoding in real time directly off the card, either to a file or directly to the RealAudio server, which is how you do broadcasting. So it is actually a very simple process.

On our Web site, we have some tips for getting the best possible playback quality. If you do some compression or EQ before encoding, you generally get better results. If there is excessive clipping in the audio, there will be pops.

Or if the level is too low, you will get bad results.

**Gordon:** We provide what is effectively a real-time transmitter that takes an analog input and puts out packets that are directed to the server and from there out to the clients. It captures at 16-bit PCM and then applies the various algorithms to do the conversion to MPEG. The output is configured for the target bit rate. The other way is to use our file converters, which take a prerecorded .WAV or other PCM file and convert it into one of the MPEG-encoded formats. We assume that the user has his or her own preparation or filtering software. It would not be unusual to do some kind of bandpass filtering in front of the encoding, especially when you get into the lower bit rates, to eliminate any kind of an aliasing artifact.

MPEG specifies the format of a stream so that an MPEG-compliant decoder can handle it, but it does not specify the encoding. There are a number of different psychoacoustic models that have been developed to do a more effective job in the coding, and we have been working at this for a really long time, and actually pioneered the use of software-based compression/decompression of audio as well as video, so we have a lot of experience. But other people's encoding tools may be used to generate the streams—as long as they are MPEG-compliant—that our server can provide to the clients.

*What does the Web site operator need to deliver the audio to the clients using your system?*

**Barrett:** We license by number of streams, so if somebody wants to deliver 500 streams, we sell them a 500-stream license, which obviously has a much better price point than five 100-stream licenses. They then have the right to put the RealAudio server software on as many machines as they need to get to the limit. The server software is very flexible. It may run on the same machines as the Web server. For instance, the Personal Server can serve up a couple of streams on a machine and you hardly notice when it is in use. But some of our large customers who are doing a large number of streams dedicate a bank of machines to serving RealAudio.

**Gordon:** Above and beyond the encoders or the file converters, you need our audio-video server software, which complements the Web server. It can coexist with the Web server on the same machine or be on a different machine. That is the software that will

## AUDIO-ON-DEMAND WEB SITES

A number of music-oriented sites using Progressive Networks' RealAudio system are either up and running or will be soon. To get the RealAudio player and find out more about the system, visit <http://www.RealAudio.com/>.

Among the RealAudio sites are: ABC RadioNet (<http://www.abcradionet.com>), Atlantic Records (<http://www.atlantic-records.com>), CDnow (<http://www.interjoke.com>), Elektra Records (<http://www.elektra.com>), InTouch (<http://www.worldwide-music.com>), MCA Records (<http://www.mca.com>), Warner Bros. Records (<http://www.wbr.com/>).

Xing Technology's StreamWorks has only been out for a few months, and its music-related use on the Internet thus far has mainly been for special events, including broadcast of the Grateful Web Party from the Fillmore Auditorium in December 1995. According to Xing, the system is also slated for use on the forthcoming Hollywood and Vine site from Capitol Records. To download the StreamWorks player and find out more about upcoming events: <http://www.xingtech.com>.

Further information about VocalTec's I-Wave may be obtained at <http://www.vocaltec.com>. ■

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take the prerecorded or the live streams and basically ship those out to the end-users. It can simultaneously provide the same stream at different points of play to multiple users. In live broadcast situations, the live audio encoder generates a stream of packets which goes to the audio-video server, which then goes out to the client or possibly to other servers which send it out to clients. The other situation is that there is a prerecorded file which gets converted and posted to the server, and then the client individually requests that stream. Those are the two simplest cases, but there are other variations. The server software can also do bit-rate reduction at the same time if required, so something recorded at one bit-rate can actually be recorded in real time to a lower rate.

*How will systems evolve over the next couple of years in terms of the relationship between quality and modem/connection speeds?*

**Barrett:** CPU speeds keep going up rather dramatically. For example, a huge number of Pentiums are being sold into the home. That brings up the median of the market, so in 18 months a much more CPU-intensive algorithm could be used that would provide higher quality at the same data bandwidth. That's why we allow for upgrades to the algorithms used for encoding/decoding.

**Gordon:** There are lots of different ways to bit-rate-reduce PCM, so who knows if we have reached the theoretical maximum. But we thought it was important to comply with existing standards, because we thought we would be able to more quickly build a user base and take advantage of some tools which already exist. And we can certainly continue to make improvements, whether it is in the preprocessing of the input signal or in the use of more sophisticated psychoacoustic models, or adopting different models for different types of sounds. So those are all possibilities which should allow us to achieve improvements, but we are basing everything on a standard format, and it is our intent to stay with that. We think the MPEG standard is very strong, and that the streams that it is producing are superior, at any given bit rate, to anything that has been done on a non-standard basis. ■

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

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## THE BBC'S TIME-HONORED RADIO DRAMA TRADITION



Left: Script conference during the recording of *The Alabama Belle*.

Clockwise from left: studio manager/mixer Tim Sturgeon, production assistant Liz Holt, director Celia De Wolff, studio guest Merelyn Davis and the play's author Pieter Rogers. Below: In the rear of Studio 6A the primary recorders used on *The Alabama Belle* are a vintage Telefunken M15A mastering deck and a bank of Studer A810 record/playback machines. Sound effects and other tracks are replayed from a bank of Studer D730 Compact Disc players.

Radio drama is, for most of us, a novelty. Long gone are the days when radio in this country carried a mixture of musical entertainment, comedy, current affairs and the occasional radio play. These days, tight advertising budgets and even tighter narrow-casting to audience demographics mean that very few stations are capable of finding space in a rigidly formatted schedule for any offerings that fall outside of the ratings formulas.

There are exceptions, of course. National Public Radio and its confederates are more open to producing the occasional drama, as are community-minded networks such as Pacifica Radio. Travel across the Atlantic to the United Kingdom, however, and you come across the type of radio that hasn't been heard on American shores for many years. In addition to its pair of all-music networks—Radio 1/Pop and Radio 2/Easy-listening—the British Broadcasting Corporation operates three other national services. Radio 3 carries a predominantly classical music flavor, with the occasional high-brow discussion program, opera and jazz. Radio 5 is an all-live service for sports fans, devotees of phone-in programs and



similar fare. The jewel in the BBC's crown, however, is Radio 4, which serves up a mixed diet of news, current affairs, arts discussions—and radio plays.

British listening audiences hold such high regard for drama that many of the country's best-known playwrights have written, and continue to write, for Radio 4. (Tom Stoppard, who began his professional life as a journalist, first presented many of his well-known theatrical plays in a radio version, including *In the Native State*, which

recently won critical acclaim in London's West End theater district as the retitled *Indian Ink*, with Felicity Kendall.)

### A PLAY A DAY

It's no exaggeration to say that the BBC's output of drama production is prodigious; a typical listening day of Radio 4 (and, to a lesser extent, Radio 3) will offer at least one short play, in addition to a 60- or 90-minute long-form production in the mid-afternoon or early evening. A typical week's programming might include as many as 30 hours of

BY MEL LAMBERT

—CONTINUED ON PAGE 252

## FACILITY SPOTLIGHTS

# LIVINGSTON RECORDING STUDIOS

## *Studio 2 Gets a New Console & a New Look*

London's Livingston Studios has been through thick and thin. The facility opened in the early '60s, when it mainly handled audio-book recording for the blind and a bit of folk music. In the '70s, it changed hands and locations and was rededicated to music recording, and by the mid-'80s, it was a four-room complex with a huge equipment investment and dozens of high-profile clients (The Who, R.E.M., Yaz, Pet Shop Boys, Enya, 10,000 Maniacs and others).

However, the '90s were not kind to many of Britain's music studios, and in 1993, Livingston appeared as though it might become a recession casualty: Though the complex continued to be a popular recording spot, the owners found that the onset of digital technology and surging interest rates had complicated their lives considerably; they decided to fold the business. But practically before the studio could close its doors, it was rescued by a new pair of owners: Livingston chief engineer Jerry Boys and



*Livingston's remodeled Studio 2*

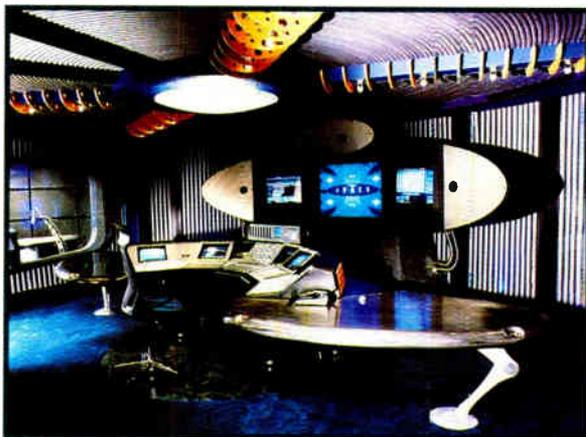
Dave Margereson, an artist manager who handled Supertramp during their most successful years and, more recently, Chris DeBurgh. Studios 3 and 4 remained closed permanently, but Studios 1 and 2 were down for only two weeks and then reopened. Today, just a couple of years after the facility nearly went under, Livingston is back on the plus side, and Boys and

—CONTINUED ON PAGE 72

## LONDON'S SPACE

Robbie Weston insists that he met an alien on Virgin Atlantic airlines, and the alien told him and his partner, Rick Dzendera, how to design their new post-production facility, Space, which opened for business last November. Promotional materials claim "...the passenger made the extraordinary suggestion of installing a facility within the remains of an abandoned alien spacecraft. He gave some clues as to the location of the spacecraft, but then mysteriously disappeared from the plane before it landed!" It sounds odd, of course, but don't be put off by the gimmickry. Space is the third successful post house for this pair (they also run Silk Sound and The Bridge), and as much—if not more—care went into the ergonomics of this studio as went into its Star Trek-like style.

The facility design was a collaboration between Weston, technical director Dzendera, London architectural firm Morgan Lovell, designer Steve Kennedy (who designed The Bridge) and furniture designer Guy Wilson. "Guy worked very closely with Steve to get everything to perform properly,"



*Cabin 1 at Space*

Weston says, "and he came up with some really interesting furniture concepts. A lot of Fiberglass, rubber, all sorts of interesting materials. We want-

—CONTINUED ON PAGE 74

BY BARBARA SCHULTZ

## INTERNATIONAL UPDATE

—FROM PAGE 69, LIVINGSTON RECORDING

Margereson have completed an impressive redesign of Studio 2.

Boys, whose background includes years at Abbey Road and Olympic Studios, as well as 14 years at Livingston, says he had often dreamed about redesigning Studio 2, but he and Margereson didn't actually start out to change the recording area. Their first thought was just to replace the old Amek Angela console. They shopped the mid-priced market, looking at used Neves and SSLs, as well as new boards in their price range, and settled on the Amek Rembrandt—the first one to be installed in the the UK. "I've always liked the sound of the Ameks," says Boys, "although I'd often found them sort of fiddle-y to use—too many switches to do things. But the Rembrandt has broken the mold completely. It's so simple to use, it's a joy, and it still sounds great. Very similar EQs to the Angela, and more modern mic amps. There's recall and their onboard dynamics system, which we wanted. It's a 40-channel console that becomes 80-channel fully automated, which is a big

console with a very small footprint. That's important, because it's not an enormous control room."

The new board was scheduled to be delivered in October, and studio designers/builders KFA were retained to handle the installation plus whatever minor refitting needed to be done in the room. Boys says that KFA was just about to start their work when Margereson began to talk about doing more. "He said to me, 'Well what about the studio area?' and I said, 'Well, we weren't going to do anything, because we didn't want to spend any more money.' So, he said, 'What would it cost to do something with the studio area,' and I said, 'Give me 24 hours.'"

After consulting with KFA's Mick Fitzgerald, Boys determined that a huge overhaul would be necessary to improve Studio 2 in what he considered a meaningful way. "It was a very old design," he says, "with lots of big traps that took up a lot of floor area, and quite a low ceiling, with not much of a live room. I went back to my partner and said, 'It's going to cost probably £30,000,' and he took a small gulp, because this was three-times the budget that we'd had in mind for building. But

he said, 'Well, I'd like to do it.' So I took a big gulp, because normally you plan these things well in advance."

By working closely and designing as they went, Boys and Fitzgerald managed to accomplish the renovations in only a few weeks more than they'd originally booked out for the console refit. The redesigned recording area has been split into three areas: a large live room and two additional isolated recording areas, one of which includes a small vocal booth. Double-glazed sliding glass doors divide the spaces from each other. A private lounge was also installed, making Studio 2 more comfortable and self-contained.

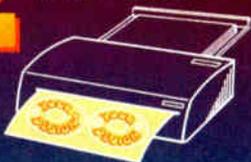
In the control room, Boys says, the new Rembrandt is working out well. At press time, two projects had already been done on it: basic tracks for a new Amii Stewart album, and a collection of show songs by *Phantom of the Opera* star Peter Karrie. And some other equipment upgrades have been made. An Otari MTR-90 was acquired, and new outboard gear includes a Lexicon PCM80, an old Lexicon 200 and some vintage items that Boys says "float around between the two studios": a rack of Massenburg preamps and a pair of

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## INTERNATIONAL UPDATE

Neve 2254 compressors. Control room 2 is also equipped with Eastlake TM3, Yamaha NS-10M and Auratone monitors, powered by Crown amps, a Sony JH-24 recorder, additional outboard gear from Yamaha, Alesis, Lexicon and Roland, and MIDI gear from Atari and Akai. There's also a large selection of microphones from Neumann, AKG, Sennheiser, Shure, Beyer, Microtech Gefell, EV and STC, and a Bechstein grand piano. It's certainly not a gear list to apologize for, but Boys says, "Obviously, Studio 2 is designed to be cheaper than Studio 1, so we avoided some of

the more expensive, esoteric outboard gear to try to keep the difference."

The refurbishments in Studio 2 affected work in Studio 1 to a small degree, so Boys doled out a few bottles of wine to keep everyone happy, but for the most part, he says, the renovations went very smoothly and quietly. They must have, because he doesn't have the never-again attitude most people have after living under construction for a few months. He says he'd like to upgrade Studio 1 at some point, as well. This room comprises a 45x30 live room and a separate dead area and vocal booth. The console is an automated 48-channel SSL 4056 G with Total Recall and

Black Knob EQ. There are also Eastlake, Yamaha and Auratone monitors, two Otari MTR-90II recorders, a wide range of outboard gear, MIDI gear, mics and effects, and a Yamaha grand.

Currently, Livingston is undertaking another sort of expansion, but this time in keeping with '90s economics: Margereson is starting his own label, which will funnel work into the studio. "It's good for us, because I think nowadays you have to be involved with some form of production," he says. "Dave's already got two or three acts signed that we'll record, and we're really excited by it. It's good stuff." Livingston's other recent clients include George Michael, Everything But the Girl, Bjork, Maxi Priest and Bad Company. ■

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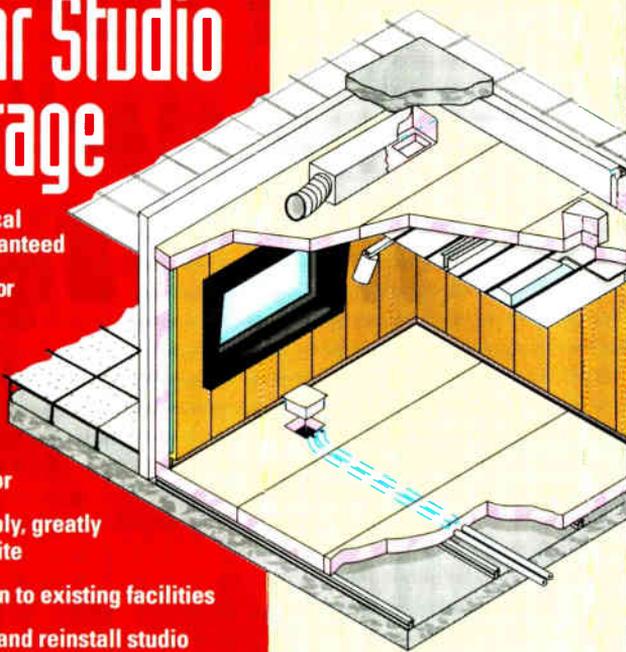
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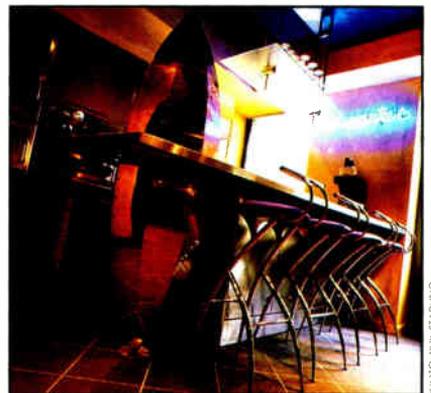
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## INTERNATIONAL UPDATE

the front balances it correctly, and the people at the back say, 'No, it's too loud at the back, we want more at the front,' and then, 'No, it's too much at the front, we want more in the back.' So we've tried to arrange it in a much more kind of horizontal line."

Space, like Weston and Dzendzera's other studios, offers a full in-house engineering staff. "We find clients come back to us to work with their favorite engineer," Weston says. "And with the level of equipment at Space—it's the first SSL installation in the UK to use DiskTrack technology—learning the



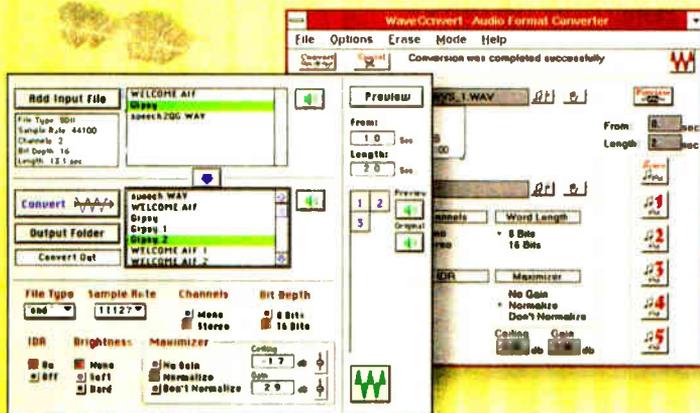
Bamonte's Bar at Space

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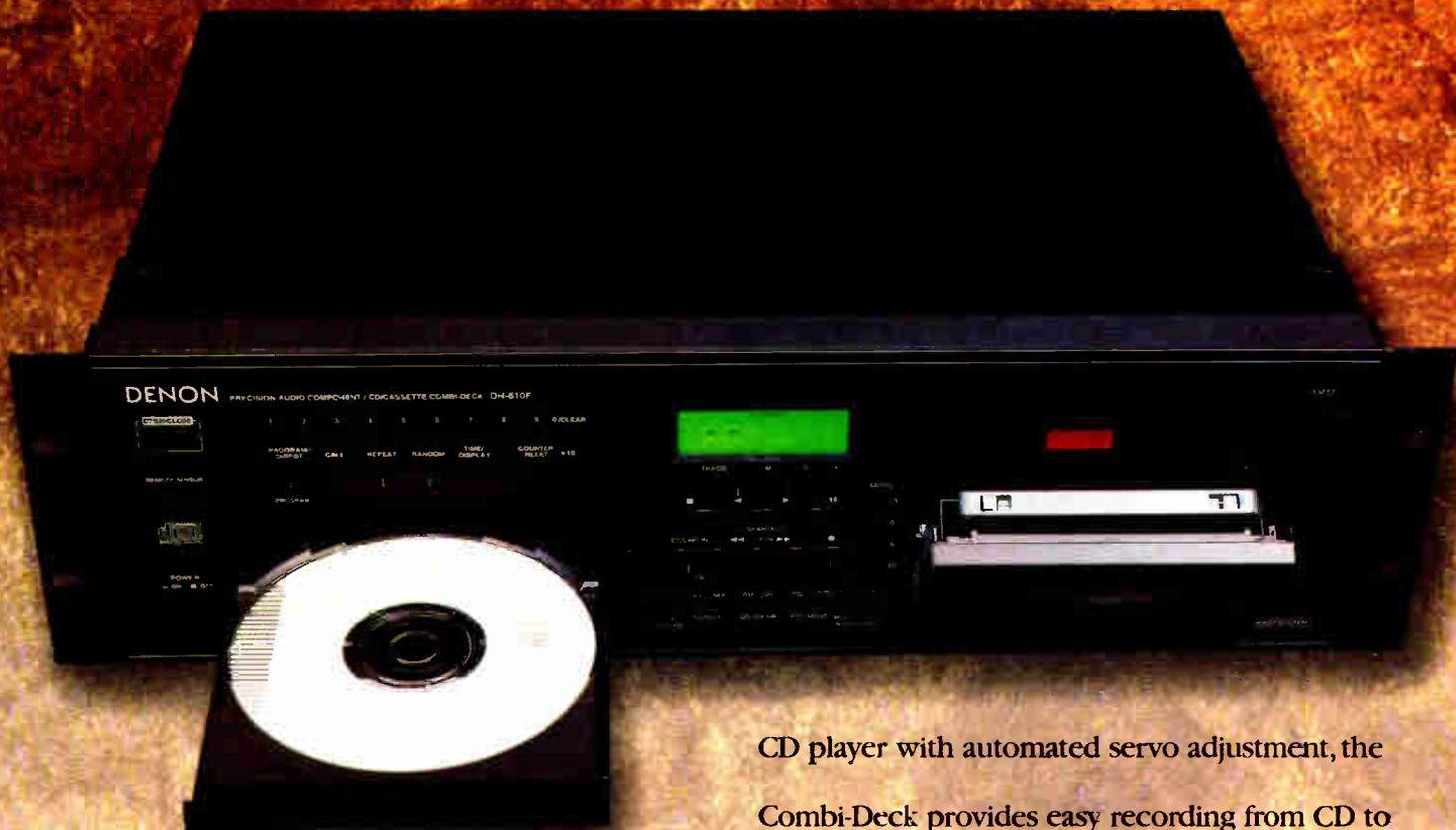


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system requires a three- or four-week training program, because it's so powerful. Once you've learned it, you think, 'Wow, this is magic,' but a freelance engineer wouldn't know what to do. Also, all of our sound effects on CD are all on jukeboxes managed by software that is on the PC that is built into the console...there are so many things to learn." Weston says he's also been proud to be able to promote from within his triad of studios. Two of the five engineers on staff at Space moved over from Silk Sound, which meant that two seconds at Silk could move up.

In addition to the four Omnimix systems, Space has Sony DVW 500P, BVW 75 and UVW 1800P Betacam, two Tascam DA-88s, eight Neumann U87 mics, two Mackie LM3024 mixers, two Dolby SDU4 surround sound decoders and two SEU4 encoders, and a complement of gear from Akai, Denon, E-mu, Pro-Bel, Quad, Lexicon, Kurzweil, TC Electronic and others. Weston notes that the facility has also recently been making use of its ISDN capabilities to link up with voice talent in U.S. studios. Recent projects include advertising work for Saatchi & Saatchi, Leo Burnett and the English National Lottery, and a BBC documentary.

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- Proper gain settings are facilitated by proper gain labeling along with center-click detents on the faders, clearly understandable input trim controls and output meters that read channel levels in solo mode. With properly set levels you achieve very high headroom and low noise at the same time.
- EFFECTS SEND WITH GAIN**
- Unusual circuit design that provides two different "zones" that reflect real world use. Send from each channel can vary in level from off to full gain, which is the normal range of effects sends in other mixers. Since you also get another whole zone from the center detent to +15 dB of gain, the channel fader can be pulled down and the effects send can be boosted above unity when more effect is needed.



- Master section includes two stereo aux returns, a separate headphone level control, mixing and two stereo aux returns.
  - Line inputs and outputs are designed to work with any line level from instrument level to semi-pro 10dBu to professional +4dB.
- HEAVY DUTY CONSTRUCTION**
- Designed for non-stop, 24-hour-a-day professional duty in permanent PA applications, TV and radio station, etc.
  - Sealed rotary controls in sealed open frame phenolic potentiometers that suffer from dust and contamination.
  - Has steel chassis, rugged fibreglass circuit boards and a built-in power supply. Also has exceptional RF protection.
- MULTIPLE APPLICATIONS**
- Ideal "entry level" mixer for those just starting a MIDI suite.
  - Ideal as headphone or cue mixer, level matching pro audio "tool kit" drum or effects sends submixer, 8-track monitor mixer.



- INTELLIGENT EQ POINTS**
- Low frequency EQ is 31 80 Hz where it has more depth and less hollow midbass. Bank Midrange is centered at 2.5 KHz, providing for more control of vocal and instrumental harmonics. A specially-shaped HF curve that shelves at 12 KHz creates more sizzle and less aural fatigue.
- REAL MIC PREAMPS**
- The CR-1604 has genuine studio-grade phantom powered balanced input mic preamps on channels 1 through 6. All CR-1604 (and XLR10) discrete input mic preamp stages incorporate four conjugate pair, large-emitter geometry transistors just like the big mixers use. So when recording natural sound effects to heavy metal or mixing flutes or kick drums, you get the quietest, cleanest results possible.
- BUILT TO LAST**
- The CR-1604 is designed for non-stop, 24-hour-a-day professional duty—even for tours that log 100,000 miles in three months. It has sealed rotary pot-wipers that are resistant to airborne contamination like dust, smoke, liquids and even the oxidizing effects of air itself.

**Optional Accessories**  
OTTO-1604  
Add sophisticated computer-controlled automation to your CR-1604. When connected to the MIDI port of your computer (PC, Mac, Amiga or Atari) each one of the 16 input channels can be programmed to change gain or to mute, just as you would program a sequencer. Master levels can be programmed as well, along with all standard channels.  
**XLR 8D**  
While the CR-1604 comes with 6 high performance mic inputs, there are times when you need more. Enter the XLR10. This simple-to-install accessory adds 10 more (for a total of 16) mic inputs, with the same quality, performance and features as those in the CR-1604.

## ALESIS Monitor One Near Field Studio Reference Monitor

Designed by engineers with decades of experience, the award winning Monitor One provides the last critical link in the recording studio's signal chain, giving you an accurate reproduction of what is being recorded.

- Delivers excellent image and transient reproduction, powerful bass, and smooth, extended high frequency detail.
- Exclusive SuperPort speaker venting technology eliminates the "choking" effect of port turbulence for solid high-power bass transients and extended low frequency response.
- Ferrofluid cooled 1" silk-dome driver eliminates the harshness and ear fatigue associated with metal or plastic tweeters, making it easy to mix on for extended periods.
- Monitor One's powerful bass incorporates a proprietary 6.5" low frequency driver with a mineral-filled polypropylene cone and a 1.5" voice coil wound on a high temperature Kapton former.
- They come in a mirror-image left/right pair covered with a non-slip rubber textured laminate for stable mounting.

## Monitor Two Mid Field Studio Reference Monitor

With much of today's popular music demanding more bass at louder volumes than a small near field monitor can possibly provide—the Monitor Two delivers—at a price no higher than many of these smaller speakers.

- Utilizes a 10" three way speaker design with a unique asymmetrical crossover to maintain the same accurate tonal balance and imaging of the Monitor One—but with a much larger sound field.
- 10" low frequency driver incorporates Alesis SuperPort speaker technology to provide powerful, extended bass.
- 5" mid frequency driver offers exceptional mid frequency detail.
- 1" silk dome high frequency driver delivers a broad but natural frequency response from 30Hz to 18kHz.
- Covered in a non-slip rubber finish, the Monitor Two comes in a mirror imaged pair for mixing accuracy.



## SHURE M267 Microphone Mixer

An industry standard, the M267 is a microphone mixer/remixer amplifier specifically designed for professional applications. A complete and compact console, the M267's excellent performance, versatility and features make it ideal for studio, remote and sound reinforcement applications as well as an add-on mixer for expanding existing facilities.

- Four switchable XLR-balanced mic or line level inputs with individual gain controls and low-frequency rolloff switches.
- XLR-balanced output switchable for mic or line level.
- Wide flat frequency response (30Hz to 20kHz) and extremely low distortion up to +18dB output.
- Feedback-type input gain controls for maximum clipping levels and dynamic range.
- Built-in switchable peak limiter cuts output overload distortion and adapts to power supply voltage.
- Externally adjustable limiter threshold (-4 to +18dB).
- VU meter is calibrated for +4 and +8dB with range switch. Meter is also illuminated during AC operation.
- Phantom power for condenser microphone operation.
- Front-panel headphone level control and monitor jack can drive almost any stereo or mono headphones.
- Headphone output level is high enough so you can use it as an auxiliary unbalanced line feed to drive a tape recorder or power amplifier.
- Automatic muting prevents speaker damage during turn-on and turn-off.
- Highly stable, low-distortion tone oscillator provides for line test and level checks.
- Rear panel Mix Bus jack facilitates stacking multiple M267's for additional input capability without losing any inputs. Two M267's connected, provides two independent master gain controls & two isolated line amplifiers with eight individually controlled inputs.
- Internally selectable 120 or 240 volt AC operation as well as portable DC capability (three 9v batteries required).

## M367 Microphone Mixer

Built to meet the requirements of the most demanding field production applications, the M367 incorporates all the features of the legendary M267 plus much more. The M367 is a six-input portable mic mixer designed for ENG and EFP applications as well as general audio mixing. With its exceptionally low-noise design, the M367 is also ideal for use with digital transmission links and digital video/audio recording media. All the features of the M267 Plus—

- Low-noise circuit makes it 25dB quieter than the M267 and ideal for digital formats.
- Six XLR-balanced switchable mic/line inputs.
- Two XLR-balanced outputs, one selectable mic/line output and one dedicated line output.
- Metal XLR connectors on both inputs and outputs (inputs only on the M267).
- 48v or 12v phantom power for condenser microphones.



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**SENNHEISER**  
RF CONDENSER MICROPHONES

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



**MKH 20 P48U3 Omnidirectional**  
Low distortion push-pull element transformerless RF condenser. High frequency response, diffuse near-field response switch (6 dB boost at 10 KHz), switchable 10 dB pad to prevent overmodulation. Handles 142 dB SPL. High output level. Ideal for concert. Mid-Side (M-S) acoustic strings brass and wind instrument recording.

**MKH 40 P48U3 Cardioid**  
Highly versatile, low distortion push-pull element, transformerless RF condenser, high output level, transparent response, switchable proximity equalization (-4 dB at 50 Hz) and pre-attenuation of 10 dB to prevent overmodulation. In vocal applications excellent results have been achieved with the use of a pop screen. Recommended for most situations, including digital recording, overdubbing vocals, percussive sound, acoustic guitars, piano bass and string instruments. Mid-Side (M-S) stereo and conventional X-Y stereo.

**MKH 60 P48U3 Short Shotgun**  
Short interference tube RF condenser, lightweight metal alloy, transformerless, low noise, symmetrical capsule design, smooth off-axis frequency response, switchable low cut filter (-5 dB at 100 Hz), high frequency boost (+5 dB at 10 KHz) and 10 dB attenuation. Handles extremely high SPL (135 dB) ideal for broadcasting, film, video, sports recording, interviewing in crowded or noisy environments. Excellent for studio voiceovers.

**MKH 70 P48U3 Shotgun**  
Extremely lightweight RF condenser rugged long shotgun low distortion push-pull element, transformerless, low noise, switchable presence (+5 dB at 10 KHz), low cut filter (-5 dB at 50 Hz) and 10 dB preattenuation. Handles 133 dB SPL with excellent sensitivity and high output level. Ideal for video/film studios, theater, sporting events, and nature recordings.

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**Symetrix**

**Signal Processing Products**  
601 Digital Voice Processor

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

**488 Dyna-Squeeze**  
8-Channel Compressor/Interface

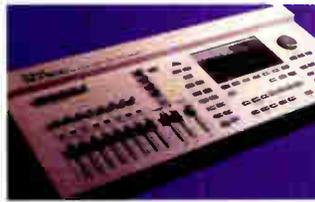
- Can easily increase average recording levels on your digital or analog tape recorder by 10dB with no side effects.
- Tracks processed by Dyna-Squeeze have presence and increased articulation. Subtle sounds become more up front.
- Many professional mixing consoles have output levels that are much hotter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

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**Roland**

**DM-800**  
Digital Audio Workstation

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



**TASCAM**  
**DA-88 Digital Multi-Track Recorder**

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

- The ATF system ensures that there will be no tracking errors or loss of synchronization. The DA-88 doesn't even have (or need) a tracking adjustment. All eight tracks of audio are perfectly synchronized. What's more, this system guarantees perfect tracking and synchronization between all audio tracks on all cascaded decks - whether you have one deck or sixteen (up to 128 tracks!).
- Incoming audio is digitized by the on-board 16-bit D/A at either 44.1 or 48KHz (user selectable). The frequency response is flat from 20Hz to 20KHz while the dynamic range exceeds 92dB. As you would expect from a CD-quality recorder, the wow and flutter is immeasurable.



- One of the best features of the DA-88 is the ability to execute seamless Punch-ins and Punch-outs. This feature offers programmable digital crossfades, as well as the ability to insert new material accurately into tight spots. You can even delay individual tracks whenever you want to generate special effects or compensate for poor timing. All of this can be performed easily on a deck that is simple and intuitive to use.

**Fostex RD-8 Multi-Track Recorder**

Fostex has long been a leader in synchronization, and the RD-8 redefines that commitment. With its built-in SMPTE / EBU reader-generator, the RD-8 records at either 44.1 or 48KHz and will perform Pull-Up and Pull-Down functions for film video transfers. The Track Slip feature helps maintain perfect sound-to-picture sync and the 8-Channel Optical Digital Interface keeps you in the digital domain. All of this contributes to the superb sound quality of the RD-8. The audio itself is processed by 16-bit digital-to-analog (D/A) converters at either 44.1 or 48KHz (user selectable) sampling rates, with 64X oversampling. Playback is accomplished with 18 bit analog-to-digital (A/D) and 64X oversampling, thus delivering CD-quality audio.



- The S-VHS transport in the RD-8 was selected because of its proven reliability, rugged construction and superb tape handling capabilities. Eight tracks on S-VHS tape allow much wider track widths than is possible on other digital tape recording formats.
- With its LCD and 10 digit display panel, the RD-8 is remarkably easy to control. You can readily access 100 locate points, and cross-tape time is fully controllable in machine to machine editing. Table of Contents data can be recorded on tape. When the next session begins, whether on your RD-8 or another, you just load the set up information from your tape and begin working. Since the RD-8 is fully ADAT compliant, your machine can play tapes made on other compatible machines, and can be controlled by other manufacturers ADAT controllers. Your tapes will also be playable on any other ADAT deck.

**ALESIS adat xt**

**8-Track Digital Audio Recorder**

An incredibly affordable tool, the new ADAT-XI sets the standard in modular digital multitrack recording. With new features & enhanced capabilities, the ADAT-XI operates up to four times faster than the original ADAT, offers an intelligent software-controlled tape transport and provides onboard digital editing and flexible autolocation.



**Stunning Audio:**

- Indicates the latest ultra-high fidelity 18-bit, 128 times oversampling analog-to-digital converters which provide better-than-CD audio quality.
- For outputs, the digital-to-analog converters provide 20-bit, 6x oversampling performance for a flatter frequency spectrum, improved phase response & much less low-amplitude distortion.
- Frequency response is 20 Hz to 20KHz  $\pm$  0.5dB, signal-to-noise ratio is greater than 92dB, crosstalk between channels is better than -90dB at 1KHz and wow-and-flutter is immeasurable.
- **Intelligent Transport:**
  - Rewinds and fast-forwards up to four times faster than the original ADAT.
  - Advanced transport software continuously monitors autolocation performance and the head constantly reads ADAT's built-in sample-accurate time code—even in fast wind modes.
  - Newly developed Dynamic Braking software allows the transport to quickly wind to locate points while taking every precaution to treat the tape gently.
- **Make flawless copy/paste digital edits between machines or even within a single unit.** A New Track Copy feature allows you to make a digital clone of any track (or group of tracks) and copy it to any other track (or group) on the same recorder. This allows you to assemble composite tracks for digital editing. For example, record six takes of a guitar solo on separate tracks; then choose the best selections from each track and digitally build a single new track.
- Use two or more ADAT-XIs and the Tape Offset feature lets you copy and paste not only from track to track, but from location to location. Tape Offset assembles the elements of a project with a minimum of repetitive over dubbing. It changes the relative tape position of a slave XT to its master so you can "fly" audio to different locations on each tape. For example, you can create the perfect vocal harmony for your song's chorus on tracks 7 and 8, then copy those tracks (with 1/100th of a second accuracy) to the next two choruses on tracks 15 & 16.
- **Track Delay feature** allows you to delay the time reference of a track by up to 170ms. With Track Delay, you can easily change the groove of a tune. Track Delay is individually adjustable on each channel and is excellent for fixing slight timing errors in recorded tracks (player lags behind or rushes the beat). In recordings with multiple microphones, you can time-align each track, precisely compensating for the spacing between mics with accuracy to 0.0001 seconds.

**Onboard Autolocator with Auto Record:**

- Onboard 10-point autolocator system provides quick access to multiple tape locations. Four specialized locate points are tailored to make your recording sessions quicker and easier.
- Auto Play automatically enters Play the moment any autolocation point is read. Auto Return automatically rewinds at the end of a loop.
- Auto Record function lets you automate punch-in/punch-out times that are accurate to 1/100th of a second.
- Rehear & Mode allows you to enter or exit record modes without actually laying tracks to tape.
- To record on the fly, you can even use the individual Record Enable buttons to punch in and out of tracks.
- Includes its own remote control with transport and locate functions - and offers a footswitch jack for hands-free punch-in.

**Flexible Inputs and Outputs:**

- Servo-balanced 56-pin LC90 connector operates at +4dB for interfacing with consoles which offer +4 balanced or unbalanced inputs or outputs.
- Also includes unbalanced -10dB inputs and outputs on phono connectors.
- Has an electronic patchbay built-in so it can be used with stereo and 4-bus consoles.
- Multiple Optical Digital I/O can carry up to eight tracks at once completely in the digital domain. The digital I/O is combined with the ADAT Synchronization interface make it completely compatible with any ADAT-format recorder or other devices that use Alesis' proprietary digital protocol.

**Optional Accessories:**

- BRC Master Remote Control lets you command up to 128 tracks from a single location, with 460 nameplate locate points. SMPTE & MIDI synchronization & extensive digital editing power.
- AI-1 Digital Interface offers sample rate and digital format conversion between the ADAT-XI's Optical Digital Interface and AES/EBU and S/PDIF formats.
- AI-2 Synchronization interface allows synchronization to video and film. The AI-2 offers compatibility with video recorders and editing systems (including TimeLine's Lynx-2 system) and can issue MIDI Time Code and translate MIDI Machine Control commands to the ADAT-XI.

**TASCAM**

**DA-P1**  
Portable DAT Recorder

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



**SONY**

**TCD-D7**  
DAT Walkman Player/Recorder

- Long Play (LP) mode allows up to 4 hours of record/playback of 12-bit audio on a single DAT cassette.
- Equipped with digital coaxial and optical input connectors. Maintains the highest signal purity for recording and playback of digital sources with all information retained in the digital domain.
- Also has analog Mic and Line inputs for recording from analog sources without external adapters.
- High-speed Automatic Music Sensor (AMS) search function finds and plays tracks, skips forward or back up to 99 tracks, all at 100x normal speed.
- Has a Digital Volume Limiter System (DVS) that increases listening comfort and sound quality by automatically adjusting for sudden level changes of the recording. It also helps prevent sound leaks through headphones.
- Two-speed cue-review lets you hear sound while player is in fast-wind modes, up to 30x or 20x normal speed.
- Compact and portable, it has an anti-shock mechanism that permits accurate recording and playback even while in motion.
- LCD display with backlit windows clearly shows recording level, track number, operating status and 4-segment battery indicator, even in low ambient light conditions.
- Optional RM-D3K System Adapter Kit for complete digital interface. The kit is equipped with the input/output connectors for both the optical cable and the coaxial cable. Therefore you can use it as a relay between the TCD-D7 and other digital equipment. Also includes a wireless remote control.



**TCD-D10 PRO II**  
Portable DAT Recorder

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



# PHIL MANZANERA

**GUITARIST/PRODUCER/SONGWRITER/STUDIO OWNER**

We should all have the same good fortune as Phil Manzanera. Over the course of nearly a quarter-century in the music business, he has managed to sculpt a career that has taken him to great commercial heights through his long tenure as Roxy Music's inspirational lead guitarist, occasional songwriter and principal musical foil for Bryan Ferry's stately vocal musings. At the same time, he's managed to travel down any number of other, even more singular musical paths, working at various times on projects with his one-time Roxy bandmate Brian Eno, ex-Velvets Nico and John Cale, ex-Soft Machine leader Robert Wyatt, Asia's John Wetton, Tim Finn, Pink Floyd's David Gilmour and many others. Additionally, he's put out several fine solo albums, of which *Primitive Guitars* is probably the best known.

But wait, there's more! In 1979, he conspired with 10cc's Kevin Godley and Lol Creme to build Gallery Studios in an 18th-century coachhouse on 14 picturesque acres of Surrey, England, countryside. It was there, on a Trident 80 board and Ampex 1200, that Roxy's last studio album, the incomparably sleek *Aralon*, was recorded, and many other artists, most of them friends of Manzanera's, have come through its doors since. More recently, Gallery added a mix room, equipped with a Euphonix CS-2000, 32 tracks of Alesis ADAT with BRC, and scads of outboard gear.

With Roxy inactive for the last couple of years (it's been an on-again, off-again proposition for some time), Manzanera has found even more time for production, and it's in this area that he's carved



PHOTO: MARTIN & ELDERS

himself a most interesting niche—he's overseen many best-selling albums by musicians from Spain, Mexico and South America. This is not as strange as it may appear: Manzanera was born to a Colombian mother (and an English father), and parts of his youth were spent in Cuba, Venezuela and Colombia; indeed, the first songs he learned on the guitar were Cuban folk songs. He got his first electric guitar at the age of 8 when he lived in Venezuela. Manzanera's early Latin experience has served him well and crept into his playing at different points throughout his career, but his approach to the guitar has been shaped by so many different styles and musical schools—The Beatles, Zappa, Eno,

Velvet Underground, you name it—he's very difficult to pigeonhole. I've always viewed him as one of the instrument's great chameleons, able to shift the colors of his music to each musical situation. He can play loud, angular, complex, decidedly modern lines on one song, and then simple, highly wispy, melodic phrases on the next.

Last summer, Caroline Records put out an excellent two-CD anthology of Manzanera's work called *The Manzanera Collection*, which culls tracks from throughout his career. Roxy tunes are juxtaposed with tracks from the great (but short-lived) 801, Nico, John Cale, Wetton/Manzanera, Tim Finn, the Guitar Legends '91 tour and even a few of his Latin productions. It's an amazing 140 minutes of music, stylistically all over the map, but with Manzanera's always-intriguing guitar

work acting as the colorful thread that holds the patchwork together.

I caught up with this warm and articulate Englishman/citizen of the world last summer by phone from Gallery Studios.

*What made this the right time to put out an anthology of your work? Are you at some point in your work where you're both looking back and looking ahead?*

Yes, that's true, but what happened in point of fact is that I bumped into a guy at Virgin who said they were doing this [anthology] series, and would I be interested in putting something together. What appealed to me is they said, "You don't have to just do things from your solo albums. Pick from anywhere and we'll license it for you." So it was a labor of love, really.

BY BLAIR JACKSON

When you're given that kind of freedom, you have to put it in some kind of order—How the hell am I going to choose? So I decided it should be the musical equivalent of an autobiography, but not in true chronological order. But something that covered all aspects of my career to date. So it's me as guitarist, writer and producer. It's a nice way of saying, "This is what I've done up till now."

**You have so much to choose from. How did you make the first cut of material?**

It was very difficult, because musically I wanted there to be some continuity, and as you say, there is a lot to choose from. But when I started putting songs together, I found you could match something together from *801 Live* with something more recent. There is a continuity. I also wanted to have a place to put on some tracks that many people might not have heard before, so we have songs from the Guitar Legends tour and a few others. We put "The Fat Lady" ["Fat Lady of Limbourg"] on there

because it wasn't on the *801 Live* record, and it was a good opportunity for people who liked that record to hear some more. So I got out the tapes and I managed to transfer it straight from analog to ADAT in one go. And I did some remixing on that.

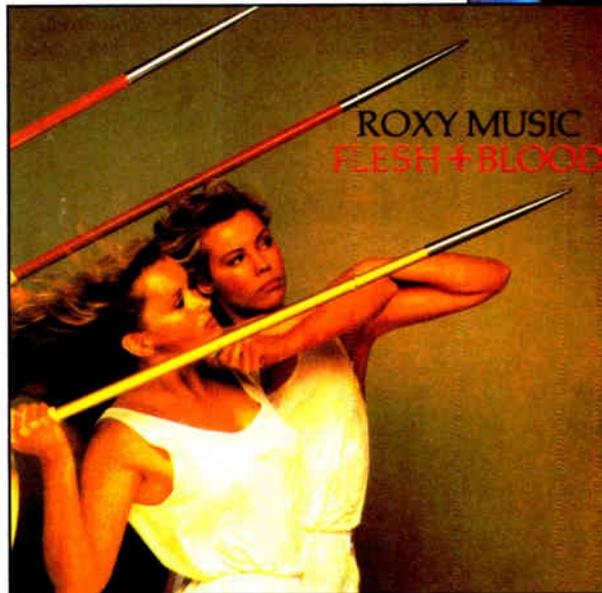
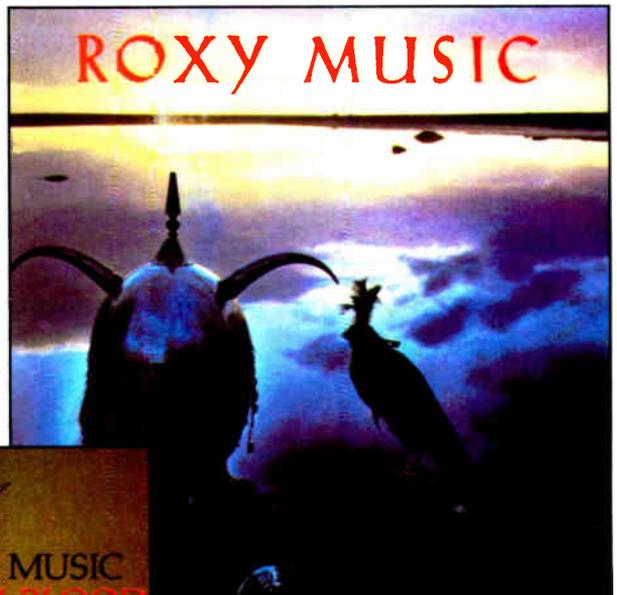
**Did you do a lot of that on this record?**

No. Most of the other tracks were just EQ'd. The whole thing was put through the Euphonix desk in one of my rooms and EQ'd, but not a lot apart from that.

**When you look over this disc and it jumps around to different eras, what sort of continuity do you hear in it? What connects Nico's version of "The End" with Tim Finn's "Charlie," for instance?**

Well, that's a difficult one to answer, really. I suppose it's my guitar playing mainly. The reason I chose "The End" was I wanted there to be something I did with Nico on there. John Cale produced that, and it was an interesting period for me, working with John Cale, working with Eno, working with Nico. There are a lot of 25-year-olds who never heard Nico, and don't know she was one of the first of the character-

singers. She actually had a very beautiful quality to her voice. What I really love about that track is at the very end, when we all come in and it's finished being very musical and arty-farty and stuff and we all start playing again, it sounds like a scene from some late '60s psychedelic B-movie. It has a wonderfully nostalgic sound to



it, although it was recorded in the '70s. I found it very endearing.

The reason for choosing "Charlie" with Tim is that I have all sorts of tracks on there that have been super-produced, no expense spared, mixed at the Power Station with Bob Clearmountain in New York, and then "Charlie" is a track recorded on a DAT with just one guitar and a guy with an acoustic guitar and singing, recorded live at the Borderline club after about five minutes of rehearsal. And to me it sounds as good as something that had tons of money spent on it. Part of what I'm trying to do is move people, and this is saying, "You don't have to spend a lot of money to do that. If the quality of the performance is great and the words mean something, that's what you need."

**When did you first get the recording bug?**

Right from the very beginning, really. When I joined Roxy in 1972, I already had a Revox tape recorder and so did Eno, and we were very much involved with sort of messing around with recording and trying different techniques. You could get the recorders

modified here with ADT and sel-sync and all sorts of things, and eventually we started using them onstage with D'Amard pedals controlling the speed of the motors and things like that, and it became a very integral part of what we were doing.

**Where were you getting your ideas of how to use tape? Were you studying Varèse and people who had done tape treatments or were you just messing around?**

I hadn't really studied anything like that, but I certainly was very aware of systems music and musique concrète and electronic music and so, obviously, was Brian Eno. Also, there's a great tradition in England of what they call a Heath Robinson approach. [Robinson might be considered England's Rube Goldberg.] You see, before all these incredible electronic gadgets were invented that you could buy off the shelf, you sort of had to do it for yourself, which was also part of the tradition of avant-garde and experimental music. You stuck screws in pianos and cut up tape. "We want something different—let's try putting sticky tape on a capstan and see what happens and then put a delay on it." So we created a thing called "butterfly echo," which we used a lot in the early Roxy days, and it was all done by what we considered to be in the tradition of Heath Robinson—do it yourself.

And of course everyone was influenced by the experiments of The Beatles and George Martin at Abbey Road. One would read about it and eventually we worked with Chris Thomas, who had worked with George Martin. There was also this guy called Ron Geesin, who had worked with the Pink Floyd and again, the Floyd were part of that

whole tradition of experimenting with sound—putting clocks in and sound effects and all. Basically, what happened in the '60s was all the barriers came down. Everything was allowed, so you could take anything from anywhere.

*Is it fair to say, then, that Roxy was sort of second-generation experimental?*

In one sense, yes. It's fair to say that we were at the Steve Reich concerts and we knew the Terry Riley records and we knew all about that. In my musical upbringing, we'd go to the library and get tapes of all sorts of avant-garde music as well as listening to Zappa and

psychedelia, and we were influenced by all of that. Then there comes a point, though, where you have to do it yourself—do your own version of it—and then it's how you put it together. It's not just a question of getting a whole load of funny sounds; it's how you put it all together that makes it interesting. There are very few opportunities to be the first to do anything nowadays, because so much has been done already.

*How influential was American psychedelia on British guitarists?*

Quite a lot. We had a guy come over in 1967 from San Francisco and he brought all the records over with him. We were total Dead freaks. We loved

Spirit, the Airplane, all the big bands. We bought the albums on import and we went to the gigs when they'd come over. The Doors. We had the Avalon and Fillmore posters. So we were all very familiar with what they were doing. The first Mothers of Invention concert at the Albert hall, I was there. We were watching all the moves. It was very important over here, for musicians especially.

*How involved were you with the early Roxy recordings from a sonic standpoint?*

Well, we were really just inspired amateurs. We'd done some recordings on Revoxes, but when we went to a studio to record the first album, it was 16-track and we had Pete Sinfield, who'd worked with King Crimson, to produce it. But it wasn't really until we teamed up with Chris Thomas that we began to learn about the craft of recording.

*What did you learn from him?*

Part playing, if you like. How things interlock together. Less is more. Space. Variety of sound. Things that were sort of floating around as concepts that we were aware of, but he organized it. One started being given part of the George Martin/Beatles tradition, which was brilliant. At the same time, as I said, there was also this sort of rebellious side with Eno and me and the Heath Robinson tradition. Then, after the second album, *For Your Pleasure*, Eno left, and I continued working with Eno for four or five years simultaneously with Roxy, so I developed both sides: One was the sort of crafted, Chris Thomas, Beatles part-playing approach, and the other was the more anarchic Eno, let's-try-anything approach. It was a very exciting period because there were no commercial dictates.

*Why is that? Is it because Roxy was commercially successful enough to allow the other?*

Partly. Because my solo side and the Eno side were regarded by people at the record companies as just sort of messing around, especially compared to Roxy. With Roxy there was always pressure to have another Number One and, "Here comes another tour," and all this. On the other side it was no pressure, no tours, do whatever you like, anything goes.

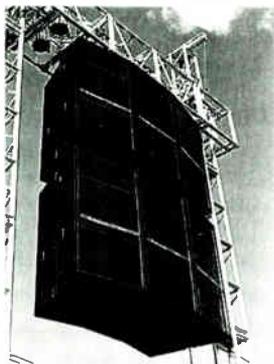
*Did it force you, though to be almost schizophrenic in your creativity—"Well, this idea is more Roxy, this is better with Eno, this is a solo idea"?*

Absolutely, but I don't know that it was a bad thing. If I presented material for one of the Roxy albums, I was always

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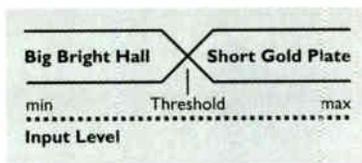
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hearing, "No, keep that one for Eno, because it's too weird." [Laughs] In that sense, Roxy became a bit boring, really. And there were different phases of Roxy. The first two albums were very exciting. The next three there were some great bits in there—half was exciting, half of it wasn't particularly exciting. Then you get a gradual build-up to the end leading to *Avalon*, which was quite exciting in one way—certainly a different approach.

*That record almost seems like a culmination of one of the Roxy approaches.* It was. *Avalon* was the culmination of the idea of using the recording studio as an instrument, because at that stage is the first time I had the studio.

*What were those sessions like? Here in the States Avalon is widely considered one of the best-sounding records ever made.*

First of all, I'd been building the studio with these guys from 10cc, Godley and Creme; they had experience building studios. I'd formed a band with them and Roxy wasn't really happening at the time. Then they had to pull out and Roxy got back together and I said, "Okay, we can use this as our base."

A series of technological developments had also been taking place—the invention of the LinnDrum, so I had that built into the desk, which was, and still is, a Trident Series 80. I used that with the Ampex 1200 and ATR 100s.

My theory was, if you change your method of working you're going to come up with something different. All the other albums we'd done before, we'd come up with a series of chord sequences, jam on them, create a structure, then try to write a top line to it, and then overdub. But basically we'd all play together. From about half-way through *Flesh and Blood* through all of *Avalon*, we did it the way a lot of people do it now—we started with the [Linn] drum and then just added things to it. We were using [an Audio+Design] Scamp rack with a gate to trigger stuff. We were adding everything on top. If we wanted a particular drum sound we might go to the Power Station where Bob Clearmountain had a drum recording setup, and then we might go back to Gallery Studios to record something else and just build it like that.

*Sounds like sort of a laborious way to make a record.*

It was. *Avalon* took about nine months, but it only cost about 120,000 pounds because I had the studio.

*The magic, of course, is that it sounds like a performance.*

Right. It was literally using the desk as an instrument, because you had tons of sounds and you sculpted it together using the technology that was available at the time. It was mixed at the Power Station, three hours a track, two tracks a day, five days, by Clearmountain, and the mix is just brilliant. That was the irony—that after all those months, he could just zap through it. The combination of all the different influences created an album with a very strong mood. It didn't necessarily have a hit single, but it had a total sound that people seemed to like. And it came at a time when CDs were first invented. It was one of the first big CDs in England.

*Would the song "Avalon" have started with a drum machine?*

In terms of the recording, yes, but the song itself started as a chord sequence. It's a very simple chord sequence. Then it's a matter of putting the atmospherics on it to create the mood. The high voice was done at the Power Station.

*Would your guitar traditionally be miked at the amp, or combined with a DI signal?*

It tended to be recorded at the amp. I used everything from an old AC30 to an old Gibson Les Paul Amp to Fenders, Hi Watt, Music Lab, a big Yamaha; I still have all these in the studio. That's one thing I learned working with Eno and Chris Thomas—to aim for a variety of sounds and combinations of sounds and recording techniques. Combinations of microphones. That's how you create something original.

These days I tend to have about six things going at the same time [in my guitar sound]. I'll have a straight sound, a raunchy sound, then going through a few different echoes, maybe through a MIDI guitar, and then blend it all. I have a system using some DMP7s on which I pre-work out combinations beforehand. It's blending shades of sound textures to come up with something more interesting.

*Has there ever been a time when the business of owning a recording studio has overshadowed the creative end?*

It's really only in the last couple of years that it's really become a commercial facility. Before that it was word-of-mouth only, but we still had a lot of people coming through here—Dire Straits' *Brothers In Arms* album, Moody Blues, Duran Duran, all these people coming in almost on a private basis. But since we've had the Euphonix

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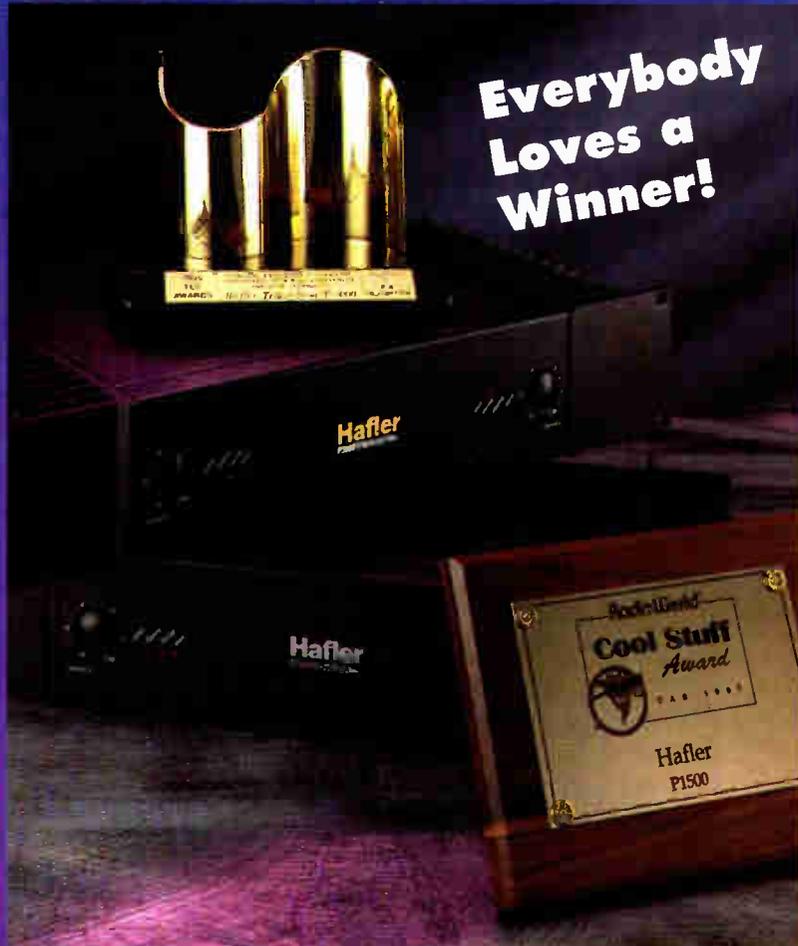
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## PRODUCER'S DESK

room, we've put together a brochure and the whole thing.

### *What was the Euphonix room before?*

Originally it was an old-fashioned echo room. I had an old Ampex amp and some old mics, but the only person who ever used it properly was Eno. So it wasn't being used enough. Then it became the record company office [Manzanera ran Expression Records from 1990-1993]. Then, when I started doing a lot of production a few years ago, I thought that rather than go up to London all the time, I'd invest in a mix room, and we've mixed ten albums in the last two years there.

### *How did you happen to choose the Euphonix? I don't think of the company as having much penetration in England yet.*

Actually, the reason I chose it is because I read an article about it in a magazine, and I suddenly realized what it could do, and for the size of the room I had and for what I wanted to do with it, and the price. I wanted something that would last me a long time and go into the future with me. I liked that it was software-upgradeable. For years I've had people telling me to get rid of the Trident, but I adore it so much, so I built a new room to put a newer desk in it.

### *Well, if you're ever hard-up for cash, just send out the word that you've got the desk that Avalon and Brothers In Arms were cut on...*

[Laughs] Right. The great thing about [the Trident] is it doesn't have anything in it. It just sounds so wonderful. At the same time I wanted a complementary desk that was transparent, so I could send stuff from the Trident room to the ADATs. I've been using the ADATs a lot—in fact, on all these productions I've done recently, which are mostly Spanish or South American rock acts, I used the ADATs. On this Argentine guy I produced [Fito Paez], we recorded in about six different locations—in a converted theater outside Buenos Aires; in Capri Digital Studios in the Mediterranean; the new AIR Lyndhurst studios, putting an orchestra on; in my studio; and so on—and we used the ADATs everywhere, in conjunction with analog. At Capri Digital, where they have the greatest selection of digital machines, they were pulling their hair out: "Why are you using the ADATs when we have these machines?" [Laughs] But I found the ADATs to be so flexible and efficient, and soundwise, for me, they're

great. The Argentine album has already sold half a million, and no one has mentioned at all whether it was recorded on analog or digital or anything. They just love the songs.

### *Do you carry a little mixer with you when you do those projects?*

No, we just sync it up with the BRC, and using offsets we do the most incredible things that we couldn't do before—dropping in stuff and shifting it all over the place.

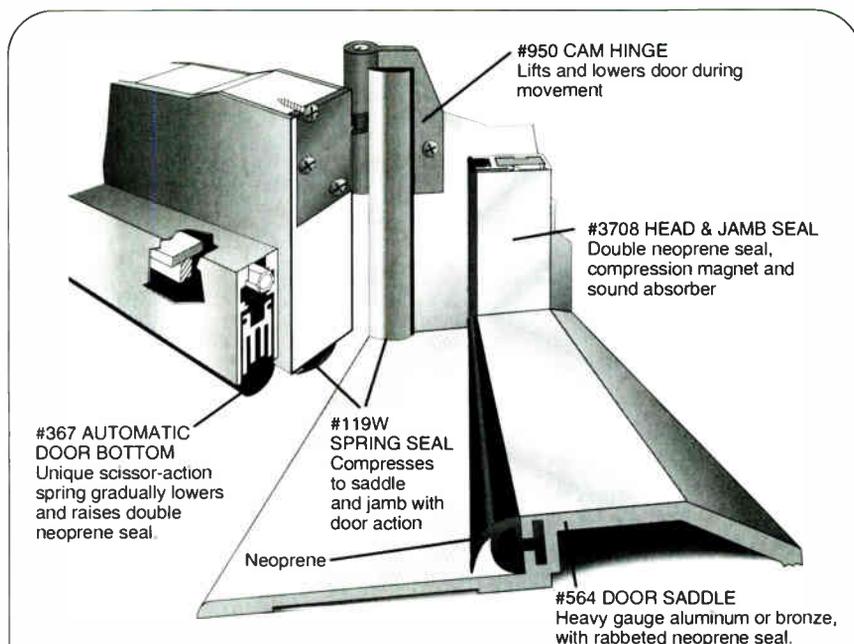
### *Does Spain have good studios?*

There must be some. I have done a couple of albums there, and it was a bit frustrating. Maintenance can be a problem there. I've always brought

stuff I recorded there back here to mix. The Spanish artists I've worked with like to travel, and they like coming to Gallery because of the albums that have been recorded there. We've had some of the biggest-ever albums in Spain and in Argentina and Mexico recorded here in England. So people have been influenced by that.

### *Are you fluent in Spanish?*

Yes. It's sort of by default that I became much in-demand in Spain and South America, because I was one of the few European musicians who'd been in a well-known rock band who could speak Spanish fluently, because of how I was brought up. I find it a



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## PRODUCER'S DESK

great challenge, and it's nice to feel useful to these artists.

*Do you play guitar on most of those records?*

It usually works out that way. It seems they always want me to put on a solo somewhere, and I'm happy to do that. They also invite me to come play live with them every now and again, and that's fantastic. There's no responsibility and I just get up for a couple of numbers. I enjoy that a lot.

I haven't gone looking for any work in England or America because I've been so busy with this sort of nascent

recording business in these other countries, where they need you to bring expertise and experience.

*Do you have a specific engineer you like to work with?*

The guy I've been using recently, called Ash Howes, wrote me a letter when he was 18, and he's sort of grown up at the studio; he's about 24 now. He's been absolutely great and he tends to go around with me. Before that there was an engineer I used, called Chipper, whom I liked a lot as well, but he's gone back to Australia. He worked on INXS and Elton John, and in fact worked with Chris Thomas a lot, as well.

*I assume you're savvy enough to run everything in your studio if you need to?*

Let's put it this way: When I first got the Trident, the first week I thought, "My God, I've done five solo albums and I don't know how to do this!" So I sat there until I learned how to do it. The Euphonix is a different matter. I haven't actually gotten my hands on it because it's been so busy. I've never gotten a chance to sit in there on my own and try to record something. But I'm told it's incredibly easy.

Generally speaking, I don't want to particularly engineer myself because if I'm producing I'd rather be thinking of concepts—sort of lateral thinking, and the psychology of keeping people happy so they perform well, rather than whether something is plugged in properly. I always believed that recording is about teamwork and that to try to do everything yourself is bad. You should get somebody good to do the engineering, somebody good to help with arrangements. Not try to do everything yourself just because you can do it. Working alone, you tend to become obsessed with little things and that makes you more tired. I like to create a good working atmosphere with a team.

*Do you have a different demo setup at home, or can you use Gallery?*

In the past I've been able to use Gallery, but sometimes it'd be so busy I've been relegated to a 4-track Teac on a cassette in the snooker room or something. I wrote an album with John Wetton, and that was all done in the snooker room.

*Where does Roxy stand these days? I liked the last album, the live one mixed by Clearmountain.*

Well, of course there's a greatest hits and boxed set and all that coming out. There are always rumors here in England. I hear on the radio that we're getting back together, and we almost got together a few weeks ago to do a track, but it just didn't work out. I'm very ambivalent about it at this point, only in the sense that when people say Roxy is getting back together, I say "Which Roxy? The first one with Eno, the middle one, or the last one?" And then you wonder, are any of them relevant today?

*Was the last tour unsatisfying?*

No, it was very satisfying. I wanted to go on with it, but Bryan had other plans, and then one thing led to another and we just sort of didn't do anything. We're all around still and we'll just have to see what happens. Maybe I'll hear about it on the radio [laughs]. ■

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# MELODY LANE

## BASEL, SWITZERLAND

**D**ominik Tschan discovered his interest in recording in the early '80s, when he traveled from his native Switzerland to study music at Foothill College in Los Altos, Calif. "On weekends, I usually played at Friday Night Music in Palo Alto," he recalls. "It was a nonprofit organization with a recording studio. They recorded jam sessions every Friday night. That was my first experience in a studio." After returning to Switzerland, Tschan took a sales/marketing position to pay the bills, but he continued playing music part time, and in 1987, he bought his first 4-track recorder. "At that time, Switzerland didn't have any recording school," he says. "I then had some private lessons, but most of my audio know-how I learned through hands-on experience and through books." In 1993, Tschan quit his sales job and with the help of his wife and business partner, Lacie Super, opened a project studio, Melody Lane.

This studio was first brought to *Mix*'s attention when Tschan and Super traveled to the San Francisco Bay Area last year and stopped by the Mix Bookshelf. Tschan picked up a couple of volumes and showed us his press kit—an article from his region's local press (in German), a CD and some modest studio snapshots, which revealed the most unique aspect of Melody Lane: The studio is built into a former bank vault. Tschan says that the vault, though compact, practically could have been designed for studio use; the five rooms were configured perfectly. There is the 250-square-foot recording room, the 200-square-foot Control Room A (Control Room B is under construction), and a separate office and lounge, plus a little gar-



den. All Tschan added were bass traps and diffusers, two new doors and some additional lighting. "The vault itself has two-foot-deep walls and a \$25,000 door," says Tschan. Melody Lane's motto is "Your sound is safe with us."

Tschan engineers all of Melody Lane's projects, working on a Tascam M520 console. He also has a Ramsa board that he uses to record live gigs. Recorders include an ADAT, a Tascam 38 and a ½-inch Tascam 32, and a Panasonic SV-3700 DAT machine. Monitoring is with Yamaha NS-10s or NS-40s. Melody Lane also offers signal processing gear from Yamaha, Korg, TC Electronic, Ashly, Alesis and Akai, Crown amps, Yamaha and Roland synths and samplers, and mics from AKG, Audio Acustika, Shure and EV.

Commercial clients at Melody Lane come from all parts of the industry. Tschan says Basel has a lot of live theater, and he has provided

sound effects for many productions. He has also recorded regional musical theater productions such as *Little Shop of Horrors*, as well as a radio broadcast of *A Christmas Carol*, local and national advertisements, and local bands. The onboard music played on Switzerland's TEA Airlines is also by Tschan.

Another important aspect of Melody Lane's projects—and one of the main reasons for having the studio—is Super's albums. Super, who grew up in the U.S., has performed backing vocals for celebs such as Johnny Cash, Loretta Lynn, B.B. King and others. She has cut one solo album—a collection of blues and gospel tunes—at Melody Lane and is beginning to put together material for a fall '96 release. Super's voice is also one of the amenities Melody Lane can offer commercial clients. "Artists often come to us with their pre-productions from other studios, to add vocals," Tschan explains. "Lacie is our specialist for vocals."

Perhaps because his wife is a performer, Tschan's mixing philosophy begins with the artists: "A good mix starts with a good composition. The more people come prepared—the better the musicians—the better the recording session, and the more enjoyment is involved. Through a good performance, work behind the console gets more exciting." He then waxes philosophical, comparing the mixing process to planting a garden. "...lots of trees, colorful flowers and exotic plants with a walkway for the listener to stroll through. You lift the fog off the garden and let things come alive. You give color with effects..." and then he smiles and says simply, "We like to mix." ■

BY BARBARA SCHULTZ

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# MASS MARKETING PRO AUDIO

**E**very now and then, you go out expecting to find one story and come back with another. I went to Paris ostensibly to cover an MTV Europe Awards broadcast. It was a straight-ahead story on first look, the kind that is the bread and butter of professional trade publications like *Mix*: X number of boxes had been stacked or flown in such a way, amplified and fed into such-and-such a console, which in turn led out to a remote truck and to a satellite dish, which relayed the signal to a satellite farm somewhere else and then on through a few other stages to some head end somewhere that re-

proved to have too much shrapnel potential for a nervous Paris, where a wave of terrorist bombings over the summer had forced the city to bolt the lids of street litter containers.) Starting at 11:00 p.m., 5,000 fortunate billet-holders got to dance themselves silly to the thump of a 105dB sound system. They also got to experience another specialty of MTV: marketing. The tent's interior was ringed by displays from the likes of Apple Computer, Jose Cuervo, Burger King, Lee Jeans, Coca-Cola, Heineken, Mitsubishi, Perrier...and JBL Professional, the same company that supplied the party's massive sound system. The same hamburgers you eat

**I HAVE SEEN THE FUTURE...  
AND IT COMES WITH FRIES  
AND A LARGE COKE**

laid it into your television.

This is not to say that such stories aren't interesting; they are, however, often predictable—until something goes wrong, which, considering the extensive amount of experience this industry has in these matters by now, rarely happens in a way that warrants headlines. Not even the luscious, cholesterol-laden and exotic location of Paris changes the mechanics of such events much. From the inside of a control room or from behind an FOH console, it could as easily have been Paris, Texas, as Paris, France.

What made this event different was the party that occurred afterward. It took place in a huge tent nearly a kilometer away from Le Zenith, the disco where the MTV Awards show was held. (The tent was a last-minute replacement for Le Grande Halle, a cavernous structure closer to the club. But the glass content of La Halle

every day, the same personal computers many of us use every day, the same liquor many of us drink a little too often on Friday nights. And the same 15-inch, high-SPL we use every day? Normal to regular readers of this magazine, but not to the stylish 20-year-olds moshing about the floor.

At least, not yet. And that's the story.

## THE SETUP

Personal, affordable recording technology has changed everything about this business. Just as compact discs ushered in a quality delivery format for music, personal recording technology made it easier and less expensive to create. In doing so, it introduced an entirely new component to professional audio—or, more to the point, it redefined just who or what makes up the professional audio world. It's no longer limited to someone with a significant depth of technical ex-

BY DAN DALEY

ILLUSTRATION BY PETER FASOLINO

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expertise and matching depth of personal creditworthiness. Good recordings are now routinely being made on equipment that costs less than two weeks in a traditional recording studio.

Personal recording technology has opened the floodgates, broadening pro audio to include musicians, bands and DJs, as well as entire genres such as house and rave. Musicians and producers can now bypass the traditional A&R route to getting deals; DJs and alternative producers can not only scratch records, they can make them from scratch for a minimal investment.

It occurred to JBL Professional—and not without some internal hand-wringing—that the potential customer base for pro audio could expand even further. In fact, some felt that without deliberately expanding it, the future appeared considerably limited. A few tens of thousands of traditional pro audio customers were a good thing; the expanded base of several hundred thousand semi-pro users was even better, and JBL had developed its low-cost, portable EON system last year precisely for that new market. But what if you could tap into millions of people who might have had only a moment's thought at some point about going into audio professionally? The market had already broadened to include both buyers of half-million-dollar consoles and weekend guitar players; suppose you could tap into the air guitar market, into those whose inspiration to enter pro audio could come as easily from a fuzz-boxed beer commercial as from Beethoven?

This was the point of the evening's exercise: JBL had agreed to provide the sound equipment, sound company (Copenhagen's DPA SoundCo, Scandinavia's largest SR company) and DJs for the evening in exchange for promotional credit on the broadcast's credit crawl, space on related printed literature and a spot on the floor with Cuervo, Burger King, et al. JBL's booth featured a European circus act, which perfectly matched the evening's big-top motif. The sound system was fairly immense: 40 of the new JBL T Series T771 top boxes, 24 T749 sub boxes and 16 triple-chamber sub boxes filled the 150x50-meter tent, powered by 60,000 Crown watts, controlled by a JBL C232 speaker controller system and run through a Yamaha PM1800A console, which had four BSS Varicurve EQs for the main system and a Klark-Teknik DN 360 for the DJ position. (Two of the minor problems DPA en-

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countered: a strike by French government workers threatened the power supply, so two generators were standing by; and a desperate search through multiple music stores to find an actual vinyl record with which to test the DJ system. DPA project manager Michael Meisner finally found a Little Feat record on the fifth try.)

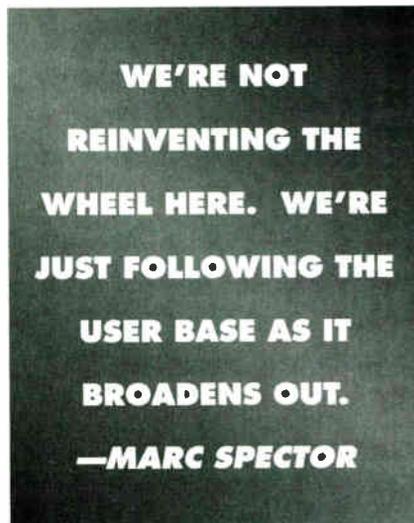
Once the evening kicked off, Marc Spector, JBL's director of marketing communications worldwide, was able to say, "We're not reinventing the wheel here. Fundamentally, we're realizing who our audience really is. We're just following the user base as it broadens out. These people access information through channels other than the trade press—they're reading *Rolling Stone* and watching MTV. The trade press was the traditional way that people involved in music found out about technology. But people don't lead channeled existences. That's what we've realized, and we're responding to it."

#### MASS MARKETING PRO AUDIO

Buttressing Spector's assertions is the fact that *Rolling Stone* announced plans to inaugurate a musical instrument and equipment advertising initiative called "Sound Check." And Gibson Guitars is taking out regular advertisements in *The New Yorker* magazine. Pro audio manufacturers are now using nontraditional media to reach a wider, nontraditional audience. But more to the point, all the sponsors of the program have entertainment-related marketing campaigns, and Apple, for instance, as the leading platform (in the U.S.) for music-related software, has a link between consumer and professional recording applications. And musicians watch MTV worldwide (the broadcast was viewed in real time on Thanksgiving afternoon in the U.S., and highlights were repeated in prime time that evening).

As Kevin Fetterplace, (a former club manager and advertising salesman for *Studio Sound* and *Melody Maker*, whose independent marketing firm Mojo Workin' in London helped put the MTV deal together for JBL) points out, "This is mass marketing. The brand is being seen by 300 million people tonight, and the artists' VIP area at the party is nothing but EON. Less and less music is being made at traditional recording studios, and they're reacting by marketing themselves to that 95 percent of musicians and producers who don't have record

deals to finance recordings. They're doing best-local-band contests and giving two free days to the winners to raise awareness among the musician community about their studios. Think about it: A calculator used to cost \$40; now they give them away with petrol purchases. The [professional audio] industry has been a very insular one for a long time, and all aspects of it are changing. This is simply one of the grander examples of it." Fetterplace adds that when he arranges photo shoots for his studio clients in the UK, he purposely seeks photographers who otherwise do personality shots rather than studio shots. "You have to



light a studio the same way you'd light a rock star," he explains. "You have to market everything in pro audio, from the products to the studios, in a way that a mass culture can respond to them."

But what can a professional audio company sell the air guitar crowd? Two things: an expanding down-market product line, kicked off by something like the inexpensive EON system—which Spector tellingly described as an "aggressive, youthful, fun and useful product," in that order—and which will be supported by more down-market professional and semi-pro products in the future; and, second, simply put, selling a piece of the dream. For the same reason that Gibson is advertising in upscale consumer publications, JBL believes that it can entice brand loyalty among a huge potential consumer base, a percentage of whom might just chuck 9-to-5 gigs in pursuit of a rock 'n' roll fantasy. Of those who do, a percentage will actually succeed to some degree professionally, and for them, the JBL brand

will be as familiar as the smell of Crayola crayons. Eric Clapton still plays a Stratocaster, not a Parker Fly. "The Gibson campaign is perfectly analogous to what we're trying to do," says Spector, whose background includes a long stint in marketing at consumer electronics manufacturer Pioneer.

But the decision was not taken lightly. Although JBL's financial investment was minimal compared to the other sponsors who bought into the broadcast, the implications for the existing professional audio user base had to be considered. Spector maintains that a company like JBL, part of the huge, publicly traded Harman International conglomerate, can sustain a broad vertical product line that comprises everything from Showco to Joe Wannabe, as well as horizontal product depth at each point along the scale. "Look, it's a question that was asked extensively internally," Spector concedes. "Could we support this expanded position? A conscious decision was made that JBL will expand into high-volume market niches. But the thinking is that, ultimately, even professional users are consumers. What's happening is that the line that divides the distinction between consumer and pro needs to be re-examined, just as the line between what a studio is has been redefined by personal recording equipment. A lot of cottage industries—and the \$1.2-billion professional audio industry is a cottage industry—have reached bigger success by realizing that there's more to the market than they originally thought."

JBL President Mark Terry, in an interview conducted later, noted that this new market strategy comes at a time when the company has strengthened its commitment to traditional markets. "Just as we were developing EON for a new market, we were also developing new high-end professional loudspeaker systems for the large-scale live sound touring and cinema markets," he says. "The benefits we derive from any one side helps all markets down the line."

Spector believes that, just as Mackie's consoles and Alesis' ADAT were products that hit the market just as an MI consumer base was waiting, the broader consumer base is larger than anyone currently realizes and is just as ready to buy into pro gear based on its cachet of stardom. EON, which was developed as much by focus group marketing as by traditional in-house

—CONTINUED ON PAGE 271

MIX MAGAZINE PRESENTS

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SPRING 1996



**Sony Pictures Studios' Michael Kohut  
Scoring for Film and Television**

**Wing Commander IV**

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# SOUND FOR PICTURE™

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## ON THE COVER

Sony Pictures has received a lot of press recently, most of it negative and most of it focusing on the revolving-door executive changes and the high-profile movie flops. *Vanity Fair* had a scathing piece at the end of 1995 on the hirings and firings in the development and management teams, and *Los Angeles* magazine put teen-sensation Alicia Silverstone on its February cover, headlined "Can Alicia Silverstone Save Sony Pictures? Can Anyone?"

To be sure, since Sony's 1990 purchase of the former MGM lot in Culver City from Warner Bros. (who purchased it from Ted Turner, who purchased it from Lorimar, who purchased it in 1987 from MGM), the hits have been few and far between. But while the software side of the business has been struggling, the new owners have made a massive commitment to facilitywide



hardware upgrades, largely under the direction of executive vice president of post-production facilities Michael Kohut, who has been on the lot nearly 30 years, through thick and thin.

When *Mix* last visited Sony in July 1992, Kohut and Barry Snyder (now at Warner Bros.) were completing an upgrade from the PAP-style prelay rooms to digital editing bays, with more than 20 WaveFrame 400 and 1000 systems as the centerpieces (now numbering more than 40, with additional systems from most every workstation manufacturer). Now, four years later, Kohut has unveiled the crown jewel of his ten-year redesign plan with the completion in January of Stage 5.

Stage 5 includes the Kim Novak Theater and the William Holden Theater (on the Sound for Picture cover), virtually identical re-recording stages constructed in the shell of a former soundstage. Each of the rooms houses a 244-input/72-bus Harrison MPC-1 console, said to be the largest film consoles ever installed. One-hundred percent digitally controlled, 100% automated.

The rooms are large, measuring 77x60-feet, with 39-foot ceilings. Each room is configured with an 8-channel monitoring system, with Sony Theater System speakers, to handle Sony Dynamic Digital Sound mixes. Each has a 256x256 routing matrix, and each has its own extensive outboard racks. Projection capabilities for each stage include a 35mm Kinton high-speed projector and 35mm/70mm Simplex projector; the screens are 44x22 feet.

Each stage has its own digital machine room, with

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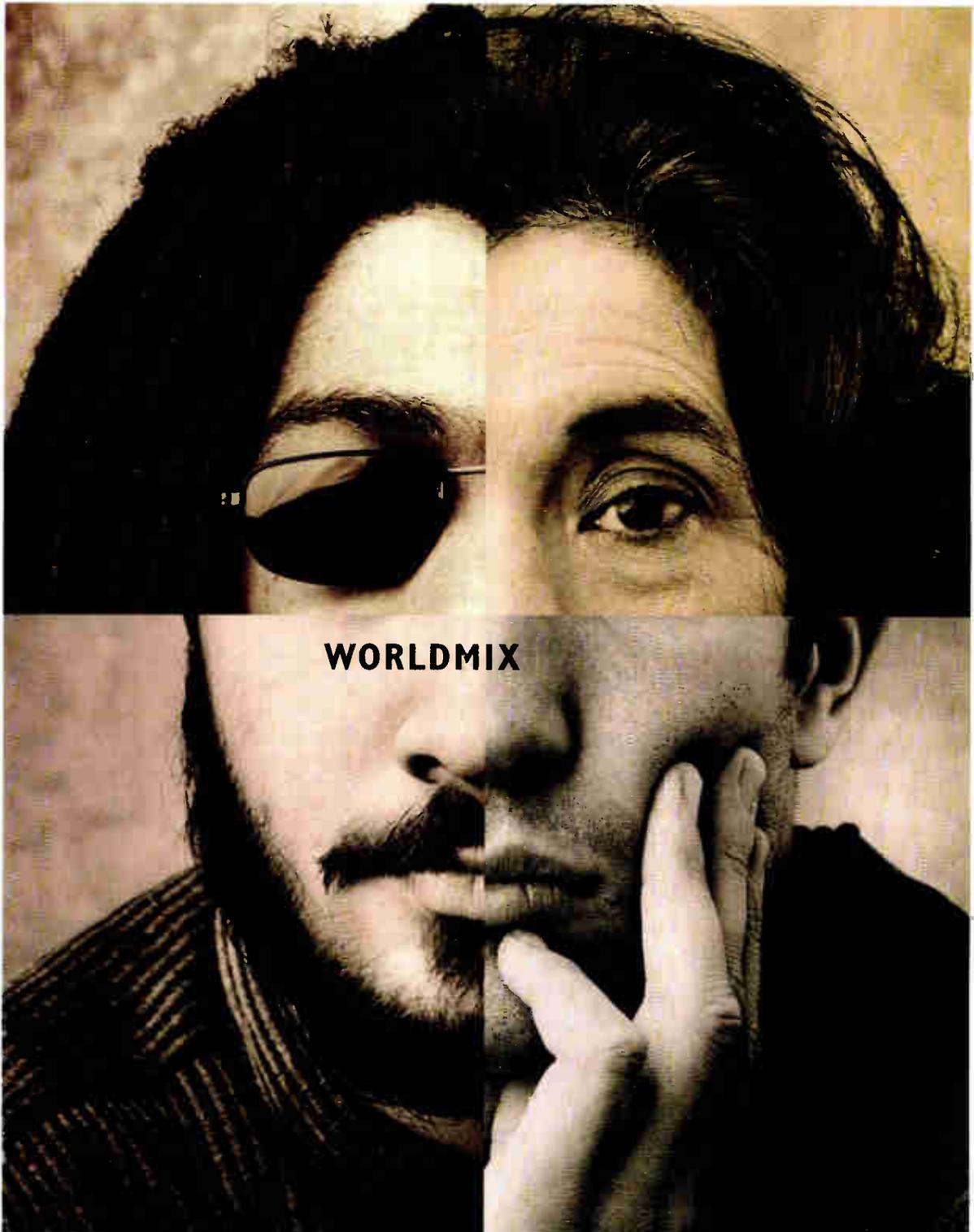
audio-video-data-control network ties to a central machine room. The digital rooms contain ten Sony hard disk recorders, 80(!) Sony hard disk players, a Sony network control system, Sony PCM-800, PCM-3348 and fiber-optic lines to Pacific Bell's Hollywood hub.

The central machine room, accessible from either stage, includes ten Magnatech 6-track recorders, a Magnatech single-stripe recorder and 85 Magnatech reproducers, all with Teccon heads; six Sony and Ampex 2-inch, 24-track recorders; a Sony PCM-3348 DASH recorder; and 11 Sony PCM-800s, the company's version of the DA-88. (For more on the facility's development, turn to page 16 of this special supplement for an interview with Michael Kohut.)

All it takes in Hollywood is a hit on the order of *Jurassic Park*, or *Die Hard*, or *Batman* to turn a lot's fortunes around. Sony's day will come, and when it does, the infrastructure will already be in place.

**Photo:** Ad Dimension/David Sessions

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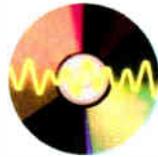


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# AUDIO

## FOR "WING COMMANDER IV"

by Chris Michie

The scene opens in deep space as an unarmed hospital ship loaded with refugees glides majestically across the screen. A fighter pilot assigned to escort duty exchanges flirtatious banter with an unseen female in the ship's communications deck. The richly detailed space vehicles glimmer in the starlight, and only the futuristic hum of spacecraft in flight and occasional radio chatter disturb the serenity of this far corner of the galaxy.

Suddenly, the peace is shattered as menacing fighters materialize from hyperspace, right on the tails of the unwary escorts. Warnings from the communications deck are in vain, as the intruders quickly dispatch the three escort fighters with point-blank rocket fire and set an electromagnetic mine on the hospital ship's metallic skin. The radioed pleas of the defenseless noncombatants are drowned in static as the hospital ship and all souls aboard are consumed in a space-rivening thunderclap. The bandits make their escape, leaving only slowly spinning space junk as evi-

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dence of their dastardly crime.

So opens the latest installment of *Wing Commander*, one of the world's most popular video games. Released in February in a six-CD-ROM package for the PC (recommended configuration includes an Intel 486/66+ MHz processor, double-speed CD-ROM drive, 8 MB of RAM, 256-color VGA, and digital sound board), *Wing Commander IV: The Price of Freedom* is the latest in a series that has set new standards in production values for the PC-CD format. Previous installments in the *Wing Commander* series have topped PC game charts worldwide and gathered an armful of awards for its creators, Origin Systems (Austin, Texas), a division of Electronic Arts. The production budget of *Wing IV* has been estimated as between \$9 million and \$12 million, almost certainly the highest figure ever spent on a PC game.



### FOUR HOURS OF FILM

Employing traditional film techniques and a full crew, game creator and director/executive producer Chris Roberts directed a nine-week shoot at the RedMar lot in Hollywood to create the unprecedented amount of live



Studio 4 at Music Annex,  
San Francisco



footage that accompanies and informs the player's progress through the complex and multilayered game. The all-star cast includes Mark Hamill, Malcolm McDowell, Jason Bernard, Tom Wilson and John Rhys-Davies, and the finished game includes almost four hours of film footage, two to three times as much as in most full-length features. (Players do not necessarily see all of the footage, as much of it consists of "branches," alternate scenes and plot lines that reflect the player's game strategy. In fact, a player can take as long as 50 hours to

**THE FINISHED  
GAME INCLUDES  
ALMOST FOUR  
HOURS OF FILM  
FOOTAGE, TWO TO  
THREE TIMES AS  
MUCH AS IN MOST  
FULL-LENGTH  
FEATURES.**

## TRADITIONAL POST VS. DESKTOP PC

Much of the audio post-production for *Wing Commander IV* was done at Music Annex, San Francisco, where engineers Patrick Fitzgerald, Jon Grier, Mary Ellen Perry and Will Harvey created stems and performed final mix-to-picture in Dolby Surround for about half of the 12 reels. (Charlie Stockley and Shannon Mills assisted; the latter was also responsible for some effects design.) According to Music Annex president David Porter, the project was "a much more complicated piece of post-production than any feature I've ever seen. The number of elements involved, the number of submixes, the sheer number of scenes that had to be treated, the fact that many different facilities were doing separate parts of it...At times, Music Annex had four rooms going, plus somebody working offline in Pro Tools."

Post-production for games or multimedia presents no particularly unusual technical challenges, says Porter, but the organizational task of coordinating all of the elements and facilities for *Wing Commander IV* was considerable. "Murray Allen was downright amazing in that he was able to get all these different facilities to do their pieces and

come out with a very consistent product—a truly amazing feat."

Porter sees EA/Origin's use of film post-production methods and facilities as an inevitable result of the increased sophistication of PC games. "Traditionally, multimedia developers were very proud of the fact that they could do all of their audio and video and data manipulation within their desktop systems—they have looked upon traditional post-production as kind of an unnecessary expense. And, quite frankly, for the early development in games and multimedia, what they could do on the desktop was perfectly adequate."

For *Wing Commander IV*, however, Porter maintains that desktop technology would not have been up to the task. "Murray Allen, having come from a traditional post-production background, said, 'We're not going to be able to do this on the desktop—we're going to go out and use the more traditional post-production tools because we're going to get the job done faster, and ultimately it's going to look and feel like a feature film.' He obviously felt, and I agree with him, that on very large, complicated projects, the traditional post-production facilities are still better equipped. That doesn't mean that two years from now [the multimedia developers] won't be able to sit at their desktop and get really great results. But today this is the best way to get the job done."

—Chris Michie



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play the game, depending on skill level.)

Roberts also placed strong emphasis on sound; in many respects, the audio production for the game followed the pattern for a conventional theatrical release, right down to the Dolby Surround mix. But the accelerated production schedule, which included versions for French- and German-language markets, posed significant logistical problems, which were ably tackled by Murray Allen, director of video and audio operations for Origin Systems' corporate parent, Electronic Arts of San Mateo, Calif.

## CROWD-SCREAMING WALLA

According to Allen, the post-production editing team created a final cut on the Avid Media Composer and shipped a dozen reels to Electronic Arts' San Mateo (EASM) studios over a seven-week period starting in late July. Avid AudioVision was used to autoconform the production audio, which had been recorded on timecode DAT. PAL conversions from the new master audio/video reels were made for French and German versions, and resulting D1 tapes were sent to Studio Lincoln in Paris, France, and FFS in Munich, Germany, for dialog replacement. At the same time, digital Betacam tapes were struck for use in ADR sessions with the original actors, who looped their lines at Larson Sound in Los Angeles and Pacific Ocean Post in Santa Monica.

All of the dialog was then transferred to ADAT tracks, with each actor on a separate track "so that we could [later] EQ each one separately and add echo, or process each one individually without affecting the total," explains Allen. "We also brought in gangs of actors to do what we call gang Foley—crowds screaming and doing what we call walla." Allen's team also created new backgrounds at Larson and in-house at EASM.

In late August, Allen started five weeks of Foley recording with engineer Rich Duarte at Fantasy Studios (Berkeley, Calif.). The Foley tracks were recorded on 24-track analog tape with Dolby SR and then sent to Poolside

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Recording in San Francisco, where Dave Nelson edited the Foley to picture and made a premix to eight tracks of ADAT. "Now we had all the dialog and all the background sounds," says Allen.

### 128-NOTE POLYPHONY

Meanwhile, score composer George Oldziej had been working with a VHS tape of the original Avid cut, with timecode. Roberts had specified a "sort of an orchestral 'Star Wars'-type soundtrack," says Oldziej, a requirement that would have been hard to meet using the technology that Oldziej had available on *Wing Commander III*, which he also scored.

"In *Wing III*, all the music was composed as MIDI files," says Oldziej. "There were three different versions—one version for General MIDI, another version for Roland MT-32, and also an Ad-Lib version that could be played on SoundBlaster. Each version has certain parameters in terms of the number of notes the sound card will play simultaneously. General MIDI is the best, but even so, you can only hear 24 notes at the same time, and some of the sounds I like to use, such as the strings, will use up as many as three or four notes for one sound. So if you want an orchestral sound, you have to be very conservative with picking just the right sound to get a whole effect."

Fortunately for Oldziej, Roberts had decided that for *Wing IV* all of the music was to be prerecorded, eliminating the limitations of MIDI regeneration. Oldziej first composed the space-flight music heard during "game-play" and completed the music for the space-flight portion in April or May. Game-play music, unlike the score that accompanies the filmed sections of the game, may be extended almost indefinitely. Oldziej therefore composed minute-long sequences that can be repeated. "The last part of a one-minute piece sounds like it's segueing to its beginning," he says. "But anywhere within that piece you could be triggered by an event to go to some other piece. For instance, if you blow someone up or get engaged in combat, you could jump to another piece of music that had more tension or is faster-paced."

Typically, Oldziej composes on paper and then fills out the composition in Cakewalk, the sequencer program driving his PC. "We had originally talked about using a live orchestra, so in order to save time when I started composing the space-flight music, I did not limit myself to the amount of

notes," says Oldziej. "I wanted to be in a situation where if I entered all these notes on a sequencer, I could then port it over to a printing program and just spit out the parts for a score and orchestra. Then the decision was made not to use the orchestra; instead, we just got some high-end sample players such as the [E-mu] Emulator IV and the Kurzweil K2000. The Emulator IV has 128-note polyphony so I could use as many notes as I wanted."



For most of the movie soundtrack, Oldziej recorded onto a single ADAT in stereo pairs—strings, brass, woodwind and percussion. As soon as he had finished a reel, he sent the music to EASM, either on ADAT or as a Pro Tools session over a T1 line that connects EASM and Origin.

### CONSISTENCY IN EFFECTS

"Now we had dialog, music, walla, Foley, everything but SFX," recalls Allen. The sound effects for *Wing IV* were planned as a team effort: Allen assigned FX creation to Ken Felton, Tony Berkeley and Marc Early at EASM, Dave Nelson at Poolside, and another four engineers at San Francisco's Music Annex (see sidebar). "We were really in a crunch, and there wasn't enough time to have one studio go all the way through," explains Allen, who rationalized the task by putting reels together based on locations; so, regardless of the order of scenes in the final cut, FX for

each location would be created by the same engineers at the same studio, ensuring consistency within each location.

"We did so much preparation and kept very close tabs on what everyone was doing," says Allen. "It would be very hard for anyone outside to listen to one reel or one scene and figure out if it was mixed from a different place than another scene." EASM supplied all of the ambiences (undertones, the rumble of the ships, etc.), and Origin supplied a source reel of sound effects created for use in the space-flight segments of the game.

### FINAL MIX—12 REELS, THREE STUDIOS, FOUR WEEKS

As part of the production schedule, computer-generated animation was created at the same time as the film. The final cut included gaps on the edited reels where computer graphics representing scenes impossible to shoot at RedMar (such as space flight) could be inserted later. Once the final reels were assembled with the computer graphics, Oldziej wrote whatever additional music was needed and the FX teams at the various studios created the necessary sound effects and ambiences. Master DI reels including the computer graphics were then created.

"And then the mixing process started," says Allen. "We decided to have six of the reels mixed at Music Annex, four of the reels mixed at EASM, and two reels mixed at Poolside." In fact, there was a lot of overlapping in the process. "I would be sending reels up to Fantasy for them to be doing Foley on, while at another studio they had a complete set...and they were starting to mix. The entire mixing process started somewhere around the 15th of October and was totally finished in the second week of November. We did the whole thing in four weeks."

Much like in the film world, premixes were crucial and were laid to an analog 24-track with Dolby SR. Dialog was mixed to left-center-right; Foley, music, effects and ambiences were mixed to left, right and surround. Once the stems were complete, they were transferred to 24 tracks of ADAT or PCM-800 (one complication caused by the multistudio mixing schedule was that Music Annex is standardized on PCM-800s, whereas Poolside used ADATs, hence the dual format).

Next up was the foreign language mix. The French and German PAL DIs were transferred back to NTSC at Western Images (San Francisco). The foreign

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years ago was that I needed consoles right then and there; I couldn't wait until digital became a reality. There was SSL and other manufacturers with analog consoles. We learned that Harrison was planning to develop a new digitally controlled, analog console—the MPC-1—that could eventually be upgraded to digital circuitry. We were excited by the fact that we would be able to modernize the console as we progressed from analog to digital, simply by changing our circuit cards. We ended up co-developing the MPC with Harrison, and to date have purchased eight MPC-1 systems, including a pair of fully automated 244-input/72-bus consoles for the new [Red and Blue] dubbing theaters.

We are working with Harrison to digitize the back-end. Then, as we gradually get into digital production and have to handle more and more digital information connecting to a particular channel fader, it will be processed digitally. If the next fader is being assigned to an analog source, obviously we can call up an analog section. The new version of these consoles will be the only design in the world that will be able to go both ways. When you think about it, that's really the only way a post facility can function—unless you have total control of all the materials, and that would be very difficult to do.

***Do you ever have the opportunity to handle a mix? To fire up the board?***

I did work a little bit on the SDDS trailer. Yes, I do miss that side of the business. I'll watch a new release, and go, "Well, I would have done this," or "I would have done that," or "I would have talked the director into doing this." But now, with all my other functions, it's just too difficult. The last picture I mixed was *Basic Instinct*, for Paul Verhoeven. I did all of Paul's pictures up to *Basic Instinct*; he's very sound-conscious and puts in a lot of effort to make it perfect.

***What was the best film you ever mixed, the one you enjoyed the most?***

I've enjoyed all of them. But I would have to say the one that really gave me inspiration was Alan Parker's *Fame*. It was one of the first pictures I ever mixed as a lead mixer; in fact, it might even have been my very first picture. Alan knew how he wanted this picture to sound with the music. *Fame* also gave me the first inspiration of how creative you can be as a mixer: I really

connected with Alan on that picture and truly enjoyed the experience.

It was during the MGM years. Alan Parker was tied up with Alan Marshall; they shot the picture in New York. They did most of the picture editing in London, because they both lived there. They then came back here and were going to mix it at the Cary Grant Theater. I was about to move from sound effects into the dialog chair, and Alan Parker was sitting up in Alan Marshall's office with my boss. We went through the picture, describing how it was going to be. Alan Parker finally said to me, "Mike, if after the picture is mixed,

**I try to have a feeling  
for the person who has  
directed the picture  
and why they chose  
this project—what they  
put into the film—  
when I look at it  
on the screen.**

and I'm unhappy with it, whose fault is that going to be?" That was a tough statement. But what else could I say? "Alan, if you're unhappy, then I guess it's going to be my fault." Then we dubbed the picture, and it turned out very well.

***How do you find out from a director what he or she wants to bear in the soundtrack? Is there one key thing you need to bear from the director?***

It's an interesting process. The director's got maybe two, three years of his life in this project. They bring it onto the stage for what might be a six-week mix, and it's the last aspect before the show is delivered. I try to have a feeling for the person who has directed the picture and why they chose this project—what they put into the film—when I physically look at it on the screen. I think that to be a top mixer today, you have to have an element of being a filmmaker yourself.

I've never said, "Well, what do you want to do with this or that." It was just kind of an instinct that we both felt *this* is the way it should be. When I was doing sound effects or dialog, I would design the sequences the way I felt that

they should be designed. I'd obviously work with the sound editor, and then with the director. It was always give and take, but I don't recall ever having a difference of opinion with any of the directors I've ever worked with.

When we were doing *War Games* with John Badham, we were finalizing the picture and moving into the final mix. At the very end of the picture, there's a scene where we think that there's a nuclear holocaust starting between Russia and the United States. We're down in the central control room, and on a world map, John had designed these white flashes to go off [on the display] where the nuclear explosions were supposed to be occurring. John always thought that he wanted this to be dead-silent; all the machines in the room go off, and he just wanted it to be totally frightened with dead silence. It was a good idea.

When we finally mixed the scene, there was just something missing; it didn't have the impact I felt it needed. We went off to lunch, and I quickly found a sound editor, and said, "Just take a few of these explosions that you see on the screen and put a 30-cycle tone up." I ran off about a hundred feet [of 35 mm mag], and I said, "Cut it to the white flashes." And then I gated the sounds and put those "puffs" into just the subwoofer. I didn't tell John that I did it, but just said, "Let's run the last reel. I'd like to show you something." When I played it for John, he said, "Oh my God, that's *it*."

***Is there a move within this facility to offer one-stop services; everything from sound editorial to mixing?***

That's where we're going to move, just as soon as I put the finishing aspects to my digital technology, which we're going to start to introduce during the first quarter of this year. One of Sony Pictures Studios' big advantages is that we have two film arms, TriStar and Columbia. So we do have the entire package here, with all the facilities, including sound mixing and editorial. We will take it right from production, through sound editorial, through re-recording and up to delivery. We do that on several Columbia-TriStar pictures now, and it gives me the opportunity to debug what we're going to be changing here.

When Sony took over, Gary Martin—who's now president of production at Columbia-TriStar—and I had a meeting. I told him that we needed more support from Columbia-TriStar. He said, "Mike, the only draw here is

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*How did the idea for 8-channel Sony Dynamic Digital Sound come about?* SDDS is an invention that had been in the back of my mind for a long time. I recall that Peter Hyams was the first person to get me seriously thinking about it while we were doing *2010*. It was a dramatic picture, with a lot of sound. The only way to replicate what we did on the dubbing stage was to convince the company to make 70mm prints—to go discrete 6-track on the film. But 70mm prints were getting expensive. If you had a couple of hundred orders, it was around \$10,000 per print, but if you went down to 10 or 20 prints, it could cost maybe \$25,000 a print.

We had worked so hard on *2010* to produce the best soundtrack possible, and Peter Hyams says, "Mike, why the heck can't we replicate the sounds of what we're producing on this stage on a 35mm print?" We're using Dolby A—I don't know if SR was popular at that time—but the [1:2:4] matrix was squeezing it down. We had low-end frequencies on that movie that were really important to the action. That's what got me started thinking that I'd like to develop a digital system for this industry.

*And the multiplexed digital information had to be printed on the film?*

Yes. As a matter of fact, when I was developing SDDS, Terry Beard was perfecting DTS [Digital Theatre Systems].

**Usually the difference between a fabulous mixer and one that's just okay, is that the former has a feel for what goes onto the screen. We can't make mechanics out of somebody who should be an artist.**

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and he knew that I was very interested in his system. Most of Hollywood knew I was very pro-digital. Terry came to me and asked if I would support it. I said, "Yes, but you really *have* to be digital on film." He went forward and did his test—it wasn't on CD-ROM at that time, but on 8mm cassette locked to timecode on the film. I said that I thought it was good technology, but that with today's worldwide delivery expectations, we mix up prints. To support a digital system, I really feel that it has to be on film. That was the challenge.

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mixed. I was here when David Lean came from London to remix *Doctor Zhivago* at the Cary Grant Theater; more importantly, I was on the scoring stage when they recorded the music. At that time, it was the biggest orchestra we'd ever seen—110 pieces—which we recorded on six channels: five horns in front and a surround.

I snuck into the dubbing stage and, with music recorded discrete to five channels up front, plus totally discrete sound effects, it was a *magnificent* experience. Here we were with five discrete horns up front in the '50s, '60s and '70s, and in the '80s and '90s—when we're supposed to be going forward—we're adding subwoofers! How effective is that in most pictures? And to lose two screen channels because of that was, I thought, a creative mistake for our industry.

It was crucial to have the eight channels, and to optically print the [digital information] on the film. It was a big challenge. When we ran into difficulties, our Japanese engineers in Atsugi always came back and said, "Mr. Kohut, can we drop two channels [inner-left and inner-right]?" I'd say, "No, we *cannot* drop two channels; we've got to work around it." ***Did they try to talk you out of split-surround?***

No, split surrounds were important for effects, and because the competition was offering that capability. Obviously, the subwoofer was crucial. I wanted the five discrete channels up front, split-surrounds and a subwoofer. The beauty of what we did was that we took a tremendous amount of practical experience here at the studio; my experience as a mixer; what I felt was going to be needed in the future; Sony's technology...and moved forward. If we'd tried to develop SDDS without access to that sort of technology, it would have been *extremely* difficult. But Sony is the "Father of Digital"; they've been doing it for more than 15 years.

Our statistics from exhibitors show that 24 percent of new [domestic U.S.] theaters are now 8-channel-capable—that's pretty significant. Stan Durwood, chairman of AMC Theaters, and one of our biggest supporters, is building some of the biggest multiplexes in the world, with up to 28 screens. At least half of them are 8-channel-capable, because Stan realizes that to bring

people from their homes, you need a "bigger" experience.

***Is the SDDS process licensed by Sony? Does a rep need to be at the mix to make sure it's okay?***

Yes, we do license the process, and support being on the mix. But the difference between us and our competitors is that basically whatever [print-master transfer] media you record it on is acceptable to us. We do not have to be on the stage to have any kind of compression blocks, or any type of restrictions to what goes on the film. Basically, you can record on mag, DASH-format or DA-88, just so long as you like what you hear, and it will go onto SDDS.

For an 8-channel mix here at Sony Pictures, we predupe everything to five discrete screen tracks; I insist that the music be scored and dubbed down to five channels. Then we go into our final mix with three 8-channel stems—dialog, music and effects—and mix it to SDDS. Then we take those stems and go back and to make our 2-channel Lt-Rt matrixed-surround mix. And we can monitor reductions from SDDS to various 5.1-channel replay formats. ***What are your thoughts on emerging technologies, including workstations? Sony has made a major investment in TimeLine [formerly WaveFrame] systems and is developing its own proprietary digital dubber format.***

Right now, the dubber is based on hard disk and removable media. Hard drives are okay for workstations, but in the dubbing or post-production environment, you can't walk around with hard disks and use them like removable media. So I try to base the technology on mag film, which has been around for 50 to 60 years. Our new technology will involve hard disk and removable systems, with multiple channels on each media. The biggest pitfall with tape is that it can't slip a track; you have to lay back onto another machine. If it was on mag, you always had that flexibility. Eight channels per drive is obviously mandatory for the media, with 22 to 23 minutes record/playback capacity for double reels. We plan to unveil the system at the NAB convention.

***We're seeing a lot more editing taking place on the dubbing stage, with two or three workstations handling music and effects playback. At \$1,200/hour, a dubbing stage may not be the most cost-effective place to play second-guess the director. If you're going to make decisions, at least make as***

***many as you can prior to the dub stage. Is this something that facilities need to come to terms with?***

Putting on my company hat, yes, you're right; at a thousand dollars an hour, you cannot afford to spend that kind of money while somebody's looking for a music cue or making an edit. If you can still keep the wheels turning, that's one thing. But some of the newer technologies—these new consoles that are tied with hard disk editing functions—how do you operate like that? Very seldom have I mixed a picture that there isn't editing going on constantly.

What we've always done in the past is that if you have some difficult edits, you can't afford to sit there while an editor's taking the film off the dummy and making the changes. New technology should be able to do *simple* edits. If you want it to make extremely difficult edits, it should also be able to handle them, but it should also have the capacity and the ability to very easily remove that media so that we can continue. Without giving away too many secrets, our new generation of dubbers will have the ability to do that on the stage.

***But will the mixers also handle editing functions at the console?***

It's going to be an interesting challenge. One of the concerns I have as a mixer and somebody who has spent his whole career creatively doing films is that there's a lot of distraction on the stage, and it has to go back to being much more creatively controlled. Mixers need to pay attention and get into the movie—to forget about the mechanics. Usually the difference between a fabulous mixer and one that's just okay, is that the former has a *feel* for what goes onto the screen. We can't make mechanics out of somebody who should be an artist. Then, putting on another hat as someone who's designing the hardware, we have to offer the best tools that we can.

Sound is becoming so totally important to the overall experience of movie audiences. I worked with Paul Verhoeven on the first *Robocop*. At the end of the movie, I recall Paul saying to me, "Mike, sound was 60 percent of this movie." It was a great feeling. ■

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

# Scoring For Film

## Mancina Makes His Mark

**H**ow does a musician break into the tightly knit world of film scoring? For Mark Mancina, 20 years of band work, club dates, touring and production have been a ticket to the realm of Hollywood's first-call composers.

A recipient of Grammy and AMA awards, Mancina's recent scoring credits include the movies *Speed*, *Assassins*, *Money Train*, *Bad Boys*, *Man of the House*, the hotly anticipated *Twister* and *Moll Flanders*, scheduled for release in June. Collaborating with buddy

**BY JOHN LA GROU**

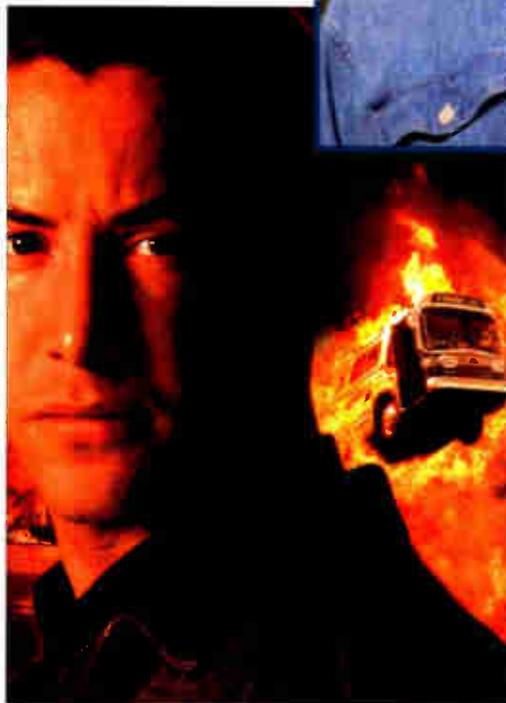
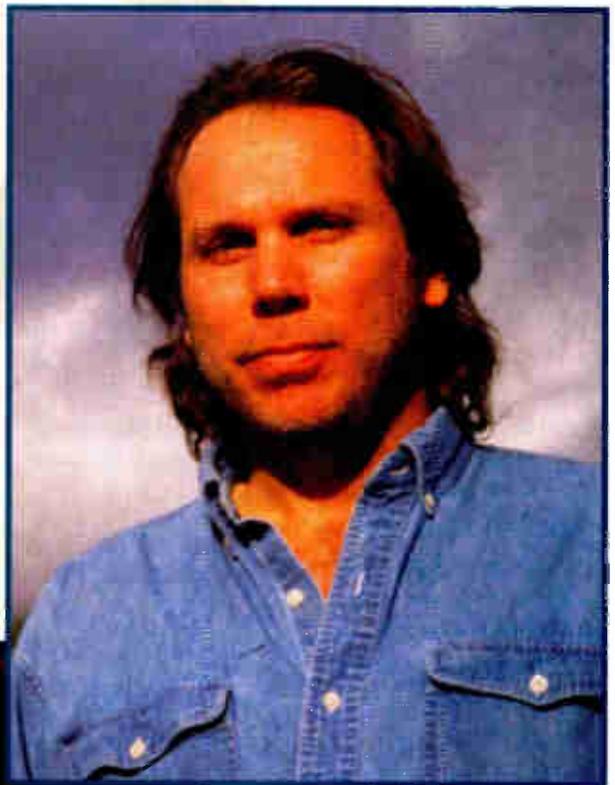
Jans Zimmer, Mancina also produced music for Disney's multi-

Platinum *Lion King* soundtrack. I caught up with Mancina recently in Santa Monica at Media Ventures, Zimmer's pseudo-collaborative scoring studio.

Mancina and I both grew up in Orange County, Calif. We reminisced about our early 1970s classical-rock bands, Handel and Gazelle. With musical roots deeply established in the early '70s progressive explosion (fueled by groups such as Yes, Gentle Giant, PFM, Jethro Tull and Genesis), we enjoyed frequenting each other's gigs and rehearsals. After catching up on old friends and times, we talked film scoring.

"I probably haven't taken the path of your traditional Hollywood composer," Mancina admits. "The road here began after many years of playing guitars and keyboards in Southern California progressive bands, including the group Dexter from 1984 to 1988. During that time, I chanced upon meeting Yes guitarist Trevor Rabin. We developed a close relationship, which eventually led to us writing songs for and producing Yes' *Union* record.

"Sometime thereafter," he continues, "Phil Carson at Victory Records played my song 'Burning Bridges' for Emerson, Lake and Palmer. ELP liked my work and



Mark Mancina and the composite image used for the film poster of *Speed*

asked me to produce their record *Black Moon*. Making these records with Yes and ELP taught me volumes about producing.

"The exhilaration of working with some of my musical heroes was quickly tempered by the reality of artistic personalities. To survive, I learned an artistic diplomacy that has actually helped me to balance a life of production, performance and composition. Such experiences have also taught me how to remain creative while pro-

—CONTINUED ON PAGE SEP 26

# ES Television

## Christopher Franke's Brave New World

If Aldus Huxley ever pictured a place where the Brave New World would dawn, he might have picked Christopher Franke's Hollywood studio. Franke, composer for one of television's most futuristic shows, *Babylon 5*, has put together a home studio and a method of working that com-

**BY DAVID JOHN FARINELLA**

bines the very best of today's technology and tomorrow's hopes.

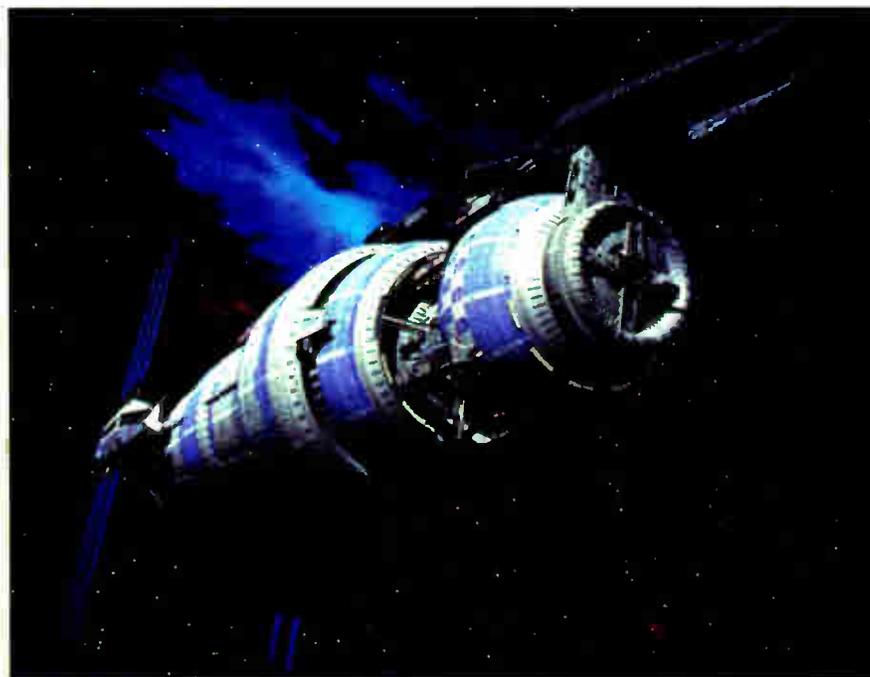
To wit: It's your typical Los Angeles midnight, and many of the city's musicians are either sweatin' up a storm onstage or staring at their reflection in an iso booth, but Franke is looking into a television monitor asking, in German, for a little more oboe in the next take. He's conducting The Berlin Symphonic Film Orchestra (which he founded in 1991) from his Hollywood hills home studio via ISDN lines.

It all began innocently enough. Parents were musicians. At the age of four he picked up a violin and a trumpet, to begin studying and mastering classical music. Then IT happened. In this case, the big IT was the '60s, and Franke, budding classical maestro, was off learning all about improvisational music when his future was sealed. As he puts it with a smile, "I waved the classical education bye-bye for a while." During the "while," Franke was one of the members of the experimental band Tangerine Dream, who were at the forefront of the electronic, techno

—CONTINUED ON SEP. PAGE 28



Christopher Franke in his Hollywood Hills home studio;  
below: a still from the show *Babylon 5*, on which Franke is the composer.



ductive within the hellacious pressures of film scoring.

"Sometime before working with ELP, I met Hans Zimmer. Jay Rifkin had given Hans one of my tapes. He liked it and called me over to discuss film music. That's when I realized that film scores are an ideal platform for presenting the range of my musical concepts and images. It wasn't long after I began working with Hans that I started getting calls to compose entire motion picture scores."

For many, the process of selecting a film composer is a mystery. Mancina says that a movie's director usually, but not always, chooses the composer. "For instance, the producer of *Speed* already had a composer in mind, and it wasn't me," he remembers. "[Director] Jan de Bont, however, lobbied hard to bring me on. As you can imagine, it became very political—but in the end, I got the job."

Mancina says he begins a new film scoring project by figuring out a theme. "After reading the script, I'll begin working on thematic impressions that seem to best fit the emotion of the story," he says. "Then, when the first edits arrive, I'll find that decisive scene that the central theme can ultimately develop around. It's from that central scene where my theme and score develop. The last music I write is actually the opening title. The main title often becomes a preview or creative montage of the entire score."

When a movie's basic filming is finished, Mancina begins receiving daily ½-inch or ¾-inch rough edits, usually with limited dialog and few sound effects printed. "Once the dailies start coming, it gets very, very crazy," Mancina says. "Each new rough edit is a moving target—new scenes, deleted scenes, order changes and more. Yesterday's musical work is frequently rendered useless by today's new edit. Of course, ideally, the composer would start working only after the editing, sound effects and dialog replacement are completely finished," he adds. "Reality is, the insane time pressures of moviemaking won't allow it. Besides, part of the director's creative process includes artistic changes based on hearing the score develop while viewing new edits."

Of course, key sound effects are often unavailable until very near the final edit, as Mancina well knows. He says the director, along with the supervising sound editor, is normally in charge of making sure that score and sound effects work together. "I coordi-

nate closely with the director but rarely get involved with a sound effects editor," he explains.

"The same is true for music and dialog," he adds. "Dialog replacement [ADR] is often one of the last tasks in a movie, and, again, the editor must make sure that music and sound effects complement the dialog. I may only meet the sound effects and dialog editors briefly during production. Regarding sound effects, there is one general rule I follow. I try to always avoid the big orchestral hit over a loud sound effect. Yet, sometimes, this is exactly what a director wants! This again underscores the importance of director and composer working closely throughout a project."

In an age of shrinking post-production schedules and budgets, striking a balance between MIDI-based scores and live orchestral work has become increasingly important for composers. "For me, it depends on the film—there's really no formula," Mancina says. "Some of the decision has to do with budget. Another consideration is artistic impact—though, in my opinion, a live orchestra is almost always preferred; I certainly favor writing for orchestra whenever possible.

"On the recent Stallone movie *Assassins*," he says, "I scored the film entirely with MIDI devices. *Assassins* was an artistically satisfying project because I was free to write complex music with a great deal of counterpoint and depth. The project itself was not your common shooter movie, though, and the lack of live music in no way decreased the film's impact. Actually, given that I had only 13 days to write 93 minutes of music, I think synths were much better-suited to this particular film."

The first thing one notices on entering Mancina's studio is the wall of electronics. Along with countless racks of digital and analog synthesizers, Mancina employs the services of 33 Roland S-760 and S-700 samplers, ten Akai S2000 samplers, Lexicon reverbs and Millennium mic preamps. He also has a wall full of electric and acoustic guitars and basses, including one particularly striking King Crimson guitar, a gift from ELP's Greg Lake.

Mancina's main controller is a Roland A-880, and his sequencing software includes Cubase and Digital Performer. His digital sound palette includes some amazing custom live orchestral samples, many of which he played for me—the ambience and realism surrounding them is extraordinary.

One of Mancina's current projects is

expanding and remodeling a retreat studio in Lake Arrowhead, Calif. "I'll use the cabin to get away and develop new ideas," he says. "Joe Ruggiere built most of my Media Ventures studio cabinetry and is almost finished with the cabin work. He's the consummate craftsman and really understands studio ergonomics. I'm choosing the cabin equipment to parallel my studio in Santa Monica. When I'm done composing in the mountains, I can bring a few diskettes and DATs back to L.A. and pick up where I left off."

Unlike some film composers, Mancina usually hires a conductor to facilitate orchestral scoring sessions. "I have a hard time staying focused on the blend and overall sound of the orchestra if I conduct," he says. "Don Harper is my first-call conductor. He's really tuned into much of the emotion and direction of my scores. We work very well together."

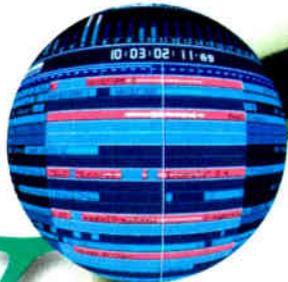
To bring a score together, most film composers rely on the services of a few able assistants. Mancina's in-house attachés include Chris Ward and Robbie Boyd. He says, "These guys handle much of the daily editing, synching, notating and general housekeeping. Creating the music is my responsibility, but when we get to the scoring stage, it's good to know that these guys have meticulously double-checked the scores for accuracy. At thousands of dollars an hour for a scoring session, there's little room for composer error."

Some of Mancina's movie-scoring heroes include John Williams, Jerry Goldsmith, Thomas Newman and, of course, Hans Zimmer. Fatefully, in a *Twister* pre-production meeting with Steven Spielberg and Jan de Bont, Mancina sat in the chair normally warmed by Williams. It appears that Mancina has arrived to stay.

Indeed, with his recent string of successful movies, a ten-times Platinum soundtrack CD, and a potential blockbuster release with *Twister*, Mancina has shown an energy that has propelled him to the top of the Hollywood scoring scene. What's more, his talents as a performer and producer should open many additional doors in his creative unfolding. Congratulations, ol' boy! You're exactly where you should be. And the best is certainly yet to be. ■

*John La Grou is an audio product designer, recording engineer, musician and Internet junky who resides with wife and baby in the Sierra Nevada ritticultural region.*

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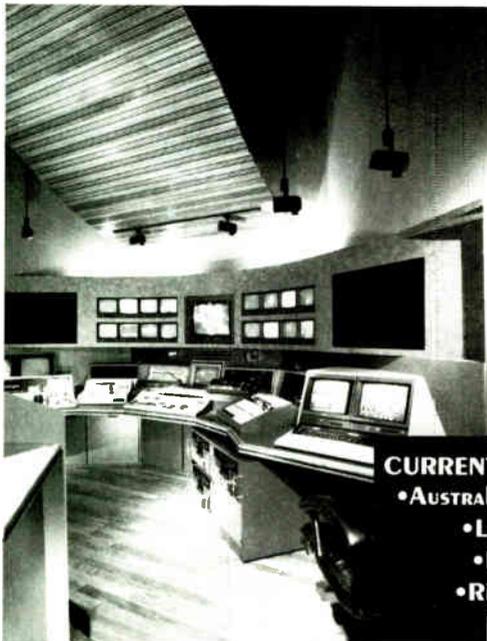
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—FROM PAGE SFP 25, CHRISTOPHER FRANKE  
and ambient movements before there were terms to describe what they were doing.

And then there was the day in 1988 that he looked up and realized that Tangerine Dream had dug too big of a hole for itself and that he needed a break. So he took two years off and organized his life, both musically and personally. He calls it the biggest contradiction in his life, because after leaving Tangerine Dream due to too many demands, he came back to more work than he could have ever imagined.

Shortly after moving into his Hollywood home, Franke built a home studio that occupies two of the four floors. He calls it a project studio, and he has a small room for soloists and a larger room that can handle up to 24 musicians. While he does most of his composing work via the Berlin studio and orchestra, he says he'll use a local studio if the job calls for a soundstage.

In addition to the typical work that goes into building a studio (like dumping seven tons of sand inside the walls of his home for sound isolation), Franke also had some time to develop and customize a number of soundtrack templates that give him the ability to work more efficiently. When you have more than 50,000 samples and the ability to create more than 100,000 sounds, organization seems to be imperative. "It's a little like a Chinese menu," he says with a laugh. "There are too many choices." So, rather than becoming victim to the distraction of choice, Franke developed a number of different "orchestras" that limit him to a certain palette. To give a simple example, there is a general template for an orchestra with electronic instruments score, and another for an orchestral arrangement with a rock band.

Although he's long been at the forefront of electronic music and is the keeper of an extensive sound library, Franke has lately been moving back toward acoustic instrumentation for soundtrack work. "The industry used electronic music to replace expensive acoustic recording, so it became a plastic approach. When that happened, I really felt that electronic music was not doing anything new, so I tried to bring back my old thrown-away classical training and orchestral thinking." He started to work with musicians again, but there was a minor problem. "After 20 years with synthesizers, it altered my approach to acoustic music. Now I know all of the frequencies, and I've become my own engineer and mixer. So, I'm hearing in-

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struments differently, and I'm using an orchestra like a synthesizer because I'm trying things out with them like I would on a synthesizer."

It seems to have paid off, considering the fact that Franke is responsible for creating music for a time and for a number of cultures that don't exist—yet. In the year 2257, as aliens and humans travel on a large space station called Babylon 5 (which he refers to as the United Nations of the future), the opportunities for experimenting and creating new sounds are nearly endless. "Sometimes they'll ask me to compose a punk music piece that plays in 250 years. So, I compose something with Celtic music mixed with Arabian chanting and some acid jazz or techno or ambient and some strange lyrics from an experimental poet like Kurt Weill."

For those pieces he can use existing instruments, but then there are times when nothing of this world will work. Take, for instance, a recent Vorlons celebration on *Babylon 5*. "Since their tradition dates back 20,000 years, I have to do something hyperacoustic and archaic, but somehow different and new," he explains. So he found a Klavins piano in Cologne, Germany, and manipulated its sound in a number of different ways. The piano, which is 12 feet high and weighs two tons, is not encased, so Franke ran chains, mallets and anything else he could get his mitts on across the piano's strings to create new tones. Those original sounds make up the bulk of the Vorlons' signature sound.

For another character, Marcus, Franke not only created a new sound, he created a new instrument. The wind instrument, which he calls a metaphone, combines the tones of a pan flute, a saxophone and an English horn. "I wanted a sound that was powerful, yet lyrical and very breathy," he says. From its plastic mouthpiece, the "horn" goes into a combination of wood and metal pieces and then into a section with a spinning disk, similar to a vibraphone. Then, because it's a Franke creation, another device known as a neurolink controls the speed of the disk. The neurolink, which fits onto a finger like a ring, has the ability to pick up 17 different parameters, including positions like left and right, or up and down, as well as concepts such as yes and no. "It's perfect for a science fiction show," he jokes.

While the music is supposed to take place 250 years from now, the Paramount television network still wants it yesterday. Franke's main workhorse is

TimeLine's WaveFrame workstation, which has been outfitted with 48 voices and 96 MB of RAM. He also uses modules such as the E-mu E-IV, Akai S3000 and Yamaha VL-1m (which he used to find the sound for the metaphone), with new Mesa software from England. While his main keyboard is the Roland A-50, his rack also includes a Korg Trinity and M1 Plus, a custom Moog 3P, and a number of other Rolands, including a JD-800, JV-1080 and a MKS-80.

Franke jokes that he keeps his board, a 64-channel Soundcraft Series 3000, for two reasons: "The big console is basically there to rest my feet and to use all of the great noise gates, because from all the different samples and machines, you get a heck of a lot of noise." He finishes most of his mixing with MIDI volume controls. "I don't use a traditional mixing process anymore," he explains. "Everything is already in the dynamic curve, so when I'm done composing, I'm done mixing. I consider the volume part of the composition."

As far as monitors, Franke prefers JBL 4343 mains for their harsh overtones and their similarity to cinema sound reproduction. For more classical sounds, he relies on Genelec 1030As, though if he uses the reference speakers too much, he says, he gets tired quicker.

He mixes down to the Tascam DA-88 format, though he uses a DAT as his master tape since he generally delivers three stereo tracks to the post-production house. Those three stereo tracks include all of the percussion, the orchestral arrangements and what Franke calls the "dangerous" stuff, which is anything that can burst out either too high or too low.

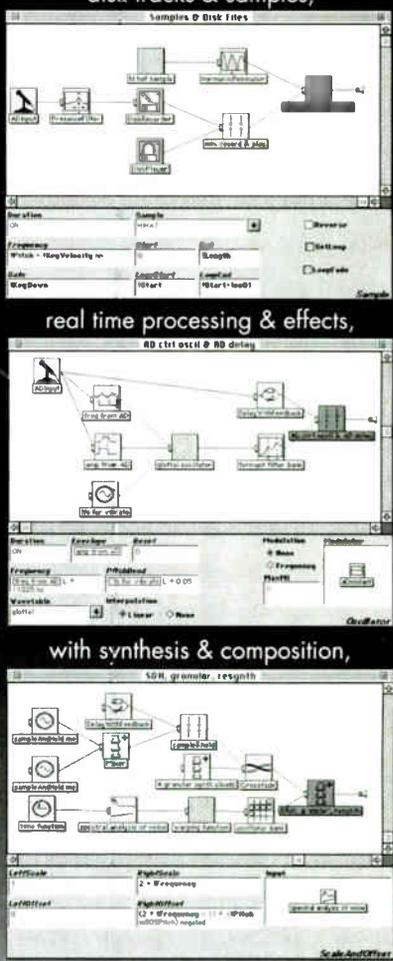
Franke's scoring work on *Babylon 5*, *Walker, Texas Ranger* and ABC's new science fiction show *Hypermasters*, as well as his feature film work, also serves as primer for his own albums—his next studio album will be released on his own Sonic Images label. "Soundtrack work is a big learning process," he says, "so I'll take those experiences and use them later on my studio albums. For me, it's like the Berklee School of Music because I can touch so many different styles." And, as he's pointed out before, he has the ability to create so many different sounds. "It's demanding, but I like it. I have to come up with new stuff all the time, and maybe that's my role in the music scene anyway." ■

*David John Farinella is a freelance writer based in the San Francisco Bay Area.*

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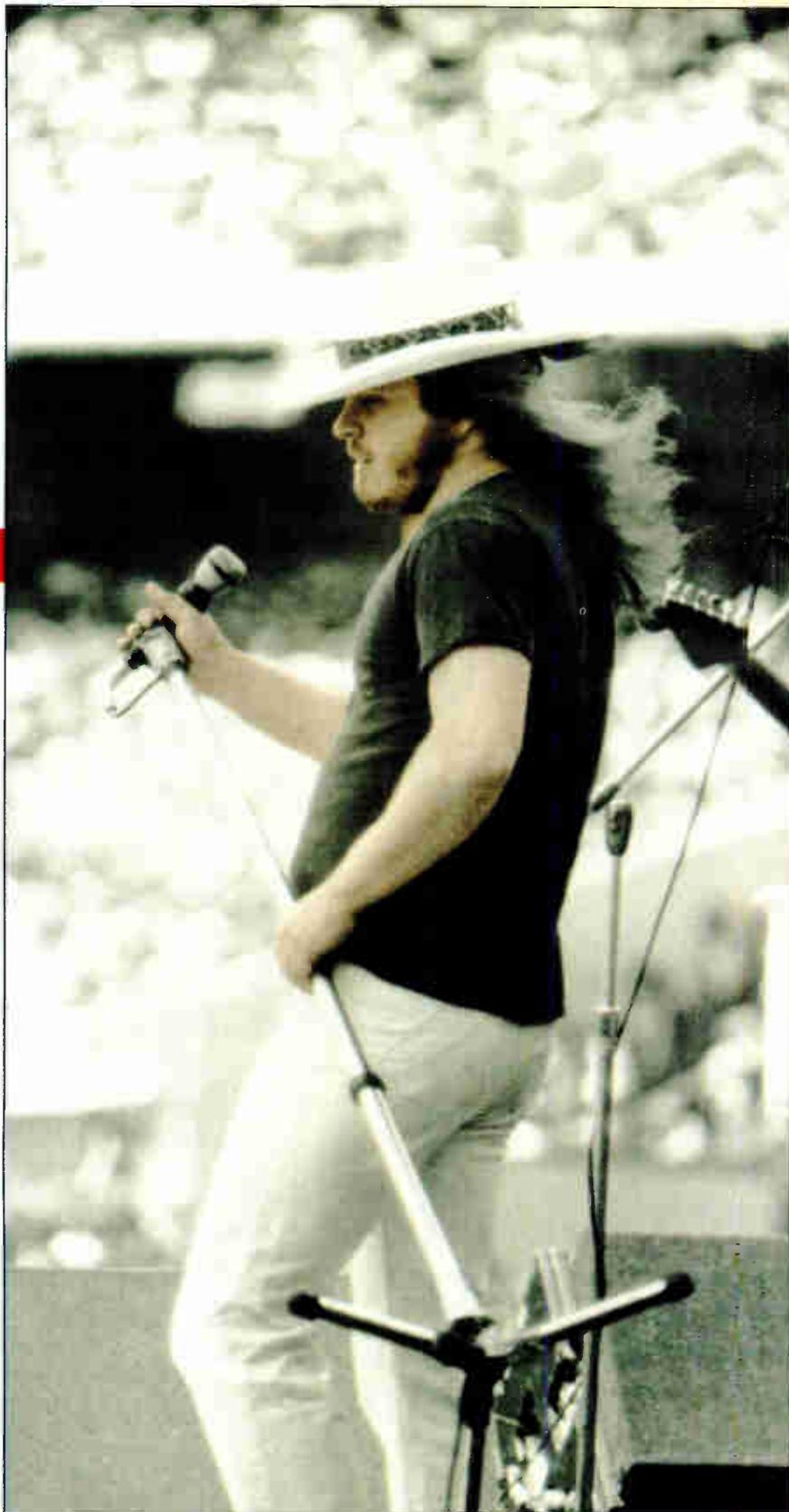
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ture films since taking over the former Evergreen facility four years ago. *Freebird* was mixed on a 60-input Neve VR with Flying Faders, customized for film post to accommodate two operators.

All transfers were performed in-house. Playback and record were from a pair of Mitsubishi X-880 digital 32-track machines, along with a 24-track Studer A820 with SR. Monitoring in the THX-certified room was through a JBL Theater System, which included 2360A horns and 4648A woofers for left-center-right, 8330s for the surrounds and a 4645B dual-18-inch, triple-chamber sub-woofer. Technical support was provided by Dennis Sager, Ground Control's director of engineering.

Three key pieces of footage from the past were put through the Ampex "baking" process—where the aging videotape is heated, causing the disintegrating magnetic particles to re-attach to the tape surface for a very short time—restoring picture and sound long enough for transfer to another medium, in this case D-2 video. The process was used on a version of the title song that was recorded in 1977 at an Oakland Coliseum "Day on the Green," an interview with Van Zant and guitarist Gary Rossington, and two songs from a 1976 concert at San Francisco's Winterland.

Two other songs used in the film, performed at Convention Hall in Asbury Park, N.J., in 1977, had been recorded on half-inch reel-to-reel video, requiring a search for a compatible machine. The

*Previous page: The original Lynyrd Skynyrd Band: back row, L-R: Allen Collins, Steve Gaines, Leon Wilkeson, Artimus Pyle; Front row: Billy Powell, Ronnie Van Zant and Gary Rossington.*

*Left: Ronnie Van Zant at 1977's "Day on the Green"*

*Below: Jeff Waxman, Paul Ratajczak and Kurt Kasulke at Ground Control, Burbank, Calif.*



producers eventually came across Vidipax Corporation, owners of one of very few working machines left.

Four of the songs recorded at Asbury Park and Winterland were deficient in the low end and required Skynyrd bassist Leon Wilkerson to make an emotional return to the studio, playing along with his buddies on tape to enhance the bass line. And Tom Dowd, who produced Skynyrd's 1976 album *One More From the Road*, was drafted to remix the original audio tracks of the film's main concert footage, recorded at the 1976 Knebworth Fair in England. "Gimme Three Steps," "Sweet Home Alabama" and "Saturday Night Special" are high-

lights from that show.

But the most chilling footage reportedly comes from the lowest-tech source: Longtime roadie Craig Reed had filmed the band on their private plane during the 1977 tour. Recorded on a small Super 8 camera, the Reed film depicts bandmembers with families and friends joking around at the airport and traveling on the same 1947 Convair 240 turboprop plane that crashed in a forest in October. The plane, which had run out of fuel, went down near McComb, Miss., killing Gaines; his sister, backup singer Cassie Gaines; road manager Dean Kilpatrick; and Van Zant. Reed survived the crash with his film intact.

Now, eerily, *Freebird—The Movie* ends with a view from the cockpit he filmed as the plane was taking off.

Mixer and sound designer/supervisor Paul Ratajczak described some of the techniques he used to enhance the tape sources, some of them from the P.A. mix or what may even have been monitor mixes. Ratajczak made heavy use of BASE (Bedini Audio Spacial Enhancement) units to help divide up the 2-track and mono soundtracks into the 6-track needed for DTS release.

"I used two [BASE units] on the front and two on the rear surround speakers with different delay times on all six channels," he says. "And I was doing tons of EQ changes for each moment of the song—to try and bring guitars, vocals, keys or drums into the forefront, for instance, without affecting the other instruments in that frequency range. We didn't add any other musicians except for bass overdubs that Leon played on four songs, so it was basically frequency mixing and phase manipulations. For example, I'd take a mult off the stereo mix, bring it up on more faders and do all kinds of processing. So in different sections, I would just bring up a new EQ'd version of the guitar solo and crossfade that up. It was very difficult to do and not have it sound harsh and unnatural. But I was able to smooth it out, and the experience of hearing it in DTS in the theater—well, it sounds like you are there in concert. We A/B'd it to a bunch of other concert laserdiscs after we finished the mix, and it pretty much blew them away as far as feeling like a concert environment.

"The three-dimensional effect of the crowd in stereo surround, and their reactions, are so real," he continues. "At the screening in Atlanta, it was hard to tell what we were hearing—the crowd in the onscreen audience or the crowd in the 5,000-seat Fox Theatre. It was that real. And I sent different parts of the music to the subwoofer, slightly time-delayed. That helped to create a clear low end, because it would have been easy to end up with a muddy mess. I gave them six channels of SR mag to work with, which they then [printed] to DTS.

"It's a very haunting film," he concludes. "My second mixer, Kurt Kasulke, and I worked very hard on building the peaks and valleys, because you couldn't be balls-to-the-wall all the time. It was a very emotional and exciting project to be a part of."

Maureen Dronney is Mix's L.A. editor.

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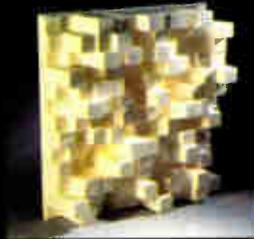
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# POST · SCRIPT

## SOUND FOR FILM

### READY OR NOT, HERE IT COMES

**STEREO SURROUND  
SOUND IN THE MUSIC  
INDUSTRY, PART 1**

by Larry Blake

The literal definition of "stereophonic sound" is sound reproduced over two speaker channels, right? Wrong. Look it up in any dictionary and you will find the number specified as "two or more." Regardless of dictionary definitions, the history of stereophonic sound has embraced three channels since Day Zero of stereo, the research conducted in the early '30s by Bell Telephone Laboratories comparing results between varying flavors of 2- and 3-channel systems.

Practical reasons (almost all sourcing back to grooves on vinyl) have resulted in 2-channel stereo being adopted as the standard for music recording and manufacturing, where film sound has always utilized three main channels because of the need to "anchor" the sound to the image on the screen. (More on this next month.)

The day has come to bring multichannel surround sound to the world of music recording once and for all. I'm not talking about quad, as practiced in the aborted attempts in the early '70s, and I'm not talking about matrixed surround sound, which in some ways isn't all that different from standard 2-track stereo. I'm talking about (to some extent) recording and (definitely) mixing and mastering music for full-blown 5.1-channel release, which is to say for left/center/right/left surround/right surround/sub-

woofer (the .1 channel that requires approximately one-tenth the bandwidth of the five full-frequency channels).

This is the format that will be made available to the music recording world when digital video disc is introduced later this year AS AN AUDIO-ONLY FORMAT. The final specifications of bit rates, sampling frequencies and the use (or non-use) of perceptual coding are still being worked out as I write, but one thing is certain: The 5.1-channel music format is just around the corner.

Some debates are going to start to heat up, and one of the first will undoubtedly be whether the surround speaker channels should be matched to the left-center-right set. Using identical speakers for all four quadrants was fairly standard for quad, but this ain't the early '70s, and this ain't quad. I

—CONTINUED ON PAGE SEP 39

### HOOPING IT UP WITH ROBERT GOULET

by Tom Kenny

Some of the best TV this past winter was the series of 30-second ESPN college basketball promos featuring Robert Goulet in a recording studio. They're camp with a capital C, from a snappy script by Weiden & Kennedy copywriter Ernest Lupinacci. And they feature full, rich music tracks accompanied by the distinctive Goulet baritone.

Music for the eight spots was produced by music director/producer Scott Liggett of Alan Ett Music Group in L.A., recorded and mixed by Mark Howlett.

The shoot was designed to mimic the legendary Frank Sinatra sessions at Capitol in the '50s, including the gold-mesh baffles and the eight-piece band setup (two trumpets, trombone, tenor sax, piano, guitar, bass, drums). Liggett cast the band visually to resemble "those jazz cats from the '50s, right down to the JPL scientist look." The one noticeable difference was a rear-

projected video screen that flashed college hoops images, edited to the music, dialog and lyrics.

*At O'Henry Studios' custom 64-input API console (left to right): Alan Ett Music Group VP Scott Liggett, owner Alan Ett and engineer Mark Howlett*



PHOTO: SHEILA HALL

**FACILITY SPOTLIGHT**

**POMANN SOUND**

**MAKING MOVES IN MIDTOWN**

by Tom Kenny

From 1983-1993, Bob Pomann had a one-room penthouse on 46th Street, where he did primarily sound design for radio and television commercials. His staff consisted of Lynn Weeks, a jack-of-all-trades who juggled the hats of studio manager, bookkeeper, scheduler, and marketing and sales rep.

At the end of 1995, the mid-Manhattan Pomann Sound facility included the original penthouse, three new studios, a machine room, a shop, a MIDI room and a lounge, spread out over three floors. Five years ago, he bought his first SSL ScreenSound workstation;



Above: Bob Pomann, center, surrounded by (bottom row, L to R) Pat Schweikart, Marc Bozerman, Dave Chmela, Joe Gauci and (top row, L to R) Aria Boediman, Lynn Weeks, Lou Esposito, Violet Miranda and Jerome Hyman. Below: Bob Pomann in the booth, with assistant engineer Ray Rivera at the board.

today he has four, networked via SoundNet. The staff of 18 now includes four "jet fighter pilots"—Marc Bazerman, Joe Gauci, Juan Dieguez and Lou Esposito.

"I can't speak for all of New York, but business has been good for me," Pomann says. "We've been working with more of the bigger agencies in town, and, of course, doing *DOUG* [the Nickelodeon animated series] was a very good thing. It's amazing that *DOUG* is more popular now than when I posted it." In fact, Jumbo Pictures recently contracted for another



er 13 episodes.

*DOUG*—a boy-and-his-dog series about the foibles of growing up, has certainly grown in appeal the longer that repeats have been on the air. According to *The Hollywood Reporter*,

it was the Number One cable animated show in 1995, and it no doubt helped increase Pomann's profile in sound for picture. However, Pomann's bread and butter for the 20-odd

—CONTINUED ON PAGE SFP 42

The band was recorded to 48-track digital over two days at O'Henry Studios in Burbank. Goulet came in to rehearse. Liggett had worked up arrangements for "Happy Days Are Here Again," "Oh Susanna," "High Hopes," "Delta Dawn," "Bad, Bad Leroy Brown," and others and sang and played the MIDI sketches over the phone for the agency's approval. The turnaround time for the arrangements was two days. At the same time, he called Goulet in Oklahoma to determine what keys he was comfortable in.

During the recording, a set was built at Hollywood Center Studios. A remote truck was brought in to play



Robert Goulet on location for the ESPN college basketball promos

back the 48-track and record Goulet's vocal. The musicians had headphone feeds; Goulet had an earpiece. He sang into a Neumann U47 tube.

"We had a two-day shoot,

four songs a day, and Robert really wanted to perform his vocal live on camera," Liggett explains. "In the spots, he goes in and out of singing, talking in rhythm and ad-libs, so the live per-

formance became the crowning jewel in the production. He was fantastic and hard-working. There were maybe 100 to 150 people on the set, and it was dead quiet. It was like he was singing a cappella, completely in sync with the image and these full band tracks that nobody else could hear. It was magical."

Incidentally, Weiden & Kennedy creative director Jerry Cronin plays the recording engineer in the spots. Don't be surprised if he turns up in a Coen brothers film some day. ■

# EFFECTS-HEAVY AXIOM "FROM DUSK TILL DAWN"

By Mel Lambert

All-digital consoles are beginning to make regular appearances on dubbing stages around Hollywood. During re-recording of director Robert Rodriguez's recent movie, *From Dusk Till Dawn* (starring co-producer Quentin Tarantino, George Clooney, Harvey Keitel and Juliette Lewis), an 80-channel Solid State Logic Axiom Film Dubbing System with DiskTrack and Vision Track was installed in the South

Dubbing Stage at the Twentieth Century Fox lot in Century City. Used primarily for sound effects premixes and finals, the Axiom was connected to the room's Harrison Series PP-1 board via 6-channel tielines; the Harrison also features a separate SSL 5000 Series monitoring section, which interfaced directly with the Axiom.

"This was definitely an effects-heavy mix," recalls Tennyson Sebastian III, who handled effects mixing.



At 20th Century Fox, in Beverly Hills, Calif., effects mixer Tennyson Sebastian (rear) dubbed the recently released *From Dusk Till Dawn* on an SSL Axiom film console using an integrated DiskTrack system. Front, the film's director Robert Rodriguez.

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"In certain pivotal scenes, we had as many as 80 channels of effects elements, which provided an excellent test for the Axiom. To retain transients and 'punch' through the premixes and finals, the all-digital system was great. The tracks sounded very transparent. The Axiom ran with very few glitches and never crashed."

Axiom's integral DiskTrack random-access hard disk system, Sebastian says, also speeded up a number of processes. All effects premixes were recorded and replayed directly from Axiom's DiskTrack. "While we were premixing the effects stems, we saved a great deal of rewind time by pre-loading tracks from DA-88, 35mm mag and Pro Tools drives directly to DiskTrack. Then we were able to move to any part of the track instantly, without waiting for external transports to catch up."

Which is also where Axiom's optional VisionTrack video record/playback system came into its own. "Sure, while setting up premixes and EQ profiles, we were able to run VisionTrack locally on the Axiom—rather than use the room's film projector—and move through a scene much more quickly than if we had to wait for 35mm film to stop, rewind and then come back up to speed. Our projectors are pretty fast, but nothing beats the speed of hard disk video!"

The Axiom's automation computer served as the master source of time-code data and was used to drive the PP-1 analog console as a slave system via conventional Ketchum motion-controller units. "We would use the [Axiom] moving-fader automation to develop our premixes," Sebastian ex-

plains, "and then lay off the stems to DiskTrack using a final pass under automation." Picture changes were handled by editing the audio elements recorded to DiskTrack; automation and digital picture followed these edits. The film's 6-track DTS/Dolby Digital mix was mastered to 35mm mag for passage to Fox's Darryl F. Zanuck Theater, where the 8-channel SDDS mix was prepared. (The Fox South Stage features 5.1-channel LCR plus split-surround monitoring.)

Compared to conventional consoles, Sebastian says, "operation of Axiom is *totally* automated; everything can be stored and recalled to timecode or feet and frames. I also like the fact that you have one knob per function, which makes it very easy to find the right control without paging through multiple layers."

Each Axiom channel strip includes dedicated controls for a 4-band parametric digital EQ section; eight auxiliary sends; a digital dynamics section; digital effects processing, including reverb, delay and ambience generation; plus direct assignment to four 8-track buses; an additional 32 assignable buses are also available. All signal processing applied during recording or overdubbing can be saved as snapshots or dynamically automated without affecting the recorded signal.

Although Rodriquez made his early reputation as a director of low-budget movies, including *El Mariachi*, his latest offering is taking full advantage of the technology currently available. "The Axiom was *real cool*," he confides. "I'm a 'hands-on' kind of director—I edit my own movies on Avid or Lightworks—and prefer to work quickly. I'm a great believer in digital technology.

"I've worked as a music mixer on my other films, and I like to get behind the board. In terms of speed, audio quality and the number of options you can try out during a mix, there is no way that I could go back to mixing any other way! I've been spoiled by Axiom's high-speed [DiskTrack] audio playback.

"While we were premixing some of the more 'dense' reels, we could use the [VisionTrack] small color monitor, which was more useful—and closer to us—than the main screen. We could see a lot more of the intimacy of a scene from close up and respond with fast moves. It's an extremely practical system that lets you access sounds very quickly." (Incidentally, Rodriquez

is a card-carrying IATSE Y-1 mixer.)

According to Barry Ross, director of engineering at Fox's sound department, "Like most major film companies, we are carefully examining the new all-digital choices that are currently available. We favor a systems approach that would enable us to streamline the various editorial, premixing and re-recording stages.

"So far, we have been able to examine sections of that system, to see how it would integrate within our configuration. Working with the Axiom was a good learning experience, and one that showed the system's potential for mixing films like *From Dusk Till Dawn*. We worked closely with SSL to develop the project and were very pleased with the end result."

It's now obvious that digital is more than just a buzzword around Hollywood; Fox Studios' experience on *From Dusk Till Dawn* shows what can be achieved within controlled situations. Yet, while an increasing number of dub stages are examining the advantages that all-digital designs might offer, there are still serious reservations. The cost of most systems remains prohibitive, and a painless transition from analog functionality to its digital equivalent is not guaranteed. The ability to provide routine file in-load and archiving, not to mention the role to be played by "digital dubbers," has many studios convinced that the time might not be right. Watch these pages for future developments. ■

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—FROM PAGE SEP. 36, SOUND FOR FILM

agree that matched speakers might be the way to go if you are trying to capture, and put the audience in the midst of, a live acoustic event.

I further believe that the multiple-surround-speaker array approach is proper for visual media: It's one thing to listen to a quad or 5.1-channel orchestral music or sound effects recording sitting in the middle of your living room; it's another matter when you are trying to evenly disperse the sound throughout a rectangular theater. Film sound is not just about re-creating reality—we're primarily supporting the drama that's *on the screen*, as in *not* in the audience. How often in movies today are we pulled out of the story with crap needlessly rattling around in the surrounds? Mind you, this is something that had already been dealt with in the early days of stereo film sound,

yet again proving that the more things change, the more they stay the same.

No question there will be a big change in the mastering of records from today's relatively straightforward situation, which relies almost exclusively on composite 2-track mixes. The primary mastering focus is on EQ and compression and level matching, with additional attention paid to sequencing and editing. The Mastering Engineer of the Future, I predict, will do all of the above and a whole lot more. The growth of 5.1-channel mixes, and the axiomatic need to create two masters (5.1 and standard 2-channel stereo) will require great changes in mastering facilities and procedures. First and foremost, mastering facilities will have to have 6-channel monitoring capability, adding center channel, surrounds and subwoofer (actually, *two* such systems—their big one, plus one with small satellites).

Not only will mastering houses have to add amplifier and speaker channels, but they will have to put in new consoles that have much more in common with standard mixing boards than they do with today's purpose-built mastering units. Even the best-equipped facilities have what are in essence extraordinarily simple and great-sounding 2-bus boards with minimal capabilities for true mixing. But this next level of mastering will require the ability to record six channels simultaneously (when making 5.1 masters) and to handle eight or more sources going into both mixes. The board will have to be capable of all forms of matrix encoding and decoding, and in many ways will be a baby film console.

You might ask yourself, what is this guy talking about? Wouldn't I bring in composite—as in, everything mixed together—sources just as I do today, which would mean separate 6-track and 2-track mixes?

You might, but you would be much better off mixing your multitracks down to "stems," film-style, onto an 8-track modular digital multitrack and then doing the final combines during mastering. (Film stems, for those of you who haven't been following this column, are the stereo dialog, music and sound effects mixes that, when played together at unity, represent the final mix of a film. They are then combined during print mastering, creating a 2- or 6-track master.) The chief benefit will be to allow the mastering engineer to tailor EQ, compression, etc. for individual components. Currently, almost all in-

struments will appear on both tracks, so it's impossible to simply EQ an instrument to taste during mastering because you have to take into account what that will do to the rest of the mix. As a result, there's a limit on how much a mastering engineer can "save" your mix.

By relegating the creation of the final 5.1-channel surround mix to the mastering stage, the initial mixdowns can be made as they are today, at any standard recording studio. The only difference would be that instead of recording on two tracks, you would be recording on an MDM, or eight tracks of a multitrack. (I use the number "eight" only because it's a nice round number, although there's nothing stopping you from spreading your mix across 12, 16 or even 24 tracks. Nothing, except your mastering engineer telling you that you've taken a good idea too far.) Since the mastering console I've described doesn't exist now, this is all highly speculative. My guess is that mastering engineers should expect to deal with no more than 16-track stems, and will design consoles to provide another eight inputs for reverb returns, etc.

A sample music stem configuration might involve mixing instruments to four tracks, with bass kept separate from an overall LCR stem, which would contain everything except bass. Within

the LCR group, the kick, snare and solo instruments might be assigned to the center, with everything else apportioned primarily (via 2- or 3-track panners) to the left and right tracks. The other four tracks might be lead vocal, stereo backup vocals and maybe the solos.

One of the big advantages for music mixers to go the way of film stems is that you retain a great degree of flexibility and delay the final combination of tracks until mastering, and the mix itself has the potential to be less precious and nerve-wracking. Instead of printing different mixes with vocals hotter or softer, you know you can control that during mastering. You want to completely overdub the bass after you've mixed the song? No problem. It should be clear that shifting a percentage of final decisions to mastering is not procrastination; the reasons are solid and sound.

Of course, each band, each project, perhaps each song will require different master mix configurations. Other approaches might have the stem mix including surround information printed at the original mix, and others might have two LCR groups and an LR pair.

There is no question in my mind that the music world is heading toward the film world of center and surrounds—home theater is no longer just

confined to laserdisc fanatics; a glance at any mainstream consumer audio magazine will show that this format is here to stay, regardless of what certain audiophiles want to believe. Now, for some random advice on making stems:

- Forget the subwoofer for now, maybe even forever. The variance between sub systems in home theater systems is substantial (no pun intended), and this is aided and abetted by the bizarre low-end response found in almost all living rooms. I mean, low end is tough enough as it is with normal stereo, and whatever is to be gained, real or novelty, from using the sub channel is more than counteracted by the risk that it's going to be played completely out of whack. (I realize that the problem is already bad considering that subs are an important part of the standard low-end portion of many home theater systems.)

- Make sure that whatever multitrack format you mix down to (MDM or multitrack) is formatted—with respect to timecode, sampling rate, sync reference, etc.—the same as your multitrack masters. This way, you can easily lock everybody during a mix and can avail yourself of what film boys and girls have been taking for granted for decades—punching in on your mix. You then take the flexibility that the mastering-from-stems process allows

## POST NOTES

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**People:** Intermedia Partners Inc., owner of audio post house Soundelux in Hollywood, has named **Jeffery Scott Edell**, formerly of the consulting firm Duitch, Franklin & Co., as its new president...**Paul Rodriguez** has been promoted to president of EFX Systems in Burbank, and **Debi Kimball** has been appointed VP of sales...Santa Monica music and sound design house Smoke & Mirrors has signed a representation agreement with songwriter/pianist **Jim Brickman**...**Facility News:** **National Video Center** of New York, which already has an audio-video production operation in Boston, has opened a Westport, CT, branch, dubbing it "Santa Monica of

the East"...L.A.'s award-winning music and sound company **Machine Head** has opened a New York City facility, adding staff sound designer Bill Chesley and producer Barbara Spenningsby. Meanwhile, Stephen Dewey (effects) and Johannes Hammer (music) recently completed a world-music-designed TV spot for Microsoft Encarta "World Atlas"...**Audio Recording Unlimited** in Chicago took delivery of an SSL Scenaria system, which was put to use on *The MusiCrittters Christmas* radio program...Rocket Lab, a San Francisco facility known more for its mastering work, has added video post capability with the purchase of an Avid 800 system. The intent is to bring in multimedia production, as filmmaker Kevin Pina has been named **Rocket Post and Multimedia's** new manager...**Bad Animals/Seattle** says it is reorienting its music production/post

house to concentrate solely on audio post-production...**Baron and Baron Productions** (father and son, Aaron and David) took delivery of New York City's first Studer Editech Post Trio workstation...**Todd-AO Studios** in Hollywood has picked Audix Studio 1A reference monitors as its primary film-to-video speaker system...**Warner Bros. Television** purchased a Soundcraft DC2020 console with C3 moving fader automation for use in the new TV network's promotional spots...**Projects:** **Peter Buffett** recently produced and composed original music for Gardetto's Snack Mix television spots out of his Independent Sound facility in Milwaukee...**Disney MGM Studios** in Orlando, FL, had Michael J. Fox in for voice-over work on *Homeward Bound II*; also, Beth Fraikorn has been named general manager for post-production operations. ■



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Steve Davis '96

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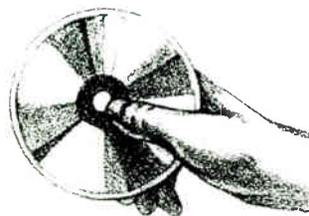
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one step further: Change relative balance of instruments during mastering, alter the mix or completely redo sections after mixing, punching in only on the affected tracks.

- If you have an 8-input workstation you might even consider using it as your mixdown recorder. Do your editing and sequencing, and either spit out your sequenced, edited master to MDM or take your workstation to the mastering session for the ultimate in last-minute control. Always remember that A/D converters are critical, so beg, borrow and do everything short of stealing to get the best ones.

- To those of you who always forget to put a complete set of tones on your mixes, stop the madness now! If you got dirty looks from your mastering engineer in the past, wait until you walk in with 16 tracks of stems and no tones.

- And, finally, remember to make a clone of your master mix (or a backup of your DAW files). This is your master, and don't rely on the record company to properly store and preserve your work. Part of the idea behind this column is for you to start changing your working methods because this format will become standard before you know it. Protecting your work for the future involves not only creative matters such as mix format, but also prosaic issues such as constant, low temperature and relative

humidity for the storage of masters.

Changes and advancements in technology usually bring with them choruses of "we couldn't have done this without," as much as "we don't have time to" or "we don't need to." I remember in 1984 talking to the producer of a top-rated TV show who told me that with their tight schedules, they didn't have time to mix in stereo. Less than five years later, the delivery requirements of all the networks would insist on stereo.

The same will go for 5.1-channel stereo music. Like it or not, you'll make the time and effort, and the sooner you get with it, the better off you'll be. Your old stereo product may be in good company, but that's no reason to not get in on the bottom floor of a sure thing. Next month, I'll remain on this pulpit and will discuss an issue in this 5.1-channel discussion that is easy to overlook: the use of the center channel.

I've never written a column that was so directly aimed at the music recording world. Please let me know what you think by writing to PO Box 24609, New Orleans, LA 70184, fax 504/488-5139, or via the Internet: [swelltone@aol.com](mailto:swelltone@aol.com). ■

*Larry Blake is a sound editor/re-recording mixer who lives in New Orleans for reasons too numerous to mention, although one of them is simple to explain: It is not Los Angeles.*

—FROM PAGE SEP 37, POMANN SOUND

years he's been in the business, has been radio.

In the early '70s, at the age of 17, Pomann arranged a high-school internship at Wendell Craig Inc., a facility that did trailer and radio spots for film companies like MGM/UA and Paramount, as well as creative programming for the National Lampoon Radio Hour and the original *Saturday Night Live*. After Craig closed the business, Pomann opened Tape Tracks with partner Joe Conforti. He kept his film clients, did syndicated radio shows and began working with work from Grey Advertising and NW Ayer. Two years later, he moved to 46th Street and opened Pomann Sound.

"I've always done spot work," Pomann says. "And over the years I seem to have found certain specialties." He does radio spots for Warner Books, Random House, Simon & Schuster and Harper Paperbacks, eight or nine beer companies, including Foster's, Bass,

Harp and Genessee, and radio for ABC Primetime, Daytime and the affiliates. "We send all of the ABC spots and most of the others to radio stations over ISDN lines through DG Systems.

"We just finished up a fun campaign for Foster's Beer—the 'How to Speak Australian' spots for Angotti, Thomas, Hedge," Pomann adds. "Those included ten radio spots and six for television." Using the Dolby Fax system, they recorded talent directly from The Sound Firm in Sydney, Australia, then handled casting, effects, voice records and all music. "We have a MIDI room now," he says, "so we're doing a lot more original music—Stanley Schwartz is our staff composer."

The music and effects editorial package seems to work well for clients. Each of the four rooms has an attached vocal booth, accommodating anywhere from three to eight people. For four years now, he has recorded voices through the mic pre's in the mixing boards directly into Screen-

Sound. In the past year, he's been using an Amek 9098 mic pre, with his mic of choice, the Neumann TLM170.

"I close-mike everything," Pomann says, "and I find that the 170 works well for very different announcers. We also do a lot of vocal effects here, and it tends to handle dynamics very well. It's also the mic Disney prefers. We use it when we have Gilbert Gottfried in—he's the voice of Iago in *Aladdin*. He tends to be hard on a mic, with a strong attack and loud level. I find that you have to have a good mic pre to take his kind of level."

Each of the four rooms has a ScreenSound system, and three networked TC Electronic M5000s ("I love that box; it's replaced the Lexicon") with 20-bit converters were installed recently. A SADIe workstation was also added in the past year to handle additional editing. The Penthouse has a Trident 65 board; the MIDI composing room has a Yamaha ProMix 02R and a Sony PCM-800 digital 8-track. Monitors include Meyer M-1s, in-house-designed "real-air cherrystones," UREI 813s and JBLs, powered by Bryston amps. On the video side, Pomann Sound supports D2, 1-inch, 3/4-inch, Digital Beta-cam, ASC's Virtual Recorder and SSL's VisionTrack. Pomann has extensive music and effects libraries on CD, including original effects created in Foley. The facility was designed and is serviced by Ira Kemp of Cylinder Systems.

One of the facility's recent high-end projects includes audio design and post for 13 episodes of a new animated ESPN series called *SportsBenders*, which is in the can and was expected to air some time this spring. Despite the concentration on radio and TV spots, and the forays into animated series work, Pomann's first love is film, and it's a direction he expects to be taking soon. He sees the ad work as a different discipline, though he finds complete synergy between his radio work and the demands of film sound. What he brings to picture, he says, is added "weight," which makes it more cinematic.

"You see so many animated spots on TV now," Pomann says, "but the tracks are very thin because the music houses may add sampled sound effects, like a drum fill, but there's often nothing there giving it pure weight without sounding corny or too cartoony. I think radio is all about visual sound. You have to construct the spots to paint a visual picture in the absence of one."

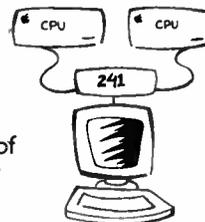
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# NEW PRODUCTS FOR FILM/VIDEO SOUND

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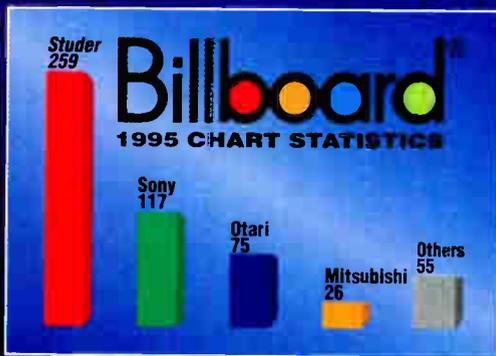


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## DOLBY SEU4 ENCODERS NOW FOR SALE

Dolby Laboratories' SEU4 encoder system, which is required to produce programs in Dolby Surround, was previously available only on a one-year lease directly from Dolby Laboratories in San Francisco. It is now available from Dolby pro audio distributors, either for purchase or on a three-year lease. As before, use of the Dolby Surround trademark to identify encoded consumer programming requires a no-cost license, obtained from Dolby. Also, the companion SDU4 decoder continues to be available for purchase.

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## SPATIALIZER 3-D STEREO PRO TOOLS PLUG-IN

The PT3D from Spatializer Audio Labs (Woodland Hills, CA) is a 3-D sound imaging and enhancement plug-in for Digidesign's Pro Tools 3 digital audio workstation (also compatible with Pro Tools 2 with TDM). PT3D uses panning controls to place sounds outside the conventional soundstage area. Software features include metering for phase, spatial impression and stereo levels; a bypass switch engages or disengages the spatial effect. Hardware is a single 56001 chip in the Pro Tools 3 DSP Farm.

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## PORTADAT REMOTE

A third-party supplier offers a compact, wired remote for the HHB PortaDAT portable DAT recorders. The unit has controls for play/ffw/rwd/stop/record/pause and seek forward/back and is compatible with both the standard and timecode versions of PortaDAT. The unit is available through many PortaDAT dealers or direct by calling 312/975-6598. Retail is \$150.

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## FAIRLIGHT DIGITAL DUBBER

The Digital Audio Dubber (DaD) from Fairlight USA (Culver City, CA), is designed to replace multitracks and mag dubbers in post applications. The system consists of a control surface, rack storage unit, CPU and I/O for up to 24 tracks. A single remote can manage multiple "dubbing units," with the ability to individually control more than 300 tracks. Tracks can be slipped individually and reconfirming done on the dubbing stage. Features include forward and reverse lock with film chain, and individual on-/offline switching of dubbing machines. Storage can be MO disk, conventional hard drive, or both. A 24-track system is priced at \$750 per track.

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## SONOSAX SX-S PORTABLE MIXER

Sonosax USA (North Hollywood, CA) offers a new version of its SX-S portable mixing console. The expanded SX-S model features input modes switchable between standard and mute, improved gain structure with more front and head room, advanced ergonomic design and quieter operation than its predecessor. A new film/intercom module accessory replaces two input modules and provides metering, remote tape start/stop, advanced auto-slate and private intercom.

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## EV 635L BROADCAST MICROPHONE

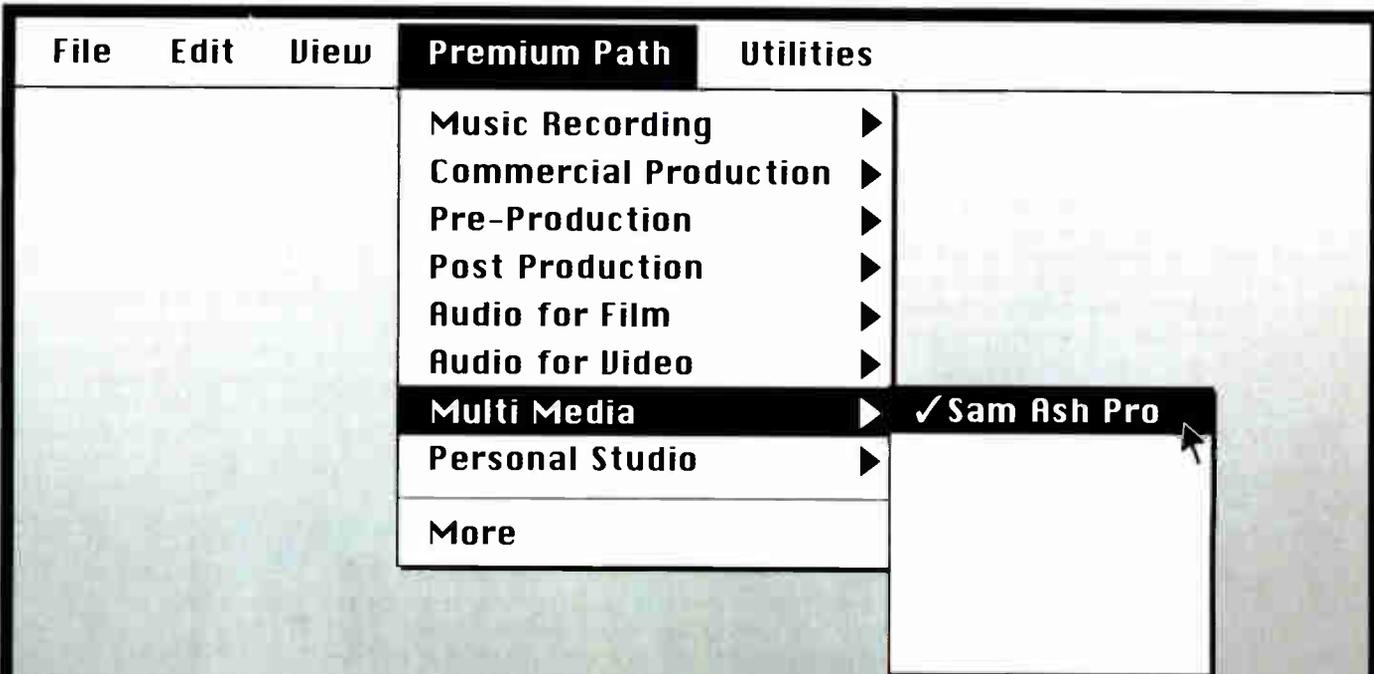
The 635L from Electro-Voice (Buchanan, MI) is a new version of the 635A microphone, with an extended, interview-length handle. The 9.5-inch handle provides ample room for station flags while allowing greater reach on the mic for a stronger signal. The 635L is available in fawn beige or black.

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## DIGIDESIGN OPEN AUDIO SOLUTION

Digidesign (Palo Alto, CA) debuts its Open Audio Solution, where Pro Tools software is now available for Session 8 Mac and Audiomedia II hardware. Additionally, all Pro Tools software sessions are compatible, whether created on a Pro Tools III system, or on PowerMix, a \$795 software-only system (for 2-track record and up to 16-track play). This allows Pro Tools to run on qualified PowerPC-based computers without additional hardware. Audio facilities can now use a full Pro Tools III system with TDM, the virtual digital environment, for recording and mixing, and then divide editing tasks among smaller systems.





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**Kevin Mills, Owner, Larrabee North**

"I've used the SL 9000 J Series console on my last three album projects at Larrabee North. The 9000 has all the punch of previous SSLs as well as added warmth and smoothness. It is the best sounding desk I've ever used for mixing or recording. The console's new computer system is easy and fast, and offers infinite flexibility. Once you use the 9000, you don't want to use anything else." **Dave Bianco, Grammy nominated Producer / Mixer**



## SL 9000

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# ALESIS XT

## DIGITAL 8-TRACK RECORDER

Four years ago, the first ADAT recorders were delivered to the audio industry. Now 70,000 recorders later, the next generation of ADAT has arrived. And it's worth the wait. The new Alesis XT adds 20 new features and functions over its predecessor and is priced at \$3,495, which is \$500 less than the original price of the first ADAT. But Alesis didn't stop there: The new machine is built into a sleek, robust chassis that's more solid and more compact than the original, and it improves transport control with faster locate/lock-up times—and provides better audio performance.

sync of up to 16 transports, for as many as 128 tracks.

On the rear panel, the 1/4-inch, unbalanced -10dBV connectors have been replaced with RCA jacks, while the 56-pin EDAC connector—with eight channels of balanced +4dBu I/O—is the same as the original. There is one subtle variation with XT's balanced interfacing: The outputs are now servo-balanced, so no level loss occurs when the balanced outs are connected to an unbalanced mixer. Also used on certain Soundcraft, Neve and Soundtracs mixers, as well as the Alesis X-2 recording console, the 56-pin EDACs are

three rackspaces high but feels beefier than the first ADAT, with a shallower front-to-back depth and two scooped-out sections along each side for lifting the unit. Four removable, rubber non-skid feet protect tabletops or counter surfaces from scratches. The front-panel sub-assembly attaches to a heavy, one-piece, die-cast aluminum chassis. The design objective of this central chassis block was to remove any variations in tooling of separate metal pieces by creating a rigid, single-section frame for mounting the power supply, electronics and transport components.

Included with every XT is the



XT definitely has that new-generation look, but it's still an ADAT at heart: The flat, black front panel is gone, replaced with a brushed-silver look and extruded-aluminum faceplate. Alesis has always been on the forefront of using custom display technologies, such as those used in the Q2, SR-16 and QuadraSynth, but the XT goes much further. On the left side of the unit, a large, multicolored, vacuum-fluorescent display shows the tape locator data, meters, status indicators and other session data.

The tape format—eight tracks on an S-VHS tape—is unchanged, and XT is fully compatible with tapes recorded on any ADAT system, including the original Alesis unit, Fostex RD-8, Fostex CX-8 and Panasonic MDA-1. And like other ADAT-format modular digital multi-tracks, XT offers sample-accurate

rugged, with large, gold-plated contact pins. By the way, all Alesis ADATs—XT and original recipe—have been using 56-pin EDAC connectors for several years now, and the XT manual erroneously refers to the multipins as "ELCOs" (which are compatible with the EDACs but made by a different company).

The remote meter bridge connector has been eliminated on the XT. With the availability of consoles having expanded metering capabilities, Alesis felt that the remote meter bridge option was unnecessary. Other than these changes (and a cast "Alesis" logo), everything else on the back panel (sync, BRC, LRC, punch-in/out jack and optical digital I/O connectors) is similar to the original ADAT.

Physically, the 20-pound unit is

LRC, a palm-sized remote controller that duplicates all of the transport controls. The LRC connects to the ADAT via a two-conductor, 1/4-inch cord; the eight-foot cord attached to the LRC can be extended using a 1/4-inch female-to-female "barrel" connector and a standard guitar cable.

### UNDER THE HOOD

With such a slick outside package, I had to see how the insides stacked up. As with the ADAT, access to the transport and electronics is through the top cover, which in the case of the XT requires only five—rather than 12—screws. The transport is cleanly laid out, with plenty of finger room for cleaning and maintenance. On the underside of the chassis are two doors that provide easy access to the power supply and the capstan drive belt.

BY GEORGE PETERSEN

By the way, the XT and all other ADATs employ a switching power supply that runs cool and does not require a fan. One obvious plus of the switching supply is that it will operate at any AC line voltage from 90 to 250 volts, either 50 Hz or 60 Hz. ADAT recording should be "no problemo," whether your recording exploits take you to Beijing, Benelux or Beirut.

The left side of the recorder houses the electronics. The main board has a socketed EPROM containing the XT control software, the transport control and logic circuitry. Also on the board is a lithium cell that retains autolocator settings, even when the unit is unplugged or switched off. In my experience, such batteries typically last at least five years (a cell in my Korg PolySix recently gave out after 15 years!), so around the turn of the century, if you encounter a senile-acting ADAT, the problem may be no more than a dead battery. The audio I/O boards (balanced and unbalanced) are mounted along the rear wall.

### SYNC/LOCKUP

XT also increases the intelligent control of transport operations, with servo control of the deck and microprocessor monitoring of the braking and motor action. The "intelligent" part refers to XT's ability to "learn" how to compensate for changes in transport dynamics. For example, let's say the system slightly overshoots a locate point. The first time this occurs, there is a slight delay while it makes the adjustment; but the next time, XT automatically compensates for the overshoot and parks the tape right on the money.

The XT's transport mechanism is the same as the original ADAT; however, improved software control makes it significantly faster in terms of the wind speeds. In Wrapped mode, the original ADAT shuttled at approximately ten-times play speed. XT is about four-times faster, shuttling at about 40-times play speed. The drawback here is that when shuttling tape, the XT's transport is considerably louder than the original ADAT's. Given the choice of the two, I'd prefer a faster machine and put up with a little extra noise.

One of the main complaints about the original ADAT was the unbearably long times that were often required to get all of the decks in a multimachine setup to achieve exact sync. Typically, on a 24-track session, I would press Play and then wait about ten to 12 sec-

ALESIS XT SYNCHRONIZATION TESTS		
<i>Here are some machine lockup times we found in a typical studio setting. Please note that the XT times were consistent, so only one lock time is shown. The original ADAT lock times tended to vary considerably when rewind/fast-forward/locate operations were involved, so the lock time in the chart presents a range from the shortest to the longest times we measured. Also, the fast-forward times to locate points were slightly longer than the rewind times we measured.</i>		
16-TRACK LOCKUP RESULTS		
CONFIGURATION	OPERATION	LOCK TIME
XT-XT	Play from dead stop	2 seconds
ADAT-ADAT	Play from dead stop	4-9 seconds
XT-XT	Rwd 2 min to locate point, play	4 seconds
ADAT-ADAT	Rwd 2 min to locate point, play	5-12 seconds
24-TRACK LOCKUP RESULTS		
CONFIGURATION	OPERATION	LOCK TIME
XT-XT-XT	Play from dead stop	2 seconds
ADAT-ADAT-ADAT	Play from dead stop	9-12 seconds
XT-XT-XT	Rwd 2 min to locate point, play	4 seconds
ADAT-ADAT-ADAT	Rwd 2 min to locate point, play	13-20 seconds
<i>Many ADAT owners will want to add XTs to an existing setup, so we checked out the performance of various XT/ADAT combinations. If you have one original ADAT and one XT, then the XT should be the master; in a 24-track (single XT/dual-original ADAT) system, several permutations are available:</i>		
24-TRACK LOCKUP RESULTS		
CONFIGURATION	OPERATION	LOCK TIME
ADAT-XT-ADAT	Play from dead stop	4-7 seconds
XT-ADAT-ADAT	Play from dead stop	6-9 seconds
ADAT-XT-ADAT	Rwd 2 min to locate point, play	6-14 seconds
XT-ADAT-ADAT	Rwd 2 min to locate point, play	8-16 seconds

onds before all the tracks were in sync. From a dead stop, a 24-track XT system locks up in approximately two seconds; rewinding that same system two minutes back to a locate point with auto-play required four seconds.

The bottom line is that once you've used an XT, you probably won't want to go back to a standard ADAT, for a lot of reasons, such as...

### SONIC QUALITY

The XT boasts new-generation Philips converters—18-bit ADCs (128-times oversampling) and 20-bit DACs (8-times oversampling). Specs are nice, but I was interested in discovering how the new machine compared sonically to the original ADAT. My critical listening tests with the XT consisted of feeding identical program material (rock, classical, jazz) simultaneously into an XT and an original ADAT, which were interlocked in sample-accurate record/playback. This allowed the luxury of making instantaneous A/B comparisons between the machines. The results from a panel of engineers/producers (including my-

self) were identical: In every case, the XT demonstrated a noticeable improvement in sonic detail over the original ADAT. This was most evident in upper-end clarity, particularly with high percussion (cymbals, bells, triangle, hi-hat) and the top-end reproduction of harmonic-rich instruments such as violin, cello, piano and acoustic guitar. Reverb tails seemed much more detailed on the XT, with natural decays.

### FEATURES AND COMFORTS

Five years ago, Alesis' intent was to produce a digital multitrack at an affordable price. With this goal in mind, some of ADAT's more esoteric features—such as individual track delay, digital track routing and multimachine offset—were shifted to the BRC controller. Now XT includes these and 20 other new features at a price that's less than the original recorder.

Despite the added features, most of the XT's recording functions are simple, straightforward operations. Below the meter display are the eight track-arming buttons, but—unlike the original

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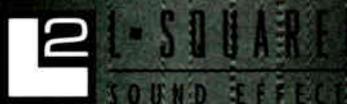
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**FIELD TEST**

ADAT—the XT allows punching-in/out of any tracks while recording continues on others. Essential in many post-production applications, this is a welcome improvement on the XT.

The new machine now offers ten locate points, all settable on-the-fly and editable to .01-second accuracy. The ten locate keys also double as a numeric keypad for quickly entering locate or edit points from the front panel. XT's Rehearse mode allows safe, non-destructive previewing of auto-punch recording operations. The pitch up/down buttons also double as data increment/decrement keys during editing operations, and a front panel Clock Select key chooses a 44.1 or 48kHz sampling rate.

Many of the XT's improvements merely simplify basic routines. The XT now includes an extended recording time offset mode, which allows longer recording times by recording on one deck and having a second take over just as the first tape ends. Previously, this was only available using two ADATs, a BRC and a tedious list of keystrokes. Thankfully, the operation is much simpler now and can be performed using only two XT's.

Many other small additions are a nice touch, such as a Write Protect Override (when you need to record onto a tape whose record tab is removed and you want to continue recording); and the fact that pitch-shift values are displayed in both percents and musical cents. These don't exactly change the world, but they definitely make life easier in the studio.

The XT's custom vacuum-fluorescent display is a major upgrade that improves the ADAT interface, with more flexibility in customizing the deck's display to user preferences. For example, the user now has control over the selection of hours/mins/secs/hundredths of a second, indicated in absolute or relative time. The meters are multicolored displays in 13 steps, from -48 to 0 dB. The peak-hold feature can be set to momentary (two-second hold), infinite

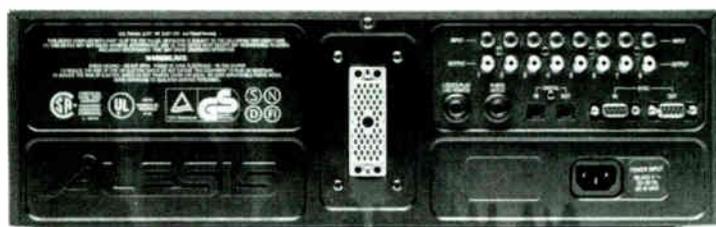
(with peak-clear switching) or bypassed entirely—again, the choice is up to the user. I also liked the fact that the track number is illuminated under each meter. On more occasions than I wish to recall, I'd have to look twice at the old ADAT display and count the meters, to verify the track number, especially in dim control rooms.

ADAT's blinking-decimal-point Error Correction indicator has been replaced with a small flashing star on the vacuum-fluorescent display. For more detailed information, a hidden mode allows monitoring the actual error count of any tape. This feature also provides the user with a means of running objective comparisons of various tape formulations and brands.

One of the nice things about XT is how it can integrate into an existing ADAT system. If a user has one ADAT and adds an XT, not only does this provide additional tracks, but by assigning the XT as the master deck and accessing its machine offset feature, the system becomes capable of digital assembly editing. Suddenly, multiple takes of basic tracks (or instrumental/vocal takes) can be combined into one seamless performance that incorporates the best sections of many takes. Additionally, data from one—or several—XT track(s) can be digitally routed and copied to a different track(s) on the XT itself or a second ADAT transport. Before performing a difficult punch on a vocal track, you can make a digital "safety" copy within the machine itself to any number of additional tracks. Previously, such functions were only accessible via the BRC controller.

With the debut of the XT, Alesis has added significant performance improvements to its line of ADAT-format recorders. But perhaps more importantly, XT makes a strong statement regarding the future of the ADAT format, as well as the company's commitment to maintaining compatibility with tens of thousands of existing ADAT users worldwide.

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



Alesis XT rear panel

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# PREVIEW



## EV RE1000

Electro-Voice (Buchanan, MD) offers the RE1000, a true condenser studio microphone. The RE1000 is an externally biased, high-voltage condenser with an ultra-thin gold laminate diaphragm design. It has a self-noise floor of less than -14 dB, and it contains transformerless output circuitry and a DC converter that enables the mic to operate with less than 12 volts of phantom power. Retail is \$950.

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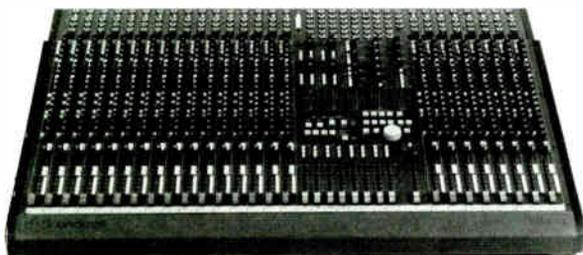
## SOUNDCRAFT GHOST

The Ghost console is the newest model from Soundcraft (Northridge, CA). Ghost offers low-noise mic preamps with phase switch and phantom power, 4-band EQ with two parametric mids, ten aux send buses (two are configured for stereo) and four stereo returns. Control features include Sony 9-pin control for video recorders, record-enable from the computerized master section and MIDI machine control of digital multitracks. Other MIDI controls include a snapshot-mute recall system and data control faders. A timecode reader/generator triggers mute snapshots. Options include an LED meter bridge and a 24-channel expander. Prices start at under \$4,000; a moving-fader version ships this summer.

## NETWELL ACOUSTICAL MATERIALS

Netwell (Minnetonka, MN) announces its new Silence Acoustical Covering. The lightweight covering is Class-A fire-rated, ribbed, woven polyester and states an NRC value of .65. Available in 24 colors and sold by the linear yard or in 50-yard bolts, the material has an acrylic backing, is Velcro-compatible, and is mildew-, mold- and fray-proof. Netwell's new Acoustic Ceiling Tiles feature an NRC absorption coefficient of 0.90. The 2-foot-square panels, which may be adhered to a flat ceiling or dropped into suspended ceiling structures, are available painted in several unique designs or white.

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## APHEX 661

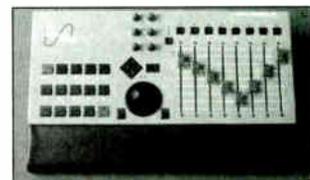
The 661 Expressor from Aphex is a single-channel tube (12AT7) compressor/limiter. The 661 provides three compression curves, hard-knee, soft-knee and No-Knee™, with manual or automatic operation. The unit features Aphex Tubesense™ and Easyrider™ circuitry, and High Frequency Expander™ and Spectral Phase Refractor™ processing. Link modes include stereo link, master/slave link and unlink; sidechain access is provided, as well as a sidechain lowcut filter. Operation is -10/+14dB switchable, with a bar graph level meter on the front panel. Other front panel controls include input, threshold, output, ratio, attack time, release time, HF ratio and HF corner frequency. Servo-balanced XLR and TRS input and outputs are accessible on the rear panel. Cost is \$749.

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## ALESIS NANOVERB

Shipping this spring is the NanoVerb, an 18-bit digital effects processor from Alesis (Los Angeles). The NanoVerb, a 1/2-rackspace unit, offers hall, room, plate and nonlinear reverbs; stereo chorus and flange; delay; and chorus/room, chorus/delay/room and Leslie/room multi-effect programs. A/D and D/A converters are 18-bit, with a 20-bit internal processor. Controls include input and output level, program select, effects mix and a program parameter adjust control. LEDs indicate power/input and signal input/clip. Suggested retail price is \$179.

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## AUDIOMATION AUDIO STATION

New from Audiomation Inc. (Ashland, MA) is the Audio Station digital controller, a tactile control surface for digital audio workstations. The Audio Station has eight motorized touch-sensitive faders, 12 function keys and six rotary knobs, all programmable to control workstation tasks. Also included are transport control keys and assignable shuttle/scroll wheel. Audio Station provides MIDI, GPI and ADB interfacing to most audio workstations.

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## HAFLER P1000

The P1000 Trans•ana from Hafler Professional (Tempe, AZ) is a single-rackspace amp delivering 110 watts per channel (FTC) into 8 ohms and 55 watts per channel into 4 ohms, with a 100dB signal-to-noise ratio and a stated frequency response of  $\pm 0.1$  dB from 20-20k Hz and  $\pm 0/-3$  dB at 0.1-100k Hz. The convection-cooled P1000 features proprietary TRANsconductance Active Nodal Amplifier topology, which stabilizes operation to increase imaging accuracy. Also incorporated is Hafler's NOMAD circuit protection system. Connections are balanced XLR 1/2-inch or unbalanced RCA inputs and barrier output; front panel includes bridged-mono and power switches and thermal, clip and signal LEDs. Suggested retail is \$499.

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# PREVIEW

## DIGITECH VTP-1

The VTP-1 from DigiTech (Sandy, UT) is a 2-channel unit combining a tube preamp, EQ and A/D converter in a 2U chassis. The preamp uses a 12AX7 tube input circuit and is suitable as a tube DI; front panel preamp controls include mic/line input select, phase invert, -20dB pad and 48V phantom power. The built-in EQ is 4-band, with sweepable mid-bands, as well as a switchable low-cut filter and EQ in/out bypass. The onboard A/D converter is 18-bit, 44.1 or 48 kHz, and converts to either AES/EBU or S/PDIF. The VTP-1 features a balanced, post-EQ send/return loop, and can be fitted with an optional transformer-balanced circuit. S/N ratio is better than 100 dB (A-weighted), frequency response is +0/-1 dB from 15-300k Hz. Retail is \$999.

Circle 232 on Reader Service Card



## E-MU DARWIN 4002

E-mu Systems (Scotts Valley, CA) releases the Darwin 4002, the latest in the Darwin series of 8-track digital audio disk recorders. The 4002 features an integrated 1GB Omega Jaz disk drive. Each removable 1GB Jaz cartridge stores 180 track-minutes of 16-bit, 44.1kHz recording, while providing full editing access. The 4002 (with 1GB removable disk) sells for \$3,995. The 4001 has a fixed 1GB drive and lists for \$3,795, and the 4000 (without hard drive) is \$3,195.

Circle 233 on Reader Service Card

## LA AUDIO V8 AND C8

New from LA Audio (from ProMusic, Keene, NH) is the V8, an 8-channel tube signal conditioner, and the C8, an 8-channel compressor. The V8 offers eight channels of active tube processing in a 2U unit with two stages of ECC83 tube circuitry per channel. Controls include drive, level, hard/soft adjustment and channel bypass. I/Os are balanced (+4dBm) XLR and unbalanced (-10dBV) RCA connections. The single-rack-space C8 is an 8-channel compressor, usable as eight mono or four stereo channels. Controls adjust threshold and gain range, with link and bypass switches; also included is an LED gain reduction display. The unit automatically determines the optimum attack, ratio and release parameters. Inputs and outputs are balanced 1/2-inch connectors.

Circle 234 on Reader Service Card

## BSS DPR-901 II DYNAMIC EQ

BSS of Northridge, CA, introduces the DPR-901 II, a new version of the DPR-901 equalizer. The DPR-901 II offers all of the features standard on the DPR-901, but has added two major new features. A Split Band Switch allows the unit to be used as either a single 4-band EQ or as two separate 2-band EQs, one for low and low-mid ranges and one for high-mid and high ranges. Also new is a Sidechain Monitor feature. Retail is \$1,549.

Circle 235 on Reader Service Card



## VISCOUNT EFX-3000

Now available from Viscount Professional (distributed by American Keyboard Products, Bloomfield Hills, MI) is the EFX-3000, a 24-bit digital signal processor. The two-unit EFX-3000 offers a range of processing, including compression; real-time analysis; graphic and parametric EQ; overdrive, distortion, chorus, flange, phaser and rotary effects; and various delays and reverbs. Internal memory comprises four banks of 128 fully programmable memories; up to nine effects can be layered. I/Os include line-level, balanced XLRs and a front panel guitar input.

Circle 236 on Reader Service Card

## GRACE 801 MIC PREAMP

Grace Design in Boulder, CO, offers the model 801 microphone preamplifier. The 801 is a transformerless bipolar design and features 48V phantom power, phase reverse and -20dB pad. Gain is adjustable in 2dB steps from 18 to 64 dB. The unit is supplied with a separate power supply. List price is \$4,000.

Circle 237 on Reader Service Card



## MACKIE CR-1604-VLZ

Woodinville, WA-based Mackie Designs introduces the CR-1604-VLZ, an upgrade of the CR-1604 16-channel compact (eight-rack-space) mixer. The new CR-1604-VLZ has all of the standard features of its predecessor but includes new additions and refinements. The VLZ (stands for Very Low Impedance circuitry) incorporates a true 4-bus design. Mackie's proprietary discrete mic preamps are included on all 16 channels, and a new control gain structure handles a 70dB range. Faders are now a 60mm logarithmic design, the midrange of the 3-band EQ is now sweepable from 100 Hz to 8 kHz, and each channel features an 18dB/octave lowcut filter. LEDs indicate -20dB signal present, overload, level set, solo and phantom power. Retail is \$1,199.

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# PREVIEW

## YAMAHA SU10 POCKET SAMPLER

Yamaha Corp. (Buena Park, CA) introduces the SU10, a MIDI-compatible portable stereo sampler with phrase sampling and record/replay capabilities for up to 48 stereo waveforms, with a maximum sampling rate of 44.1 kHz. A finger-driven ribbon controller provides selectable functions such as pitch slide, "scratch" and filtering effects and crossfade between playback and input. The SU10 can replay up to four "songs," or independent sample replay sequences, which can also be layered with samples. Samples can be held, looped (five modes) and reversed; the Scale function plays any sample at 12 different pitches. Retail is \$399.

Circle 239 on Reader Service Card

## ART PRO MPA MIC PREAMP

Applied Research & Technology in Rochester, NY, introduces the Pro MPA, a 2-channel tube preamp, with circuitry built around the 12AX7A. The unit is housed in a 2U steel chassis. Twin VU meters display channel levels, and an LED "tube character" meter displays the effect tube gain and related distortion have on the input signal. Independent variable highpass filters are adjustable from 7 Hz to 150 Hz; +20dB gain, phase reversal and phantom power switches have LED indicators. Maximum gain is 72 dB, with THD less than 0.1%. Inputs and outputs are balanced XLR, unbalanced 1/4-inch. Retail is \$599.

Circle 240 on Reader Service Card



## ROSS 30-BAND PARAMETRIC EQ

The DPX Mainframe from Ross Systems (Fort Worth, TX) is a programmable, 30-band parametric equalizer. Equipped with balanced/unbalanced XLR inputs and outputs, the unit uses 18-bit sigma-delta D/A and A/D converters to process in the digital domain. Thirty bands of stereo EQ are offered, with 12 dB of cut/boost, adjustable center frequencies and adjustable Q for each center frequency; each channel also offers time delay of up to 750 ms. Up to 100 user presets are assignable. The unit is housed in a 1U chassis, with a 20-segment bar graph displaying output level and an LCD user interface screen. The DPX is MIDI-controllable; unit upgrades include digital I/O (AES/EBU, S/PDIF and optical), RTA with pink-noise generator and RTA with auto EQ.

Circle 241 on Reader Service Card

## CORRECTION

The January "Hot Off the Shelf" listed an incorrect telephone number for Zero International, maker of Sound Trap studio door seal systems. The correct telephone number is 718/585-3230.

## HOT OFF THE SHELF

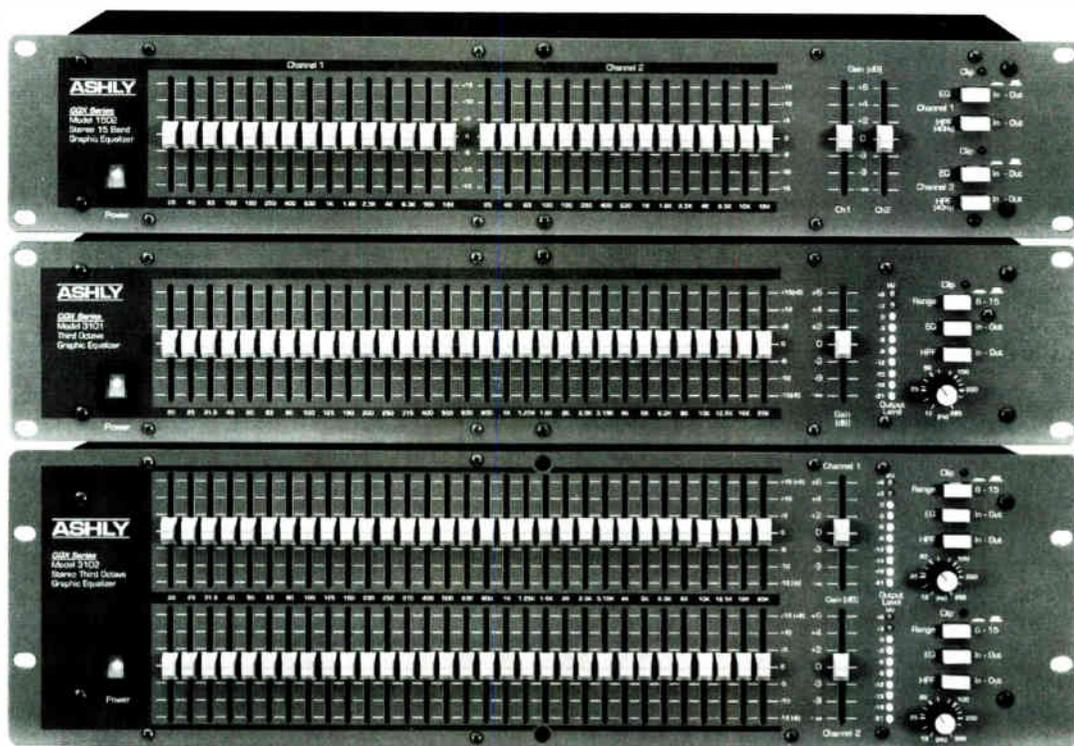
Pinnacle Micro debuts the RCD 5040 4x CD reader/2x CD recorder. A PC version is bundled with an OEM version of Corel's CDCreator 2.0; internal retails for \$995, external for \$1,295. An external Mac version includes Pinnacle's CD Burner 2.0 software and costs \$1,295. All packages include photo images, video clips and two blank discs. Call 714/789-3000...New from Second Wave is the Expanse PX series of PCI-to-NuBus bridges for Macintosh and Mac clone computers. The 2-, 4- and 8-slot systems include PCI interface card, interface cable and external expansion chassis. Prices start at \$795. For more information, call 512/329-9283...Millennia Media announces a new high-resolution gain switch option, with 36 1.5dB steps, for its acclaimed HV-3 stereo and "The Quad" 4-channel preamps. For details, phone 916/363-1096...New Groove Tubes include the GT-K177s power tube; the GT-ECC83 dual triode; and GT-6V6C pentode. Also available are supplies of vintage tubes, including the GT-5881, the GT-6L6A, the

GT-5751 and the GT-KT88. Call 818/361-4500...TRF Production Music Libraries announces the release of two new CDs for its Bosworth library. World Sports contains music designed for sports events and related occasions, and Light Music & Jazz Archive is a collection of 78 rpm archive recordings of pre- and post-war light orchestral, jazz and dance music. Call 914/356-0800 for details...New from Drum Doctors is The Drum Doctor's Drums 2 collection of more than 1,500 samples of vintage and contemporary percussion instruments. The library is available on CD-ROM in Akai, SampleCell and Kurzweil formats for \$299.95; an audio CD version is available for \$99.95. Call 818/506-8123...The Music Bakery introduces additions to its library of buyout production music. New categories include Bold Orchestral Scores, Positive Motivational Themes, Warm Romantic Cuts and Unique Contemporary Grooves. For information and a free demo, phone 800/229-0313, or visit <http://www.musicbakery.com>...United Ad Label's new catalog includes packaging, labeling and J-cards for audio cassettes, DATs, tape boxes and all video formats, in a variety of colors. For a catalog and free product samples, call 800/998-7700...Timecode: A User's Guide (\$47.50) from Focal Press is the new edition of this 272-page reference on all aspects of using SMPTE on location or in the studio, with film, video or audio (analog or digital). To order, call 800/366-2665. ■

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# WRIGHT WFM-II

## STUDIO MONITORS

Over the years, Tom Wright has amassed a substantial following for his line of affordable, high-performance studio mics. An engineer, designer and studio owner, Wright creates products for the needs of real-world users. The most recent innovation from this Atlanta-based inventor is the WFM series of near- and mid-field studio monitors.

Today, there are lots of "me-too" monitors, but from a design and performance standpoint, the WFM (Wave Front Monitors) series is ahead of the pack. The speakers use a unique coaxial arrangement, with a 1-inch dome driver mounted in the center of an 8- or 10-inch woofer. The tweeter juts out a few inches to keep the HF/LF driver combination exactly in phase. The tweeter mount is covered with an acoustically non-reflective material for minimum interaction with the woofer. The cabinets have a 14-sided shape—by eliminating many parallel surfaces, this geometry cuts interior reflections, while the slanted front baffle reduces diffraction effects.

The enclosures are finished in granite-look paint. The rear panel has a 2-inch diameter bass port and a Neutrik Speakon™ connector. Speakon is an accepted standard in sound reinforcement, yet few studio monitors use them. This is unfortunate, as they provide a tight, dependable connection. Unlike banana connectors, Speakons are immune to accidental cross wirings (hooking plus to minus) and won't come loose due to vibration. Cables with Speakon terminations are available at pro audio dealers—don't expect to find them at Radio Shack.

The WFMs are manufactured as left/right units, the only difference being the position of the rear ports. Move the right speaker to left and vice-versa, and the ports can play either toward center or outward. In a semi-free-field placement, sans nearby reflecting surfaces—such as



console-top or stand mounting—the port location makes no difference. My reservation about rear ported designs is their unpredictable LF response when the speakers are placed against a wall or in a corner; however, the ability to "change" the port location offers some flexibility in such situations.

I tested the 10-inch WFM-II monitors, which list at \$2,000/pair. The smaller, 8-inch WFM-III model (\$1,000/pair) is essentially similar, but with less bass output. The WFM-II monitors have a sensitivity of 90 dB (1 watt/1 meter), with splendid, punchy transients using amps in the 150- to 200watt range. I generally monitor in the 80- to 85dB range, providing an ample 25 to 30 dB of headroom. If you really need to monitor much louder than 110 dB in the near-field, the WFMs are probably not for you.

After listening and mixing on the WFM-IIs with numerous amps—100 to 400 watts/side—I found that the "sound" of the monitors didn't radically change with the selection of amplifier, as long as it delivers clean, distortion-free power. The WFM-IIs are free of phase smearing, especially in the

critical 2kHz region. Stereo imaging was also superb, with a well-defined soundstage and a clear ability to reproduce even the most minor changes in stereo mic placements or panpot settings.

But what impressed me most is the monitors' extraordinarily flat response. Top end extended beyond 20 kHz, the -3dB down point of the bass was 60 Hz, and the speaker could audibly reproduce 30Hz sine waves, although at a lower level (approximately 9 dB down). The spectral balance is spot-on, as long as you're one of those few engineers willing to hear what's actually on tape or from the console. Some monitors are designed to make playbacks sound "better" than they really are by adding LF/HF boosts, presence peaks and the like. Not so with the WFM-IIs; what you hear is what you'll get, whether your mixes play on an audiophile or automobile system.

At \$2,000/pair, the Wright WFM-IIs aren't inexpensive, but anyone looking for a solid, professional tool that sets itself apart from the pack should give these a listen.

Distributed by the Olsen Audio Group, 7845 E. Evans Road, Scottsdale, AZ 85260; 602/998-7140; fax 602/998-7192. ■

BY GEORGE PETERSEN

# Squeeze The Most Out Of Your Music



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The 3630 offers dual mono or linkable true stereo operation, so you can process your stereo signal (or two mono signals) from a single unit. Its flexible interface lets you choose between RMS and peak compression styles as well as hard knee or soft knee compression curves to customize the 3630's response for any source material. The 3630 also provides dual 12-segment LEDs that allow you to meter gain reduction *and* display input and output levels.

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Of course, the 3630 Compressor Limiter also has the great sound that has made it the choice of over 80,000 artists and engineers worldwide. We use the industry standard super low-noise VCA

chip to eliminate pumping and breathing, and each channel's independent built-in

noise gate has an adjustable threshold and close rate to ensure clean, transparent performance. The variable Attack and Release parameters offer wide ranges (0.1ms - 200ms and 50ms - 3s), allowing you to precisely control the dynamic response for the job at hand. The 3630's sidechain function can be used for ducking rhythm tracks and background music, or for de-essing vocals when used in conjunction with your favorite EQ device. And, of course, the 3630 allows the highest signal-to-noise ratio for mixing to analog tape *and* optimizes hot levels for digital recording.

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# EUPHONIX CS2000F

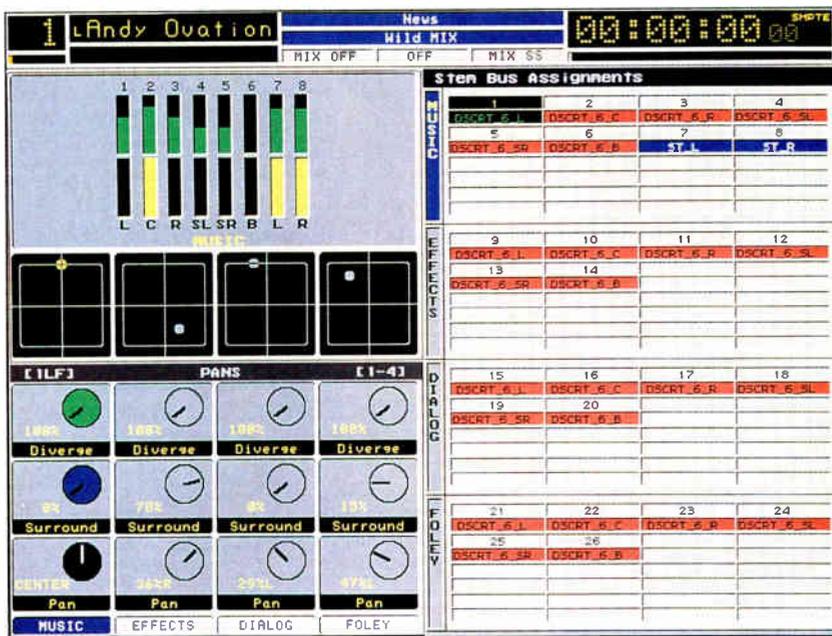
## DIGITALLY CONTROLLED ANALOG FILM-DUBBING CONSOLE

The Euphonix CS2000 Series has been through some interesting changes since I reviewed the system back in *Mix's* March 1994 issue. As you may recall, the basic CS2000 comprises a familiar user-control surface and a companion Audio Tower, which interconnects via a simple serial link and houses the banks of digitally controlled switching, mixing and signal processing circuit elements. All switch, rotary and fader controls can be scanned and stored as either static Snapshots or Total Automation dynamic mix data against timecode.

Now there is a new Audio Cube unit, which allows additional multi-format or aux bus outputs—in banks of four—to be derived from each channel strip, adding a new level of assignment functionality. Also available is an add-on Dynamics and Filter Package, which makes a very flexible compressor/limiter, de-esser, expander, noise gate and similar functions available on a per-channel basis. Finally, the recently introduced Digital Studio Control module (DSC) dramatically improves the ease with which an operator can access and control each of the individual, fully assignable channel and master functions; it also adds a pair of servo-controlled faders, plus a very impressive full-color, active-matrix display screen that eliminates the need for an external video monitor. The DSC screen can be used to display normal system functions, or a graphic display of EQ, dynamics and auxiliary parameters, and features banks of software-defined function keys.

### A SPECTRUM OF SYSTEM CONFIGURATIONS

In many ways, the Euphonix CS2000 has matured during the past two years into a highly flexible, reconfigurable mixing system. All systems are now shipped with the DSC (which formerly was a sys-



Euphonix V2.5 Software—Multiformat Film Panning Screen

tem option; it's hard to imagine how you could take full advantage of the system's amazing flexibility and assignable control without it!). Mainframe sizes are 40-, 72- or 104-channel strips, routing to 24 multitrack buses; multiple-operator formats for film dubbing and video post are also available.

I'm informed that any CS2000 Series console can be upgraded to any other CS2000 format (see below) with the addition of suitable hardware and/or software—either additional channel modules, in banks of four, dual-path strips, or additional Audio Cubes and Dynamics packages. Other system options include a 48x48 Audio Switching Router with integral SnapShot of all I/O assignments, plus Clear Strip Displays that add two eight-character alphanumeric displays above each fader; names can be added from the central keyboard and stored with mix data. The MX464 Master Expander accommodates 16 external mono, 32 stereo or 16 4-track inputs, in any

combination; enhanced monitoring, talkback and 16 GPI relays for fader-start or monitor-mute are related functions.

### MEET THE NEW CS2000 CONSOLES

The basic CS2000D is similar to the format that I reviewed back in 1994 and offers two independent fader paths per channel strip, with two mic- and four line-level sources per channel, plus phase reverse, phantom power, gain trim and highpass filter. Eight aux sends are available per strip, controlled via four knobs; output from the upper fader bank can be routed and panned between 24 internal multitrack buses, or two independent stereo buses. Two independent 4-band EQ sections are also provided per channel strip. EQ can be assigned internally as a stereo pair to either the upper or the lower fader block, or used as two separate monitor sections per fader. MIDI machine control and SnapShot automation are also available.

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BY MEL LAMBERT

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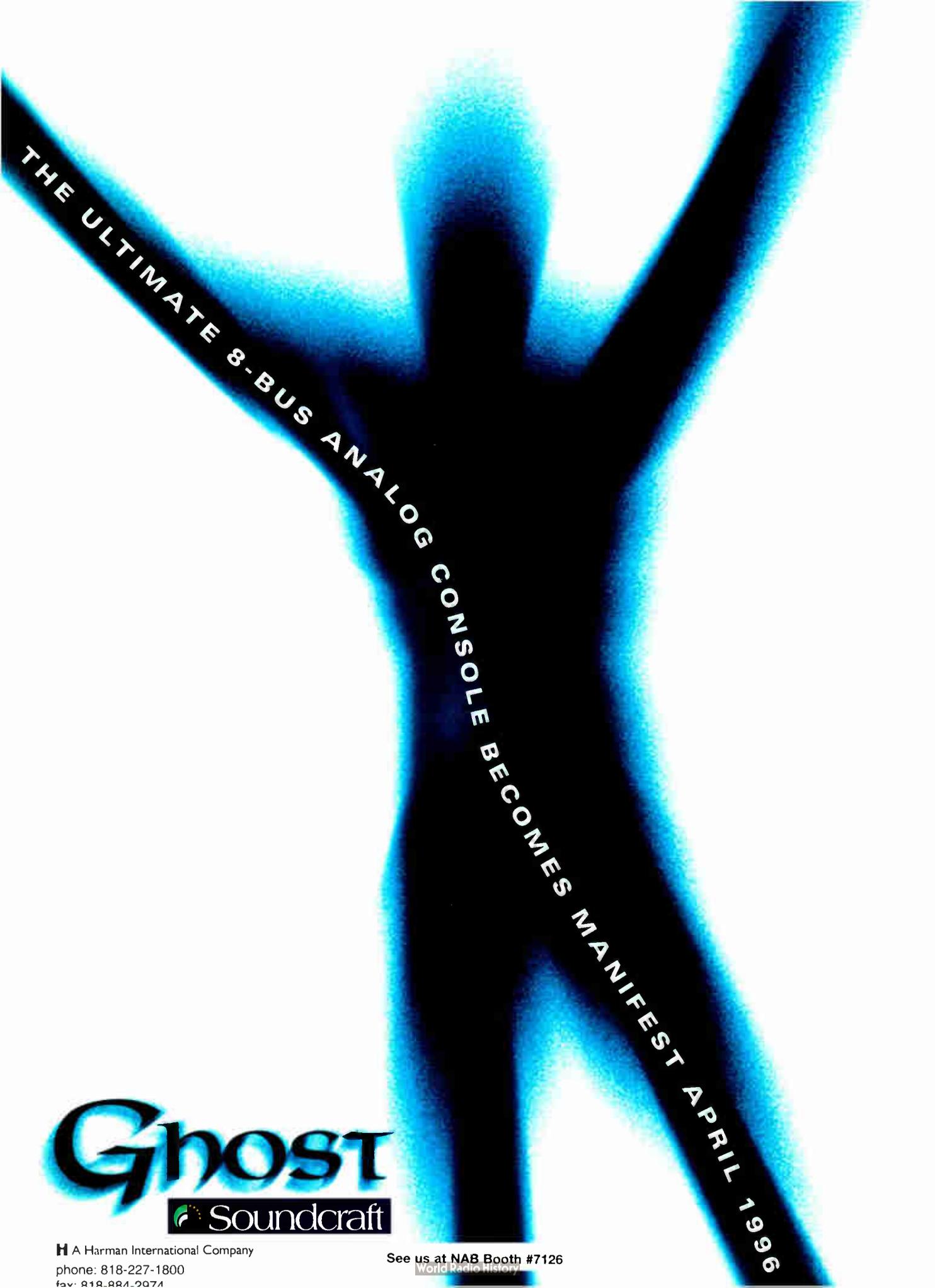
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## FIELD TEST

ed functions are controlled from the DSC. Having hit the appropriate ATTN button on the channel(s) to be modified, that section becomes active on the DSC and allows changes to be made very quickly. In contrast to the older technique of using a rotary wheel and toggle buttons, the advent of the DSC system is a major advancement. And, if you prefer not to leave the central sweet spot as you adjust system settings, the DSC also features 48 channel-select buttons, plus upper or lower, that achieve the same function as the individual buttons per channel strip.

As before, each 4-band EQ section per fader path features high shelving, 1.32 kHz to 21.1 kHz; two mid-frequency parametric bands, 659 Hz to 21.1 kHz and 41.2 Hz to 1.32 kHz; plus a low shelf, 20.6 Hz to 330 Hz. Up to 15 dB of adjustment is available per section, with Q on the two parametric sections adjustable between 0.32 and 11.6. These still offer a very flexible set of parameters, and ones that prove very musical in operation. The degree of overlap is great and can be set easily by ear or by using the graphical EQ profiles displayed on the DSC. Reset accuracy for each 4-band EQ section is within 0.25 dB.

The CS2000M adds the Dynamics and Filter Package plus a single Audio Cube, which can be configured to provide 12 additional auxiliary sends normaled from the lower fader bank, or extra multiformat buses for complex LCRS and other multichannel mix formats.

Moving up-market, the CS2000P for post-production applications is supplied with a different I/O module configuration: The original 24 output buses are reconfigured as six stereo buses per fader, in addition to the familiar pair of main stereo outputs. The multiple stereo buses can be used as feeds to separate stem recorders, or as multilay-

ered LCRS submix groups, for example. They can also be used as subgroups feeding back into any six stereo faders, and hence to the main stereo buses. As would be expected, all six stereo buses can also be summed to the monitors, which should be adequate for most post applications; if additional sources need to be accommodated, the optional MX464 Master Expander will accommodate 64 external mono inputs, 32 stereo or 16 4-track, in any combination. Finally, for enhanced monitor flexibility—and to add PEC/DIR switching of stem recorders—the optional Otari PicMix system provides a great way to interface the CS2000 with multichannel playback environments; more on this later.

The CS2000B is targeted at broadcast on-air and production users and provides 12 mono mix-minus feeds from every fader. Alternatively, if mix-minus outputs aren't required, the busing can be jumper-selected to provide six stereo subgroups instead. (Obviously, if you need both types of output, an optional Audio Cube can be specified to add extra functionality.)

### TOP OF THE LINE: CS2000F VIDEO/FILM SYSTEM

The new CS2000F system is aimed at the multichannel mix-to-picture and film-dubbing markets. The basic system is similar to the CS2000D or CS2000P—with as many as 12 stereo/mono buses from the upper and lower faders—with the addition of an Audio Cube that offers 12 additional multiformat buses; output capacity can be expanded in groups of four to provide up to 48 buses. Because each channel strip can provide simultaneous access to both the two main stereo buses, the normal 12 multitrack/stem buses and the additional multiformat buses—for use as multiple surround stems, for example, or additional aux sends to outboards—the CS2000F packs a remarkable amount of processing into a small amount of space.



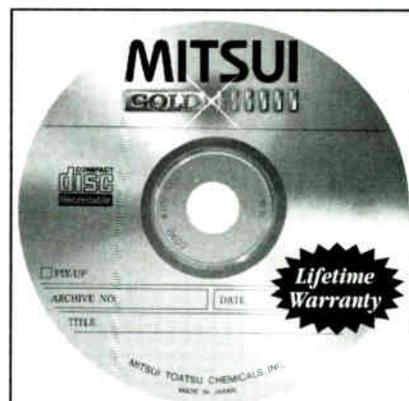
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## FIELD TEST

When set up for two- or three-engineer operation, there are various ways of interconnecting the stereo, aux sends and multitrack/stereo stem mix buses, to provide fully independent control of each section's system functions, or priority switching for solos and mute circuitry, on up to fully integrated automation and other key functionality from the master position; you simply specify what you want, and Euphonix engineers can provide the relevant logic and interconnect access point within the I/O topology. (And, of course, you can add these functions if your facility's workload requires it.)

Establishing just how you want the multiformat mix buses to be configured is simple. A Setup page accessed from the DSC enables each bus to be labeled from a call-up menu; standard designations are available for the familiar 4-channel Dolby Surround LCRS, 5.1-channel SR•D and DTS formats, as well as the Sony 8-channel SDDS configuration; others can be designed as necessary. Having selected the corresponding bus labels, the CS2000F automatically loads the appropriate panning laws onto the DSC's assignable bank of 12 shaft-encoders that provide the appropriate multichannel assignments for up to four subgroup stems, including divergence across the front outputs.

In addition, since multiple outputs are available from each channel—a simple stereo mix, for example, and a complex 5.1-channel via the multiformat buses—the same pan control can now be used across two totally independent

formats, as either the final mix levels or while developing multichannel stems and submixes. It's a remarkable system and highly intuitive to use.

The optional Otari PicMix system provides a great number of the multichannel monitoring, bus/tape switching (PEC/DIR), joystick panner, meter selection and Sony 9-pin transport control that's currently lacking on the CS2000F; I predict that the majority of CS2000F users will opt to add an outboard monitor unit (although I understand that, in the near future, the CS2000 system will incorporate many if not all of these functions, including comprehensive machine control; more details as they become available).

At press time, mix data across the Audio Cube's multiformat buses is only stored as SnapShot information; in the very near future, a planned software upgrade will add full auxiliary and film-style panning automation to timecode. (Because of the enhanced number-crunching involved, this upgrade will also include an additional automation computer and network link.)

Also available as part of the planned upgrade, scheduled to be unveiled at the upcoming NAB convention in April, will be enhanced automation editing (including joining, copy, move and slip modes, plus selective undo), fully automated EQ, automated punch-in/out when a fader crosses an underlying audio position, and absolute offset. Also coming is Bus/Tape switching from assignable keys on the DSC, enabling film-style pickups to be handled from the CS2000F, rather than an outboard remote controller, or maybe the option-

al PicMix system. All in all, these new enhancements are going to enhance the system's already powerful features dramatically.

## IN-USE ASSESSMENT

With such a large amount of I/O routing flexibility, multichannel stem options, not to mention complex monitoring assignments, controlling the CS2000F might seem a daunting prospect. Not true. The combination of simple layouts on each channel strip means that all important controls fall easily to hand. Add the master Digital Studio Control module, and the majority of setup and adjustment functions fall into a central location—right where you are mixing—and are very easy to find. I would have preferred some additional color coding to help designate certain sections of the DSC—upon first use, you are presented with a sea of closely spaced buttons—although you soon learn what is where.

The active-matrix color graphics display is one of the most flexible user interfaces I have experienced. It is fast, easy to read from a distance, and allows a great deal of assignable display functions to be viewed easily and clearly. Worthy of note is the parametric EQ display, with color coding of each section, as well as the remarkable—and patented—dynamics displays with real-time display of threshold and attack/release profiles. A separate display can be called up to show faders, pan, aux and mute information against timecode.

The color panel also provides a continuous display of the primary rotary controls that are remapped to shaft en-



coders directly below the screen, as well as a list of 50 SnapShots with labels that can be used to recall complete system settings. Also provided within the DSC are two rows of eight assignable keys with alphanumeric labels that can be used to provide additional, user-selectable functions, plus a master machine/MIDI transport control section for controlling external transports. (I didn't have time to fully explore the CS2000F's extensive MIDI functions, which can be used to control external MIDI-capable effects processors, as well as issue MIDI machine control commands to sequencers, disk-based recorders or MDMs.)

The DSC also offers a pair of assignable, servo-controlled faders with solos and mutes that can be selected to any upper or lower fader path on the console. The CS2000 Series Total Automation does just about everything you could ask of it—including elegant Takeover and Merge modes for the faders that really speed up the process of updating and refining previous mix and mute passes—in addition to providing complete Snapshot storage and recall, with labels, of all front-panel settings. Up to 99 automated mixes can be stored in RAM, providing 99 levels of undo and mix-pass tree management. Also, any fader on the console can be set up as master for any number of other faders; operation closely mimics a conventional VCA-based system, and is completely glitch-free in operation.

One addition I'd like to see—and I realize that it would be costly—is some form of moving-fader automation across all channels. In many applications—not just film mixing—today's engineers look for visual feedback of where each input channel is currently set, and like to have the ability to perform relative updates of channel, subgroup, master and related levels simply by grabbing the appropriate fader. Also, as a mix progresses, faders will become reassigned to provide final trim levels for both multitrack stem/subgroup outputs and master 6/8-channel print masters. In these and other applications, moving-fader automation, despite the higher costs involved, extends the user-friendliness of any console.

Having said that, however, I understand that the new software release closely mimics the main functions of a moving-fader system via the CS2000F's DCA-based automation. The user will be able to grab any fader and enter either Absolute mode (new fader positions are written instantly) or Relative

Update mode, which adds new data to the existing information as changes are made to previous passes. Although these additions still lack the graphical feedback of a moving-fader system, at least there is more of the simple "grab-the-fader" appeal without nulling or having to pass through a previous fader setting.

For many film/video-mixing applications, the use of an external Otari PicMix system will dramatically simplify a great number of routine functions. In addition to offering virtually limitless monitor formats via a programmable bus output-to-loudspeaker matrix, PicMix simplifies the insertion of various matrix-encoding surround systems—such as Dolby DS-424 and Ultra Stereo's units. Used in conjunction with the PicMix Monitor Console Controller panel, which drops into a spare console area, the system extends the use of multitrack stem and master recorders by adding a set of transport controls and microprocessor-controlled solo, mute A/B and record/safe functions, plus eight assignable channel strips that can be used to drop in/out on groups of tracks via PEC/DIR-style switches. Also available is an outboard Panner Rack and console module that enables multiple inputs to be assigned and dynamically relocated across the current multichannel surround-sound outputs.

As mentioned earlier, Euphonix is planning to unveil an enhanced monitoring section that will incorporate most—if not all—of the functions currently available from the add-on PicMix system. Until then, the Otari unit, designed and manufactured for the firm by TG Systems, will extend the CS2000F's functionality for high-end power users.

Back in my 1994 review, I stated that due to the enhanced functionality and ability to pack a great deal of processing power into smaller control surfaces, the future of analog and digital console design lies in the realm of assignable gain, EQ, dynamics and signal routing. In terms of both extended creative potential, more fully integrated control via the DSC, and outstanding sonic quality, Euphonix has continued to refine and enhance the CS2000 Series. The development of the Audio Cube, outboard dynamics and other system options has kept the Euphonix CS2000 well in the forefront of digitally controlled analog mixing console technology.

Euphonix Inc., 220 Portage Ave., Palo Alto, CA 94306; 415/855-0400; fax: 415/855-0410. ■

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# ATI PRO<sup>6</sup>

## PREAMP/EQ/COMPRESSOR/GATE



ATI has established itself as manufacturer of the Paragon mixing console, the first touring console to provide extremely low distortion and low noise, with a high-quality gate and compressor on every input channel. Designed for house or monitoring chores, this premium desk set the standard by which others have been measured. For the last five years, Paragon consoles have been the choice for many top touring engineers.

Functionally identical to the input strip from a Paragon console, the Pro<sup>6</sup> has a mic preamp, high- and lowpass filters, 4-band parametric EQ, compressor and gate in a single rackspace unit. If you know the console, it's all there and you need read no further. At \$2,295, it's not cheap, but what is that's this good?

The mic preamp uses a proprietary padless circuit, offering a clean and quiet 65 dB of gain, with phantom power and phase reverse switches. The gain is detented in 2dB steps and is concentrically mounted with the auxiliary output gain control, which has its own balanced XLR. A 10-segment LED meter shows the input, the main output or the auxiliary out. The aux out can be used to directly feed an effect or, through a second console input, routed to a series of effects, or used for foldback. The aux out can be switched to post-EQ, and either pre- or post-dynamics processing, allowing it to be picked off one of three places in the processing chain.

The highpass filter is tunable from 10 to 320 Hz, and the lowpass

filter has a tunable range from 1.2 to 40 kHz. Both filters have 24dB/octave slopes. If you've ever been frustrated by shallow console filters that can't remove handling noise without chopping the power at the bottom end of the vocal range, or can't keep the high end of cymbals out of the vocal, you'll like the PRO<sup>6</sup>. Its steep filters allow the engineer to precisely confine this channel to the performer's vocal range.

Balanced rear panel TRS connectors can be switched to either pre- or post-EQ; a ground-lift switch is supplied. Another switch lifts pin 1 on the XLR input, and a third switch lifts ground on both XLR outputs.

The 4-band parametric EQ has concentric frequency and gain controls with a zero-detent, and each band generously overlaps the next. Smaller knobs adjust the Q from 0.3 to 3 octaves; pulling this knob switches the filter from peaking to shelving. Any or all four of the filters can be used as shelves, allowing a flexibility not found on other units. The EQ is wonderfully precise and responsive.

The patented RMS program-dependent compressor has adjustments for threshold, ratio and "make-up" gain; and "soft-knee" compression can be selected. The compressor's control signal can be switched from pre-EQ to post-EQ. Therefore, if the EQ is bypassed on the main audio path, choosing post-EQ compression provides frequency-weighted compression, allowing it to be used to compensate

for proximity effect at lower frequencies, to smooth out midrange vocal peaks, or to de-ess high frequencies. Push both the Comp and Key switches, and the compressor's key signal comes up at the main output. An external signal can key the compressor, or it can be slaved to another unit by connecting their TRS link jacks on the rear. A front panel 10-segment LED meter shows gain reduction in 2dB steps.

The full-function gate has its own 10-segment LED, showing reduction in 6dB steps, and there are controls for threshold, attenuation, attack, hold and decay, high- and lowpass key filters, plus a switch for monitoring the key signal at the output.

The Pro<sup>6</sup>'s careful design and quality construction includes threaded nut inserts in the chassis and an internal fan to keep the unit stable. The amazing thing is how quiet and clean the sound is.

Not every show can carry production with it, and many tours cannot carry a Paragon console due to financial or logistical reasons; but often there are one or two audio inputs, sometimes called the "money" channels, that require uncompromised audio quality. Sometimes a single, high-quality mic preamp; EQ; and dynamics processing; plus the primary mic are enough. For those not touring, this is an excellent tool for going direct to tape. In today's all-digital recording environments, the ATI Pro<sup>6</sup> is the one analog device to own.

ATI (Audio Toys Inc.), 9017-C Mendenhall Court, Columbia, MD 21045; 410/381-7879; fax 410/381-5025. ■

BY MARK FRINK

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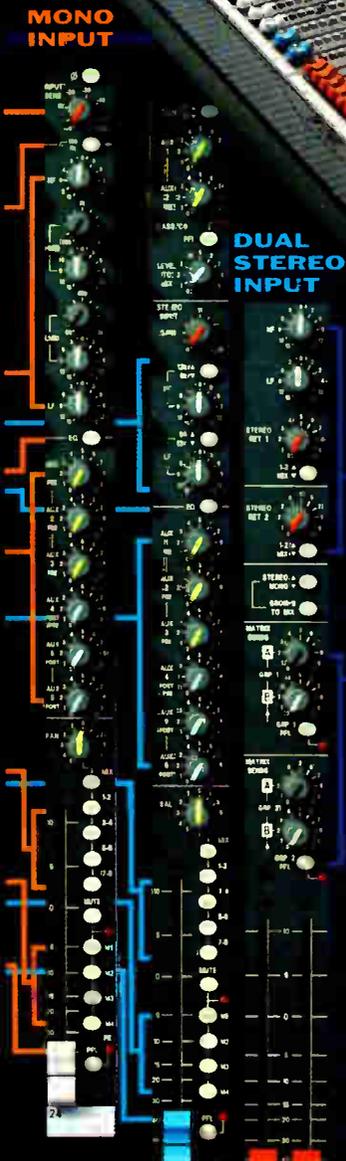
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# SOUND CHECK

## SOUND REINFORCEMENT HITS FROM NAMM

A record-setting number of exhibitors—more than 1,000—were at NAMM in Anaheim this January as music merchants got their first look at the new products for 1996. Many manufacturers have gotten hip to releasing new SR products at this show before the touring season starts. While there isn't space for all the new gear, anyone's list of the top new products for live sound would have to include most of the following.

Startling to many was Shure Brothers' expansion of and improvements to the Beta family of mics. While the Beta 87 (\$434) remains unchanged, the new Beta 58A (\$266) looks the same but claims smoother response, extended high end and reduced handling noise. The Beta 57A (\$220) now has a similar-looking grille and some of the same improvements. The Beta 56 (\$240), similar on the business end to the new 57A, borrows from the design of the old SM56 integral swivel mounting arrangement. The new Beta 52 (\$310) is designed for kick drum and bass instruments, but I would guess that it will become a popular radio station DJ mic also. What do they sound like? You can be sure your *Mix* sound reinforce-



Mackie Microseries 1402-VLZ

last fall, and the classic CR-1604. This little mixer will bring pro-quality sound to acoustic musicians around the world and promises to change folk music in coffeehouses and church sound for the better. It has six mono mic inputs with high-pass filters and phantom power, plus four stereo line inputs, all with 3-band EQ. The ten input channels feature 60mm faders and a solo switch and a mute that also assigns to the alternate stereo output, like the old, classic 1604. The new

preamps standard, while maintaining "roto-pod" flexibility.

The big Mackie news was the 40-channel, 8-group live console prototype. Each group has the now-famous "air" EQ at 16 kHz. Other features include eight auxes with individual corresponding group fader-swap facility, 4-band EQ with two bands of sweepable mids plus highpass filters, an 11x4 output matrix, a mono output with separate assignment from the stereo bus, and four stereo line inputs on faders. The console has connections for redundant power supplies. The group master section in the middle of the console includes a 100-scene Ultra Mute system for inputs, groups and auxiliaries. Extras include two RCA tape sends and returns, with one fed from a pair of matrices, four more stereo aux returns, and a talk-back facility. Exact pricing was not available at press time, but will be less than \$10,000.

Lexicon's new PCM 90 (\$2,995) is a companion for the PCM 80 multi-effects processor and is nearly identical in appearance but is

—CONTINUED ON PAGE 168



Lexicon PCM 90

ment editor is investigating these and many other new products as you read this.

Mackie Designs stole the show, introducing three new mixers for live sound. The MicroSeries 1402-VLZ (\$599) is a cross between the 1202-VLZ, introduced at the AES

CR-1604-VLZ (\$1,199) picks up features from the SR series consoles, including four independent submasters, sweepable mids, low-cut, six aux sends (two of them switchable to pre-fader), and all 16 mic

BY MARK FRINK

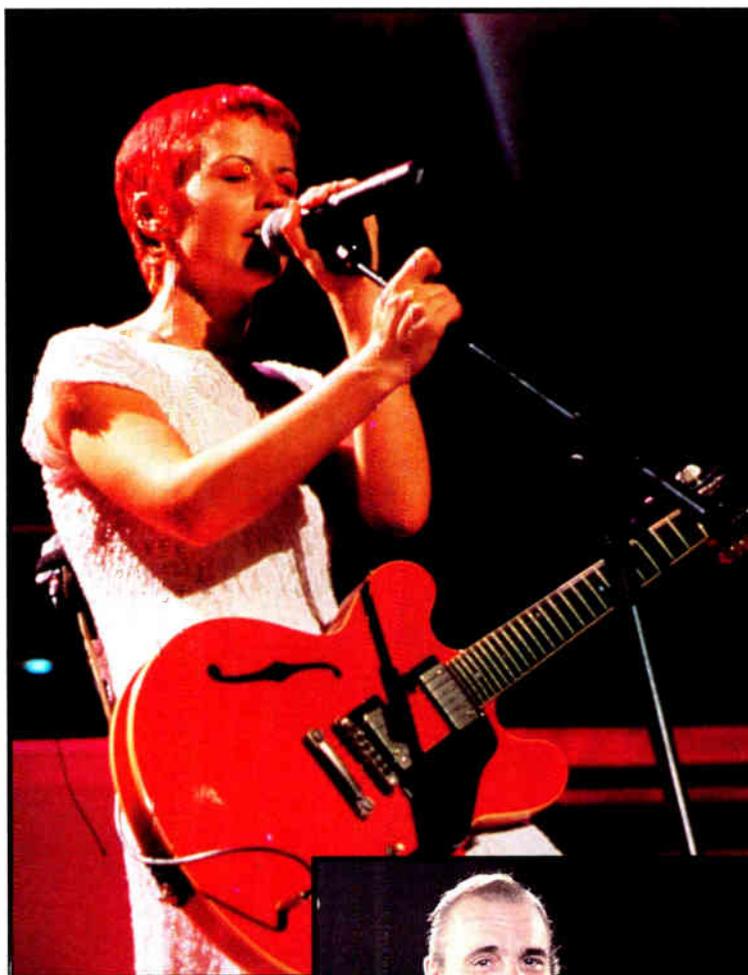
# THE CRANBERRIES

Seated next to his Midas XL-3 console at the World Music Theatre outside of Chicago, Davy Moire was at ease and comfortable, despite the head-spinning year spent mixing FOH for The Cranberries. Moire was more than happy to offer *Mix* readers a behind-the-scenes look at the audio systems assembled for the sweep of U.S. sheds that concluded the Irish quartet's world tour.

Working with a system supplied by Illinois-based dB Sound LP, Moire shared the tour's sound reinforcement responsibilities with system engineer Bob Brayton. Dave "Kleiner" Morgan served as monitor system engineer, with Martin "Ferret" Howe (whom Moire describes as "a complete maniac" in a complimentary kind of way) mixing monitors for the band. Howe took his place at another Midas XL-3 console, unleashing a contingent of EV DeltaMax enclosures powered by Crest and Crown amplifiers. MT-2As were used as sidefills, plus an MT-2 low box for the drummer's sub-cabinet.

As Moire simultaneously corrected a programmable equalizer and wrapped a Zig-Zag around tobacco produced from a nearly empty pouch, he spoke about their loudspeaker arrays. "This is essentially a stock hang supplemented with ground stacks," he explains. "Everything is pretty much MT-4As and MT-2As. The only thing that might be considered slightly out of the ordinary by some is the fact that we put a little bass in the air. That was done for the people sitting on the back shelf. The bass bins on the ground don't reach well enough out there, so I've found that a little bass in the air is perfect for some of these sheds." A seasoned veteran, Moire does indeed have the gray-bearded countenance of someone who has done this sort of thing a time or two.

His first major break in pro audio was when Frank Zappa hired him as a studio engineer in the mid-'70s. (In addition to providing his mixing talents, you can even hear him singing on tracks found within "Zoot Allures" and "Studio Tan.") Following Moire's studio successes, Zappa talked him into mixing a live show, and the rest, as they say, is history. Once Moire grabbed the reins at FOH, he found another niche in life, and went on to work with Prince,



The Cranberries' Dolores O'Riordan



FOH engineer Davy Moire

Duran Duran and others until he ultimately met up with Dolores O'Riordan and the rest of The Cranberries.

Moving backward from the loudspeaker arrays, the rest of The Cranberries' system revealed a sizable collection of Crest amplifiers, mainly 9001s. Out in the house were EV DX-34 digital processors with presets expressly for the MT Series. In addition to crossover functions, the DX-34 houses built-in parametrics, limiters and delays, all of which are completely pro-

BY GREGORY A. DETOGNE

—CONTINUED ON PAGE 175

## TOUR PROFILE

# NATALIE MERCHANT

## *New Career, New System*

**N**atalie Merchant, who was the distinctive singer/songwriter for alternative pop group 10,000 Maniacs on six albums, now has her very own tribe. Having left the Maniacs behind, her first solo album, *Tiger Lily*, met with great success, and her first solo tour was among the most popular last summer. She also picked up a new tour sound company, Audio Analysts, which has a new proprietary speaker system.

After using large, front-loaded enclosures with a familiar 4-foot profile for the past decade, the company first exposed its brand-new AALTO speaker system on Merchant's tour. The three-way, two-box system is a cooperative design by Bill Gelow, Mick Whelan and Mark Gander and is loaded with custom JBL components. The goal was to develop an arrayable system with high-intensity directed energy, resulting in controlled coverage with minimum overlap. The design is partly horn-loaded, but Audio Analysts president Albert Leccese was reluctant to go into details about specific drivers and configuration. "You don't know what's in a Prism system, do you?" he asked, referring to rival Showco's proprietary system.



PHOTOS STEVE JENNINGS



(L to R) Monitor mixer Monty Carlo, FOH engineer Deanne Franklin and system engineer Mario Leccese

Leccese claims that distortion has been halved and pattern control doubled in the new design. "One of our main goals was to reduce distortion," he explains. "This is not just another black box. It doesn't have much wood in it." The AALTO system achieves twice the SPL and weighs half as much as the company's previous system: through the use of new components and new materials, a 16-ton P.A. has been reduced to eight tons. A 270° full arena system

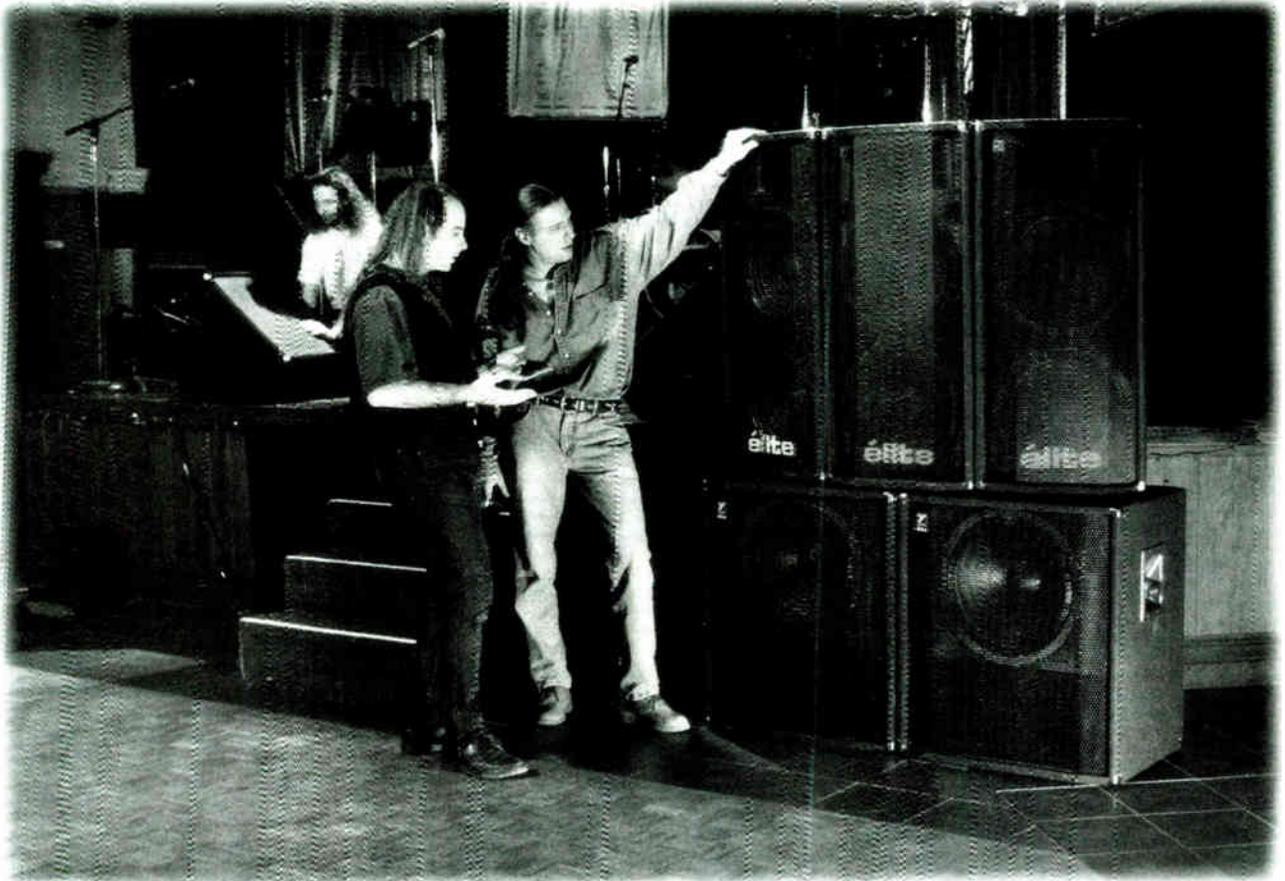
fits in one trailer, and a 360° system takes up the dance floor as well, saving an entire truck.

Twenty-four of these speakers are out on the Merchant tour. System engineer Mario Leccese typically flies the system in a theater hang consisting of two columns of six enclosures. "The rigging hardware is incorporated and uses no carabiners or aircraft seat track," Leccese explains. "The new system uses half as many rigging points as the previous system, translating to at least an hour saved each day for an arena system." A built-in tilt mechanism aims the boxes vertically; day-to-day adjustments are made in a matter of seconds, using no tools. The system is powered with Crown MacroTech 3600VZ amps with IQ cards installed, and uses the BSS Omnidrive. This full-range system gets the lows up in the air and does not require the use of subwoofers, although some engineers

BY MARK FRINK

—CONTINUED ON PAGE 177

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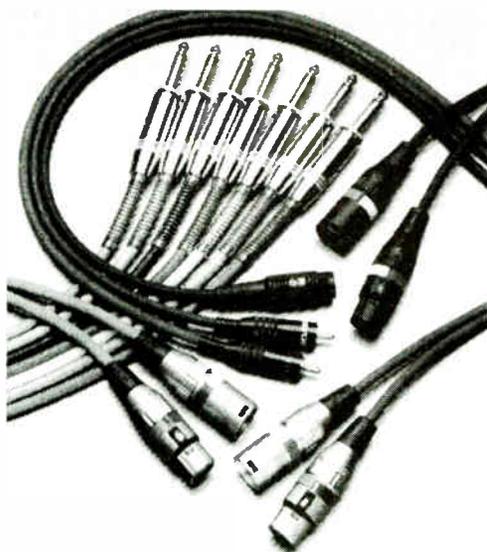
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## LIVE SOUND

—FROM PAGE 164, XAMM IIIIS

optimized for reverb effects. "While you can use the two independently, they are designed to be used as a system," says Lexicon's Steve De Furia. Together they can be configured as four independent inputs, using "split" algorithms. A new PCM 90 algorithm called "Chamber/Room" allows two independent reverbs to run simultaneously. The PCM 90 has 100 user registers and 250 presets, with many derived from the 300 and 480L, but several that are unique, including a Concert Hall that is smooth and natural. Keyword Search allows the user to find programs for specific applications. Under Live PA, presets optimized for live sound can be found as a group. There are 50 Keywords, including four that are user-definable. Also new in the PCM 90 are four custom controllers, placed in the Soft Row, each having one or more parameters patched together, with individual scaling values. In other news, the new Pitch FX card (\$250) provides 100 presets of pitch shifting for the PCM 80, joining the previously released Dual FX card.

TC Electronic released the M2000 Wizard digital signal processor (\$1,900). This single-rackspace multi-effects processor has two XLR inputs and two XLR outputs, as well as digital AES and S/PDIF I/O. There are three MIDI connectors for In, Out and Thru, plus a foot-pedal jack. The double-engine configuration allows the unit to run two full-blown effects simultaneously, and it comes with 250 presets and can store a further 250 user settings. Additional features include a PCMCIA slot on the front, a large LCD screen, six rows of switches, a large soft-knob for parameter adjustment, and a button for tapping in tempos. The unit runs on any AC voltage from 90 to 240 volts.

Apex introduced its newest ST product, the 109 Tubessence parametric equalizer (\$495), which can be run either stereo 2-band or combined as a mono 4-band unit. Each channel offers  $\pm 10$  dB of gain, and each filter is either peak or shelving, with sweepable frequency, variable bandwidth and  $\pm 15$  dB, with center detent.

I can't resist telling you about AT's new single-rackspace 8MX2. Anyone dragging a rack of ADATs or DA-88s around this summer should know that this is the easiest way to get a premium mic preamp between each channel of the splitter and the decks. It has eight

ATI mic preamps with limiters that simultaneously feed a digital multitrack recorder, and you can monitor with its built-in 8x2 mixer and headphone amp.

PreSonus introduced the ACP-8 (\$799) 8-channel gate/compressor. Each channel has a compressor with controls for threshold, ratio, attack and release, plus a gate with threshold, release and range, with a make-up gain control; further, any channel can be linked to the previous one. A row of LEDs for each channel shows gain reduction, and there are both red and green LEDs for each threshold control. The compressor has a choice of hard- or soft-knee compression, ratios up to 20:1 and a side-chain input. The gate has attack adjustable down to 10 microseconds, gain reduction ranging down to 60 dB, and an external key input. The two-rackspace unit includes an internal power supply.

Garwood revealed its frequency-agile Radio Station IDS wireless in-ear monitoring system (\$6,495). The system comes preprogrammed with international legal frequencies between 510 and 900 MHz; the operator simply chooses the current country, using two front-panel buttons, and the IDS automatically preselects a set of legal frequencies. On power-up, the system automatically locks to the frequency last used. In Program mode, the receiver accepts a coded signal from the transmitter to automatically set the frequency; multiple receivers can be simultaneously programmed to the same frequency. Operation mode locks the receiver. An active antenna



Garwood Communications Radio Station IDS

eliminates placement limitations, allowing antennae to be located more than 100 meters from the transmitter. A companion noise-reduction system eliminates background noise without affecting dynamic range.

Switchcraft's XLR connectors are now available with rubber strain relief bushings in colors other than the usual black. While colored mic cables have been popular for recording studios, they can be distracting for use in live sound—colored strain reliefs offer a more discrete visual coding scheme. Available from Switchcraft as a special order, colors include brown, red, orange, yellow, green, blue, violet, gray,

—CONTINUED ON PAGE 172



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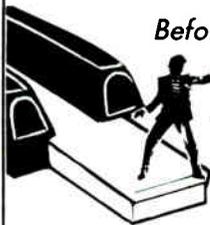
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# CALIFORNIA INSTITUTE OF CONCERT SOUND ENGINEERING

BY MARK FRINK



MIKE FULLER

In an industry where greenhorns are obliged to learn as they earn, the California Institute of Concert Sound Engineering specializes in training live sound technicians and giving them practical skills. After intensive training, one second-semester exam consists of being handed a plot and input list, and being told to get the stage and consoles ready for soundcheck in 30 minutes!

Located in Anaheim, Calif., CICSE (714/776-7414) is surrounded by job opportunities for trained audio technicians at theme parks, sound companies, manufacturers and the music business at large. A former live sound engineer, director Jim Paul taught audio and concert sound engineering at the college level before founding CICSE in 1992. "I looked at the educational programs offered and felt they were inadequate for the live sound industry," Paul explains.

CICSE offers a 15-month program over five quarters and an accelerated nine-month program for those with previous experience. The syllabus is a mix of lectures, equipment demonstrations, hands-on lab time and a continuous web of homework assignments that reinforce each subject. The body of knowledge is broken into five levels. Audio basics, proper set-up and interfacing, mixing skills, troubleshooting and field maintenance, production management and artist re-

lations are all covered. As students gain knowledge and experience, the material becomes more challenging. Students are expected to pass each term with a grade of 80% or better, and there is a strict attendance policy of only two excused absences per quarter.

"Much of the program is geared toward a night-time schedule, as is the business of live music," Paul comments. Besides classwork, each student is required to put in 100 hours of hands-on, real-world experience under the supervision of professional staff, working with the Institute's sister company, ShowTek Productions, on events ranging in audience size from a few hundred to several thousand. Students train in every aspect of concert production, including packing, loading, stage management, monitor mixing and systems engineering. Students are progressively given more responsibility until they can handle any position, from truck loader to FOH engineer or crew chief.

Through the support of major pro audio manufacturers such as JBL, Yamaha, QSC, EAW, Mackie, Aphex, dbx, AKG, A-T and Allen & Heath, students have access to top-flight equipment, and every three months another group of enthusiastic graduates enters the job market well-trained and fluent in the latest sound gear.

—CONTINUED ON PAGE 172

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## LIVE SOUND

—FROM PAGE 169, NAMM HITS

white, tan, pink and dark blue.

Electro-Voice showed the new MT-1 two-box speaker system (\$3,500 for both MTH-1 and MTL-1). Like the larger MT-2 and MT-4, the three-way MT-1 system crosses over at 160 Hz, and the mid-high enclosure includes a built-in crossover, allowing the system to be either bi- or tri-amped. The MTH-1 is 22.5 inches square by 30 inches deep, with angles on two of its sides matching the trapezoidal MTH-2. It is horn-loaded with a single DL10X and a DH2T, a special version of the DH2A for the T Series of speakers. Its

coverage is 60°x40°. An optional hanging kit allows it to be flown for concerts or permanent installations. The MTL-1 houses two DL18MT manifold woofers mounted at 90° to each other. The rectangular enclosure is exactly twice the size and weight of the MTH-1 and is easy to move, thanks to rear-mounted handles and tilt-back casters.

AKG's popular line of MicroMics has been renovated with a new softer grip mechanism and larger diaphragms for improved signal-to-noise ratio. AKG has replaced the popular C408 drum and percussion mic with the C418, which has a special low-frequency roll-off to allow it to handle larger drums and an

angle joint on its little boom arm to help position it better. Other models include the C419 for wind instruments, the C420 headset mic (which has a gooseneck instead of a boom and an improved behind-the-head band), and the C416 instrument or speaker mic.

Audix had a private showing of its prototype condenser vocal microphone, which has low proximity effect, natural sound, lots of headroom and looks just like its OM line of vocal mics. In other condenser news, Sennheiser rounded out its modular K6 line with the ME 65 supercardioid vocal capsule, which is the same capsule used on its popular wireless. Crown was showing its new CM-700 cardioid condenser, designed for both studio and touring. ■

*Mark Frink is Mix's sound reinforcement editor. Now living in Portland, Ore., he can be reached at 328 NW Broadway #116, Portland, OR 97209 (only blocks from every downtown venue). If you're coming to the Rose City, call 503/223-2345 and we'll have a latté.*

—FROM PAGE 170, CICSE

"Participation of major manufacturers is important to our program, giving students high awareness of the quality of equipment they can expect on real jobs," says Paul.

The CICSE job placement program works to find appropriate positions for each graduating student, based on the individual's skills and personality. "Our graduates have gone on to work on tours with Melissa Etheridge, Brooks and Dunn, Jimmy Buffett and Van Halen," Paul says. "However, not every alumnus is desirous of or suited for touring situations or placement with national sound companies: Many seek local work, church placement or connections with local sound companies as independent contractors." Graduates have also been placed with Disney, IATSE, equipment manufacturers, regional sound companies and local concert venues.

Paul also serves as the production manager for the Syn-Aud-Con Live Sound Workshop held each January on the campus of Chapman University in Orange, Calif. A report on the seventh annual LSW follows in next month's *Mix*, with a look at some of the issues examined. ■

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## LIVE SOUND

nating feedback. The great thing about the process is that there's no delay whatsoever, and no coloration—it's a line-level double that can give me more than enough vocals, even if she's singing in falsetto."

The feedback-eliminating qualities of the Eventide also help provide O'Riordan with more freedom of movement onstage. "For the most part," Moire says, "she can walk out in front of the P.A. with little or no problem. I do have to stay with her throughout the show, however, because she moves around

quite a bit. And I have to be extra careful if the audience is standing to ensure that I can still see her. If I were to lose her for just a moment, and she walked directly in front of a stack, it could spell disaster. Over the years, I've also learned to use panning to avoid feedback. If a performer gets close to the P.A. stage at right, I pan them to the left, and vice versa. That way you can keep them from taking their head off and avoid establishing grounds for an unexpected plane ticket home."

Two handheld Shure SC24 units with Beta 58 capsules were selected for O'Riordan's vocals, while six SC-14 sys-

tems were used for guitars, each with a spare SC-1 transmitter. A pair of hard-wired Beta 58s were used for backing vocals stage right. Shure SM98s were in use for toms and percussion, and SM57s were on snare top and bottom. An AKG D-112 was used for kick drum, 414s for overheads and 451s on ride cymbal and hi-hat. Sennheiser MD-409s for the guitar amps rounded out the list.

Based upon the input list, it appeared that Moire might be a wireless kind of guy. "It's convenient, and I like the freedom the technology gives the performers," he says. "I've used these Shure wireless systems around the world, and if I have a problem with one channel, I simply switch to another. If a mic gets dirty, I just go to the spare. I don't think I've ever had to not use the wireless systems. We have enough spares and different frequencies that there's never been a problem."

Moire's general mixing philosophy for The Cranberries followed the nature and scope of how he's always done things. Intelligible vocals played a strong part in the mix, as did keeping away from "drastic EQ" measures. "Any time you start adding plus six at 2 kHz and plus six at 400 Hz to sound good, then it's time to rethink your initial position," Moire says. "Likewise if you're pulling a lot of EQ out. For example, if you're pulling low end out on the bass band at every input, well then maybe you should pull some of the bass out of the P.A. and bring it up to zero, because as soon as you start to EQ the P.A. from the faders, you have a whole band of equalization that is useless."

As for his emphasis on intelligible vocals, Moire says, "I'm a firm believer that if you don't understand the words, then you're missing the point. Any time you go to a concert and can't clearly comprehend the vocals, someone's not mixing right. Either that, or the words are gibberish and mean nothing. In the case of a few bands' lyrics, the latter is true. But that's certainly not the case here tonight."

On that note, Moire spun up another hand-rolled cigarette and prepared to mix the show. He spoke of completing the tour and heading back to his home, then offered this bit of humor: "What's the difference between a roadie and a homeless person?" Everyone within earshot gave up. "A laminate," he said with a wry grin, walking away in a trail of smoke. ■

*Greg DeTogne is a longtime Mix correspondent based in the Chicago area.*

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—FROM PAGE 166, NATALIE MERCHANT

like to run subs from an auxiliary send. Four SB-133 subs are used on this tour.

FOH engineer Deanne Franklin, who also mixes The Breeders, is using a Midas XL-3 on this tour. Effects include two Yamaha SPX900s used for gated verb on drums and vocal pitch shift, a REV5 for general reverb and a Lexicon PCM 70 for vocals. "With Natalie it's very simple," Franklin explains. "A lot of the band gets into her vocal mic, so any processing on her gets band mixed in." She uses a momentary pedal to tap tempo into a TC 2290 delay and an Eventide H3000 to double vocals. A dbx 120x subharmonic synthesizer is used for some of the drums, and Drawmer DS-201 gates are used on drum inputs. A Summit tube limiter is inserted for compression, and a BSS DPR-901 is used to de-ess and dynamically equalize problem frequencies. "I can't live without those and my Audix mics," Franklin comments. "They've changed my life."

At Merchant's center vocal position is an Audix OM-5. The Audix OM-7 is used for the background vocal. A Beyer M-88 is used on kick, a Sennheiser MD-514 on snare and Audix D-2s on toms. All the percussion is miked with AKG C-408 clip-on condensers. The Marshall and Fender guitar amps are miked with Sennheiser MD-409s, as is the bass amp. One of the new LR Baggs parametric DIs is used on the acoustic guitar, and another is used for the bass DI. The Leslie cab has Shure SM57s on the high rotor and an Audix D-3 on the lows.

Monitor engineer Monty Carlo uses a Ramsa WRS-840 with Klark DN-360 graphics. Eight mixes of Analysts' new single-12 floor monitors are used, plus the drummer gets an old double-15 monitor, allowing the vocals to be in a separate mix. The new wedges are also JBL-loaded, using a custom 1.5-inch compression driver and a new horn design with a high flare rate, low-distortion throat geometry. This new low-profile slant is Analysts' answer to the Clair 12AM. Merchant has a pair of wedges at downstage center, with a third wedge on a separate mix between them. "The vocals are in the side wedges, and the center mix just has a little piano," Carlo explains. "A full band mix goes into the sidefills." The sidefills are Analysts' NDF-1 enclosures, which have a double-12 and a 2-inch, and four more of these are used as nearfills for the main P.A. ■

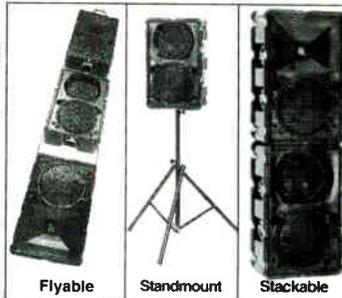
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# REMOTE RECORDING INTERFACING AT SKYELABS

BY CHRIS MICHIE

In live recording situations, time is money, but retakes are a commodity that's even rarer than a promoter who pays on time. Typically, everything must be perfect the first time. There is no second chance, and the performance of seemingly simple systems—such as snakes and splitters—becomes just as important as the console and tape machines.

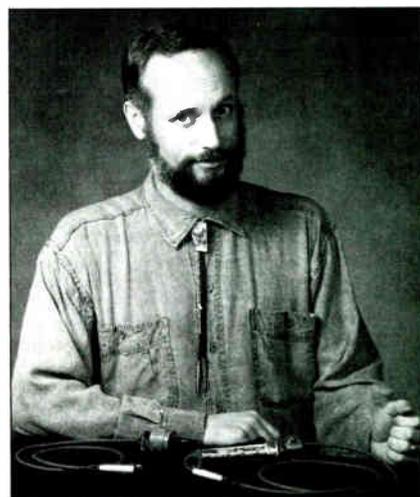
Owner of the Novato, Calif.-based Skyelabs, Bob Skye has provided mobile broadcast and music-recording services

for a long list of clients, ranging from Anita Baker and Pearl Jam to John Denver and U2. Since setting up his remote recording operation 12 years ago, Skye has spent much time and energy on optimizing the grounding scheme in "Rover," his 35-foot GMC Air Ride motor coach.

All of the audio shields in Skye's 40-pair snake splitter system bond at a sin-

gle point in the snake box. "The amount of backup that you get from the potential broken wire far exceeds any potential you have of the little gremlins of ground loops and things like that. And the coupling makes the integrity of the shielding just that much better," Skye explains. From there, the shielding to the isolated output is switched. The other end of the snake connects directly to the chassis of the motor coach, which is the ground reference for all audio shielding and grounding. The mic patchbay is also referenced to the chassis. "I use Audio Accessories [Marlow, N.H.] for all my TT patch points," says Skye. "What Audio Accessories has that's unique is their silver-nickel alloy and their spring steel. I've had zero failures over 12 years."

Skye designed his stage box, which he had fabricated by a machining company. "I came up with a box that was designed with certain parameters. I don't



Bob Skye poses with several exotic interfaces, including the 117 VAC-to-XLR mic tester.

like connectors that open straight up—I have this phobia about gravity and liquids and dirt. So my connections are all on the side panel, which leaves an open top on the box and gives us more stackability if we need it."

Made out of cabinet-grade oak ply, the stage box features Coaxicon connectors (similar to the QuickLatch connectors mentioned in the accompanying article). Skye's snakes have male and female ends, so attaching additional lengths does not require an adapter block between. "The downside of that is that if I've got a new guy who isn't pay-

—CONTINUED ON PAGE 180

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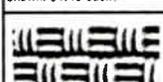
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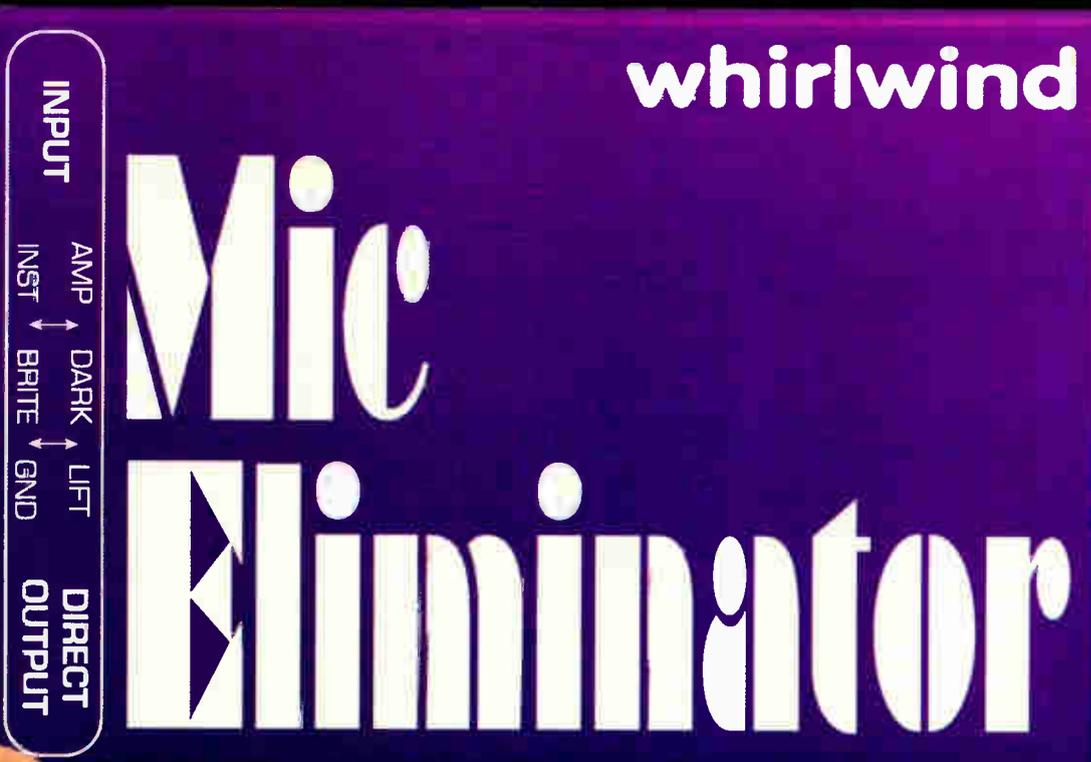
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—FROM PAGE 178, SKYELABS

ing attention and runs 250 feet with the wrong end of the cable, he's got to bring it all the way back and start over," says Skye.

Typically, Skye picks up his signal inputs from the sound reinforcement company's splitter. "They say, 'Here's our panel or here's a breakout split—do what you want with it. Here's everything we've got onstage.' And if it's a major act, they usually have everything I need." In smaller venues when there may be a limited number of snake inputs, Skye puts his box out as the head end, "so everything plugs into my box and then I give the house and monitors a split."

Skye is currently satisfied with his snake splitter system but sees big changes ahead. "What I'm excited about (and as far as I know there's only one product on the market in this area, made by Telecast [Worcester, Mass.]), is this fiber-optic stage box called the Adder," Skye says. "They've got the right idea—they've got video, they've got com, they've got a zillion mic inputs. They just haven't quite gotten down the reality of what it takes to do rock 'n' roll or a highly dynamic performance."

"Because once you get onstage, the rule is that there are no rules, and the way their units are set up, the mic preamps are in the box and all of the settings for them are with DIP switches. Very convenient, very compact—but when things are peaking and going crazy, to just switch in a 20dB pad in the middle of something is not reasonable when you're doing live music broadcasts or concert albums. The Adder needs some kind of variable gain control, phase reverse and some other things. But the idea of being able to go 3,000 feet with a cord that's the size of a rubber band is very intriguing to me. I'm waiting for it to go the next step, which will be shown at the next NAB convention."

As Skye points out, fiber-optic removes the problems of ground potential. "There is no pin 1," he says. "There is no electrical connection to cause the kind of potential problems that exist by running long wired snakes. And fiber-optic systems have none of the potential problems of splitter transformers: If you need more feeds or splits, all you need to do is add additional receivers to the built-in splits."

Skye has experienced no grounding problems since Rover's last upgrade. "I

—CONTINUED ON PAGE 183

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World Radio History

180 MIX, APRIL 1996

# masterpieces

In an era of mixed analogue and digital audio technology, the requirements of mastering engineers have never been more precise. It is in response to growing demand that Focusrite has developed two new products, designed to address the key processing functions of equalisation and dynamic control.

The Blue 315 Mastering EQ and the Blue 330 Mastering Compression Limiter both make use of the highest quality switches for all rotary functions. These provide precise and repeatable settings in units of unequalled build quality, ensuring long-term reliability and performance.

## Blue 315

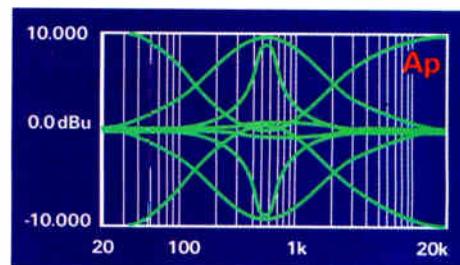
It was the widespread desire to see the legendary SA 110 Equaliser available for mastering which led to the creation of the Blue 315. The simple request was for rotary switches on all functions, but of course there is a great deal more to mastering than recallability of rotary switches alone.



Mastering is the process by which a mixed product is refined – the fine-tuning and assembly for particular media. Private discussions with individual mastering engineers, coupled with careful research, revealed many small differences between a programme equaliser and a product designed for top-

quality mastering. These differences were the starting point in the design of the impressive 315.

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



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

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

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

— Tom Coyne, Sterling Sound, New York.

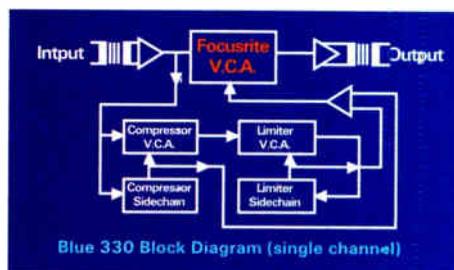
**"In almost a year I've used my three old EQ's three times. Any other questions?"**

— John Matousek, Masterworks, Los Angeles.

## Blue 330

As the product of customer demand and extensive research, the Blue 330 represents the transformation of the Focusrite Red 3 Compressor and Limiter into Mastering format. Unique and unrivalled in all its tributes, we feel it genuinely deserves masterpiece status alongside the 315.

The structure of the circuits is very different to that of other compressors/limiters. The 330 separates the compressing and limiting processes, which are then implemented by one signal path VCA through combined controls signals. You are able to compress and limit in turn, meaning that the limiter only compresses the peaks that remain after the completion of the compression process. The overall result is clean and less intrusive than that which can be achieved



with a compressor that rolls over into limiting.

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

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

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



Focusrite Audio Engineering Ltd.

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 Focusrite Audio Engineering Ltd., 80 Sea Lane, Farmingdale, NY 11735 Tel: (516) 249 1399 Fax: (516) 753 1020  
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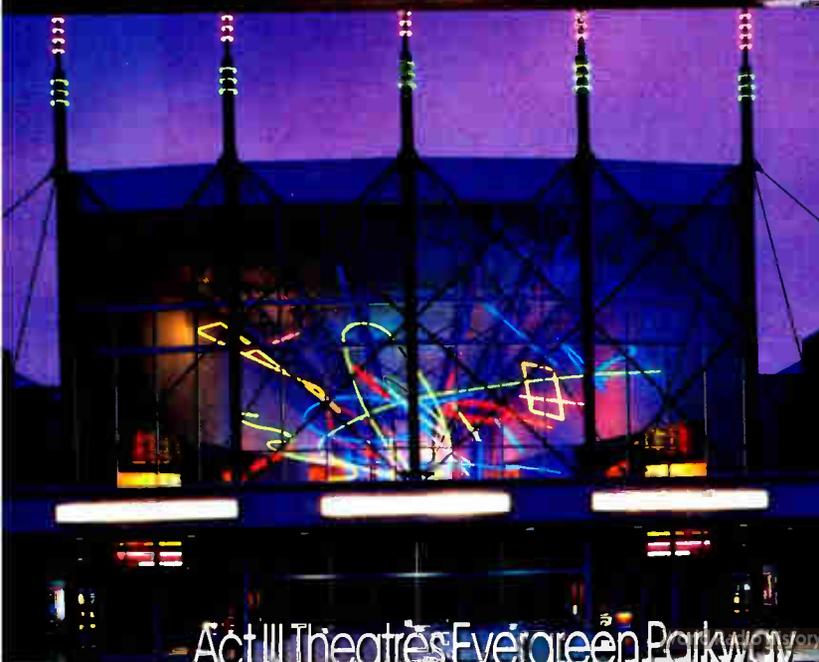
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QSC Cinema Systems include 14 THX approved amplifier models as well as the XC-1 and XC-2 plug-in Crossovers and the SF-1 Subwoofer Filter.

Screen Stardom today requires the most powerful presentation of everything that digital soundtracks have to offer. Power Amplifiers are critical to the digital sound chain. Power Amplifiers and accessories are *all* that QSC makes. Choose QSC. Call 714-754-6175 for valuable details.

Some of the other theater chains featuring QSC Power Amplifiers: Allen Theatres, Associated Theatres, Budget Cinemas, Central States Theatres, Century Theatres, Cinema World, Cineplex Odeon Theatres, Classic Cinemas, Dickinson Theatres, Douglas Theatres, Edwards Cinemas, General Cinemas, GKC Theatres, GTI Theatres, Harkins Cinemas, Loew's Theatres, Malco Theatres, Mann Theatres, Manos Theatres, Marcus Theatres, Mulane Theatres, Muvico Theatres, National Theatres, Neighborhood Cinemas, Pacific Theatres, Plitt Theatres, Regal Theatres, Rhyon Theatres, U.C.I. Theatres, Warner International Theatres, Western HTS Cinemas, and many, many more...



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The effects have been developed for optimal sonic quality, with no compromises made. This has only been possible because our engineers succeeded in combining the latest technology with TC's powerful DARC™ chip.

### # 1 IN DIGITAL

As the only signal processor in its category, the M2000 is fully prepared for the digital age. Not only does it have the digital I/O connectors S/PDIF and the professional format AES/EBU, it also has dithering. Dithering ensures that the dynamic range in your M2000 is kept when you digitally connect it to a device with a lower bit resolution, such as a 16 bit DAT. Proper dithering guarantees a clean, undistorted signal even at extremely low volume levels.



### COMES WITH A FREE EXPERT

The M2000 comes with a free expert: You! Naturally, a manual is included with the unit; however, you will not be referring to it much.

Great care has been taken to create the ultimate user interface. With the Recall Wizard you can instantly find the preset that suits your need in

any situation. You simply enter your preferences, such as 'gentle reverb for vocal' or 'extra pitch for guitar', and the Wizard serves you a short list of presets ready to compare and use.

The single-layer interface ensures that all parameters are always only one menu-level away. No more paging through endless menu-levels.

And much, much more...



### THE SOUND, THE SOUND

As you can see from the back of this brochure, the M2000 has impressive technical specifications.

However, numbers don't tell the whole story. What really matters is how your final mix sounds. This is where TC's long experience in high-end studio signal processing (with industry standards like the TC2290 and the M5000) becomes important. Our feel and experience have been fully utilized to your benefit in the M2000.

You deserve the sensation of the M2000.

Call 1 800 798-4546 for information about your nearest Authorized TC Dealer.



## TECHNICAL SPECIFICATIONS

### Analog Input

Connectors: XLR balanced (pin 2 hot)  
 Impedance: 15 KOhm  
 Max. Input Level: +22 dBu  
 Sensitivity: @ 12 dB headroom: -22dBu - 10 dBu  
 A to D Conversion: 20 bit (4 bit, 64 times oversampling)  
 Dynamic Range: >105 dB  
 THD: <0.003% @ 1 KHz, +10dB  
 Frequency Response: 10 Hz - 20 KHz: +0, - 0.2 dB  
 Crosstalk: <-60 dB, 10 Hz - 20 KHz

### Analog Output

Connectors: XLR balanced (pin 2 hot)  
 Impedance: 100 Ohm (active transformer)  
 Max Output Level: +22 dBu  
 Output Gain Range: 0 to -32 dB  
 D to A Conversion: 20 bit (1 bit 64 times oversampling)  
 Dynamic Range: >96 dB  
 THD: <0.008% @ 1 KHz, +10 dB  
 Frequency Response: 10 Hz - 20 KHz: +0, - 0.2 dB  
 Crosstalk: <-60 dB max, 10 Hz - 20 KHz

### Digital Inputs and Outputs

AES/EBU In/Out: XLR  
 S/PDIF In/Out: Coaxial, RCA Type  
 Formats: EIAJ CP-340, IEC 958, S/PDIF (20 bit)  
 AES/EBU (24 bit)  
 Sample Rates: 32 KHz, 44.1 KHz, 48 KHz

### PCMCIA Interface

Connector: PCMCIA Type 1 cards  
 Standards: PCMCIA 2.0, JEIDA 4.0  
 Card Format: Supports up to 2 MB SRAM

### Control Interface

MIDI: In/Out/Thru: 5 Pin DIN  
 Pedal: 1/4 inch phone jack

### General

Finish: Black anodized aluminum face plate  
 Painted and plated steel chassis  
 Dimensions: 19" x 1.75" x 8.2"  
 Weight: 5.2 lbs (2.35 kgs)  
 AC Power: 90 - 240 VAC without switch settings  
 3 Pin IEC power connector

### Radio Frequency Immunity/Interference

RFI/ESD: Conforms to FCC Class B,  
 EN 55103-2 (CE), EN 55103-1 (CE)

### Environment

Operating Temperature: 32 °F to 122 °F (0 °C to 50 °C)  
 Storage Temperature: -22 °F 167 °F (-30 °C to 70 °C)  
 Humidity: Max. 95% non-condensing

Note: All specifications are subject to change without notice

## you and TC

The Wizard M2000 signal processor will enable you to create Magical Sound. Uncompromising effects processed by the TC DARC™ chip offer you a clarity, density, and feel beyond anything you have ever experienced before.

You deserve the sensation.

**Wizard | M2000**  
*Art + Science = Magic*





## ART + SCIENCE = MAGIC

The Engineering Group at TC Electronic were given carte blanche to create the optimal studio signal processor. Being musicians and studio engineers themselves, they know what is important and have a feel for what you are looking for. Working on the borderline between art and science, they created the M2000.

Designed for the artist within you, you will create magic when using the M2000:

- Superior Sound
- Dynamic Morphing
- #1 in Digital
- Ultimate User Interface

## UNCOMPROMISING EFFECTS

The library of proprietary effects includes reverb, pitch shift, delay, chorus, ambience, equalization, de-essing, phasing, compression, gates, expansion, limiting, and stereo enhancement.

Among the reverbs is the unique Co-efficient Optimized Room Emulator - or C.O.R.E. Reverb™ - that is built on a whole new concept for reverberation; the result of years of intensive research. The smoothness, intensity, and density must be experienced to be believed.

The array of enhanced pitch shift (up to 6 voices), chorus, and delay effects are characterized by their precision and versatility. Everything from

the fine and subtle to the wide and spectacular is handled with equal superiority. The algorithms in the dynamics section (compressor, limiter, expander, gate, and de-esser) are unique as stand-alone effects, but are particularly useful in combination with other effects. Those might be de-esser/room, gated hall, or compressed pitch. The possibilities are endless.

Using the Tempo Tap function, you can match the effect to the beat. The tempo can be adjusted in beats-per-minute and subdivided any way you like, for example in triplets. The tempo can also be read from MIDI.

The Preset Glide function (called 'Morphing' by others) has been added to ensure seamless transition between effects. It is a useful function in live and mixing situations.

But another unique feature in the M2000 is the *Dynamic Morphing*™. By applying this function, you will be able to apply, say, Chorus to a vocal at low volume levels, while the effect is being morphed into Flanging at high levels. Or any other combination of your liking. This will give the signal a totally new dynamic dimension.

The powerful true dual engine configuration means that you can run two full-blown effects simultaneously, i.e., on two individual effects sends. There is 250 factory presets, and another 250 of your own settings can be stored in the unit. You will find that creating new presets is a breeze.

—FROM PAGE 180, SKYELABS

just don't get the occasional ground buzzes that I used to," he says. "I've had numerous conversations with my colleagues about this. There is an assumption that there will always be the occasional ground problem, and I won't say that I positively won't encounter it again. But, after three years with this incarnation of the grounding system, I've had no problems, no buzzes, nothing. When I do hear something that shouldn't be there, it's now incredibly easy to find the problem, and it's always on stage. The remarkable thing to me is that our industry spends such an incredible amount of energy developing new ways of doing the same thing, and too often ignores the ground work of our audio and electrical forebears. The answers to grounding issues, as well as many other interconnection issues, have always been there. It's just a matter of draining away some of the 'snake oil' to find them." ■

## MULTIPIN SNAKE CONNECTORS

BY MARK FRINK

"Snakes"—multichannel audio cables designed to carry mic and line-level signals between stage and console—come in two flavors. Hard-wired snakes with a stage box at one end and XLRs (or phone jacks) at the other are adequate for simple portable systems and permanent installations. But for flexibility (and fast replacement) there is no substitute for a modular system that allows different lengths of snake (or multiple sections) to be inserted between stage box, splitter box (essential for monitor and recording splits) and multipin console connectors or XLR "fanouts" (aka "pigtailed"). Essential to any modular system is a standard multipin connector that can withstand the daily abuse meted out by stagehands as they drag the snake through mud, into snake troughs or across cement floors.



VEAM CIR 40T-159

The VEAM CIR 40T-159 connector handles up to 53 pairs. Although this style has been in use for some time, it has been redesigned by Litton with input from the touring industry and is compatible with previous VEAM connectors. A new version distributed by Rapco (800-GO-RAPCO) was shown at the NAMM show for the first time. This round connector mates with a quarter-turn, positive-locking aircraft aluminum coupling ring. It has yellow dots to indi-

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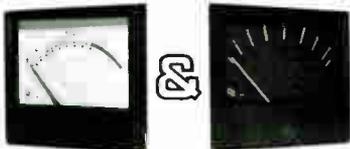
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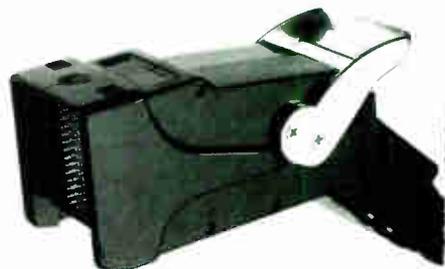
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cate correct connection and clicks home, giving audible, tactile and visual indication of correct mating. A glass-Kevlar composite backshell has a higher strength-to-weight ratio than steel and withstands impact to 50 G. The pin block is now made of Neoprene rubber, providing flexibility to avoid bending pins and give waterproof protection—mated connectors have rubber gaskets and are giving waterproof to 12 meters. The gold-plated contacts can be soldered, or crimped using most MIL #20 crimp tools. Extra contacts are sealed inside the backshell for possible later repairs, and field repair requires only a small screwdriver, needle-nose pliers and a soldering iron.

The AMP G-4 Quicklatch, a familiar, square connector with a handle that pushes the pins home and locks the connection, has enough pins for 52 channels, distributed on four "pin-blocks" that mate to corresponding sockets. The Quicklatch was for many years a standard component for snakes manufactured by Wireworks, and is used by touring companies such as Ultrasound, Electrotec, Schubert and MID Systems, as well as by many remote recording trucks. Unfortunately, the plastic handle often broke, and the system was discontinued ten years ago by AMP. Since then, the stock of parts necessary to repair and replace existing snakes has been bought up at several times the original prices.

Just released at the NAIMM show is an improved version of the Quicklatch. Ramtech Industries of Florida (800) 81-RAMTECH1 has retooled the mold for this connector, and the backshell and panel-mount are now made out of a black, high-impact ABS that will not be affected by the methanol-based contact cleaners and solvents that caused deterioration in the original connector. The Ramlatch is supplied with a metal handle and cams and has an aluminum bushing to ensure long life. The handle



Ramtech RamLatch

kit can be purchased separately—a cost-effective way to maintain older snakes. Although pins and pin-blocks for the Quicklatch are still manufactured and can be bought directly from AMP, Ramtech stocks and sells them either as parts or complete manufactured snake components and systems. This connector is also available from several other manufacturers, such as Horizon and MTL, and has been selected by Jim Gamble for use with his products.

Whirlwind's Mass connector, a round, aluminum connector with a threaded sleeve, comes in two sizes. The smaller W-3 has 122 positions, for up to 40 channels, and the larger, 176-position W-4 is wired for 42, 48 or 56 channels. Originally developed by ITT Canon for oil prospecting, it was discovered by Showco in the 1970s and put to use as their snake connector. With the demise of the domestic oil exploration business about ten years ago, there was an increase in the purchase price and minimum order quantity. Whirlwind seized the opportunity and started manufacturing it as the Mass connector.

The Mass connector has a round "face" split in half and alternates between sockets and pins for audio pairs within the same housing. Due to the unique hermaphroditic design, the usual male-and-female designations don't apply, simplifying the parts complement and making it impossible to grab the wrong end—any connector mates with another the same size. Fan-outs can connect directly to the stage box (useful for recording and broadcast setups), and longer runs are simple to connect.

Whirlwind's newest version of the Mass has replaceable crimp-type pins and sockets, which are compatible with the previous fixed-pin solder-type Mass connector and use the same housing and backshell. A shoulder is machined into each contact and snaps into a metal clip inside the insertion block. An insertion and extraction tool is sold along with the crimping tool, and the tool kit can be purchased from Whirlwind (800) 733-9473.



Whirlwind Mass connector



Switchcraft's patented Littel-Plugs® are ideal for use with standard 1/4" phone jacks including Switchcraft's Littel-Jax® jacks. The rugged #580 (shown at bottom of photo) is a 2-conductor plug featuring solder termination, shielded handle, cable clamp and bears the familiar Switchcraft® logo.

The 3-conductor 299 plug (middle product in photo) also features solder termination, shielded handle and larger cable clamp wings for improved strain relief on larger cables.

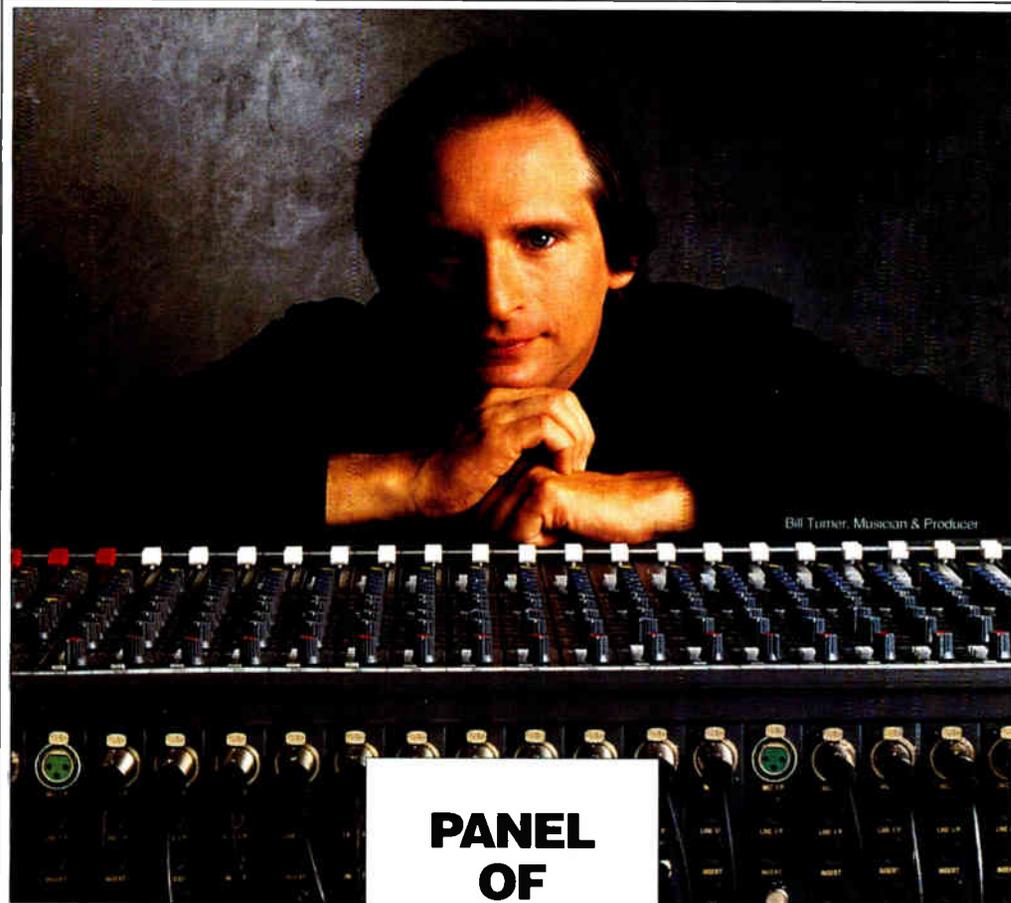
Shown at the top of the photo is Switchcraft's #121 2-conductor extension phone jack for standard 1/4" diameter phone plugs, featuring solder termination and a shielded, screw-on handle. Part #131 is the 3-conductor version of the extension jack.

Request Switchcraft's AVP-3 catalog for details. Call (312) 631-1234 ext. 243.



Switchcraft® offers a complete line of adapters including the 3-contact female to female, #389 (with Switchcraft A3F inserts at both ends) and the 3-pin male, #390 (with Switchcraft A3M inserts at both ends). Both the #389 (shown at top of photo) and the #390 (shown at bottom of photo) have pre-wired contacts. The female version has a polarizing boss; the male version has a polarizing groove.

Request Switchcraft's AVP-3 catalog for details. Call (312) 631-1234 ext. 243.



Bill Turner, Musician & Producer

## PANEL OF EXPERTS

"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."

Bill Turner is an expert on professional sound studios as well as being a renowned session musician\*. Bill is equally talented as a producer in his Brooklyn, New York, studio, Bill Turner Productions (B\*P).

Switchcraft manufactures microphone connectors, plugs, adapters, cable assemblies, recepta-

cles, patch cords, audio patch panels, and more. If you have a custom application, we'll help you

design and execute your concept. Wherever music is made, Switchcraft can supply the components and assemblies to make it sound better.

So why use ordinary components when you can work with a panel of audio experts? When you do, you'll discover what Bill Turner has known for years. "Insist on Switchcraft... we do. It's the undisputed Standard of the Industry."

After all, one audio expert deserves another.

*\*Among his noteworthy accomplishments, Bill Turner played lead guitar with Bill Haley, and toured Europe with a revival of the original 1954 Comets band. He performs and records with his own band, Blue Smoke.*

### Choose The Look You Like



The D series of Q-G® connectors offers a choice of satin, pebbled, or black metal finish for panel or chassis-mounting. Choose from 3 to 7 contacts or pins with silver or gold plating. Shown above, left to right: D3F (pebbled), D3FS (satin), D3M (pebbled) and D3MS (satin). For black finish order D3MB or D3FB.

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### Durable Q-G® Audio Connectors



Preferred by audio professionals the world over, Switchcraft Q-G® connectors, such as the A3M, A3MBAU, A3FBAU and A3F (shown left to right), feature unsurpassed durability with a choice of finishes and contact platings. High performance inserts are available in Switchcraft® green or black. Solder terminals rotated for easier access and soldering.

Request Switchcraft's AVP-3 catalog for details. Call (312) 631-1234 ext. 243.

**Switchcraft**

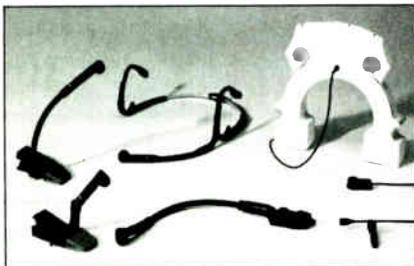
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World Radio History

# NEW SOUND REINFORCEMENT PRODUCTS



## AKG MICROMIC SERIES II

New from AKG Acoustics (Northridge, CA) is the MicroMic Series II line of clip-on, thumbnail-sized mics, offered in a variety of models. The C411 Stringed Instruments MicroMic attaches with reusable adhesive, weighs 3.6 ounces and is available in wired and wireless versions. The C416 Instrument/Speaker MicroMic, for close-miking situations, has a flat response with a high-frequency peak and an external shock-mount system. The C417 Lapel MicroMic is an omni lavalier, available in black or beige. The C418 Drum and Percussion MicroMic has an external shock mount and adjustable boom arm. The C419 MicroMic For Wind Instruments clips on the instrument bell and has a hypercardioid pattern, and the C420 Headset MicroMic has a behind-the-head band for exact adjustment. AKG's Double-Bass Bridge Pickup is a piezo-electric transducer element integrated into a traditional wooden bridge for the conventional double bass.

## RADIAN'S JBL REPLACEMENT DIAPHRAGMS

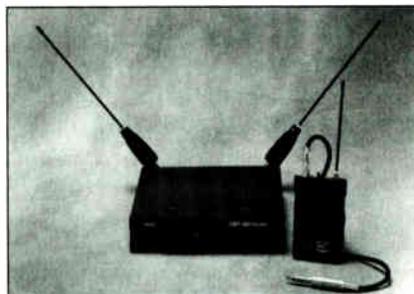
Radian Audio Engineering in Orange, CA, offers two models of replacement diaphragms to fit JBL 1-inch and 2-inch throat compression drivers. The 1225, for JBL's 1-inch compression drivers, is available in either 8 or 16 ohms. The 1245 is a 16-ohm model, for JBL's 2-inch drivers. All are constructed of a heat-treated aluminum alloy, with a copper-clad aluminum voice coil, in a Mylar suspension. For a cross-reference list of replacement diaphragms for many drivers, call 714/288-8900.

Circle 212 on Reader Service Card

## TELEX WIRELESS

Telex (Minneapolis, MN) offers the 450G and 450B UHF wireless systems for guitar and bass. The FMR-450G receiver and the WT-450G transmitter are designed for guitars, while the FMR-450B and WT-450B are designed for bass. The pager-sized WT-450G/B transmitters provide mute switching with "popless" operation. An LED indicates overmodulation or low battery power. The FMR-450G/B receivers feature true noise squelch and have AF and RF indicators to aid in installation and monitoring.

Circle 213 on Reader Service Card



## JBL TR SERIES LOUDSPEAKERS

Northridge, CA-based JBL's latest line of speakers is the TR Series. These affordably-priced speakers are rated at 200-plus watts, and include pure titanium high-frequency compression drivers, 2.5-inch edge-wound voice coils and multi-slope filtered crossover networks. Also built-in is JBL's proprietary SonicGuard™ protection circuitry, which automatically guards against over-powering, thermal stress and sharp transients. All TR speakers are housed in large-volume cabinets with curved grilles, constant-directivity horns and textured outer vinyl coating.



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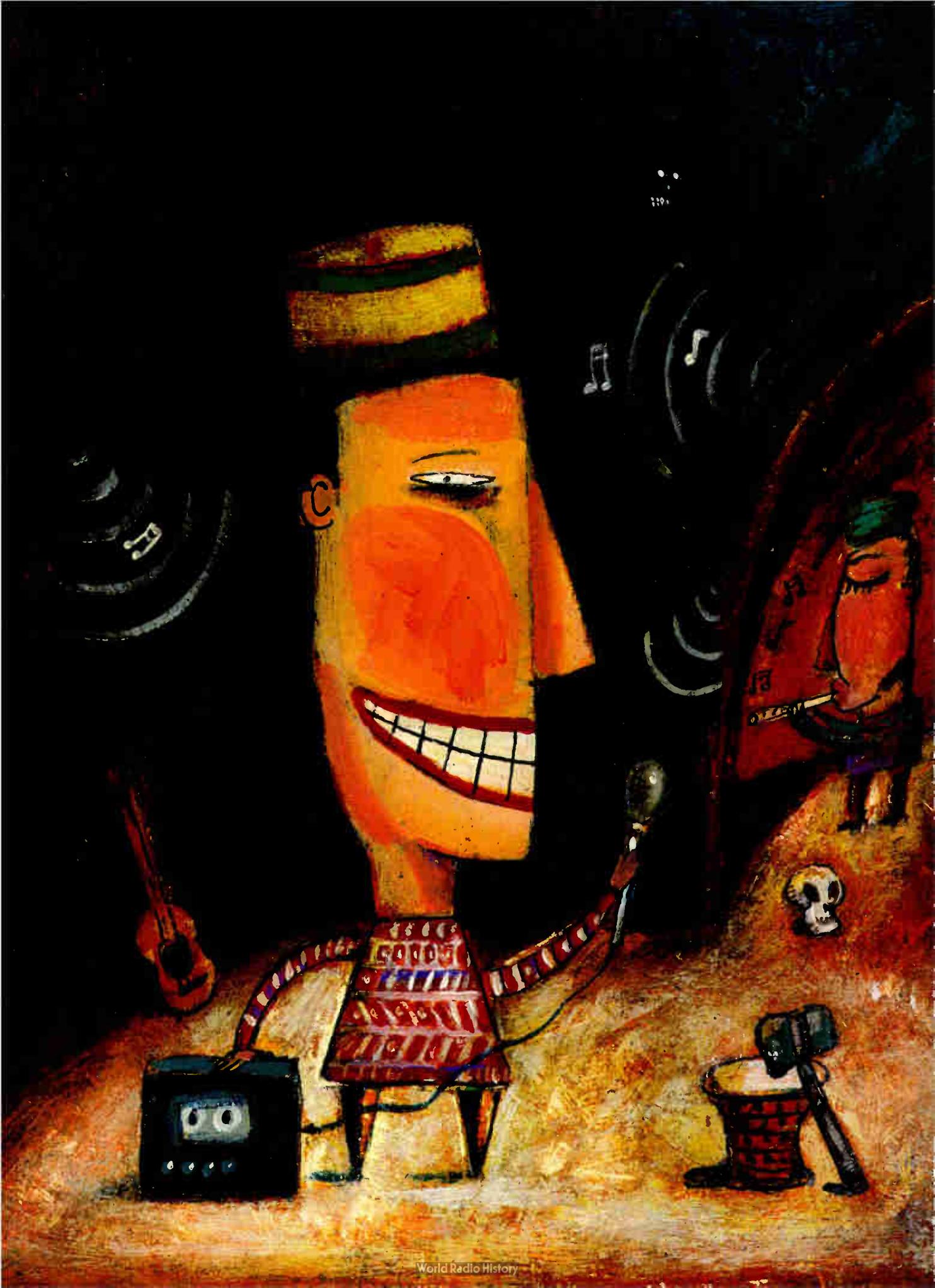
as both instrument & studio

A new trend is emerging in the creation of studio-based music, one that is drawing artists away from the inviting samples and electronic sounds of their digital wombs to explore the sounds and locations of the outside world. Electronic and electro-acoustic composers are turning toward natural spaces and events, creating a new world of sonic possibilities and a wave of diverse, cutting-edge recordings.

**KIVA  
A UNIQUE SONIC TEMPLE**

Steve Roach, Michael Stearns and Ron Sun-singer recently teamed up to create *Kiva*, an album that matches Sun-singer's field recordings of Native American ceremonies with the trio's electronic and acoustic wizardry. The results are eerily mesmerizing, drawing listeners into a world rich with resonance and imagination. Roach is no stranger to this music, having refined his tribal electro-acoustic music for years. Stearns has made a career out of mixing record-

ILLUSTRATION BY ANDREW SCHACHAT



ings he's made at exotic locales with synths and homemade instruments. Both Stearns and Sunsinger, an adopted American Indian, recently released *Singing Stones*, a collaboration recorded in Southwestern deserts and featuring the sounds of unusual stones they played with elk antlers and a hatchet head found at one site. The duo recorded these sounds with special contact microphones.

The first ingredient used to create *Kiva* was Sunsinger's collection of field recordings of peyote, ayahuasca and sundance ceremonies—events rarely captured on tape. His recording situations varied, although he always had his Denon DTR80-P Portable DAT recorder. For the sundance, Sunsinger employed both an Audio-Technica 825-T and a Crown SASS-P microphone. On the ayahuasca, he used the SASS-P and a Sony ECM-999 PR. The peyote setup had to be different. "I used the 825 for the peyote ceremonies because I needed something that was a little less intimidating," Sunsinger explains. "The SASS-P is a monster microphone. The cool thing was just having a stereo microphone and digital recorder inside a peyote ceremony."

Once Sunsinger's material had been gathered, each member of the the trio decided to take one of the ceremonies, add his own distinct musical touches, and then let the partners add in their own contributions with electronics and ethnic instruments. The final session was a live collaboration between the three musicians. The group recorded in a cavern in Embudo, N.M., designed by Mark Rendleman. As Stearns describes, "It's a man-made complex of caverns—literally thousands of square feet, built into the side of a mountain."

"There's some 30 rooms or so dug out by hand out of this volcanic ash," Sunsinger says. "It's a really remarkable place. Some of the ceilings are 20 feet tall or more. There are all these labyrinth-like hallways that go up and down in the mountain." For this location, they only employed two stereo mics: the SASS-P and the Sony 999. "It really wouldn't matter where we recorded from—you'd just get these amazing cave ambiances. There were many ingenious nooks and crannies you could go into, and the carvings in the rock had been designed to reflect the acoustics in certain ways."

To record, the trio brought in a Mackie 1604 board, an ADAT and a pair of small Genelec monitors. Stearns, an experienced IMAX and OMNIMAX film

composer, brought a pair of 150-foot mic cables to string throughout the caves, as well as his own portable DAT player. "We had all the equipment in this huge room shaped like a doulbék drum," Roach recalls. "We put all our instruments in there. It was way down into the labyrinth of these tunnels and passageways."

"We went over some material on location, so we literally multitracked in the cave," Sunsinger says. "In other words, we would record something and



**Steve Roach (L) and Ron Sunsinger**  
preparing for *Kiva* recording

then play it back while recording another couple of tracks. The Genelecs were spitting the first set of tracks back out into the cave again, which were being picked up on the microphones, so they were creating these really dense atmospheres. Sometimes we'd be reacting to what we were hearing from the Genelecs in a sort of bizarre, delayed fashion."

"It took some adjusting and some testing to find certain magic spots in the cave that would not overpower other instruments or the recording in general," Roach recalls. "For example, with my didgeridoo, I'd go down one passageway very, very deep and far away from everybody else—hundreds and hundreds of feet through these different tunnels, which all intersected in some strange way. At times, we would hear each other playing as we'd start, and at times the waves of sound would become so overpowering that we would just be playing to the memory of the last thing you heard, as if you were being submerged in the sound. All you could do was experiment, because it was un-

like anything you had any reference to in your entire life." The results are indeed awe-inspiring, and many unused recordings became sample food for later solo work by Roach.

For the final mixing and mastering, Stearns' Earth Turtle studio was used. "My studio has 2-inch, 24-track with Dolby SR and an automated console with full 6-channel surround monitoring," Stearns explains, "which is what I use for my IMAX projects, but obviously we were just using stereo monitoring for *Kiva*. A whole other part of the studio is samplers, synths and things like that. I use Pro Tools III for mixing down and mastering." As for *Kiva*: "We did almost everything on 2-inch. For Steve's piece, the initial tracking was done on ADAT. We layed it back onto 2-inch, and, since it was only a single 8-track tape, we put it into my Fostex, which had the +4 outputs on it, and literally did a direct layback, not going through the console. Then we tracked more material on top of that on the 2-inch. With Ron's piece, because he had 24 tracks of ADAT that he'd recorded building up the piece, and we didn't have +4 interfaces, we found that when we tried laying his stuff back onto 2-inch tape, we got noise from having to boost it from -10 to +4. We ended up just working with it on ADAT and not laying it back onto 2-inch. For the group piece, that was all done on the 24-track with Dolby SR. Everything was done on that except the ayahuasca piece." Their tracking master was 2-inch Dolby SR-encoded, mixed directly to hard disk—high-tech studio capabilities enhancing the mesmerizing acoustic world they created.

#### **STUART DEMPSTER: UNUSUAL LOCATIONS AS STUDIOS**

Stuart Dempster relies on acoustic instruments and the resonances of the natural spaces he records in to create an unusual aural tapestry. On his recent release, *Underground Overlays From the Cistern Chapel*, Dempster and nine other trombonists went into a 2-million-gallon water tank in Washington state and recorded long improvisations. The 45-second reverb time in the cistern created some wild, elongated, trance-inducing sonic effects. Other tracks included recordings of conch shells and a solo brass didgeridoo.

Recording engineer Al Swanson, who has worked with Dempster often over the years, including this third time in the cistern, recalls, "The main problem was that there is no AC power there, so everything has to be battery-

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operated. That limits things to some degree. This time we used a Nagra D, which is a 4-channel, 24-bit recorder. The internal converters are 20-bit and sound quite good." Other than the DC-powered digital Nagra, which has an internal mic preamp, Swanson used both omnidirectional KM-130 and cardioid KM-140 Neumann microphones. Dependent upon their mic setup on each take, they would use four of either the KM-130s or the KM-140s, not mixing the two.

"It was quite a simple recording," Swanson notes. They did 4-channel recording but mixed it down to stereo. "To get that spherical effect is pretty amazing," says Dempster. "I'm just happy that it is as good as it is in stereo."

**WILLIAMS HAS  
WORKED ON A NUMBER  
OF RECORDINGS  
USING NATURAL  
SOUNDS MORPHED  
WITH SYNTHS;  
HE SUBVERTS THE  
IDEA OF AMBIENT  
MUSIC BY CREATING  
UNSETTLING, DARK  
LANDSCAPES.**

Some mixing was involved, but more in the sense of editing long pieces rather than the sonic qualities. "The nature of the space does the mixing for you, in one sense," explains Dempster. "It was an artistic judgment on how it was mixed," Swanson adds. "There was an artistic call on how much of each piece to use—several of them might have been 10 to 15 or even 20 minutes each. In one piece, we used part of one and faded into another." The album was mixed and mastered on a Sonic Solutions system.

Dempster has been fascinated by spaces with unusual or heightened acoustics since he began playing concerts with brass groups in Grace Cathedral in San Francisco. As the trombonist recalls, "That had a nice, long reverb time. I kind of seek out these places, but

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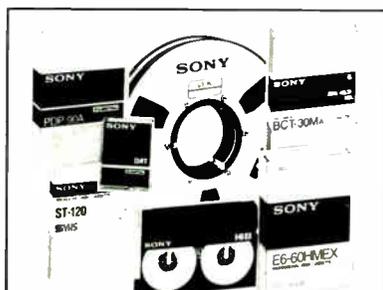
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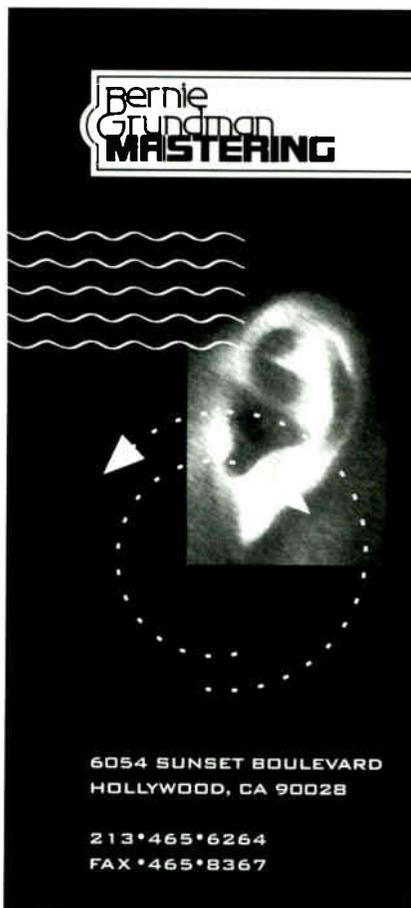
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**Recording session for Stuart Dempster's *Underground Overlays From the Cistern Chapel*. Trombonists (L to R): Nathaniel Irby, Dempster, Jeff Domoto, Chad Kirby, Moc Excobedo, Jay Bulen, Scott Higbee, Dave Marriott, Greg Powers, Gretchen Hopper.**

they also find me. I like to think I'm listening all the time. Not always to big reverberant spaces, but for some kind of interesting quality about certain sounds."

On previous outings, Dempster has recorded with the Deep Listening Band, with accordion player Pauline Oliveiros and keyboardist David Gamper. They have recorded twice before in the cistern, in a limestone quarry and, most recently, in the Trinity United Methodist Church in Kingston, N.Y.

Dealing with heightened acoustic spaces like the cistern is challenging, considering the amplifications the reverberations make of "everything from a mistaken foot shuffle to just a missed note," Dempster says. "Of course, if you miss a note, you have to be very clever in your compositional skills to get it into the texture of the piece. There's nothing more annoying than mistakes that you stop making, but the cistern sits there and makes it for you awhile longer." To handle this problem, the pacing was kept purposely slow and controlled by Dempster. "I had information to give the other trombonists visually, and they would do certain things based on that. I was improvising in real time, and they were reading me like a score."

Dempster says his fondness for such spaces over electronics stems from the fact that they are "a little less perfect than a synthesizer. There's a little more noise in the system that adds a human element missing from some electronics."

**SUN GOD**  
**RITUAL RECORDINGS**

Another approach to creating an unusual ambience is to bring outside in-

fluences into the recording process itself, as evident on Sun God's engaging self-titled debut, a flavorful mixture of voodoo music, samples and some techno-esque dance sounds—ritual music for the dance floor. Vocalist/group leader Rodney Orpheus and his collaborators, Patricia Nigiani and Marcus Giltjes, used location recordings of voodoo rituals (archival material from Cuba) supplied by Orpheus' New York-based Santeria teacher, Raul Canzares. The group often played this material live during the recording process. "The natural sounds served to link us into the vibe for each particular song," Orpheus says.

Orpheus gets so caught up in the music, he sounds like he's possessed at some points. And the different aural elements create a certain tension, especially the use of sounds like a buzzing bee or neighing horse. "Almost the entire album is made up of samples one way or the other," Orpheus says. "The backgrounds to many of the songs are natural sounds; for example, waves on 'Agwe,' and birdsong on 'Oya.' We also used some stuff from commercial sample CDs. The horses on 'Legba' were from the Digidesign SampleCell EX-ROM, the bees on 'Ayizan' from the Steinberg CD-ROM."

Regarding the equipment used to create *Sun God*, Orpheus explains: "The album is a combination of three factors. We started with loops and samples done by Marcus in his Akai MPC60, which is wonderful. Then we layered in more samples using a Digidesign SampleCell card, sequenced by Cubase Audio on the Mac. Then vocals were all

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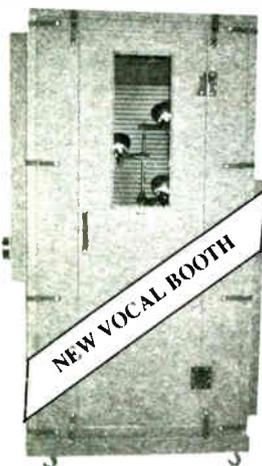
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done using Cubase Audio and Audio-media II. The entire album would have been just about impossible without Cubase and the Digidesign stuff. Using Cubase with the hard disk recording meant that we could build the record up very organically to achieve a really fluid sound, not be restricted to linear thinking, as we would have been if we'd used traditional tape recording. We've recently sold our multitrack tape machine and gone for hard disk recording all the way now. It makes the studio more of an artistic tool to me."

In the studio, the group used an AKG 414 microphone. "It's got a nice clear sound, good for just about everything in my experience," Orpheus says. For percussion, Orpheus says they used "whatever was at hand at the time, usually the trusty Shure SM58—the Energizer Bunny of microphones; it just keeps going and going." As for the reverbs used, "They are almost a perfect publicity campaign for Lexicon," Orpheus states. "I'm a big fan of their stuff, and the atmospheres on that album are largely to do with the programming I did on my LXPs. There are very few sounds that we did not create ourselves throughout the record. The drum sounds are almost all original, but very few of them are actual drums. For example, the kick drum sounds are Marcus kicking a cardboard box, the percussion on several songs are samples of things like Marcus dropping a bunch of keys on a snare drum or hitting an empty beer keg." In performance, the band also likes to use "found" percussion. "Tippy, one of our other live drummers, uses a tin bath with cans strapped to it feeding a Lexicon Jam Man," Orpheus says.

### RICH AND LUSTMORD: DEFINING NEW SONIC FRONTIERS

Robert Rich and Lustmord recently collaborated on *Stalker*, a mysterious album of undefined spaces created via synthetics and natural ambiances that are mutated into netherworldly soundscapes—an aural 2001-style voyage. Aside from recording his own experimental music, Lustmord (a.k.a. Brian Williams) works as a sound designer for Hollywood film composer Graeme Revell. Rich has been creating tribal trance music for years, enriching his music with treated and untreated environmental sounds. Not surprisingly, many of the alien sounds on *Stalker* are acoustic sounds mutated beyond recognition.

The tools of Rich and Lustmord's re-

spective trades vary, but as Williams notes, "We're both well-versed in Macintosh with Digidesign hardware and Opcode software, plus the Waves plugins for Sound Designer." Both artists use the studio as an instrument, manipulating and reshaping sounds to their liking. But the duo are rather hushed about the specific sounds used on their deep, ambient collaboration. "These recordings were done specifically for *Stalker* at various locations," says Williams. "Some of them are very evocative, while others were quite mundane and have been enhanced and treated a lot. I don't want to

## DISCOGRAPHY

Some of the albums discussed in this article are not available at conventional record stores, so we've provided contact information below, for those who want to investigate further.

*Kiva*, Steve Roach, Michael Stearns and Ron Sunsing. Contact: Fathom/Hearts of Space, PO Box 31321, San Francisco, CA 94131.

*Underground Overlays From the Cistern Chapel*, Stuart Dempster. Contact: New Albion Records, 584 Castro, #525, San Francisco, CA 94114.

*Sun God*, Sun God. Contact: Fifth Column Records, PO Box 787, Washington, D.C. 20044.

*Stalker*, Robert Rich and B. Lustmord. Contact: Fathom/Hearts of Space, PO Box 31321, San Francisco, CA 94131. Other works by Rich on Hearts of Space: *Rainforest*, *Gaudi* and *Propagation*. On Extreme: *Trances/Drones*. Contact: 1071 Main St., #2000, Cambria, CA 93428

Other works by Lustmord: *Heresy* and *The Place Where the Black Stars Hang*. Contact: Soleilmoon, PO Box 83296, Portland, OR 97283. *Arecibo's Trans Plutonium Transmissions*. Contact: Atmosphere c/o Com-Four, 7 Dunham Place, Dept. P/A IE, Brooklyn, NY 11211. ■

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specifically tell people where some of those recordings were made because I think it will take away from this magical place we're trying to create."

To find out more about how *Stalker* was made, the listener can learn from the artists' past experiments. Williams has worked on a large number of recordings using natural sounds morphed with synths into impressionistic atmospheres; he subverts the idea of ambient music by creating unsettling, dark landscapes. Williams points out that "the electronic side of my music is computer manipulation using Digidesign equipment—Sound Tools and Sound Designer, which is a very good piece of software. It's very difficult using today's synthesizers to actually get a sound that's really nice and synthetic. You get something that's trying to sound like a piano or a string or whatever. I find it much more interesting to get a good, real sound to start out with and then manipulate the hell out of it using effects."

Rich prefers the organic quality of acoustic sounds and the unpredictable changes inherent in them, as opposed to repeating and manipulating small samples. He says his new sounds still "have harmonic complexity and the quality of changing over time." Rich has used environmental sounds throughout his career on albums such as *Trances*, *Rainforest* and *Gaudi*—works filled with dark yet beautiful sounds.

Lustmord's career includes several forays into experimental soundscapes: *Heresy*, *The Place Where the Black Stars Hang* and a recent side project under the name *Arecibo*. On *Heresy*, he used recordings made in subterranean locations (including crypts, mines and caverns). *Black Stars* mixes equal doses of metastatic resonance ("...an ongoing, undulating vibration," he explains) and synths, while on the *Arecibo* disc he employs deep-space recordings by NASA. His CDs are heavy on low frequencies. "There's so much bass in my stuff because I'm literally trying to bring the sound into the room in a very physical sense, to bring you into this created space. That's my ultimate aim," he says. A lot of these spooky ambiances are not just room tone, but sounds created in the locations. "Obviously you have to have something happening for there to be a sound, so I have to generate something to start with. For *Heresy*, I even went to a cold storage place in London—a massive concrete building with a very long reverb. I'd drag big slabs of stone and telegraph pole-sized pieces of

—CONTINUED ON PAGE 228



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# RECORDING NOTES



Left: The Tractors at the Church Studio, Tulsa, Okla.

## REMEMBERING BUDDY HOLLY (AGAIN)

by Robyn Flans

They say the music died on February 3, 1959, when Buddy Holly was killed in a plane crash. Thirty-seven years later, *Not Fade Away (Remembering Buddy Holly)* is proof that the music still lives on. The project is more than a compilation of hit-makers singing Holly—executive producer Frank Liddell helped put together a list of artists and producers

who were genuinely drawn to Holly. What he got was an eclectic mix that yields to no boundaries.

Mark Knopfler produced and recorded "Learning the Game" with Waylon Jennings; Holly's bass player at the time of the crash, Dave Edmunds produced and recorded "It Doesn't Matter Anymore" with Suzy Bogguss; Nanci Griffith recorded "Well, All Right" with Holly's original band, The Crickets; The Crickets traveled to Woodstock, N. Y., to record the title track with The Band; Los Lobos contributed "Midnight Shift" from Los Angeles; Nick



Suzy Bogguss with Dave Edmunds

Lowe produced "True Love Ways" for The Mavericks; Joe Ely and Todd Snider recorded "Oh Boy!"; Marty Stuart and Steve Earle joined forces to create their version of "Crying, Waiting, Hoping"; the Nitty Gritty Dirt Band offered "Maybe Baby," the fourth Holly tune they've recorded in their 30-year career; Mary Chapin Carpenter recorded "Wishing" with Kevin Montgomery, the son of the song's co-writer and producer; Bob Montgomery and The Tractors recorded "Think It Over" in Oklahoma. Perhaps the most technically creative track, however, was "Peggy Sue Got Married," recorded by The Hollies—re-

—CONTINUED ON PAGE 204

## THE JOURNEY TO "PLANET SQUEEZEBOX"

by Barbara Schultz

Ellipsis Arts of Roslyn, N.Y., is famous for its uniquely artful, global and almost esoteric boxed sets. The company's *Big Bang* box chroni-

cles, historically and geographically, a world of drum sounds. *Celebration* is a collection of festival music from dozens of cultures. The label also puts out a *Trance* series of mystic music from Asia, Africa and South America.

Each one of these collections includes instructive liner notes that offer an overview of the musical topic, in-depth investigations of the specific cultures and pieces of music, colorful original graphics and one-of-

a-kind photographs. Clearly, the people at Ellipsis Arts feel a great commitment to exposing little-heard musical forms, and to exhibiting the intricate similarities and differences in the way cultures use common musical tools. *Planet Squeezebox*, the most recent offering from Ellipsis, makes the accordion the latest subject of the label's affectionate, encyclopedic scrutiny.

This collection was compiled by producer Michal Shapiro, who only recently took up with the label after many years as a singer and music publicist. She says *Planet Squeezebox* was her "maiden voyage" as a producer for Ellipsis Arts, but she seems to have brought

all of the label's prerequisites to the project: talent for writing and research, curiosity, industry contacts and unbridled enthusiasm for the material. "Jeff Charno, the president of Ellipsis Arts, sits opposite me [He says] 'I want to do an accordion compilation called *Planet Squeezebox*,'" Shapiro writes in the *Squeezebox* liner notes. "I

—CONTINUED ON PAGE 208



## NICK CAVE & THE BAD SEEDS

SETTING MURDER TO MUSIC

by Barbara Schultz

It's a mood thing. If it's a bright, sunny day and you're feeling relaxed and carefree, you're probably not going to

play your Nick Cave & the Bad Seeds albums. But if the day is dark, with a violent storm approaching—maybe in the atmosphere or maybe in your *soul*—Cave's latest release, *Murder Ballads*, is just the thing.

*Murder Ballads* (Mute/Reprise Records) bears certain similarities to other Nick Cave & the Bad Seeds albums. The fury of Cave's dramatic, deep and almost mocking vocal is, of course, the core of the music. And like the powerful narrative of *Henry's Dream*, the new album is conceptual and full of story songs (about

murder and death, obviously). It also has *The Good Son's* gospel piano sound, driving rhythmic guitars and near-religious intensity. But this new record, the band's ninth studio album, has a bit more range than many of the previous releases. Not that it lacks Cave's uncompromising passion, but guest vocals from Kylie Minogue and P.J. Harvey add a bit of sweet melancholy to the thrilling chaos.

The album was mixed in Melbourne, Australia (Cave's home), at Metropolis Audio. The engineer/co-producer

is Tony Cohen, who has been working with Cave for about 15 years. According to Cohen, Metropolis is a five-room complex centered around a coffee machine. "The most unusual

—CONTINUED ON PAGE 218

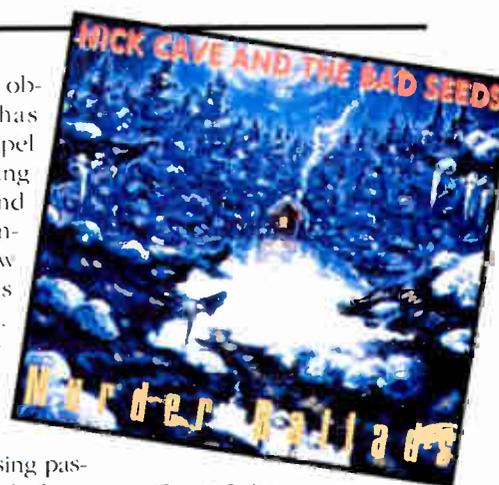


PHOTO: DAVID TONGE

# BUDDY HOLLY'S "NOT FADE AWAY"

by Blair Jackson

Buddy Holly's tragic death in a plane crash on a snowy February night in 1959 cut short a career that had intriguing possibilities, to say the least. He was only 21 at the time, and in just two years of cutting records he managed to make an indelible mark on the burgeoning rock 'n' roll scene. Along with Chuck Berry, Elvis, the Everly Brothers and Little Richard, Holly was one of the first generation's true originals—a singer and songwriter whose influence far exceeded the material success he enjoyed during his brief career. And though his meteoric rise and sudden end have certainly become the stuff of legends, inspiring books, songs and a major feature film, this is really a simple story that doesn't need dramatic embellishment, and Holly's true legacy—his songs—couldn't be more basic and to-the-point.

The Lubbock, Texas-born Charles Hardin Holley learned to play guitar, piano and fiddle at a young age, and by his early teens he had formed a band with two friends, performing mainly country material on the Lubbock station KIDAV and at various small gigs around the Southwest. Holly (he dropped the "e" early on) and his next group (The Three Tunes—bassist Don Guess, guitarist Sonny Curtis and drummer Jerry Allison) were signed by Decca and went to Nashville, where they recorded a few sides, none of them commercially successful. Among the last tunes the group cut was a song Holly wrote called "That'll Be the Day," but Decca chose not to release it. Holly returned to Lubbock and over the next year he continued writing songs and playing locally, even opening for a young Elvis Presley at one point. (He credited Elvis and Little Richard, whom he saw perform in Lubbock, with turning him in a more rock 'n' roll direction.)

In mid-1956, Holly and his group, now called The Crickets, drove 90 miles west across the New Mexico state line to record some demos at musician producer/engineer Norman Petty's studio in the sleepy town of Clovis. Petty already had made a bit of a name for himself in the area. As leader/organist of the Norman Petty Trio, he had toured



L to R: Buddy Holly, Joe Mauldin, Jerry Allison, Niki Sullivan

successfully in the early and mid-'50s, even scoring a moderate hit with a version of Duke Ellington's "Mood Indigo." Petty had been cutting acetates and dabbling in electronics since his pre-teen years, and as he became more interested in both music and recording, he'd built himself a studio in the abandoned grocery store that adjoined the gas station that his father ran on West 7th Street in Clovis. Petty lived in an apartment above the station, and when "Mood Indigo" earned him some money, he bought the building that housed the studio. "He built it with the intention of just putting together a studio to record his trio and doing his own recordings," says Kenneth Broad, who was a friend of Petty's until the producer's death from leukemia in 1984. "But then things started happening for him, and he did 'Party Doll' with Buddy Knox and got a hit. Roy Orbison came in and did 'Ooby Dooby' with Norman, although they didn't have the hit with it. And then Buddy came along..."

Petty's studio was regarded as the best in the area at the time. In the small control room, he had a 5-channel mono Altec console, built in the late '40s primarily for broadcast purposes. Petty

originally carried the board around with him to mix the Trio's live dates, but it became a fixture in the studio when Petty stopped going on the road to play. According to Jerry Fischer, who began working with Petty in the early '60s, "Norman did make one modification [to the console]—he altered one of the program switches to feed the [echo] chamber, which was a big room above his father's filling station. He stuck an attenuator in [the console] so he'd be able to balance it and switch in and out of the chamber. You can hear how he used that switch on a song like [Holly's] 'Peggy Sue,' where he'd run a couple of beats through the chamber, then a couple flat, then more through the chamber, and so on."

The other equipment in Petty's studio included one of the first Ampex recorders ever made (the first three were bought by Columbia Records, Les Paul and Petty, Fischer says), a 20-watt McIntosh amplifier, Altec speakers and a small selection of Altec and RCA mics. Fischer says that the small studio room had "poly-cylindrical panels in the walls and ceiling" as an acoustic treatment, and pile carpeting, which was later re-

—CONTINUED ON PAGE 212

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—FROM PAGE 200, REMEMBERING BUDDY HOLLY united with Graham Nash—and a posthumous Buddy Holly.

"The original idea was just to do a Buddy Holly track ourselves," explains Hollies' guitarist Tony Hicks. "Then Graham rang me one evening and said, 'I have this track with Buddy. What do you think?' It all fell into place." Bassist Ray Stiles took a 1958 hotel room recording of Holly singing "Peggy Sue Got Married" to an acoustic guitar as the basis for an entirely new arrangement of the song. The whole process involved many hours of intensive editing, using Stiles' Pelican Sound Studio's DAR Delta Plus Sound-Station to place the various elements together. The song's new arrangement, written by Hollies keyboard player Ian Parker, necessitated a 16% slower tempo than the original—from 141 bpm down to around 120 bpm—so Stiles used the Delta Plus' Time Warp facility to stretch the song.

The next stage involved making it sound as if Holly was there in spirit as well as voice on the new version, using Word Fit, an automatic dialog synchronization package. Ian Parker sang a new vocal line, and Holly's voice was automatically slotted into place.

According to Hicks, they removed Holly's restrictive acoustic guitar from the track with a combination of editing and EQ. "That allowed us to work on it some more," he explains. "Ian Parker then put a different chord structure behind the melody. I got together with him and did a few changes from that. Also, it wasn't in any particular key because there were no guitar tuners in those days. It was just short of A flat. We decided to move that up to A, which improved it. Also, it was slightly out of time because Holly was just strumming away himself.

"I think we ended up with six guitar tracks," Hicks continues, "a couple of electrics, acoustic and there's a very important one on there—an electric played through the Leslie speaker. Plugging it through an organ speaker gives you that swirling sound. If you listen to the recording, you probably think it's a Hammond organ playing. In fact, it's my

guitar. Bobby Elliott went right back to the '60s and used a vintage, antique, very small Ludwig drum kit, the sort of thing everybody used then, and he did it live in the studio. And in the middle of all this, Graham Nash arrived from the States, just as I was finishing the guitar parts. That just left us to do our side of the vocals with Graham, Allan Clarke and myself. We did it in a day-and-a-half at Abbey Road Studios."

On the other hand, The Tractors' Steve Ripley (who once served as Leon Russell's engineer in L.A.) laughs at the fact that while "Buddy and the guys"

of what went on because of simpler miking. It was only one microphone in a room, and you mixed by moving people around. In modern technology, you have a microphone crammed up on every amplifier to the point where everybody is isolated.

"The headphones are the enemies—you've got everybody so isolated you can't hear each other, so you have to wear a headphone," Ripley continues. "Nobody wore headphones back in those days. By the time you've done that, you've played the song and been there so long that nobody's got any spark. So the personality is gone, as far as I'm concerned. That's what's missing from modern attempts to make those old records. I love the idea of everybody being there at once, and I'm going to do some Tractor stuff real soon where we're all there, we set up a P.A. and really play live and forget the headphones. Headphones are the enemy. Write that across the universe," he laughs.

Though they didn't duplicate Holly's recording technique on "Think It Over," Ripley says he uses a guitar technique that he believes Holly himself employed. "A long time ago, I came to believe that when Buddy recorded, not only was he playing electric guitar through an amp and that sort of thing, but they also put a microphone on his electric guitar. This was in the '50s, and the guitar itself was so disengaged from the sound, so they miked his guitar acoustically. I've been doing that on most everything I do ever since I read that. The thing that makes an acoustic guitar an important part of anybody's record where it's not actually featured, is the

high frequencies, the pick noise and the striking of the strings. That's all intact when miking an electric guitar—not that we sounded like Buddy, because I played my Telecaster to the wrong key, instead of a Stratocaster, but I did use that technique. The oddest thing about the whole recording to me was, even after finishing it, I kept wondering if I shouldn't sing it again because it doesn't sound like me. It doesn't sound like Buddy necessarily, but it must be in there somewhere."

Although The Band's Levon Helm



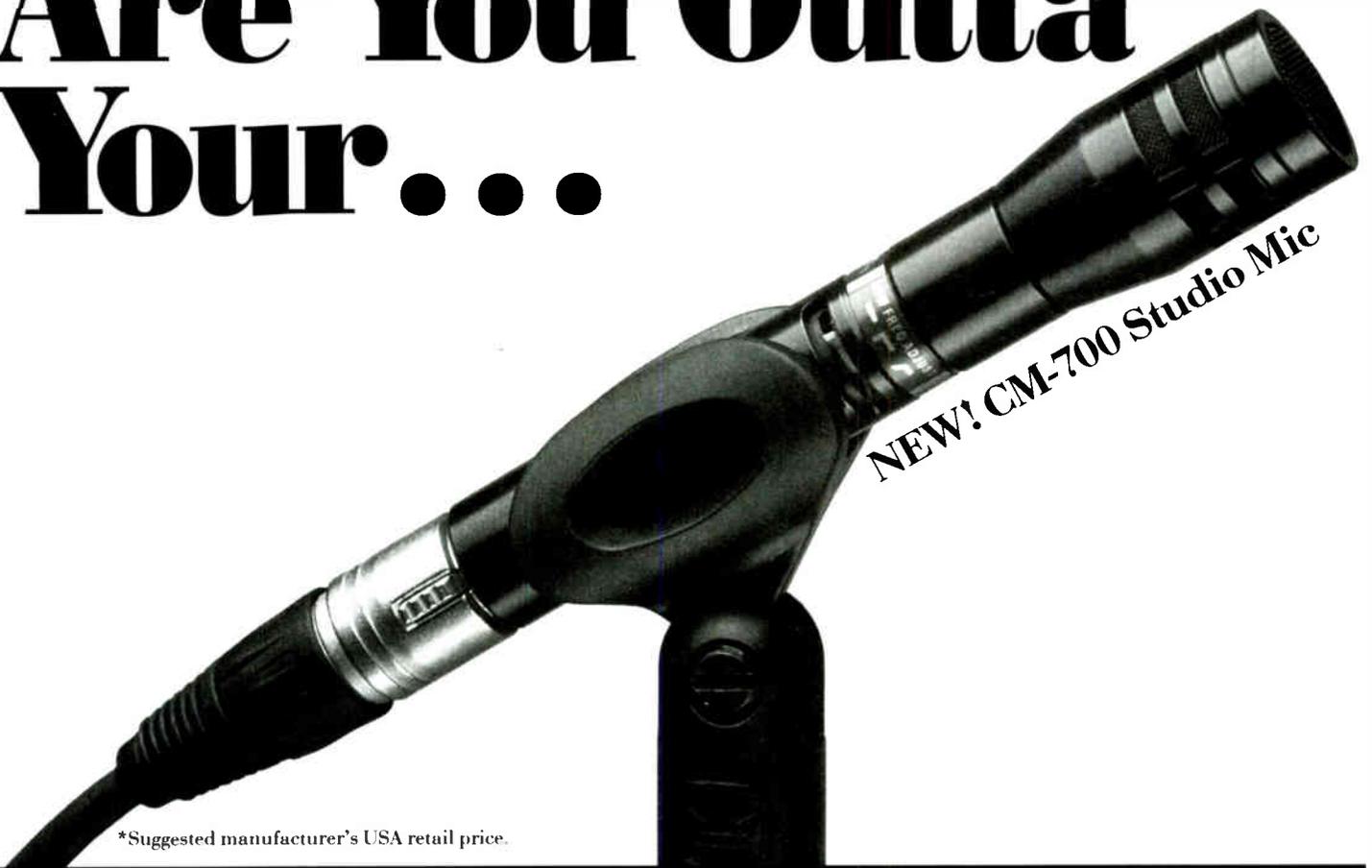
**Marty Stuart and Steve Earle**



**Producer Tony Brown with Nanci Griffith**

knocked off "Think It Over" in a seemingly two-minute period. "we constructed it in a fast six days, including mixing. I have a whole theory on live cutting," Ripley says. "I love to cut with a band. I happen to have a great band, but what I think is great about old records is, first, everybody was there together. All the people I've worked with who are trying to get that old sound have really failed because they're missing the other two important things that went on—it was a very fast thing, and the third element was the sonic quality

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**J.I. Allison watches while Sonny Curtis with The Crickets and Levon Helm swap licks.**

didn't even realize it, he was one of a few artists who actually used Holly's Neumann U47 for the lead vocals on the title track. Though executive producer Mark Wright says they attempted to remain true to Holly's original sound, this recording was done with almost two bands cutting live, as opposed to its original three pieces. For Helm, the thrill was getting to cut with The Crickets. "I always thought of it as

mics around, but this was two drummers and a percussionist at one time. I took [engineer] Steve Marcantonio [in order] to have an engineer I knew I'd be coming home with to mix it. Then Aaron Hurwitz, The Band's producer, was present also. Aaron set Garth Hudson up in the right place where he felt comfortable being able to see Levon, which are things we wouldn't have known on our own. At the same time,

Buddy Holly and The Crickets, never just Buddy Holly," he says. "Working with The Crickets was the most fun I can remember."

"I work at Javelina, a very large room in Nashville," explains Wright. "I like to have a lot of players. I'm not always sold on every track having total isolation. I was accustomed to setting a lot of people out in the room and moving

we were able to get on tape what we knew we could use when we got back home to make a mix that would hopefully gel with the rest of the album."

Helm was joined on drums by The Band's other drummer, Randy Ciarlante, and The Crickets' Jerry Allison, who recalls, "I originally played that song in '57 with cardboard boxes, instead of on drums."

"So Levon came up with the thought," Wright says, "Hey man, if he played that on the original record..." and he brought in about nine or ten different boxes that we tried. We checked the frequency of the box in the control room so it would stay out of the way of the congas and the real snare drum. We had two bass players. [Rick] Danko played a moving bassline, and Joe B. Mauldin played more of an upright part like he did on the original record. It was pretty wild, but when you hear it, it's very cool."

"It took us awhile to get in sync with each other, but that always happens," Helm says. "After we played the song and got the arrangement we were going to use, then it was just a matter of doing it four or five times until we got a real



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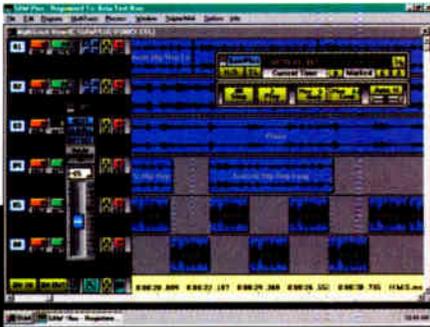
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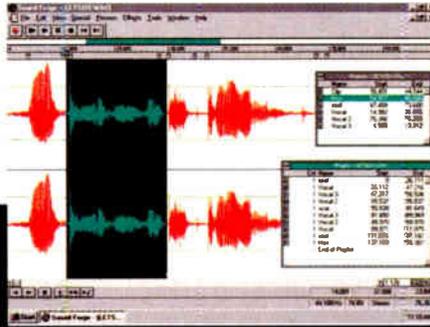
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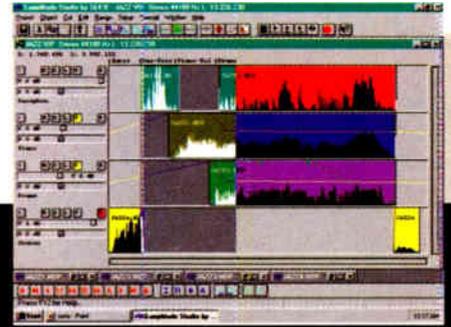
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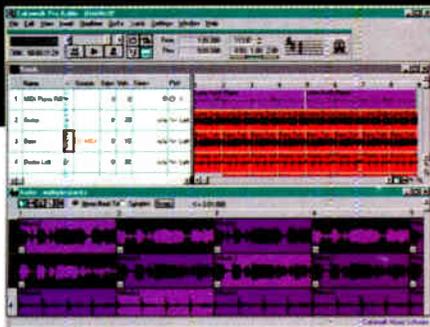


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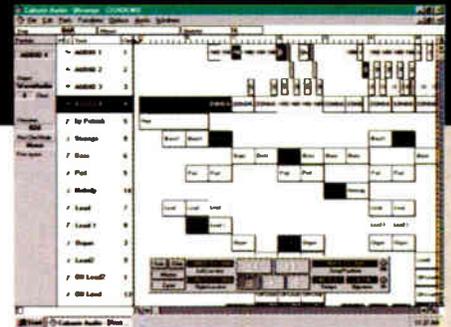
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good performance. We spent one night on the track. Then we put some vocal harmonies on and sent it to them. They put the rest of the harmonies in and some percussion things, maybe an extra guitar—or maybe an extra box or two!”

Nanci Griffith didn't have Allison play box on “Well, All Right,” but she asked him to only play ride cymbal, along with her own drummer, Patrick McInerney. “All I played on the original record was the bell of a cymbal, no drums,” Allison recalls. “We kept it pretty simple back in those days. We didn't have access to congas and bongos; we had to make do. It's a lot easier to record these days, though, because you

get another shot at it if you need to. Back then it was all mono. You played it, it was mixed and done right then, unless you overdubbed, which involved getting another mono machine and running two tapes at once. These days you can hear yourself better, but the same feel might not be there.”

“The recording we did was really easy,” Griffith says of the track Nashville's Tony Brown produced. “Basically, nobody produced it. Tony will tell you his butt had barely hit the chair and we already had cut it. It produced itself. I think it took all of an hour.”

Waylon Jennings' experience with Mark Knopfler at the helm was not

quite so quick. “When you get in there with Mark, be prepared to stay,” Jennings laughed. “That's what I did, probably for about ten hours. He said, ‘I can't believe you stayed,’ and I said, ‘Well, I'm interested, too.’ I'd sing, we'd do another take. He more or less put it down and then started taking things away that were in the way,” Jennings explains. “Every one of them would've worked, though. I told him, ‘Picky, picky, picky.’” Jennings laughs, “but it really turned out great. I've always demanded complete artistic and creative control of what I do, but you should have someone in there you can give it to. I trusted him completely.”

Jennings knew Holly for eight years in Texas before playing bass for him on his last tour. “I was a terrible bass player,” he confesses, “but Buddy would hang around the radio station where I was a disc jockey. He brought a bass in one day and said, ‘You've got two weeks to learn how to play this.’ I promptly memorized everything he ever did, but I wasn't very good.” Holly actually played “Learning the Game” for Jennings as he was writing it. “Before we left to go on that tour, we were up in his apartment and he had just written it. He had put it down on a tape machine and said, ‘This is not finished...’

“Mark did all the arrangements, and Buddy would have loved it. Buddy was the most musical person I've ever met. Mark is in there, too. I know Buddy didn't hear it the way we did it; I know he didn't write it that way. It was more of an up-tempo thing, but Mark took it to a whole other level. I think Buddy would be very proud. I think this is a great compilation,” Jennings says in summation. “Buddy had something—that thing that Elvis had, that thing that Hank Williams had. He was the first one to record almost exclusively his own songs, and that's one of the things that makes him live forever.” ■

—FROM PAGE 201, PLANET SQUEEZEBOX

am immediately flooded with vivid memories of all the accordion music that has made a lasting impression on me—the first time I experienced the Cajun soul of the Balfa brothers; my disdain for the instrument during my infatuation with rock, and then the revelation years later of the sweaty joys of Zydeco; my first night in Paris, a small cabaret, a man playing bandoneon; Astor Piazzolla; and finally, and most mightily, the first few measures of



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'Graceland'...I jump up from my chair and give Jeff the high five."

Shapiro began the project with a few choice phone calls, each one of which, she says, "yielded many vectors. I had a bunch of different journalists on my list, but the most precious lead was Jared Snyder. Jared is a man who has spent his life documenting obscure world traditions. He does it because that's what makes him live."

Snyder, an accordion player himself, wrote one of the liner notes' lengthy explorations of the accordion's cultural crossroads. His piece is titled "The Celtic, Canadian, Cajun & Creole Connection: The Accordion in Ireland, Quebec and Louisiana." "The accordion appeared in Ireland, Quebec and Louisiana in the late 1840s when traveling minstrels using this relatively new instrument brought shows to major urban areas like Dublin, Montreal and New Orleans," Snyder writes. "But these early instruments were too expensive and delicate for local traditional music, and it wasn't until the introduction of the German one-row diatonic accordion (melodeon) that the instrument changed the music of all three cultures." Snyder goes on to explain the individual countries' relationship with the accordion, and then, one by one, many of the tracks on Disc 1 of the set—tracks by artists such as Ireland's Phil Cunningham and Joe Derrane, Canada's Raynald Ouellet and Louisiana's Zydeco Force.

The notes also include detailed explanations, by other writers, of the accordion's tradition in polka music, Latin America and South Africa, and a section called the "Accordion ABCs: Arab & Baltic Communities," each with an associated selection of track-by-track descriptions. There is also a glossary of accordion types and terms, with a diagram showing the different arrangements of buttons and/or keys on different types of accordions: one- and three-row diatonic, bandoneon, piano accordion, chromatic accordion and concertina. Plus there's an index of bass accompaniment systems and a collection of surprising antique photographs of the accordion in action (supplied by Snyder). But this is all supplemental to the music itself...

In her planetary search for accordion

pieces, Shapiro's "vectors" led her to Etienne Bours, the archivist at Brussels' Mediatech, an institution that operates like a giant library of the arts. Bours sent Shapiro a long list of accordion music at his disposal. "And that was perfect because it's all divided up by nation, by genres, by artist," Shapiro says. "You could see who was available on what record. It's not totally comprehensive of every accordion album that's ever been recorded, but it's such a good starting-off point, such a good source that even when I would be sitting there going, 'God, I don't know who to call next,' if



**Maria Kalaniemi Group**

I just picked up the discography, I'd be faxing within minutes.

"So what I did," Shapiro continues, "was I faxed to hundreds of people. I ended up collecting approximately 300 CDs and a goodly number of cassettes and DATs, and I tried to listen to all of them and figure out which tunes were the ones to use. I also did a lot of research, reading up on the various forms that we were dealing with, and I spent quite a bit of time with Faithe Defner of the American Accordion Association. She took me to her factory where she manufactures Titano accordions, so I got to see how they're put together. She's a wonderful woman, a real crusader for the accordion. I have to say that one of the things that was wonderful about this project was that people do champion the instrument, and so I never hit anybody who was less than 100 percent cooperative and joyful to give input."

Shapiro says that one of the hardest parts of the project was narrowing her selections to a manageable number to fit the prescribed three-CD format. "When I first started the project," she says, "I thought, 'Three CDs, the world is mine!' But then I sat down and made a list of all the countries that had a significant accordion heritage, and I realized that there were 35 of them, easily, off the top of my head. And I thought about how many cuts from each country should go in, and suddenly, my three CDs were the size of Rhode Island instead of the world." But, to a small degree,

some of the narrowing down happened naturally, because the available version of a recording was too damaged or was inferior or, sometimes, because of licensing complications.

"The licensing part was frustrating when I'd lose a track that I was really in love with that I thought was very important to the collection. I lost a Brazilian track, and I lost a Romanian track and a French track and a jazz track. Then there were licenses that *did* go through that were crazy, like trying to get the licensing from Bulgaria. It was a scream. I spent so much energy on getting those two tracks. I saved the faxes. It's like a little phone book, and they're in every language you could imagine, because I know a little French, a little Russian...One person there

spoke English, and one person spoke French, and the woman who spoke English, I never could be quite sure that she really understood me. We'd be talking about all the terms, and then she'd say something that completely negated everything she'd said before and then say, 'Good-bye!' and hang up."

After a few months of research, and astronomical phone bills, Shapiro had compiled 51 DATs containing all of her final choices. The collection then went to Manhattan's DB Plus to be mastered by Gene and Scott Paul (Les Paul's son and grandson, respectively). "Our concerns were we had 51 tracks from totally disparate areas, different studios, and it was not easy to try to get a sense of continuity from track to track," Shapiro says. "In some places, it was impossible, but at some point you also have to say, 'Well, the listener will have to understand.' In general, Ellipsis does not

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**Alice Hall**

like to use very old recordings. I kind of was a bit forceful about insisting on the Alice Hall track, even though it was not in good shape. It was a little slice of history, and Jeff said to me, 'If you feel that it's historically significant, then we'll put it in.' We did a lot of noise reduction on it, but you can't make an old cut sound new."

Gene Paul, whose credits include a recent Grammy nomination for mastering Rhino Records' seven-disc John Coltrane boxed set, says he went into the project "sort of blind." He'd never heard the accordion played in so many different ways, and the better sense he got of the body of work he had in his hands, the more amazed he became. "I got to this track that was very organ-ish, very different, and it was so delightful to discover that there were so many different ways of expressing that instrument. It changed my way of looking at it. Now, if somebody were to come up with a spoon album, I'd listen to it!"

Gene Paul does all of the analog editing in DB's Studio A. He says he took a light-handed approach to the project, in an effort to preserve the charm of the original recordings. He uses a Sony 1630 editing system, Medici and Sontec EQs and EMT and Behringer compression. "None of this was 'colorized,'" he says. "You know, most people want to go through a lot of NoNOISE'ing and clean things up, and in doing that, they pass the music—the part that gives you tingles on your arm and the soul of the music. But this was not done that way, which I really admire."

Of course, the project required some technical heroics. One of the most memorable problems, Gene Paul says,

was a Russian track that came to him drenched in echo. "We used the Behringer compressor/limiter. It's a leveler also. That particular unit helped a great deal, because it was a tremendous amount of echo, and part of the texture was being lost. And we used the Medici and the Sontec EQs, and then we used another device called the BBE. It plays with phasing a little bit, and in doing that, we had a good shot at reducing the echo."

Scott Paul did the de-noising work on the studio's Sonic Solutions system. "We did a lot of the editing in there," he says. "We did a little bit of digital EQ'ing to get rid of some of the noise, and we did a lot of level-matching of the tracks just to make sure everything sounded natural. Of course, like with any project, there were things that were like 'Whoa!' We had to ride level on some of the stuff, because we'd hit a loud bang or something. But one of the greatest things about [Ellipsis Arts] projects is that, talking to them, you understand what they went through to get some of this stuff, or what people went through to actually go out and record it."

"This is the type of project you might like to see on CD-ROM," Gene Paul says. "I would like to be able to click and say, 'Well, hold it; I would like to go further in this direction.' It's a piece that a lot of people should listen to like they would use a World Book Encyclopedia, because it's truly a historical piece. And if there's anything that technology has brought us, it's got to be the ability to sneak back to the past. A lot of the stuff today lacks the rawness that was possessed when they made these old recordings. Whether it was a matter of nobody knew any better, I don't know, but there was a certain honesty and sincerity and warmth to it that truly makes you stop." ■

—FROM PAGE 202, "NOT FADE AWAY"

placed by more reflective indoor-outdoor carpeting. "It was very dead, very flat," Fischer notes, "but he had that chamber and he used it so well."

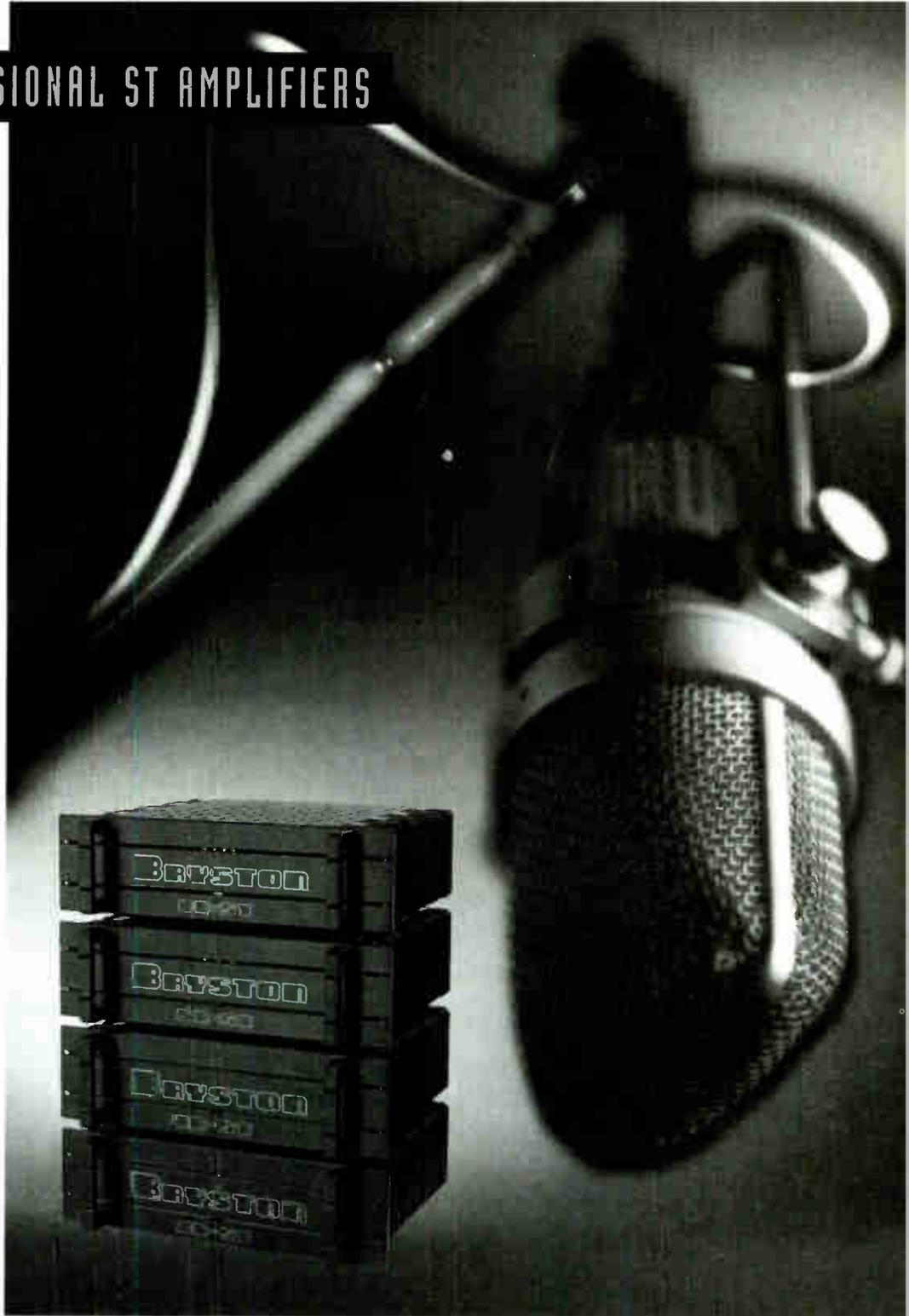
By the beginning of 1957, The Crickets had evolved into a new lineup—Allison, guitarist Niki Sullivan and bassist Joe Mauldin—and on February 25 Holly and the group drove back to Clovis to cut a new version of "That'll Be the Day" with Petty again producing and engineering. On the strength of that song, the group landed contracts with two Decca Records subsidiaries, Coral

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and Brunswick. In a strange, but not particularly unusual move for that era, Holly's songs were released under his own name on Coral, and as "The Crickets" on Brunswick (I'll spare you the tawdry contractual details). Soon after that, Petty became Holly's manager and—what's this?—began taking co-songwriting credits on songs he had no hand in writing. (Book him, Dan-O!) "That'll Be the Day" began its slow rise toward the top of the charts in the summer of 1957, and that led to Buddy Holly & The Crickets latching on to their first national tour, where they were very well-received.

But we're getting ahead of ourselves a bit here. "Not Fade Away" was written by Holly and drummer Jerry Allison in the spring of 1957 and originally offered to the Everly Brothers, who had just hit the charts with their first hit on Cadence, "Bye Bye Love." Holly had met Don and Phil Everly in the course of his earlier travels to Nashville, and felt that the song's insistent Bo Diddley-style beat (Bo already had scored a handful of hits by mid-'56) might be a good match with the Brothers' style.

But wait—can you handle an interesting and semi-apropos digression?

When I interviewed R&B great Johnny Otis back in 1986 about the writing of his own Bo Diddley-inspired hit, the classic "Willie & the Hand Jive," he told me: "That beat predates Bo Diddley by decades! The first time I heard that beat was when I was a kid in Berkeley [Calif.]. I knew this piano player named Otis Mathews who was transplanted from the Mississippi Delta. He was a rambunctious barrelhouse and boogie-woogie player. I sometimes played drums with. This was back in the '30s. He taught me a few little beats, including this one called 'shave-and-a-haircut, six-beats'—bump-de-bump-de-bump, bump-bump. He would play it over and over again on the tom-tom...And he'd sing to the beat: 'Mama bought a chicken, thought it was a duck/Put him on the table with his legs stuck up.' He had a million lyrics for that beat." Otis says he also saw chain gangs in the late '40s and railroad workers in the early '50s singing their own songs around what became known as the Bo Diddley beat in 1955, when the song "Bo Diddley" became the first of a string of hits for the Mississippi-born singer/guitarist (real name: Ellas McDaniels).

Back to our story. After the Everlys

rejected "Not Fade Away," Holly decided to try cutting the song himself, so with The Crickets in tow, he returned to Petty's studio on May 29 to record that song and another he'd written recently, the beautiful ballad "Everyday." As Jerry Fischer tells the story, Petty's studio room was so small that in the first attempts to cut "Not Fade Away," the drums completely dominated the other instruments. "Then he tried putting Jerry Allison out in a little foyer room, but it was still too loud," Fischer says. "So after that Norman found a cardboard box and got Jerry to beat on that." And indeed, that is the drum sound on "Not Fade Away."

Petty had been doing overdubs on (some) records for quite a while, initially by having the singer or musician playing to a master acetate and recording the two together, but by this time he had purchased two more Ampex mono recorders, so he could stack tracks that way. On "Not Fade Away," the backup "bop-bop's" were overdubbed by Holly, Allison and Sullivan after the main track was cut live.

Incredibly, neither Brunswick nor Coral was interested in releasing "Not Fade Away," but "Everyday" was picked

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to be the flip-side of Holly's next smash, "Peggy Sue." In November, "Not Fade Away" was released as the B-side of "Oh, Boy!" which made it up to Number Ten. But it wasn't until the next year, when Holly and The Crickets made a triumphant, ecstatically received tour of England, that "Not Fade Away" began to be recognized as a great song. It had received almost as much radio airplay in the UK as "Oh, Boy!" and it was a highlight of the concerts the group performed there. In interviews through the years, members of The Beatles, Animals, Rolling Stones and other great British groups of the mid-'60s have talked about the impact Holly had in England. The Hollies named themselves after him, the Rolling Stones had their first U.S. hit with "Not Fade Away" in 1964 (and used it as their show-opener on their '94-'95 world tour), and Paul McCartney eventually bought the publishing rights for the entire Buddy Holly catalog.

Holly and The Crickets had many more hits in '57 and '58, and in the fall of '58 Holly left both Petty and The Crickets behind to live in New York with Maria Elena Santiago, a Puerto Rican woman he'd married after proposing on their first date. He did some recording in Manhattan, though none of those sessions saw the light of day until after Holly died, and in most cases the songs were heavily overdubbed after the singer's death. In the wake of Holly's death, "It Doesn't Matter Anymore" was released and it immediately hit Number One in England, staying in that slot for six weeks. In America it hit Number 13.

Petty stayed in Clovis and eventually built a new studio inside a building that had once housed a 500-seat movie theater. The publishing money he earned from Holly's recordings made him a fairly wealthy man, but he never topped the success of his year-and-a-half producing Holly. Jerry Fischer, who helped Petty build his later studios, spotted Petty's original Altec board in a junk room at a TV station in Amarillo many years after Holly's heyday and purchased it for \$2. He owns it to this day. In 1986, Petty's widow, Vi, supervised an attempt to reconstruct the original studio for a documentary Paul McCartney was making about Holly, and ten years later there continues to be a tremendous amount of interest in both Holly and the studio. "Not Fade Away" has gone on to become a rock standard, covered by many different artists through the years. ■

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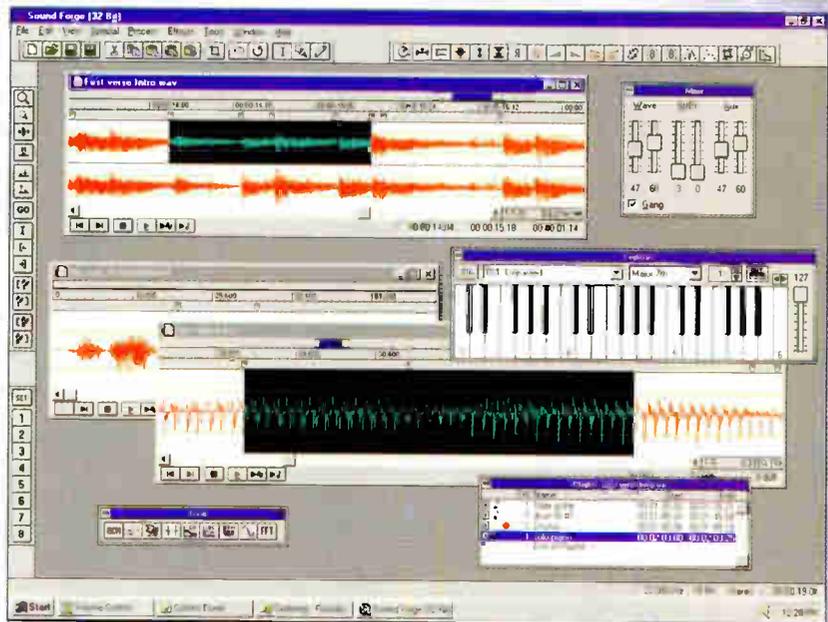
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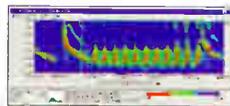
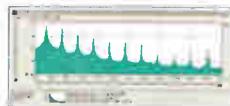
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noisy recordings. Sonic Foundry's Noise Reduction Plug-in is designed to automatically remove background noise such as tape hiss and electrical hum. Click Removal is also included, allowing you to eliminate clicks and pops automatically.



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And if you need to identify that particular frequency component, you'll find the Spectrum Analysis Plug-in a great addition.



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

## Sound Forge XP

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

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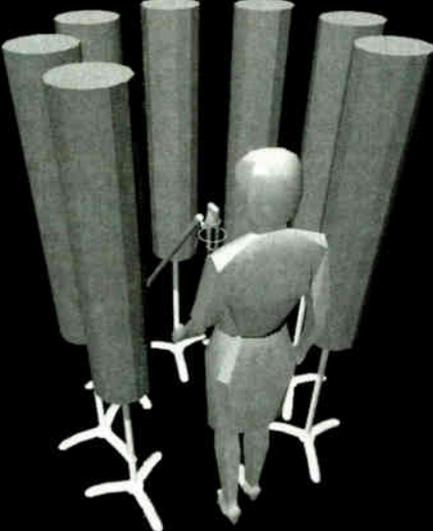


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—FROM PAGE 201. NICK CAVE & THE BAD SEEDS people meet at that coffee machine,” he says. “Like some middle-of-the-road hero will have a cup of coffee with Nick Cave. It’s the black hole of Australian music. They all get sucked to that coffee machine.” Cohen has a certain fondness for Metropolis because it’s where he began his audio career at age 16 as an odd-job boy. He also firmly believes Metropolis is the best-sounding studio in Australia. So, much of the recording of *Murder Ballads* was done there, as well, though certain pieces came from other studios and other sessions.

“O’Malley’s Bar,” for example, was recorded a couple of years ago in Melbourne’s now-defunct Atlantis Studios, where the band and Cohen mixed the *Live Seeds* album. Cohen was mixing in the A room, and the band was in a demo room jamming and working up new songs. “I usually set them up in another room so they can play and write songs while I’m mixing,” explains Cohen. “It keeps them out of my hair, and it keeps them from being too bored.

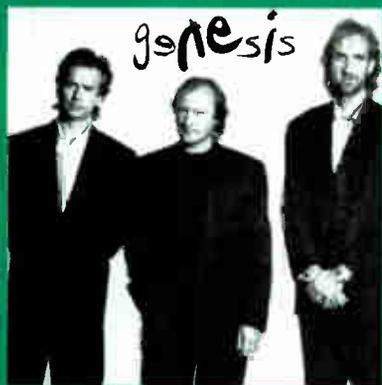
“It was late at night, around two in the morning,” he continues, “and everyone was pretty merry, and the house engineer was rolling tape. They did a 15- or 18-minute ramble of ‘O’Malley’s Bar.’ Nick had a lot of the lyrics sort of written, but a lot of them he made up on the spot. If you listen to it close, you can hear him mumbling. ‘And then I hit him with a big uh...brick!’ trying to think of a word, but we kept that original vocal that he did that drunken night, and it’s a fabulous song. He never could have gotten that spontaneity again if he tried.”

The songs recorded at Metropolis include the first single—a Cave/Minogue duet called “Where the Wild Roses Grow”—and a wild and slightly obscene version of “Stagger Lee” that sounds almost like a rap. “Nick wanted a really aggressive and confronting sound,” says Cohen. “I can remember he’d come in while I was mixing and shout, ‘No, that’s not tough enough! Make it nasty! Turn this up and turn that up!’ And he’d make it totally over-the-top, and then [bassist] Mick Harvey would come in and go, ‘Oh, no. Pull this back a bit, that’s really harsh, that’s far too loud,’ and then Nick would come back in: ‘No, no, no! It’s all gone to shit!’ I was always battling like that. But that’s half the fun of it, too.”

Cohen is not overly particular about recording equipment (he says the mix is where he gets creative and where high-

—CONTINUED ON PAGE 271

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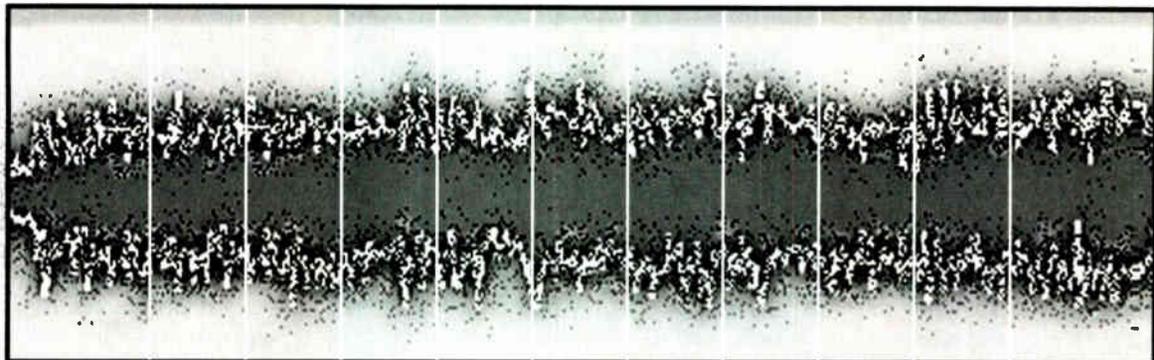
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# ADVENTURES IN Tape Restoration



**BY CHRIS LEMBESIS**

**I**n the past 100 years of recorded audio, formats have come and gone. What started as a cylinder evolved to the flat shellac disc, later the vinyl long playing record, to the cassette and the compact disc. In the era known as the Golden Age of Radio, shows were initially recorded on shellac 12- or 16-inch discs, and that size remained when the base became aluminum and later glass-based during World War II due to metal shortages. Wire was introduced during that war for battlefield or on-the-spot reporting.

**THE ASSIGNMENT  
SEEMED SIMPLE  
ENOUGH: CHECK  
THE TAPE FOR  
LOOSE SPLICES  
AND REPLACE  
THEM AS  
NECESSARY.  
THEN I OPENED  
THE BOX.**

Tape was introduced to this country in the post-war years and was used almost exclusively to record network radio programs in the late 1950s and '60s.

I was given one such program to restore, and it proved to be a particularly unusual and challenging assignment that illustrated some of the problems inherent in tape restoration. It was a single 30-minute radio show, recorded at 15 ips, full track mono (the standard practice in broadcasting in the 1950s) on a single 10.5-inch NAB reel. The assignment seemed simple enough: Check the tape for loose splices and replace them as necessary. Then I opened the box. There it was—a pile of tape with no reel or hub, in strips of varying length. No length was more than about three

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sounding dull or unintelligible.

- The tape is shedding, leaving a deposit of the oxide on all of the parts of the deck that contact the tape.

The result? This frustrating experience will cause your tape deck to stop in its tracks, not only refusing to play, but unable to fast forward or rewind. It's not a pleasant experience.

Before you can play this tape, it has to be literally prepared for playing. To stop squealing and shedding long enough for at least *one* last play, a method that has achieved some success is using a convection oven to bake the tapes. Heat the tape a couple of hours at 120°F, and your tape should be ready to play.

You may not have the time or funds necessary to purchase a convection oven, and perhaps your collection is too small to justify buying one. Is there another choice? The answer is yes. I have used a two-step process that will do the job.

Start out by giving your deck a thorough cleaning. American Recorder Technologies (Simi Valley, Calif.) has developed a product that has been a longtime favorite with pro and consumer recordists: Intraclean S-711 deep-cleans all parts of the tape path, including, besides the recording and playback heads, the guides, capstans and pinch rollers. It cleans beyond any other product known. The fluid dissipates immediately and leaves no residue or any odor. Along with being nonflammable, the product uses *no* alcohol, which this company claims does not break up the oxide deposits properly or completely.

After your tape deck has been thoroughly cleaned, it is time to treat the heads with a lubricant that will allow the tape to travel along the path in a smooth manner. The Last Factory of Livermore, Calif., has developed such a product, called Last #9, that does the job. A thorough application of the product will treat all the heads, guides, capstans and other parts of your deck in contact with the tape. It can be applied freely and will not cause any damage.

Your tape is now ready to play. If you happen to have a tape with older splices, this may be a good time to replace them. The early splicing tapes were acetate and may have dried out over the years so that when your tape is played, it might separate as it goes through the guides. 3M #67 is mylar-based and is an excellent replacement for the present splices you may have on

your older tapes. It will not "bleed" or "creep" around the splice. The contact between tape ends is strong, yet it can be removed if needed.

After all the splices have been replaced, reverse the reels and play the tape back to the beginning. Now you have a tape that is evenly wound, and minimal (if any) tape is exposed, reducing the risk of edge damage. Dropouts in audio would be noticeable. With all of the above performed, you should be able to play your tape straight through without squeal, shedding or stoppage.

## STORAGE CONSIDERATIONS

What started as loose spaghetti in a box has been restored to something playable and, hopefully, enjoyable. The reconstructed tape may look like a continuous Band-Aid, but it works. Our final step is the proper storage container, so we can put this tape away safely.

After you have played the tape or transferred it to another medium, don't throw it away. You might need it again. In case you do, a sound storage environment is vital. An ideal situation would be to store the tape in a plastic container in a vertical position on a solid wood shelf. A plastic container would be an advantage over the standard cardboard box a tape normally comes in. The reason is a cardboard container can be affected by changes in humidity and temperature and can be easily damaged, possibly hurting the tape inside if it falls off a shelf. A plastic

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THE GUIDES.**

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container is stronger and can take a lot more abuse.

The original box (though historical in nature, as it came with the recording) may be too weak or damaged to continue to be used. Save it for its historical value and restore it if necessary, but a better container must be used to protect our one-of-a-kind recording.

Print-through is an unusual phenomenon that affects just about everyone's analog tapes over a matter of time. Print-through occurs in two forms, depending on how the tape was stored: Caused by storing tapes in the heads-out position, "pre-echo" is the faint, ghosting sound of a recording that you hear *before* you are supposed to hear it. "Post-echo" is the exact opposite: It's the sound of a recording, though faint, that repeats *after* you hear it. Some degree of print-through is unavoidable on any analog tape, but storing tapes in the tails-out position is recommended, as post-echo is less distracting to the listener than pre-echo.

As a final note on storage, always store tapes in a vertical position. The ideal temperature to store tape when not in use is between 55° to 75°F. Humidity should be maintained between 30% to 40%.

As an archival medium, many will argue—this author included—that the analog open reel format still has a lot of life left in it. With proper care, it can still hold its own against the digital format. As this century winds down and we eagerly look forward to what the next one will offer in recorded sounds, we should be aware of our audio heritage and the important role that preservation plays in the survival of it.

#### GOODBYE, OLD FRIEND

The news section in the January '96 *Mix* caught my attention. 3M, a long-time manufacturer of audio and video-tape products, announced that it was winding down all blank recording tape production in 1996. 3M's products were always top-caliber, the first choice of many who relied on a tape that could do the job no matter how demanding. To them, my deepest thanks for creating a quality product that consistently did its job. ■

*Chris Lembesis is an independent audio restoration engineer who has worked with the Society for the Preservation of Film Music, Delos Records and SPERD-VAC, The Society to Preserve and Encourage Radio Drama, Variety and Comedy.*

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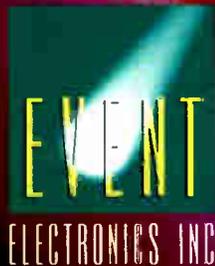
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—FROM PAGE 198, REAL WORLD RECORDING  
wood and get this huge event happening, a big sound.”

On his recent Arecibo project, Williams used the Eventide H3000 D/SE (his favorite processor) and Lexicon units (PCM80 and 300) to create harmonics and tone down the fundamental noisiness of the nonterrestrial sounds. “The Lexicon PCM80 is really good for general manipulation and correcting weird pitch-shifting. Things like specific pulsars sound good, but if you have a recording of a whole galaxy, these tend to be verging on white noise, so you have to equalize and filter it, and then you get these interesting little

things coming through.” In his studio, Williams uses a 4-track Sound Tools II system with Opcode software and owns a variety of DAT players, including models by Sony and Tascam.

Integrating both untreated and treated environmental sounds has “always been a major part of my music,” Rich says. “I grew up with polyrhythms, frogs out in the creek by my place. The frogs taught me about the way I think about polyrhythms. I’ve always been trying to find ways to create ambient sound in a manner that’s giving the sound its own voice. I’m disenchanted with the appropriation of sounds without respecting them for their own qual-

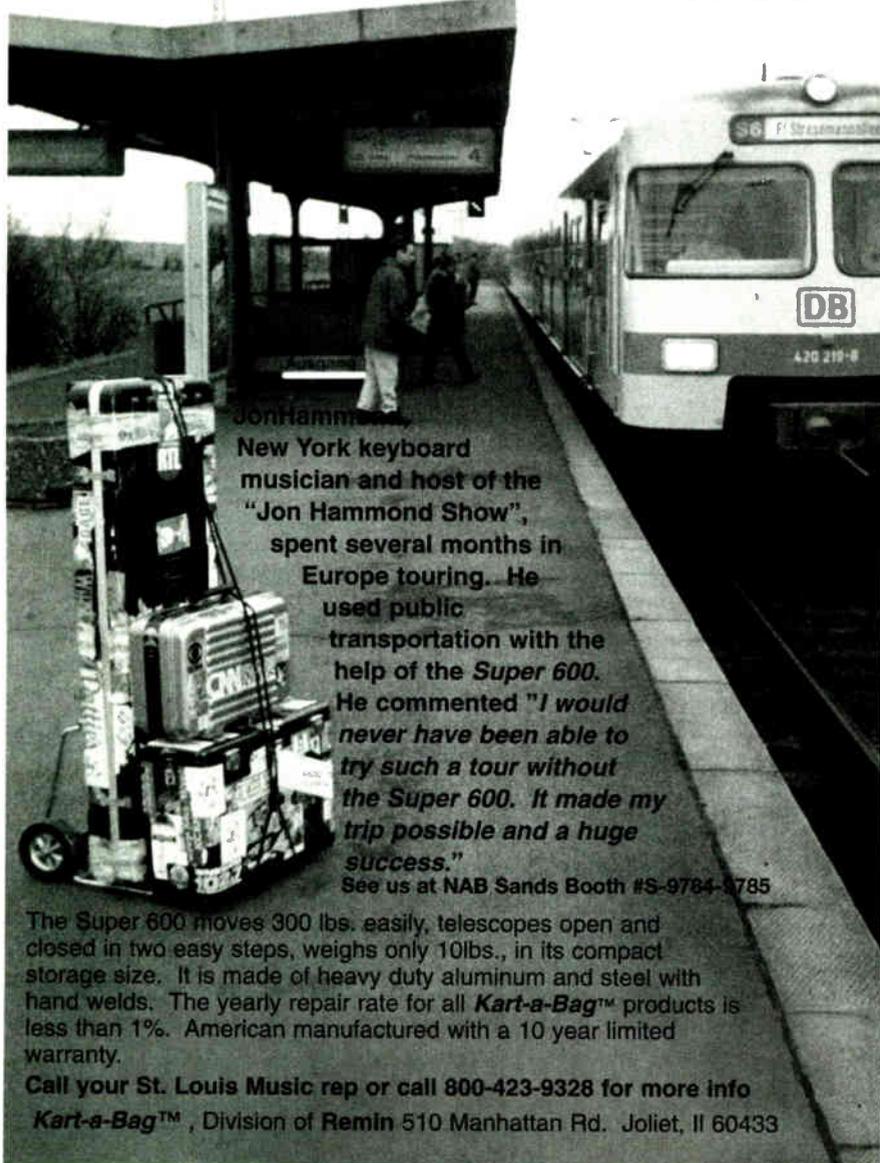
ities: ‘Here you are in the woods, and here’s this pretty piano’ kind of feeling. I approach ambient sound in a way to increase people’s acuity to their immediate soundscape, to transform the mundane into the magical. So I’ve always taken found sounds and modified and mutated them, creating an otherness with them so that they become a voice on their own rather than a placement into some artificial landscape, to become part of the music. This is where I really get off, and what *Stalker* is all about, too.”

Rich uses a variety of gear to record his source material. For general travel, he always carries a Sony TCD-D7 DAT machine and a Sony ECM 959-A stereo mic in his luggage. “But if I’m going specifically to get a recording with as much fidelity as I can, then I take a little battery-powered Neumann pre-amp, two KM-130 microphones, and I set them up in a kind of pseudo-binaural situation. I find that gives me the best surround and the least phase cancellation,” he says. In the studio, Rich uses specific software and outboard gear to “mangle” his sounds. “The outboard gear that got the most use in *Stalker* is the Eventide H3000 Ultraharmonizer, and I’ve got the ROM update for that which allows you to do your own effect algorithms. You can cut up sounds and randomize their pitch, hack them to shreds, really. Turn them backwards in real time and just cut them up into gibberish. A lot of sounds on *Stalker* are voices and things like that turned into strange, metallic, shimmering textures.”

Rich also likes to show the connection between different sounds, as demonstrated in “Guilin” off of *Propagation*: “The rainforest frogs in the background sound very much like a wooden mallet instrument,” he says. Rich integrated the frogs’ rhythms into the music, which is fleshed out by synths and layered sounds. “The two sounds merge. There’s a brief interlude with a bonang—a gong instrument from Indonesia—and in the interplay of the rhythms of the bonang with the tree frogs, you’ll hear an echoing of the rhythms. It’s showing the connection between the human music and the animal music, showing how it’s all a kind of language, communication going in many different directions.” ■

*Bryan Reesman is a freelance writer based outside of Boston. He has contributed articles to Alternative Press, CD Review, Pulse!, Jazzis and Ituh.*

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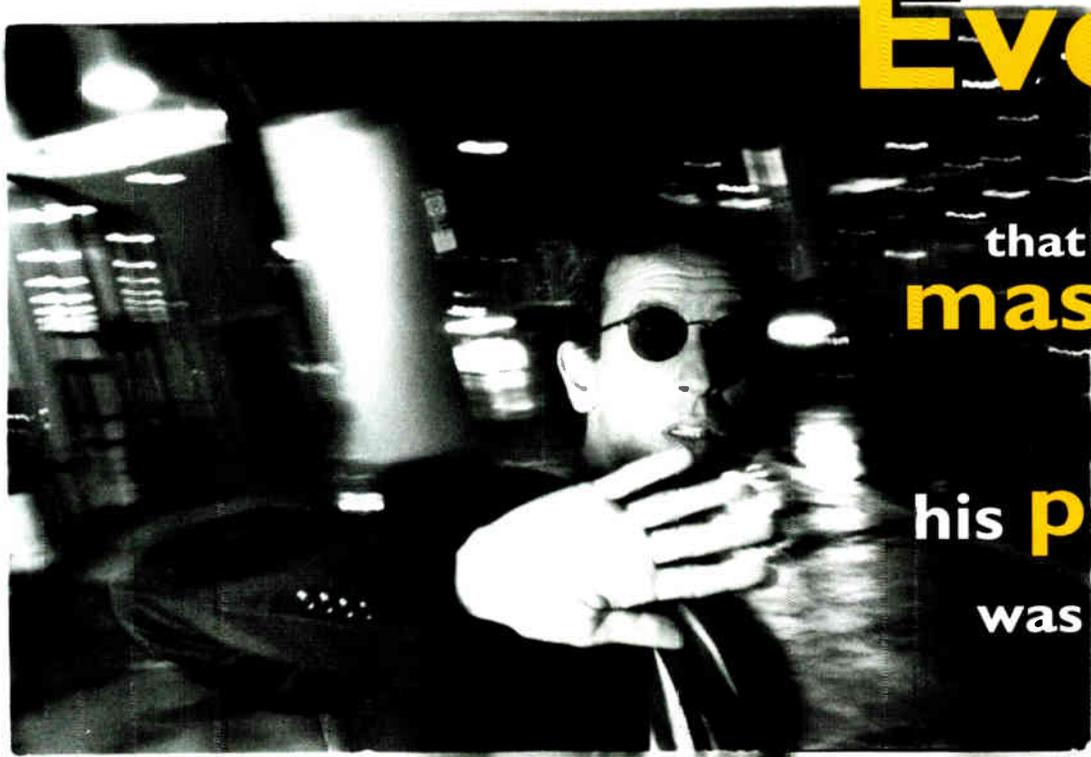


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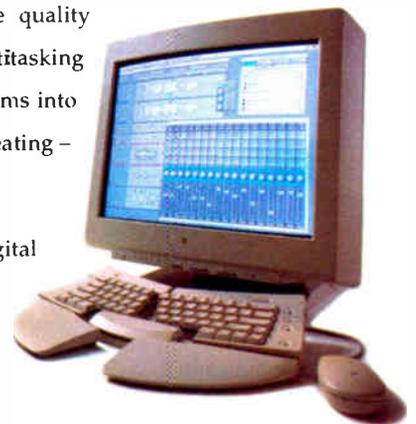
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# TAPE & DISC NEWS

## DVD-ROM DRIVES ANNOUNCED

Plans to debut ROM drives for the forthcoming Digital Video Disc format were announced by several manufacturers at the recent winter Consumer Electronics Show in Las Vegas. According to an article in *Billboard*, vendors planning to launch DVD-ROM drives, expected to retail in the \$300 to \$400 range, include Toshiba, Philips, Sony, Pioneer and Thomson. The new drives will build on the platform established for stand-alone "set-top" DVD players but will be designed to hook up to personal computers rather than televisions. DVDs are high-density CDs, capable of holding up to 9.4 gigabytes of information and designed to be backward-compatible with existing audio CDs and CD-ROMs. These attributes make the new format potentially ideal for interactive multimedia development—once the installed base of drives is large enough to support a viable business.

## ROM TITLES EXPLODE, RETAIL SPACE IS CROWDED

A dilemma facing CD-ROM publishers helps explain how the new Blue Book "enhanced CD" format can play an important role in keeping the overall multimedia market afloat. According to a recent survey by industry watchers at InfoTech, the growth in the number of CD-ROM titles continues to outstrip the availability of retail shelf space allocated for CD-ROMs. Shelf space for CD-ROMs rose only 24% in 1995 over 1994, compared to a 93% increase in the number of consumer CD-ROM titles in print, which now exceeds 3,900. The number of outlets carrying CD-ROMs rose 21%, but InfoTech says the majority of stores carry only 250 titles, and the length of time titles are displayed (shelf life) has declined from an average of 130 days in 1994 to just 102 days last year. With access to shelf space so limited, publishers desperately need to increase the number and variety of outlets for their prod-



KEVIN BRIGSE

Mastering engineers extraordinaire Bob Ludwig (left) and Jon Astley are pictured here with the SADiE portable editing system that was brought to Ludwig's Gateway to remaster The Who's *Tommy* and *Quadrophenia*. Coincidentally, Ludwig was working at Sterling Sound in 1969 when Sterling's president, Lee Hulko mastered the original version of *Tommy*. "After the first issue

of the [Sterling-mastered version], the producer and the band were so happy with it that they ceremoniously burned the 2-track master," Ludwig says. "So Jon had to go back to the original 8-track and remix it for this project. According to Jon, Pete Townshend is thrilled beyond belief with the remastered version; he'd always imagined that it could sound this way. I thought that was wonderful."

ucts. If enhanced CDs catch on, consumers may get in the habit of shopping for computer-playable CDs at record stores. A complete forecast of prospects for the CD-ROM publishing industry is available from InfoTech at 802/763-2097.

## REPRISE TEAMS UP WITH APPLE

Reprise Records and Apple Computer announced that they have agreed to work together in promoting Reprise artists and Apple technologies such as QuickTime, QuickTimeVR, Apple Media Tool and Internet tools. According to Reprise, the Apple technologies will be integrated into all aspects of business, from music creation to promotion. The companies anticipate joint promotion efforts, Web site linking and co-launching of new products such as enhanced CDs. Reprise currently

operates an Apple-driven Web server at <http://www.RepriseRec.com/>.



Scene from "Prestige Studios"

## "PRESTIGE STUDIOS" GO INTERACTIVE

Solid State Logic announced its sponsorship of a multimedia showcase of ten of the world's leading studios, delivered via CD-ROM and the Internet (<http://www.e21media>).

BY PHILIP DE LANCIE

com/studios). Entitled "Prestige Studios of the World" and co-sponsored by *Mix*, the project allows interactive multimedia tours of the facilities via Apple QuickTime VR, and features interviews with leading lights such as Dave Stewart (formerly of Eurythmics) and engineer Bob Clearmountain. The enhanced CD will also include CD-Audio tracks recorded at the various facilities, among them Ocean Way (Los Angeles), Masterfonics (Nashville), Hit Factory (New York) and The Town House (London). Additional sponsors of the project, produced by Jim Baker of 21st Century Media (San Rafael, Calif.), include Apple, CompuServe and others.

## SPLICES

Fuji International (Northridge, CA) announced that it is marketing its XD38 gamma ferric oxide cassette duplicating tape to duplicators for both spoken-word and music applications. The company cites the elimination of dual-inventory, dual-pricing and different specifications as advantages of the single tape stock approach...Allied Digital Technologies (Hauppauge, NY) announced a two-year agreement in principle with PolyGram Group Distribution to provide PolyGram's video and audio cassette duplication for the U.S. market...Electro Sound (Sun Valley, CA) sold high-speed cassette duplicating slaves to Allied, as well as to Classic Sound (Norcross, GA) and The Teaching Company (Springfield, VA). The company also sold a complete Series 7500 duplicating system to El-Helou Communication Enterprises, the first duplication plant in the newly autonomous Gaza

Strip. Sister company Gauss, meanwhile, made sales to Discos Fuentes in Medellin, Colombia, and Videolar in Manaus, Brazil. The company also reports an upsurge in the number of smaller independent duplicators investing in digital master reproducers, citing recent sales to Alshire International (Burbank, CA), Northwestern (Portland, OR), Jackson Sound (Englewood, CO), S&S Custom Tapes (Church Hill, TN) and Sound Impressions (Nashville)...Ultra-Sound A/V of Lynchburg, VA, purchased a CD 9000V video loader from Concept Design (Graham, NC)...Saki Magnetics (Calabasas, CA) appointed three sales organizations to represent its product lines in South America, including Magnetic Comercial (Sao Paulo, Brazil) and Electronica Platten and FM International, both of Buenos Aires, Argentina...Disc Manufacturing, Inc. announced the signing of a letter of intent to form a joint venture agreement with Amazon Records to build a CD-replicating plant in Manaus, Brazil. Initial capacity is expected to be 6 million CDs per year...At San Francisco's Rocket Lab, Ken Lee mastered *Virtua Sonic*, a collection of music from various Sonic the Hedgehog games for Sega, while Paul Stubblebine worked on an Acoustic Disc release of previously unreleased live material from *Old and In the Way*, the '70s bluegrass band that featured Jerry Garcia and David Grisman...At Airshow Mastering (Springfield, VA), David Glasser worked on classic Smithsonian/Folkways recordings of John Cohen, as well as a Terry Allen album featuring David Byrne and Lucinda Williams...Sterling Sound (New York City) added veteran engineer Joe Palmaccio, most recently of PolyGram, to the mastering staff. ■



*Sterling Sound: standing, left to right: Tom Coyne, Ted Jensen, George Marino. Seated, left to right: Joe Palmaccio, Lee Hulko (owner). Not pictured, Jose Rodriguez.*

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# COAST TO COAST

## L.A. GRAPEVINE

by Maureen Droncy

The venerable scoring stage on the Columbia/Sony Pictures lot was taxed to the max on the music recording for director Brian De Palma's film version of *Mission Impossible*. With Tom Cruise both starring and producing, the mad action movie put a lot into the music—a lot of money, a lot of musicians, a lot of consoles, a lot of tape machines and, well, suffice it to say, people were calling it the biggest orchestra ever used for a film soundtrack.

Keyboardist and electronics whiz Simon Franglen (who has worked with artists from Madonna to Barbara Streisand and with producers such as Quincy Jones, David Foster and Trevor Horn) gave us a tour of the setup, the logistics of which boggle both sides of the brain. His enthusiasm was infectious—the sessions were an amazing feat of organization and production. His setup alone, in the control room, used 104 channels of Mackie mixers. Out in the studio, the 110-piece orchestra seemed to include the entire Who's Who of L.A. session musicians (with Jerry Hey on trumpet, Dean Parks on guitar and Neil Stubenhaus on bass) and included two giant keyboard rigs featuring an additional 40 synths (besides Simon's); two grand pianos; live drums; two electronic percussion setups; seven orchestral percussionists; and four Latin percussionists, including *both* Alex Acuña and Paulinho DaCosta. Sorry, we don't have enough room in this issue to name all the musicians. Let's just say that rumor had new phone lines being installed to handle all those calls to musicians' answering services and that Local 47 doesn't need to have a Christmas party this year—1996's schmoozing has already been accomplished.

Mixer Dennis Sands, known for his work on *Forrest Gump*, *The Shawshank Redemption*, *Romancing the Stone* and the *Back to the Future* series, was more relaxed than one would expect in such a high-pressure situation. He laughed as he admitted that although he's seen and recorded almost everything, *Mission* was the biggest setup he'd ever worked on. He also commented that the Sony soundstage, unchanged since the music for *Gone With the Wind* was recorded there in the 1939, was one of the very few rooms in the world that could have accommodated

—CONTINUED ON PAGE 234

## NY METRO REPORT

by Dan Daley

**Where are they now?** People in the recording industry tend to be peripatetic—everyone moves around, and sometimes they don't come back. This month, I talked to a few expatriate New Yorkers who have moved on to putatively greener pastures and asked them what their thoughts were on where they are now and what they left behind.

**Guy Marshall** was a composer and studio musician in New York for ten years or so before he hooked up with songwriter Robert Tepper and penned "Le Bel Age" for Pat Benatar in 1985. L.A. was rock central at the time, and Marshall joined the migration there, where he now owns Tutt & Babe Music and a Mackie/ADAT personal studio, where he does film and television work, including featured music vignettes for the jiggly *Baywatch*. What did he leave behind? "Cold weather and congestion," he says. "I don't have any regrets about leaving. But we just had a 3.8 [earthquake] out here about an hour ago, and when that happens, I sometimes think about Nashville. But that passes. I love L.A."

Engineer **Larold Rebhun** took Todd Rundgren's place at Bearsville in 1972 when Rundgren left to pursue his artistic career. Rebhun left two years later for L.A., where he now happily engineers audio for shows like Fox's *X-Files* and *Nouberie Man*. "I don't miss New York at all," he says. "I don't miss looking all night for a parking spot." One of those former New Yorkers who has totally kicked the habit, he has only one regret: "I do miss the hot dogs at Nathan's."

**Steve Marcantonio** worked at Record Plant in Manhattan, starting as a gofer in 1978 and leaving as a staff engineer in 1985. He freelanced around town for a while until a call from Rodney Crowell, whom he had done overdubs for once at Record Plant, brought him to Nashville in 1987. He commuted between New York and Nashville until 1992, when he moved south for good. "What did I leave behind? Yeah, traffic and too many people," says the Elizabeth, N.J. (Exit 13), native. "But I also left the best food in the world up there [a common complaint of New Yorkers in Nashville]. I also miss all the Italian-Americans. Down here, I meet someone with an Italian last name from New York or Jersey, we're in-

—CONTINUED ON PAGE 238

# SESSIONS & STUDIO NEWS

## NORTHEAST

Producer David "Pic" Conley and engineer Earl Cohen mixed tracks for MCA artists Immature at BearTracks in Suffern, NY. Singer Jane Kelly Williams was also in working on a Parachute/Mecury release with producer/engineer Ben Wisch. Steve Regina assisted on both sessions... Local favorites The Humphries mixed their eponymous debut at New York's Looking Glass Studios with producer/engineer Mark Plati at the board, assisted by Ryoji Hata. Also in mixing were spinArt Records artists Technical Jed with producer/engineer Rich Costey and assistant Brian Fanelli... Roomful of Blues were in at Normandy Sound (Warren, RI) working with Phil Greene on overdubs and mixes for a new release. Rob Pemberton assisted... Jeff Buckley



PHOTO: CLARK THOMAS

dios (Albany, NY). Tom Semasharo produced and Rob Turchick engineered... Martin Sexton tracked for Eastern Front Records in the Neve room at Boston's Sound Techniques with producer Crit Harmon, engineer

Producer and MCA Nashville president Tony Brown (L) is shown with studio owner Carl Tatz in front of the recently installed SSL 4000 G Plus with Ultimotion at Nashville facility Recording Acts. Brown and Michael Utley produced tracks at the studio for the new Todd Snyder release on MCA.



The Foo Fighters recorded a few tunes, including one for The X-Files soundtrack album, in Robert Lang Studios, Seattle. Pictured (L to R) are bassist Nate Mendel, drummer William Goldsmith, vocalist/guitarist Dave Grohl, producer Barrett Jones, facility owner Robert Lang and guitarist Pat Smear.

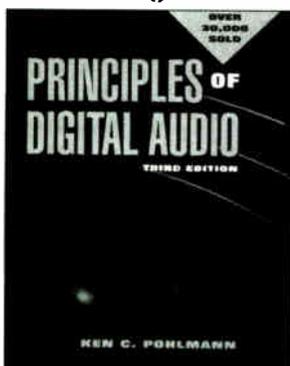
and former Nymphs singer Inger Lorre were in New York's Spa Studios working with producer/engineer Hillary Johnson on a track for a Rykodisc tribute to Jack Kerouac... Dead Bishop tracked and mixed an upcoming release at Cotton Hill Stu-

Carl Beatty and assistants Dave Kirkpatrick and Ted Paduck... Mojo Son (featuring members of Sheryl Crow's band) tracked their debut at Showplace Studios (Dover, NJ) with producers Steve "Scooter" Weintraub and Ben Elliott. Elliott engineered and

mixed... Rasputina recorded basic tracks for Sony at New York's Sear Sound with producer Jimmy Boyle and engineer Greg Gordon... Producer/engineer John Agnello was in The Magic Shop (NYC) mixing the new Walt Mink release on Atlantic; Juan Garcia assisted... At their Studio 4 Recording facility in Conshohocken, PA, Bucher Bros. Joe and Phil Nicolo

—CONTINUED ON PAGE 240

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—FROM PAGE 232, L.A. GRAPEVINE

such a venture. "The stage must be large enough to comfortably fit this huge orchestra," Sands said, "but yet not be acoustically too live. This is a score with a lot of action cues, and they have to punch. A room that's too reverberant would wash them out—you'd lose the percussiveness and the dynamics. The only other room I can think of that would be as good for a project like this would be Abbey Road in London."

When queried about his preternatural calm, Sands responded, "Well, I've been doing this for almost 30 years—and doing film work since 1977. Really, there's nothing that you can't handle or fix. And if I freak out over something, everyone will! In this job you're in the hot seat, and you're working with people who are used to having creative control on the set. They know actors and cameras, but the recording studio is somewhat foreign to them, and it can be intimidating. They have to have confidence in you. And when they have it, they are free to deal with the creative side. But I admit that this is a pretty massive undertaking. We spent a lot of time thinking about it beforehand. We knew the basic setup, but it kept growing as we got closer to the scoring date—it grew in steps, a Latin percussion section, an effected soloist—we had to accommodate those steps with a limited number of inputs. The console is a beautiful-sounding [Neve] 8128, but the 48-in just wasn't enough."

As I picked my way around Franglen's control room keyboard rig (Careful, don't step on that cable. Which cable? Any of those cables!), he explained how the setup had evolved. He's worked with composer Alan Silvestri before, and when Silvestri decided to update the very well-known *Mission Impossible* music with more electronics, Franglen was the ideal choice for collaboration. The cues were written and orchestrated, then sent to Franglen, who preprogrammed them and conferred with Silvestri and engineer Sands to devise a plan for routing all the necessary keyboards and SMPTE and MIDI lines. MIDI, which was sent to all electronic players, originated with the music editor's setup and Franglen's Synclavier. Using Galaxy software and multiple Opcode Studio 5s, Franglen devised patch bundles for each cue. His setup, which normally includes two Mackie mixers (a 1604 and a 3204), added two more Mackie 8-bus units (a 32•8 mixer and a 24E Expander) to

route everything directly to the Sony 33•8, which was used for Franglen's tracks, bass, drums, effects and a few "extras."

The orchestra was recorded on two Studer 820s at 15 ips to Ampex 456 tape at +3, with Dolby SR. Another Mackie 32•8 showed up at the main desk position when the Neve 8128 48-in proved too small. Some inputs were submixed on two Mackie boards. Mixes were made to two Sony PCM-800s, the DA-88 equivalent that allows you to plug AES directly in.

Oh, and guess what? On the day I was there, they were scheduled to *tear down for the weekend* with a re-setup scheduled for Monday! You can bet those cables were all impeccably labeled! During my visit, I heard the orchestra working on a version of the *Mission Impossible* theme being cut for the trailer. Pretty awesome to hear an orchestra that large up-close! But you know what, you engineering dudes and dudettes? Just like with any old rock band, you still have to spend time balancing the drummer's toms.

**AMS/Neve has been on a year-long digital winning streak**, with two Capricorn consoles installed at Burbank's Enterprise and Logic 2s going in on Disney's Buena Vista lot, Hollywood's advertising-oriented Margarita Mix and at Burbank's Magnolia Sound. Says AMS/Neve VP Nigel Toates, "I'd have to say we're ahead of the game in digital installations lately, we've been doing so many. But, contrary to what some people believe, we do still make analog boards!" Toates says the 55 Series is an especially popular analog seller, with two of the broadcast boards being installed at KTV/Fox Television in L.A.

Brian Murray, VP of sales for Enterprise Post, spoke about their current use of two Capricorns. "In our THX-certified Studio A, we installed a two-man 190 digital path Capricorn with the V2 software, where we are currently mixing two television series—*The Lazarus Man* starring Robert Ulrich and *Land's End* with Fred Dryer. Upstairs in Studio M, we are using a one-man 120 digital path Capricorn for music projects, but hope to utilize this room for television post sound this spring," Murray, a Capricorn vet who encountered R&D with the board at one of its first Los Angeles installations, and Enterprise Post COO André Perreault, are more than enthusiastic about the board. Comments Murray, "With the new software upgrades, it's flawless." Enterprise

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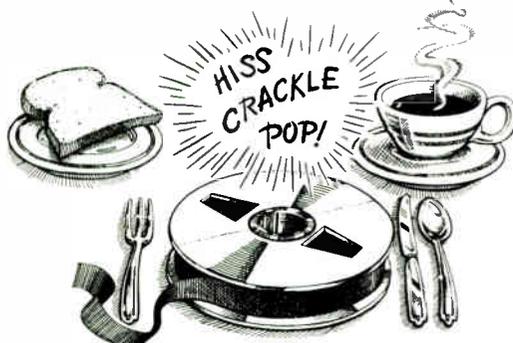
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Also in Burbank, the 20,000-square-foot, three-story Magnolia Studios has installed a 144-input AMS/Neve Logic 2 with 16-track, 24-bit Audiofile in its THX-certified dubbing stage A. Facility owner Bruce Nazarian tells us that with Studio A, which is screening theater-size, Magnolia has the largest independent dubbing theater in town, as well as the largest installed base of Synclavier and PostPro systems—five Synclavs and six PostPros in all. And operations coordinator Cheryl Wadsworth says Stage A is also one of the few "hybrid" stages around, meaning that as well as mixing to videotape, directors can mix from 35mm visuals while synchronizing multitrack machines, DA-88's and numerous other formats, getting digital audio with the Logic 2. "Certain directors want to mix to film," she says. "They have to see that visual quality." Since the Logic 2 install in October, Magnolia has played host to numerous film projects, including the Disney Family Movies' *The Barefoot Executive* and *The Lovebug*. Magnolia is particularly proud that one of their recent projects, *The Chicken From Outer Space*, was nominated for an Academy Award as Best Animated Short Film. "Needless to say, we feel that sound has a lot to do with that," laughs Nazarian, "but, of course, we're highly prejudiced."

Margarita Mix, Hollywood's high-end TV commercial specialist, is going all-digital in one of its rooms by adding a Logic 2 and Audiofile Spectra. The other four rooms are fitted with Euphonix boards, and MM's Byron Greco says, "As you know, the Euphonix are digitally controlled boards with automation and snapshot features that make us incredibly efficient. But for the fifth room, client requests led us to decide on an all-digital room." With a mainly commercial client base, Margarita Mix is known for the speed of its operations, which Greco attributes to his engineers Rauh, Marcus, Hite, Rock and Levy—all well-versed in the art of accomplishing a lot in a short time and making it look easy.

Over at Disney, I spoke with VP of post-production services Chris Carey, who described the recently opened Room 6, which features an entirely digital sound path, with a nonlinear player/recorder system, combining Digi-design Pro Tools, AMS Audiofile and digital picture from ASC's Virtual

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where he now lives with his wife and daughter. "But I didn't realize how much I missed the hustle-bustle craziness of New York until I left it," he says. "It's just a little too calm everywhere else. I like the idea of walking out of the studio at 3 a.m. and dealing with people and getting good food. I realized that I was a true New Yorker, despite all the craziness and crime. And I want my daughter to grow up in a multicultural place. I want to interact with whites, blacks, Hispanics, Chinese and Indians. Tennessee is a nice place and has nice people, but they're not different enough."

So what is Thoener going to do about it? "I have a realtor coming to look at the house next week," he says. "We're moving back to New York. If not this year, then next." Proving once again that though blood is thicker than water, it don't compare to good pastrami on seedless rye at Sarge's at 3 a.m.

Send news for NY Metro and Nashville Skyline to Daley at [dawriter@aol.com](mailto:dawriter@aol.com) or fax it to 615/646-1100 or 212/685-4783.

—FROM PAGE 233, SESSIONS & STUDIO NEWS  
 mixed a new Capitol single for Texas wildmen the Butthole Surfers...

### SOUTHERN CALIFORNIA

The Low & Sweet Orchestra recorded and mixed an Interscope project at Burbank's Master Control with producer Gavin MacKillop and assistant Jeff Robinson. The Subdudes were also in overdubbing for a High Street release with producer Jim Scott...The incomparable Aretha Franklin tracked in Skip Saylor's (Los Angeles) Studio B with producer Larry Campbell. The Arista sessions were engineered by Jason Mauza. Studio A hosted The Pharcyde's Trey Hardson and Beedee producing and mixing for Capitol artist Junior P. with engineer Rick Clifford and assistant Rod Michaels...Dirge grungers The Melvins worked on their next Atlantic release at Sound City in Van Nuys with producer/engineer GGGarth and assistant Greg Fidelman. Country icon Johnny Cash was also in recording his next American Records release with producer Rick Rubin, engineer Slyvia Massy and assistants Jeff Sheehan and Fidelman. Musicians for the Cash sessions included Tom Petty, Mike Campbell, Benmont Tench, Marty Stuart and Steve Ferrone...Hootie and the Blowfish

worked on their new Atlantic release at Scream Studios in Studio City and at NRG Recording in North Hollywood with producer/engineer Don Gehman and engineer Wade Norton...

#### NORTHWEST

Bay Area favorites Faith No More cut basic tracks for their next Slash album at San Francisco's Brilliant Studios with the team of Norm Kerner and Daniel Presley behind the board...Recent sessions at San Francisco's Coast Recorders included punkers Infested mixing a new release with producer Bill Cutler and engineer Gary Mankin, and the recently re-formed Tubes tracking with engineer Bob Biles...Punk progenitors The Buzzcocks recorded and mixed their new I.R.S. Records release at Fantasy Studios (Berkeley, CA) with producer/engineer Neill King...Sub Pop band Juno cut a single at Seattle's Soundhouse Recording with producer Phil Eck and assistant John Nevins...

#### NORTH CENTRAL

At Chicago's WarZone Recorders, Columbia artists Stabbing Westward mixed a new single with Van Christie and Jason McNinch. Citrus were also in tracking material for an upcoming release with engineer Martin Stebbing and assistant Aaron O'Mara...

#### SOUTHEAST

Recent activity at New River Studios (Fort Lauderdale, FL) included Glen Campbell in Studio A with engineer Riley J. Connell and assistant Brad Kinney. Latino superstar Juan Gabriel was also in with engineer Vavy Lazano... Producer Don Dixon spent a few days in Studio A at Reflection Sound Studios (Charlotte, NC) mixing a live album for Marti Jones with engineer Mark Williams. The Sugar Hill release was tracked by Reflection Mobile with Williams and Tracey Schroeder engineering. Dave Harris of Studio B, located at Reflection, handled all the digital editing... Brent Mason tracked for Mercury Records at Nashville's Sound Emporium Studios with co-producer John Kelton; Kelton engineered, along with Steve Lowery... R. Kelley produced artists MC Lyte and Changing Faces at Miami's Criteria Studios. Engineer Stephen George and assistant Chris Carroll joined Kelley behind the board... Singer/songwriter Jan Smith recorded tracks for a new Rogue Records release with producer/engineer Rodney Mills and producer Lee Davis at Atlanta's Blue Cat Productions...

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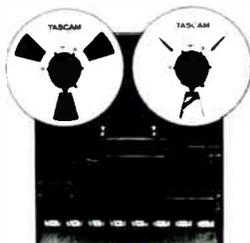
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**SOUTHWEST**

London Records recording artists Hagfish tracked and mixed a song for the movie *Barbed Wire* with producer David Khane at Planet Dallas. Giant Records artist D.O.C. was also in remixing a single with producer Erotic D and engineer Rick Rooney. Amado Carrasco and Adam Zimmermann assisted... Ani DiFranco overdubbed and mixed her new self-produced Righteous Babe release at The Congress House in Austin, TX; Mark Hallman and Marty Lester engineered... Teddy Morgan worked on an Antone's Records release at Arlyn Studios (Austin, TX) with producers Derek O'Brien and Gurf Morlix and engineers Stuart Sullivan and Larry Greenhill. Indie faves Pavement were also in tracking for Matador Records with producer/engineer John Croslin and assistant Boo McLeod... Pedernales Studio in Spicewood, TX, hosted MCA act Sublime, working with producer Paul Leary and engineer Stuart Sullivan... Reelsound Recording's (Austin, TX) 48-track remote truck captured live dates with David Bowie in Dallas and Austin. Tim Young and Peter Schwartz produced, and Malcolm Harper engineered.

**STUDIO NEWS**

Presence Studios in Westport, CT, recently joined the Los Angeles-based World Studio Group and installed a Neve VR Legend 60 in Studio A. Recent sessions include Jose Feliciano and master clarinetist Charlie Russo... Mad Dog Studios moved to a new, larger facility in Burbank, CA. The 3,000-square-foot space has a large tracking room, three iso booths, and an expanded and modified Neve 8108 with Necam 96 automation. Dwight Yoakam broke in the new facility with producer Pete Anderson. Owners Michael Dumas and Dusty Wakeman shared engineering duties... New owners for Atlanta's otherwise unchanged Doppler Studios: Long-time employees Bill Quinn and Joe Neil recently purchased the facility from founders Pete Caldwell and Tom Wells... Digital Associates Inc., parent company of New York rental company Audioforce, recently opened a new division, Mediaforce, which offers media composer rentals and multimedia services such as mixing, mastering, SADI: digital editing and post-production services... Recent SSL installs include two SL 9000J Series consoles to Larrabee North (North Hollywood, CA), one each to Soundstage (Nashville) and Quad Recording (New York), and an SL 9080 J to Ocean Way Nashville. ■

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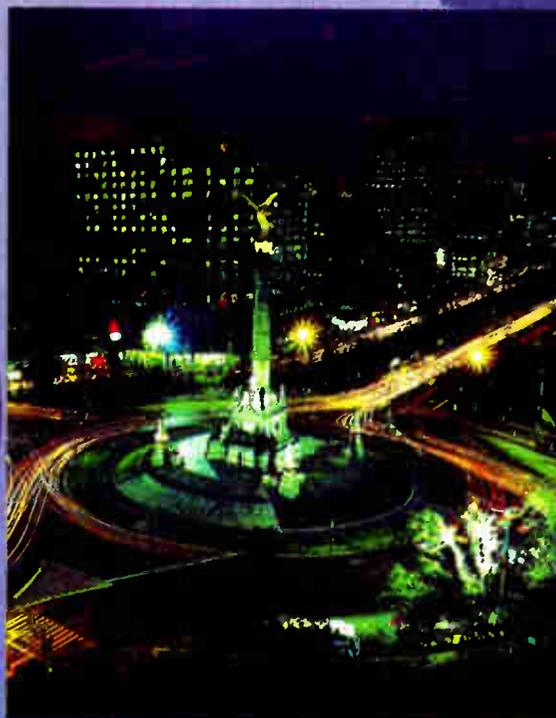
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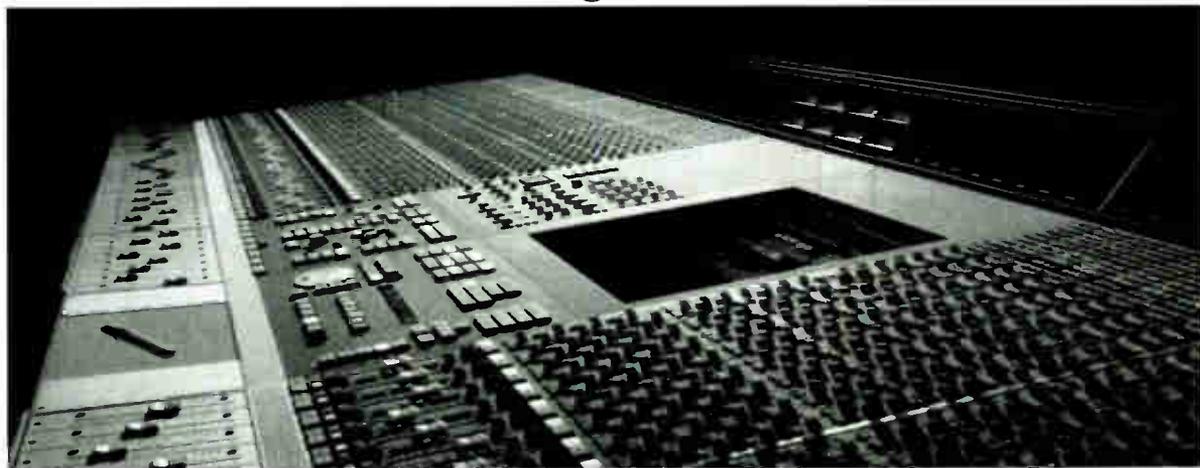


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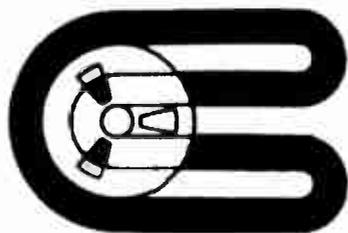


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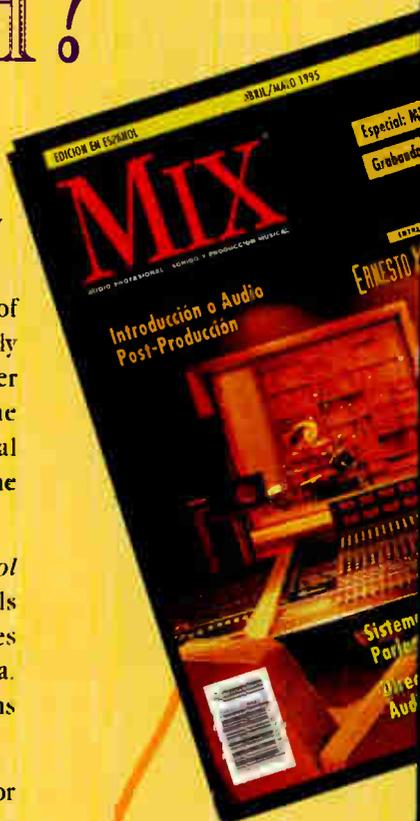
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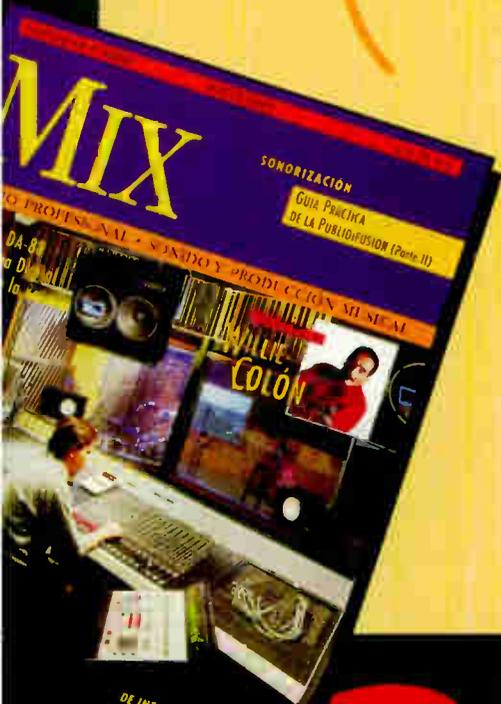
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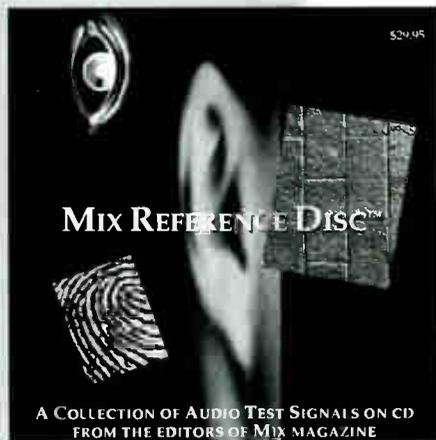
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—FROM PAGE 26, TOMORROW'S TALENT

lation to public universities. We looked at all the other areas: chemistry, computer science, funeral science, military science—anything you can think of. The audio industry is almost unique in not getting industry support at any level; it ends up at the bottom of the list for per-capita support from industry. Deans and presidents see the audio industry doesn't care, and that's why most of the public university programs are in jeopardy.

IBM assigns staff for six months to computing programs. IBM gives schools computers. They ask for students for interns, and they recruit on campus. Our industry doesn't give us money, or staff or equipment. Not even *old* equipment. We have a credibility problem that no other part of the university structure has. When have any of us ever seen an audio company come in and recruit, unless we push them into some kind of audio fair? The audio industry doesn't realize the value of what's going on, and they have a bad attitude toward the students. At every AES convention, I hear complaints about "those crummy tire-kicking students—keep them off the floor, they discourage the regular customers." I've nearly decked any number of people, because that attitude is a bad one.

**Jay Rose** (engineer, studio owner): There's another reason. In every industry that Martin talked about, there is a formal body of knowledge that must be had in order to succeed. You have to know chemical engineering if you're going to get anywhere at DuPont. You have to know how computers get put together, at the bit-by-bit level, or else you'll go nowhere with IBM. In the recording business we're all, "Hey, we're seat of the pants, we do it because we love it"—and there's a lack of respect for an educational process.

**Stephen Webber** (Berklee): I think it's going to change. Like Bill says, film has 25 or 30 years on us. Once all of our alumni are running these companies, and have a stake in this, there's going to be a lot more respect. The guys who are in there now have the attitude, "I didn't go to school!" I think they're a little threatened by the fact that here are these snot-nosed kids coming up who might know something they don't. They feel like, "What makes you think you know anything about this, just because you went to school?" Eventually, there will be an aesthetic, a set knowledge of

audio engineering that you have to know in order to get a job. It's going to grow up. To be a cinematographer now, you have to have the credentials to do it. For the first 20 years, you were just a camera man and did it by the seat of your pants. But now you look at the credits on any movie, and the cinematographer's got letters after his name. That's because it's been around awhile and has had a chance to mature.

**Lehrman:** There have been attempts before to accredit audio schools. What has happened to them?

**Polon:** We have never been able to implement an accreditation program in audio because the legal liabilities make it impossible. I've lived through efforts to do that by the AES and SPARS. The

**Public audio education  
gets little industry  
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for per-capita support  
from the industry.**

—Martin Polon

problem is that if you set up accreditation and you don't accredit somebody, this being America, they'll hit you with a \$10 million suit. That's frightening to most of the people who are involved with AES or SPARS at the studio level, because they don't have the big bucks, so they never got the programs going.

**Lehrman:** One of the ways we've replaced the old apprenticeship concept is with internships, where students go out and work, paid or unpaid, for a company. How well is this working?

**Steev Coco** (National Video Boston): There's an immense value in having an intern. When I have an intern, he's my assistant engineer for 14 weeks. We can bill more work, pull more clients through the facility in one day, and put Band-Aids on the things that normally wouldn't get Band-Aids. He advances his education: He gets client skills he otherwise wouldn't get, he understands how the industry works, not just how to move the fader 3 dB or look at the sample rate on the DAT player. He knows there's this guy back there look-

ing at his watch, paying 300 bucks an hour waiting for him to finish, so he learns how to do it really fast.

**Daniel Rose** (Mark of the Unicorn): I think internship programs are great, but I've met a lot of resistance at our company, which I understand. The typical internship is three or four months long, just long enough for the experiment to be a total money and time drain for the manufacturer. We'd be better off taking a \$5,000 check and writing it to the institution, rather than accepting the intern.

What would be fabulous for us would be to have an intern there for nine months or longer, so there was enough of a commitment that we can get to the point where there is a physical or emotional break-even. Knowing MIDI or knowing computers just isn't enough. We get a lot of technically adept people who either freeze or otherwise really embarrass you, and we can't put them into our general customer service area in that short period of time. They don't know how to physically get a press release out the door and call a magazine and say, "Do you have that in your hand?" It may just be the nature of our beast. Maybe if somebody comes in whose skills are stronger, and after four weeks we can give them the press list and say, "Okay, get a copy to every editor around the world, and please don't swear at them..." [*Laughter*]

**Scott Shapiro** (student, UMass Lowell): I interned for a large record company this summer. I felt I was shafted. I felt that I had an entrance interview with someone who knew nothing about music, nothing about audio, who said, "Sure, come in whenever you want, we'll let you use all the equipment you want to use," and I got there and it was a complete lie. No one knew how to handle an incoming student at all. One engineer told me, "I don't care if you've gone to school, we're going to re-teach you everything." That's an awful way to approach a new student, or a new employee, someone who *loves* to make records. I think it's very important for them to understand that there are people coming to them with some sort of knowledge. I got into an argument with one of their engineers about how many megabytes per minute Pro Tools uses. I said five, and he said one. And I said, well, I learned at school it's five, and we had this argument for half an hour.

**Daniel Rose:** This tells you an interesting thing about sales skills. If you've got somebody with a wrong opinion, you

saw how direct contradiction got you into a half-hour argument.

**Parsons:** What about survival skills? If Scott feels brutalized by the manufacturer who takes him in, whose fault is that? Is it the manufacturer's? Or his own, to some extent? Perhaps he needed to learn a lesson.

**Shapiro:** I was just stating what I was taught.

**Scheniman:** That wasn't the lesson. That wasn't the knowledge that was being requested. The headline says, "Local Boy Argues With Engineer, Body Found in Alley." [laughter]

**Lehrman:** Education in this country traditionally has been a way to bring new people, immigrants or otherwise disenfranchised groups, into the economic mainstream. One of the groups we focus on a lot today is women. Audio, especially engineering, is still mostly a guys' club. Do the schools have a role in helping to bring more women into the field?

**Carol Bousquet** (Ferrofluidics, Boston AES chapter): We need to be talking to girls at a younger age. By college, it's too late. There's recent research underlining the differences between the ways boys and girls are being socialized: Girls are still being taught to be passive, not to pursue technical areas. In the classroom, girls are being called on six times less than boys and are being chastised for acting out or being aggressive. So we're talking about how do we create a revolution in the '90s? How do we address something that's as organic as this is?

We're building a program called Women in Audio: Project 2000 [*which had a very successful first meeting at the New York AES convention a month after this discussion took place*], and we're talking about creating an alliance with Girls Incorporated, which used to be known as the Girls Club, which is 50 years old and the only service organization in the country that studies issues affecting girls. They have a research center that designs a curriculum that is gender-targeted and compensatory. But you can bet that organization is underfunded. I'm on the board of directors in my community, so I'm real familiar with what's going on. They have a program called Operation SMART: Science, Math And Related Technologies. We're going to massage that. I have a very deep-rooted feeling this alliance will help.

**Parsons:** I'm the father of a grade-school girl in a very good system. There's a tremendous body of research about the way girls are treated from the very earliest—within the family,

through day care and in the school system. A great deal can be accomplished at an early age, if the programs are appropriate. The good schools feel very strongly that women need a better shake. If you want to get girls into the audio profession, you have to appeal to the parents of the girls my daughter's age. You can do a lot with the students of college age, but the greatest accomplishments can be done with parents, through PTAs, talking to the principals, teachers and neighbors.

**Scheniman:** Another thing we can do is to be a little more forceful with our peers in the industry who would like to defer the issue. We can't defer it any more. I try to place my students in top studios in New York and California. Al-

**Audio, especially engineering, is still mostly a guys' club.**

**Do the schools have a role in helping to bring more women into the field?**

**—Paul Lehrman**

though there are fewer female students, once in a while I get one who is just great, and I want to see her make it, so I'll call a studio manager and say, "I've got somebody you've got to have on your staff." And then she comes back and she's real disappointed, and she says, "Well, they didn't hire me because there's a lot of lifting and a lot of heavy stuff to do, and you know, I understand, the guy told me about insurance and all," and she's starting to buy it.

So I call the guy, and I say, "You idiot! I can't believe you did that! You want another try? You want to talk to her again and say you're sorry, and it turns out you've hired two guys to carry all the stuff, and now you want her in the studio? Or do you want me to call across the street and tell them this is one of the best people I've got?"

This happened with one of the big studios in midtown Manhattan, and I turned around and called the female manager at a studio on the next block and told her, "Gee, over at so-and-so they wouldn't hire this person because

she's a girl, and she said, "I hate that asshole!" [laughter]

The clients are driving this. Boy rock 'n' roll bands don't like girls in the studio. I saw this all the time working at the Power Station. Suddenly, they can't make the jokes they like to make, they have to tighten up their act and can't be sloppy and stupid and thoughtless any more. It's about learning to behave around women, learning to respect women in the studio the same way you respect your mother and your girlfriend and your daughter. That's the challenge. Until all our friends change their attitudes, that's not going to happen. Right now, it's not a nice place to send a woman into sometimes.

**Polon:** The issue you run into in recording studios, is that, generally speaking, they are small, privately owned, not covered by any federal grants or business, so there is no way to force them to hire women. The problem studios have, and I've talked to people about this, is similar to whether they have an SSL console. The owners say, "If I decide to buy another kind of console, and my bands and the record label want SSL, I can't sell them my services. If those guys in the band don't want women behind the console, it's the same issue, because it means we won't get the business." So where you've got to start the educational process is with these bands. And it shouldn't be difficult. You have to find a way, maybe through NARAS, to get that message across.

**Coxe-Yeldham:** I'd like to say that it's not all entirely terrible. A lot of bands react quite favorably to having me in the studio, so they're not all idiots. But as to the more specific question of what we can do, one of the things I've had in mind is for AES to hop onto the Grammy in the Schools bandwagon, perhaps actually going into the schools and describing what the jobs are. Which opens up a whole range of things—not just women, some of those representatives are minorities who will act as sort of a magnet. A lot of these things are already in place, but we can really pinpoint the technology side as opposed to the musical side. NARAS is showing more about performance, not so much recording, but we can add that into their program. Seeing as how we are the educators, we're the obvious point source for some of this. ■

*Paul D. Lehrman teaches in the Sound Recording Technology program at UMass Lowell, and often wonders what it would be like to be his own student.*

—FROM PAGE 68, "THE ALABAMA BELLE"

drama productions. (And, of course, many of these plays are repeated on the BBC World Service, which reaches significant short-wave audiences in virtually every country; NPR affiliates in certain North American cities also broadcast the occasional BBC-produced radio play.)

During a trip to London last Christmas, I had the opportunity to attend the taping of a 45-minute play, *The Alabama Belle*, in Broadcasting House, central London. The BBC operates as many as a dozen drama studios throughout

the United Kingdom, including in Belfast, Bristol, Birmingham and Glasgow. Plays are also recorded on location—most notably in Ambisonics surround-sound formats—although, because of increasing production costs, these are becoming rare.

The largest drama recording facility within Broadcasting House is Studio 6A, which features a spacious control room linked to multiple recording areas that can be reconfigured using acoustic drapes and screens to form a number of different environments. "Normally, we are allocated one day per half-hour of transmission time to rehearse and record a drama production," explains

freelance director Celia De Wolff. "At a running time of 45 minutes, the BBC has given us two days to tape *The Alabama Belle*, a true-life murder mystery set in Victorian London." An additional day is provided for editing the material into its target broadcast length.

The production crew assigned for the two-day taping session in Studio 6A comprised three BBC studio managers—a euphemism for the corporation's technical staff. Tim Sturgeon was assigned to the "Panel" (Beeb lingo for the mix engineer); Anne Bunting "Grams" (overseeing the master recorders and loading of multiple CD players for music and effects playback, etc.); and Jill Abram "Spot" (liaison with the actors in the recording area, as well as supervising the Foley areas and live sound-effects production).

**RECORDING AND PLAYBACK**

Studio 6A's control room is laid out with a custom-designed 32-channel Calrec stereo production console at one end, close to the glass window, with a recording and playback area in the rear. The Calrec board is laid out across the width of the room, which is a slightly unusual configuration, because Sturgeon is forced to look through the window to his right to check what's happening in the performance area.

One advantage of this layout is that it enables the director, who is seated behind the mixer—and listening in the same stereo perspective—to see into more of the studio area than would be possible in a conventional layout. It also helps ensure a more consistent stereo soundfield from the room's pair of BBC-designed Rogers LS5/8 monitor speakers. A Lexicon 224XL provides various reverb and ambience effects used during the taping.

In the rear of the room, Bunting was in charge of the various analog recorders used during the taping of *The Alabama Belle*, including a vintage Telefunken M15A mastering deck and a bank of Studer A810 record/playback machines. Aside from the primary M15A, one of the A810 decks was also used to make a safety backup during the session. All machines run at 15 ips without noise reduction. Because most of the material was recorded in sequence, and there were only two or three takes per scene, subsequent editing was performed with a trusty razor blade and edit block.

Music and sound effects were re-plicated from a bank of remote-con-

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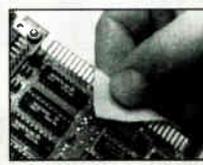
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trolled Studer D730 CD players. Also available are several EMT 950 turntables for cueing effects from vinyl, and a Studer A80 8-track, 1-inch deck that is used occasionally for more complex multitrack productions.

In the recording area, actors worked to coincident pairs of Neumann KM81 microphones located on floor stands; aside from special rigging of ambience mics, most pairs were mounted approximately six feet in the air and oriented slightly downward. Any sense of direction—of individuals moving into or away from a scene, as well as joining or leaving a conversation—was achieved by having the actors physically move away from or toward the mic arrays.



PHOTO: MEL CAMBERT

Production assistant Liz Holt (left) and director Celia De Wolff

#### REHEARSING AND TAPING IN SEQUENCE

"We like to rehearse and then tape as we go," De Wolff says, "because it helps to maintain a sense of continuity for the actors." The BBC has access to a large pool of repertory players who appear regularly on Britain's airwaves; many of them received their dramatic educations as members of London's mainstream, regional and touring companies.

Also on hand during the taping was BBC production assistant Liz Holt and the play's author, Pieter Rogers. "We block the action into different scenes, taking a page or two of dialog at a time," says Holt, who oversees liaison between the freelance director and BBC staff, in addition to handling continuity and related functions during the taping. "We have obviously looked at how the actors will need to be recorded in the studio and have begun to think about natural ambience, as well

as effects we will be playing in from CDs and other sources."

The script, written especially for the BBC, carries a great deal of specific, mood-setting information that would be considered superfluous for a conventional play being performed in a theater. For example, page one begins with a series of simple instructions: "There is a tremendous clap of thunder, and rain beats against a window. After a couple of seconds, an even more powerful thunderclap. A child's pitiful sobbing is heard. More thunder. As the thunder is heard again, there is a distant knocking, and the sobbing becomes even louder. Cut quickly to front door." The script is littered with such audio information that needs to be re-created live during the taping session or played back from CD sources.

#### LIVE AMBIENCES AND ENVIRONMENTS

The BBC places a great deal of emphasis on maintaining a natural sense of ambience during its recordings, only reverting to electronic effects whenever space and recording time preclude actually setting up such environments in the studio. The floor area in Studio 6A, for example, resembles that of a Hollywood Foley stage, with a number of pits that can be used to duplicate a variety of walking surfaces.

"We also produce specific effects for each production," says Abram. "In one scene, for example, we needed to duplicate the sound of the actors walking through long grass. I had prepared a bag of assorted lengths of recording tape—outtakes from a previous day's taping; no, only joking!—which I spread on the floor with a little gravel and wood shavings. Then, as the actors moved their feet to mimic walking, we had the complete illusion of their being in a field, moving from one location to another." For an added sense of being outdoors, the studio staff added bird songs and used the 224XL to produce a spacious, exterior ambience—there is only so much you can achieve in a modest-size studio.

Abram was also responsible for handling the various props used during the recording. "I have several glass bottles, stoppers and containers that I use to produce the sound of wine being poured, for example, or medicine being dispensed. This is a murder-mystery, involving a complex poisoning of a main character, so I'm being kept busy with the glassware!" A separate sound-effects area was set up in a corner of the stu-

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## INTERNATIONAL UPDATE

radio, where Abram worked into a local pair of mics; she had sight lines to the actors reading their lines in another area, to ensure that her movements were in time with the dramatic action.

"I try to avoid clichés," confides director De Wolff. "Take doors, for example. As the actors enter and exit a room, we obviously need the sound of a door opening and closing. But I try to avoid using the prop doors here, simply because I think they have become *too* familiar to our listeners. Speaking personally, I can tell while listening to a radio play which studio it was recorded in, simply by the sound of the stock 'BBC Door.' Instead, I try to use recordings of real doors, or augment the sound with reverb."

In terms of motivating actors to perform for the radio audience, De Wolff says that, while it obviously depends on the production, she prefers to create an environment for the actors, rather than make too many specific suggestions about how each line should be read. "These are professional actors, after all, who should know how to read lines from the page and get into character. My job during the taping is to ensure that we capture the *emotion* of the lines being performed—after all, the audience has no other clues about what's going on, including motivation,

apart from what they are hearing. In other words, the actors need to 'perform' with their voices."

One oft-repeated description of good radio—be it drama or a news program—is that it uses the microphone to paint a picture in the listener's ear; just like an exceptional work of art, or a musical performance, creating worthwhile radio should be transparent to its enjoyment.

Yet most actors are notorious extroverts and take every opportunity to act up, including corpsing fellow thespians. "Yes, there is a light-hearted sense of fun in the studio, but when the green light goes on, I have to have them ready to deliver their lines the way that I envision the script calls for. We try to avoid overacting, but, by the very nature of radio drama, these actors need to emote more to the audience, simply because we cannot see them for ourselves and cannot pick up on visual cues.

"A good radio actor is almost able to emote his or her intentions directly to the audience," De Wolff adds. "Sure, we have to include a lot of what would normally be extraneous material, simply to make sure that the actors' movements and unseen intentions are clear, but I still depend upon the way in which the lines are delivered to provide the audience with a sense of intimate involvement with the play." ■

## EUROPEAN BITS & PIECES

The Levellers' latest album, *Zeitgeist*, was recorded at the band's Levellers HQ studio (Brighton, UK) using their new Soundtracs Solitaire console. The Solitaire was installed by London's Larking Audio...**British Sky Broadcasting** (West London) purchased three Graham-Patten D/ESAM 400 digital edit suite audio mixers, to be installed in three new component digital editing suites. The new mixers, which were supplied by Graham-Patten's UK distributor, Boxer Systems, will be used in the production of trailers and films for broadcast to the company's satellite subscribers. NOB of Amsterdam also recently acquired two D/ESAM mixers...**Abbey Road Studios** purchased four Digital Genius ada 20.16 converters. The units were supplied by distributor Ki-

netic Systems Ltd. and are being used on a variety of remote recording and in-studio projects...**The Edit Works**, a London-based post-production facility, equipped its new studio with a surround sound system of Dynaudio Acoustics PPM1 monitors and an ABES bass unit. Other equipment includes an Avid AudioVision and two Yamaha DMC1000 mixers, as well as Sony DAT and Tascam DA-88 machines, an Akai sampler and a range of outboard gear...**Polihymnia** (Netherlands), Philips Classical's main recording and mastering company, ordered two Sony PCM-3324S recorders. Another Dutch facility, **Artisound**, purchased its second PCM-3324S in a package that also contains a PCM-800 DTRS 8-track digital recorder. ■

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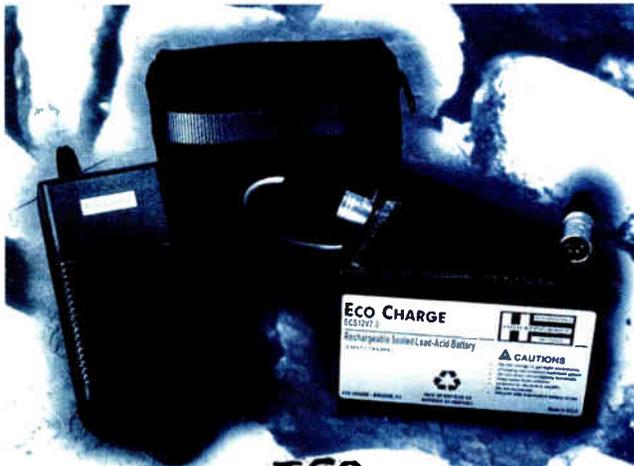


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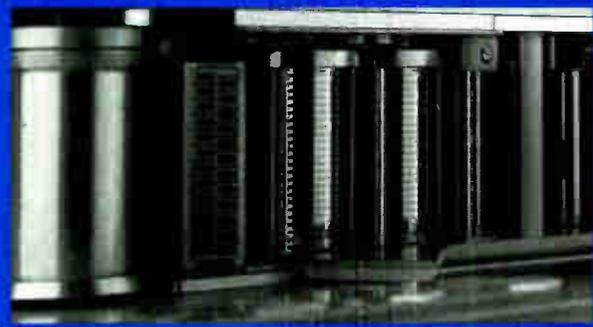
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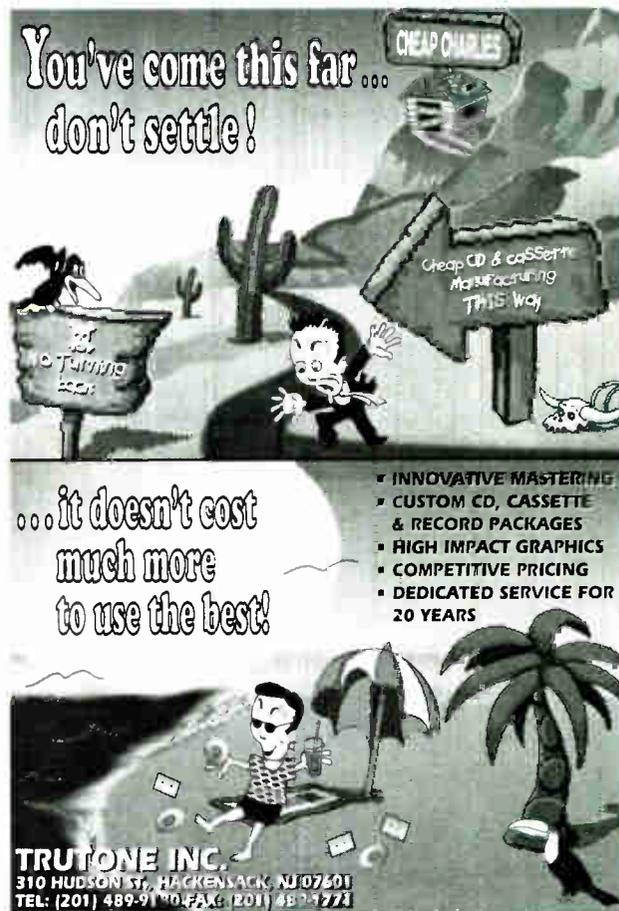
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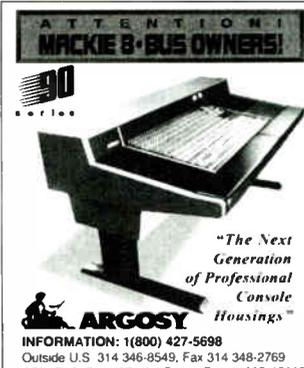
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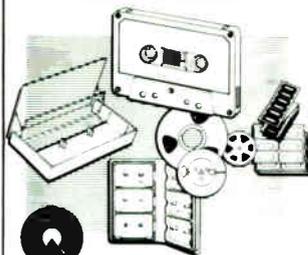
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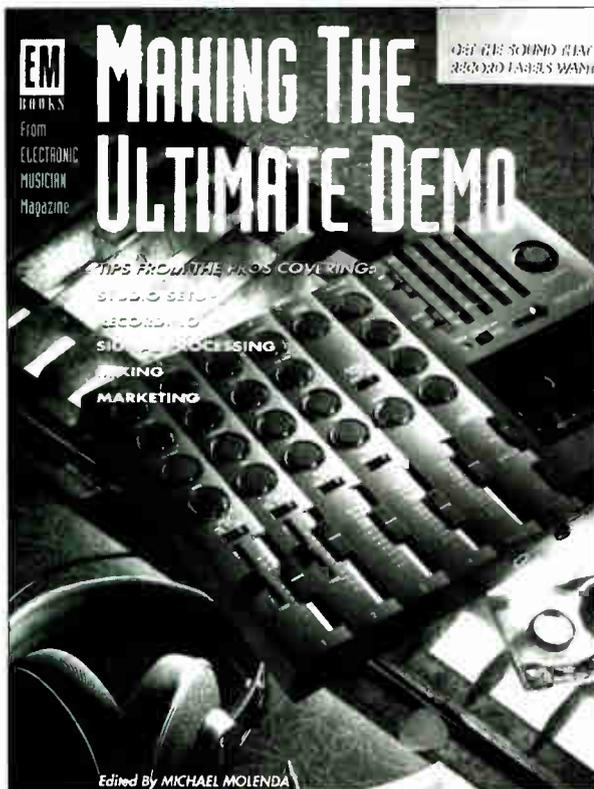
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*Michael Molenda, ed.*

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—FROM PAGE 96, *MASS.MARKETING PRO AUDIO* engineering, and which Spector says was an immediate success at retail, is just the tip of the new consumer-oriented iceberg.

Guy Hawley, JBL's senior manager for market development in Europe, says, "There's a misconception that anyone who buys a sound system is in some way an [audio] professional. Meanwhile, you have pastors at churches and small-hall owners and teenagers who are baffled by professional systems. We're accommodating the product line and the way it's marketed to accommodate them by making it more affordable and more accessible. Take the MI distribution channel: It comprises a hybrid of a consumer mentality and a professional need." Underscoring that is the fact that the EON system is the first JBL product that does not highlight technical specifications as part of its promotional literature. Rather, the prosaic language of user features is increasingly taking predominance over the more hermetic language of pro audio. "Mercedes used to use the approach of selling its cars by showing an engineer in

a lab coat in its ads," says Spector. "Now the ads are more user-oriented."

Both agreed wholeheartedly that the personal recording phenomenon was the catalyst for this change. But could such a radical shift alienate the existing professional *cadre* of users? Traditional recording studios have periodically lashed out at personal recording's swipe at their market share, and the touring sound industry is already experiencing a prolonged contraction. The risk is there, JBL acknowledges. But on the other hand, other pro speaker markets like convention halls, cinema sound and theaters are expanding, and a more user-friendly approach to selling equipment across the board follows trends in other industries.

While it's too soon to tell what the larger impact of JBL's move will be for pro audio, it's clear that its genesis lies in the spirits released by the Pandora's Box of personal recording equipment. It's also clear that, while niche markets have proliferated in pro audio over the last few years with the growth of products like digital audio workstations, these niches have become crowded al-

most as soon as they are recognized, with the DAW field now having more than 50 entries in less than ten years. As big as it is under the Harman umbrella, and as successful as it remains in areas like cinema and live sound, JBL has not been able to maintain market leadership in every niche (viz. its experience in close-field studio monitoring). And in a market as broad as pro audio, that would be too much to expect.

What happened on the night of Thursday, November 23, 1995, might come to be regarded, in retrospect, as one of those James Burke-like "Connections" points in the timeline of the pro audio culture—the moment at which professional audio shed its mysterious cloak and overtly joined the mass market machine. The Wizard of Oz cautioned, "Pay no attention to the man behind the curtain." Fifty-seven years later, the man behind the curtain has a hamburger and Coke" in his hands and a glimmer in his eye that says, "Clapton did it. Why not you, too?" ■

Dan Daley is Mix's East Coast editor.

—FROM PAGE 218, *NICK CAVE & THE BAD SEEDS* quality gear really counts), but he admits that recording Cave's vocal is somewhat challenging. He starts with a Neumann TLM mic, which he says Cave puts "halfway down his throat, which is great, but it takes a bit of work to get it right. So I put the mic through a really fast, modern compressor like a UREI LA-15, and then I'll feed it straight into a Summit valve compressor, and that smooths it all down again. Sometimes I'll do it again on the mix. That way I put it through four compressors before it's finished. It's technically a weird thing to do, but for people who sing that way, with such dynamics and so close to the mic, it really helps. And then on the mixing, I'll put it through, before anything, a de-esser—take all the esses out and then whack all the treble back in after that. Then I find that I've taken the sibilance out, but I've still got a nice, bright vocal. It's a tricky thing, though. You go too far, and you can give him a lisp."

The bulk of the album was recorded to an MCI 24-track machine: "All analog," says Cohen, "and I mixed to half-inch analog, too, with a safety copy on DAT. For some kinds of music, it's good to go digital, but not for this

band." The mixing console at Metropolis is an SSL G Series. Cohen says the room he used has JBL main monitors, but he always uses a pair of Yamaha NS-10s. "The room is great, but not overly equipped," he adds, "so I hire a lot of outboard stuff: Pultec EQs, Summit valve compressors, and the old Fairchild compressors are great for some things."

One of the hardest songs for Cohen to mix turned out to be one of the prettiest on the album: the last track, a Dylan song called "Death Is Not the End." Cave's vocal alternates with lines sung by Minogue, P.J. Harvey, Shane MacGowan, and two bandmembers: guitarist Blixa Bargeld and percussionist Thomas Wydler. Most of the guest vocals came from other studios, other engineers, and Cohen says no effort was made technically to effect any sort of continuity, "though I wish there had been," he says. "It was a nightmare to mix. But that's one of the things that happens when people don't think about that sort of thing. It's just 'Record it on the tape, that's fine!'"

"It was a lot of trial and error," he continues. "I had to compress and equalize and try to match things up. Just

thinking about it is giving me a bit of a headache. Actually, the biggest problem I had with that song was the hiss, because you'd turn on Kylie's vocal and all of a sudden some of the hiss would leap right up, so to try and get that out and still sound good—nice and bright and trebly and matching—was pretty difficult. I used a lot of the Aphex Aural Exciter. I find that unit's really good once you've de-essed it: Put the Aural Exciter on and bring all the tops back in again."

Cohen says he's dissatisfied with the final track and would have been happier to redo the song from scratch. And, in fact, you can (barely) hear what he means on the CD: Minogue's voice is a tiny bit hissy, and MacGowan's endearing growl is the slightest bit louder than the other singers, but really that all comes through as just more of the spontaneity and excitement that Cohen recognizes as part of the charm of the band's usual live-in-the-studio recordings: "As a rule, if it's a song they've rehearsed or they've learned, they will play everything live. We find that that's the best way to get a bit of excitement in it. I often wonder why people like to purify things too much, because mistakes can be brilliant." ■

# FEEDBACK

## HARDWARE VS. SOFTWARE

Re: "The Fast Lane," January 1996, "Virtually Perfect": Apparently, Stephen St.Croix has been spending a little too much time with his Virtual Boy game. His vision, with respect to the wonders of software, seems somewhat impaired.

The notion that software-based, plug-in style audio processing is less expensive and less environmentally destructive than the hardware equivalent is flawed, especially if you "let the computer companies do the hardware," as Mr. St.Croix suggests. It is a mistake to separate the cost of hardware (your computer, audio interface, etc.) from the price of the software that runs it. Computer companies are notorious for constantly changing CPU platforms, operating systems and hardware standards. That's how they stay in business. Workstation manufacturers are equally guilty. In the digital world, what was once "state-of-the-art" becomes almost obsolete overnight.

During the five years I've owned my Eventide H3000, I've been through two Macintosh computers, two sets of Digidesign hardware and several generations of software. The Eventide unit shows no sign of becoming obsolete. In fact, you could call the Harmonizer irreplaceable and the Apple/Digidesign products continuously replaceable, by design. Compare the value of a Focusrite equalizer, as another example, with its software counterpart, over the course of five years, and I think you will find the hardware version to be a better investment, financially, environmentally or otherwise. Focusrite designed a software module as a marketing move, pure and simple, spurred on by media hype, as expressed in Mr. St.Croix's column.

Today's computer industry bears a striking resemblance to the automobile industry of the 1950s and '60s. Each year during that period we saw new cars that were bigger, faster, more luxurious, with longer tail fins, etc. compared to previous models. The automobile industry called it planned obsolescence. By 1970, most of us were driving fat, lumbering gas guzzlers on our trips to the mall, and the air in most

cities was becoming poisonous. Microsoft is the General Motors of the '90s—only it's a little more insidious with the computer industry because we depend on its products for our livelihood. At least that's how Mr. St.Croix would have it.

There's no question that computer-based audio technologies such as the digital audio workstation have had a lasting impact on our industry. Developments in the digital domain have changed the very nature of the work we do as engineers and producers. It seems to me, however, that the transition to the so-called virtual studio includes a certain amount of hyperbole, and I look to *Mix* magazine to give a more balanced assessment of these technologies.

*Jeff Kliment*  
*jeffintom@netcom.com*

## CC IN THE MAINSTREAM

Thank you for your interview with Charlie Peacock. The Contemporary Christian market segment is largely neglected by mainstream publications, so I was especially pleased to see such a thorough treatment in your magazine. Not only is CC music growing in popularity and diversity of styles, but it also represents some interesting technical issues.

Though it is true that the budgets are small in the CC market, a number of artists are making releases with a big-budget sound. I'm sure a lot of your readers in the mid-level secular market would be interested in the equipment and techniques used by artists such as Susan Ashton, Bryan Duncan and Phil Keaggy. I eagerly await your next article on CC.

*Mark E. Hingsbergen*  
*Louder Regions Recording Studio*  
*Indian Springs, Ohio*  
*MHings@msn.com*

## PUZZLING EVIDENCE

Having spent the last 16 years working as a maintenance tech in some of the finest major studios in the business, I've done thousands of tape machine alignments, and it never fails to amaze me that there still appears to be so little standard concerning the documentation

and recording of tones and timecode.

I just aligned a 24-track analog tape destined to be locked to a 48-track digital tape. Both tapes were generated at the same major New York City studio. The tones for the analog reel had the following: 1k, 10k, 100 Hz, as outlined on the tape box label. Good enough; I knew what I was getting. What I didn't get was the second low-frequency tone so I could determine where the head bump was on the original recording machine. There's not even a checkbox for 50 Hz, so obviously the maintenance tech was following established criteria, as incomplete as it is. Aligning 100 Hz at 0 VU puts 50 Hz at what level? Could be anywhere from -3 VU to -1 VU typically. Big difference.

The other small complaint is: Where was it marked that I would know how long each tone was? Lastly, it's extremely helpful to put a very short blank space between each tone so I can see the meters drop as a visual cue. Yes, policy says you listen to the tones as you align, but still, a little visual cue is awfully helpful.

On the issue of timecode: The analog tape type said it had SMPTE on track 24. That's nice. What type? Was it video-referenced? The digital reel politely stated the code was 29.97. Again, drop frame, nondrop frame? Was it video-referenced? Help me out here, people!

Has SPARS generated a set standard for alignment procedures and timecode documentation? If so, please print those standards. In an industry that I see as failing its clients on a technical level, a reminder to the younger techs and assistants might prove helpful.

*Robert Knox*  
*The Time Machine*  
*Landgrove, VT.*

*Send Feedback to Mix, 6400 Hollis St. #12, Emeryville, CA 94608; fax (510) 653-5142; or 74673.3672@compuserve.com*



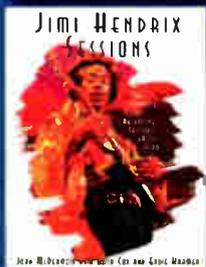
# INSTEAD OF BRAGGING ABOUT OUR 8•BUS CONSOLE AGAIN, WE THOUGHT WE'D BRAG ABOUT EDDIE KRAMER BRAGGING ABOUT OUR 8•BUS.

Okay, bragging is too strong a word. But we are very proud when one of the most important, rule-breaking, producers in recording history has become a Mackie 8•Bus fan.

After all, Eddie Kramer's role in the making of popular music has changed its sound forever<sup>1</sup>. His recipe? "Make a record unlike anything that's ever been heard." So, while other engineers in London were churning out England's formula Pop of the Day, Eddie Kramer was across the console from a strangely-dressed young man from Seattle named Jimi Hendrix. Together, they broke practically every

sonic and musical rule in sight. The result was an aural legacy of such originality that it still sounds amazing — even revolutionary — a quarter century later.

Eddie hasn't gotten any more conservative over the years. So it's not surprising that a man with Kramer's receptiveness to change would add a 32•8 to his creative arsenal. A mixing console that costs hundreds of thousands less than those he's worked on for most of his awe-inspiring career.

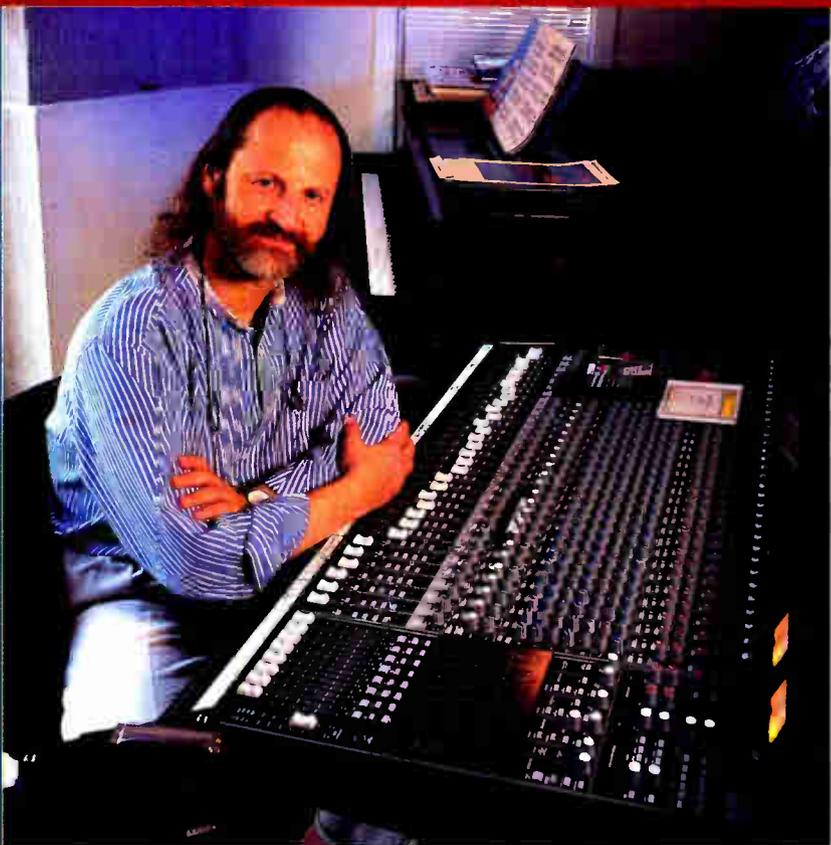


Sample Eddie's latest work on "In From The Storm."

a brilliant orchestral homage to Hendrix with an astonishing array of some of the best players in the world. Leave it to Eddie to break more rules. (Net surfers should check out the **rcavictor**® Web Page @ <http://rcavictor.com>.) For a great read, pick up the *Jimi Hendrix Sessions* book by John McDermott with Billy Cox and Eddie Kramer (Little Brown), and on video, *Adventures In Modern Recording* (available from Mix Bookshelf, 510-653-3307).



1. Including Hendrix, Led Zeppelin, Kiss, Buddy Guy, and more recently, his work with other Mackie mixer owners: Sting, David Abbruzzese, Vinnie Colaiuta, Stanley Clarke, Tony Williams, Steve Vai, and Carlos Santana.
2. He hates the location of the 8•Bus' talkback button.
3. According to Eddie, Eric Shenkman (Spin Doctors), Little Red Wagon Mobile Recording Studio, Bootsy Collins and Jonn McEnroe have purchased 8•Bus consoles at his urging.

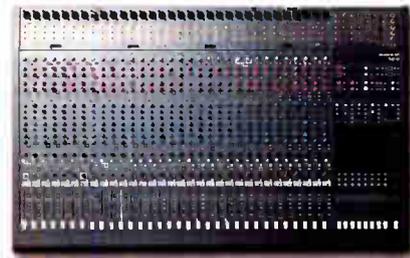


A console he says he likes for its "...sweet EQ, dynamic range, and cleanness."

Eddie wanted to do more than just take advantage of the creative and lifestyle options afforded by the project studio revolution. He also wanted to help DRIVE it. So a year ago, we agreed to lend Eddie a 32•8 in return for his feedback. Since then, we've learned Eddie is not shy about expressing his opinions. Luckily they're mostly good<sup>2</sup>.

And Eddie Kramer recommends Mackie consoles to his associates, too<sup>3</sup>. In these cynical times (when pop stars accept millions to "endorse" products they admit later to having never tried), we at Mackie Designs think that's the only kind of "endorsement" worth having.

If you're in the market for a serious but affordable mixer, we hope you'll take a close look at the only 8-bus console Eddie Kramer says is worth having.



See us at NAB Booth #S-1245

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Made for the way you play.

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And while you're playing hard, rest assured your sound is never compromised. With features found only in higher-end speakers, the TR speakers always maintain a balanced output of crisp highs and killer lows.

At JBL our goal was to bring you a more affordable JBL speaker, not a cheap one. So turn it on. Turn it up. And give the new TR Series a listen. At this price, it's time to get a speaker that was made for the way you play.



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