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Editor,
MIX Magazine

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Pro Audio Review Magazine

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adat xt

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ALESIS

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"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."

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Grammy Award Winning Engineer

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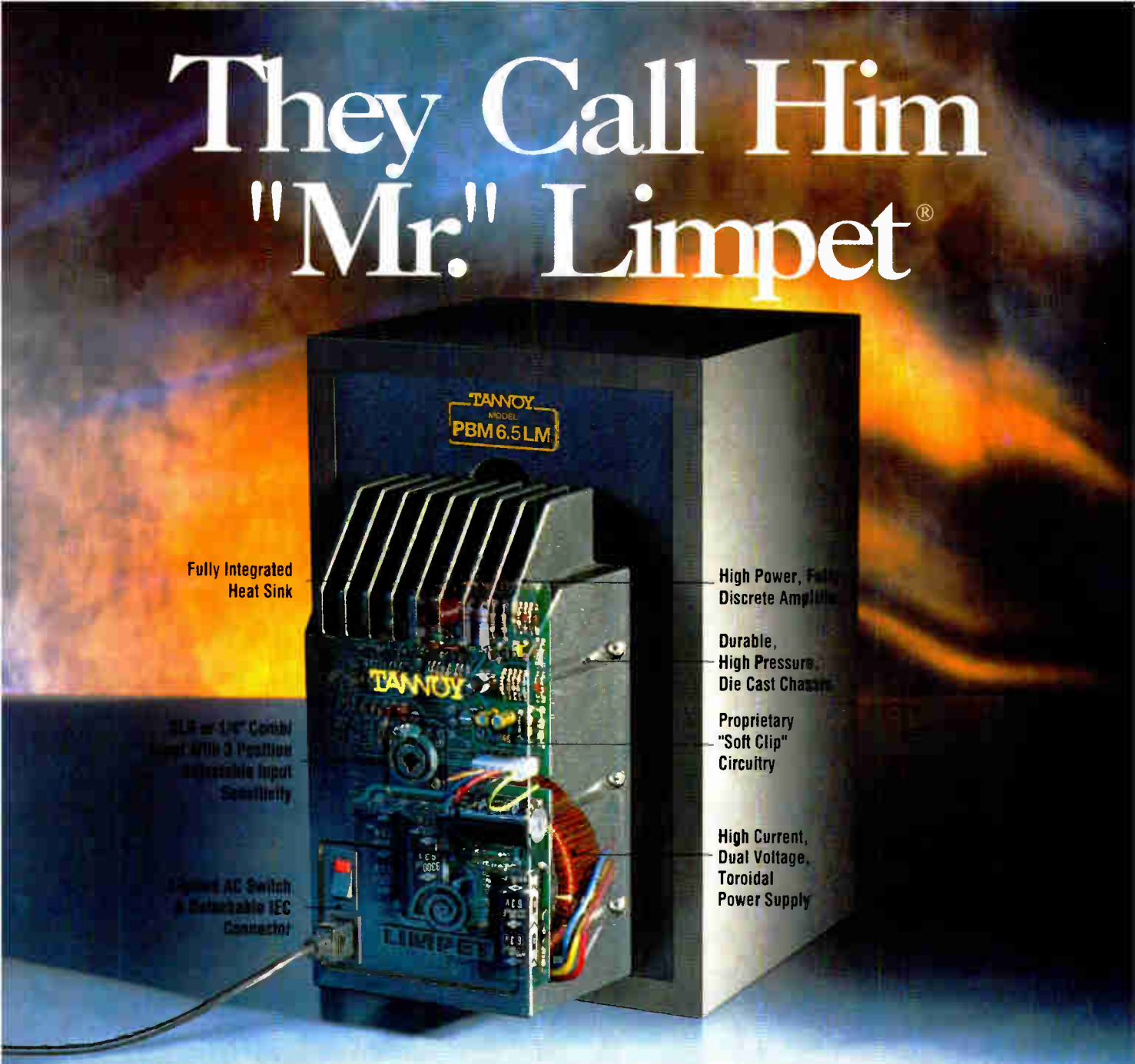

■ Every once in a while a product comes along which not only meets the ever increasing demands of the market, but one whose smooth commercial styling, ergonomics, durability and outstanding performance demands respect. Introducing MR. LIMPET. ■ The LIMPET is a unique, compact design that combines a very 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.

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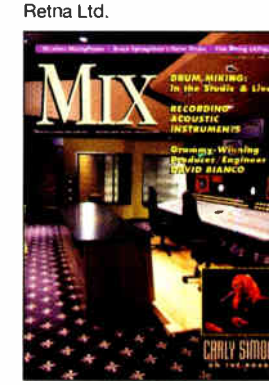
12TH ANNUAL TEC AWARDS

193 1996 Nominees

Cover: Studio B, one of two rooms at Royaltone Studios in North Hollywood, provides a mix of modern technology and vintage gear in an environment designed for comfort and creative enhancement. Designed by studio bau:ton, Studio B features an SSL 4064 G Plus console equipped with Ultimation, custom-designed Ocean Way monitors by Allen Sides and two 24-track Studer A800 MkIIIs with transport upgrades. For more information on Royaltone Studios, see this month's "Coast to Coast" on page 206.
Photo: Edward Colver
Inset Photo: Larry Busacca/Retna Ltd.



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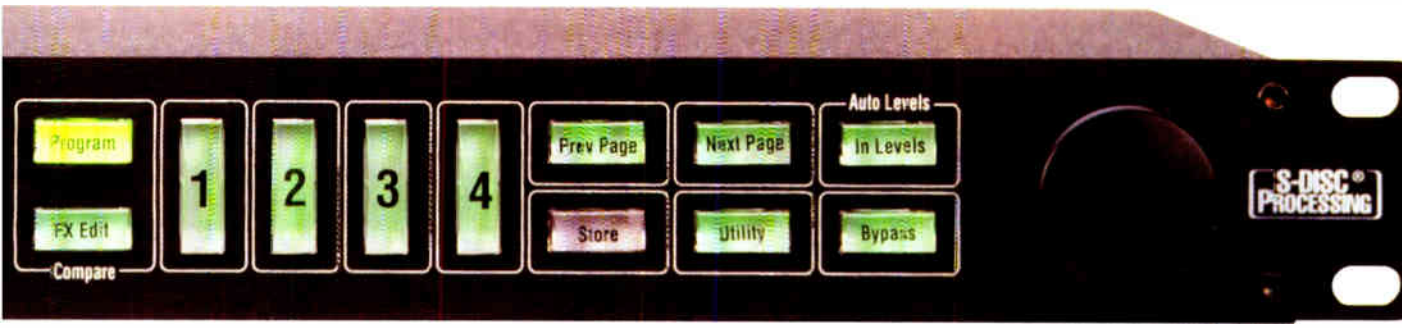

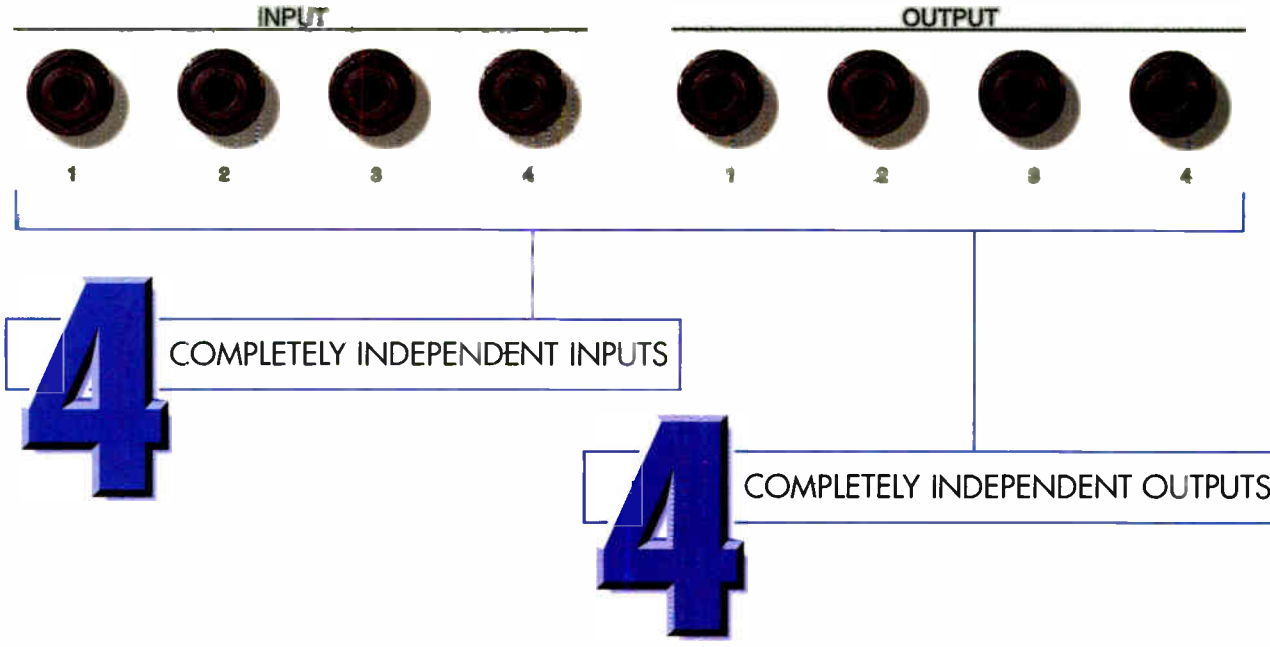

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FROM THE EDITOR

MICS IN THE MACHINE

Whether working in the studio, on the road or in a duplication facility, most of us spend most of our time reproducing music. And if we weren't addicted to audio as a life's passion, we'd be making *real* money in the real world, either owning a fast food outlet (very profitable) or writing technical manuals on toxic waste handling (even more lucrative). As audio junkies, we devote years to discovering new techniques, new equipment and new ways of thinking in every endeavor. Except one.

Most of us are willing to try nearly anything in the studio, yet the miking methods we witnessed on our first gig can be so indelibly ingrained into our psyche that we'd sooner mix our next hit to the Elcaset* format than change our setup. Can the alchemist/engineer really impress a client with audio magic when a track can be improved simply by moving a mic a few inches, rather than by reciting incantations over some mysterious DSP processor? But don't throw your approach out entirely—merely try a new mic or placement every once in a while to keep the brain fresh.

The possibilities are endless. If you're hooked on dynamics for snares and toms, substitute condensers on your next gig. Instead of the X-Y coincident or spaced pairs for overheads, try a stereo mic, M-S pair or even a Blumlein (criss-crossed figure-8s) arrangement. And don't always limit placements to that precisely-over-the-drummer's head stuff: Sometimes moving the mics slightly in front of—or behind—the kit and angling the capsules toward the cymbals will reduce snare bleed and open up the stereo image. If you're really brave, try using just two overheads, a kick and snare mic for that BIG sound.

If you haven't guessed by now, this issue is packed with information on microphones and miking techniques. Sound reinforcement editor Mark Frink looks at new UHF wireless systems and gives insights into onstage drum miking; Rick Clark offers the studio perspective from leading engineers and session drummers; Michael Cogan shares his years of experience with miking acoustic instruments; and we take a look at the new generation of studio mics. We hope this will encourage you to develop a few slick tricks of your own.

Whatever you do, at least once a year switch your multipattern mics out of the cardioid setting, if for no other reason than to keep the contacts clean. Of course, while you're doing it, perhaps you could...try some new mic techniques.

Omnidirectionally yours,

George Petersen

* You *do* remember those giant ¼-inch tape cartridges, don't you?

BPA INTERNATIONAL SPARS ABP American Business Press

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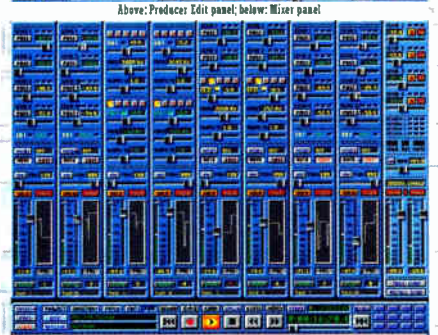
Above: Producer Edit panel; below: Mixer panel



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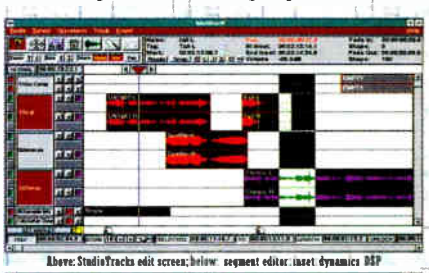
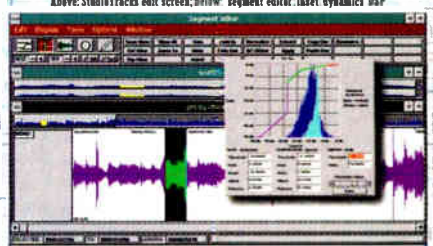
‡ The software program Formerly Known As Prisma Music. Our *previous* Marketing Department did it.



Above: StudioTracks edit screen; below: segment editor; inset: dynamics DSP



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FAX +81 35 256 2856

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ADVANCETEK INTERNATIONAL CO LTD
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THOROUGHBRED PRODUCTS FOR PROFESSIONAL AUDIO

VALVE TECHNOLOGY

When you choose TL Audio you're getting a combination of superb design, quality manufacture and un-paralleled audio industry experience.

Our key personnel include individuals who have worked with Neve; (9 years research and development project leader), Trident; (11 years chief installation engineer and sales support installing the classic A-Range, B-Range and TSM consoles in many top studios worldwide), and Soundcraft; (5 years as UK Sales Manager).

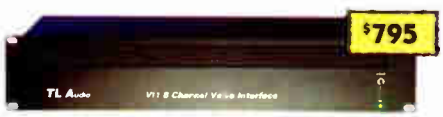
All in all a total of 50 years sales and engineering experience in professional audio.

EQ-1 Dual Valve EQ
2 channels x 4 band valve EQ, balanced mic & lines, +48v phantom power, front panel AUX input, bypass switch.

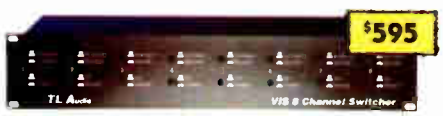
EQ-2 Stereo Valve Parametric EQ
4 band parametric, variable filters, mic-amps, +48v phantom power, dual mono or stereo linked modes.

C-1 Dual Valve Compressor
Stereo valve compressor, balanced mic & line inputs, +48v phantom power, 2 AUX inputs, variable 'soft knee' compression.

PA-1 Dual Pentode Valve Pre-amp
Transformer coupled mic input, +48v phantom power, input/output gain controls, front panel instrument input, Phase reverse switch, Filters.



VI-1 8 Channel Valve Interface
Line amp, balanced ins & outs, unbalanced compatible, level matching for -10dB & +4dB equipment.



VI-S 8 Channel Switching Unit
8 channel switching unit for use with VI-1 Valve Interface. Offers switching between record and replay modes plus bypass.

PA-2 Dual Valve Mic Pre-amp/DI
Mic & instrument inputs, peak LED, +48v phantom power, switchable sensitivity, variable gain control, rack ears included.

For UK sales: Tony Larking Professional Sales Ltd.
Letchworth, SG6 - 1AN (UK)
Tel: +44 (0)1462 490600 Fax: +44 (0)1462 490700

SASCOM MARKETING GROUP
Canada & USA:
Sascom Marketing Group
Tel: +1 905 - 469 8080
Fax: +1 905 - 469 1129

CLASSIC SERIES

TL Audio

TL Audio would like to thank all the professionals from around the world who have taken time out to express their thoughts about our equipment.

Stereo MCs - *"We found our previous choice of mixers to be unusable. The M-2 has a nice warm, fat sound that makes it easy to blend material - we don't have to spend half an hour EQ'ing to obtain a great sound."*

Mark King - Level 42 - *"The C-1 Compressor has a marvellously transparent sound that I find ideal for vocals... bright, sparkly and very impressive."*

World Radio History

Pete Bellotte *(Songwriter/Producer - Donna Summer, Elton John, Janet Jackson)* - *"Recording through the VI-1 interface makes a world of difference - drums become not just punchier, but clearer - more defined."*

Alex Marcou - Abbey Road Studios *(House recording engineer)* - *"The VI-1 makes hard sounding digital sound like cosy, rounded analogue - a joy to listen to. The control that the EQs, Pre Amps & Compressors give is excellent."*

INDIGO SERIES

NEW!

$5,995

M-1 8:2 Valve Mixer
4 band valve equalisation, balanced busses, valve mix amps, balanced outputs, Link facility providing 16, 24, 32, etc channels.

$7,995

M-2 8:2 Valve Mixer
As the M-1 plus 100mm faders, 2 AUX's per channel, 2 stereo FX returns, channel direct outs switchable pre post EQ & post fader, comprehensive link facility

The new Indigo Series of valve products from TL Audio boasts the same critically acclaimed audio quality as the Classic range, but with an even more affordable price tag - making the unique characteristics of valves available to musicians and project studios for the 1st time.

Each unit comes in a compact 1U 19" package, and features the usual superb TL Audio build quality, un-paralleled sonic integrity, and, of course, that classic valve sound.

$1,295

PA2001 4 Channel Valve Mic Pre Amp
Continuously variable input & output gain controls, 48v phantom power, 90Hz low cut filter, Phase reverse, Peak LED metering.

$1,295

EQ2011 2 Channel 4 Band Valve Equaliser
Variable input gain, two channels x 4 bands equalisation, front panel AUX input, EQ bypass switch, peak LED metering.

$1,395

EQ2012 2 Channel Parametric Valve Equaliser
Variable input gain, 'mono mode' allows mono 4 band operation, divide / multiply by 10 frequency switching, EQ bypass switch, peak LED metering.

$1,395

C2021 2 Channel Valve Compressor
Fully variable control of input gain, threshold, ratio and gain make up, stereo link facility, 8 segment LED metering, side chain insert point.

$1,295

O2031 2 Channel Valve Overdrive Unit
Continuously variable input and output gain, defeatable "Boost" level control, 3-band EQ, high-cut filter, EQ bypass switch.

STILL AVAILABLE!

$3,495

TL Audio Classic Neve EQ
Classic Neve EQ at an affordable price. For a fraction of the cost of new modules, TL Audio brings you 2 used classic Neve EQ modules, tested, refurbished and mounted in a sturdy 19" 1U case.
Stocks of Neve EQ modules will not last forever so unfortunately we can only supply this unit while we still have modules available.

SASCOM MARKETING GROUP

For UK sales:
Tony Larking Professional Sales Ltd.
Letchworth, SG6 - 1AN (UK)
Tel: +44 (0)1462 490600
Fax: +44 (0)1462 490700

Canada & USA:
Sascom Marketing Group
Tel: +1 905 - 469 8080
Fax: +1 905 - 469 1129

Andy Jackson - Pink Floyd *(Sound engineer - "All the lead vocals on the "Division Bell" album mix were run through the EQ-1 - I certainly prefer the EQ-1 to other Valve Equalisers for vocals. The new EQ is probably the best all-round EQ I've ever used*

Carmelo Luggeri *(Songwriter / Producer - Kula Shaker) "Both the EQ-1 Equaliser & C-1 Compressor add warmth to my digital system - the C-1 is subtle and warm without being intrusive, the EQ-1 makes everything sound better!"*

Ed Hapson - Lynyrd Skynyrd *(FOH Engineer & Production Manager) - "On lead vocals we replaced our existing valve compressor with the C-1 Compressor and the increase in intelligibility and signal quality was immediately noticed by all."*

Dennis Charles & Ronnie Wilson - 1st Avenue *(Producers - Eternal, MN8, Michelle Gayle, Dana Dawson, Louise) - "The EQ-1 and C-1 units helped us put the power into the EM album "Power of a Woman" Eternal"*

Nigel Lowis - Soul City Productions *(Songwriter / Producer - Eternal, Dina Carroll, Louise) - "The EQ-1 Equaliser warms up vocals and adds quality to the bottom end, and the C-1 Compressor makes a hard pass sound like a million dollars. Amazing sound!"*

Chris Porter *(Producer - Take That) - "I bought one of the first EQ-1s and I've enjoyed using it immensely. It gives a unique quality to the vocals in particular - Take That's 'Back for Good' is a typical example of the EQ-1 adding depth and presence to a vocal track."*

Powered by Electro History

CURRENT

POWER STATION SOLD

Power Station was sold virtually intact in a bulk bid on April 25. In an auction conducted by Rabin Brothers Auctioneers and attended by an estimated 500 people at the Manhattan Center in New York and 200 more linked by video at the Butterfield & Butterfield Auction Gallery in Hollywood, the 17-year-old landmark New York recording facility was taken by a lot bid of $5.3 million by Japanese recording studio owner Takashi Kanamori and a group of Japanese investors.

The bid will satisfy the reported $4.175 million debt owed to Chemical Bank (now Chase Manhattan) plus court costs of the suit brought and won by Chemical that precipitated the auction, as well as the estimated six-figure cost of the bi-coastal auction and several hundreds of thousands of dollars in unpaid real estate and sales tax.

Over its 17-year history, Power Station hosted thousands of recording sessions that produced more than 400 Gold and Platinum records. Studio founder Tony Bongiovi filed voluntary Chapter 11 on June 21, 1995, after failing to repay his initial $3 million loan to Chemical Bank.

Initial reports indicated that Kanamori, who owns two recording studios in Tokyo, will keep Power Station intact and retain much of its staff. The studio's name, however, will have to be changed; the studio, the building and its contents were the property of Power Station Inc., the holding company owned jointly by Bongiovi and minority owners Bob Walters, Rita Scaglione and Mike Gross. Power Station Inc. remains in Chapter 11 bankruptcy.

Michael Hackman, the Rabin Brothers representative in charge of the event, stated that "Even though individual bidders ultimately could not acquire the items they hoped to, there seemed to be a genuine feeling of exhilaration that the studio would remain whole."

—Dan Daley

NAB 1996: REVOLUTIONIZING THE ELECTRONIC MEDIA

From April 13 through 18, 1996, a record 92,333 broadcast and production professionals headed for Las Vegas to attend the 1996 convention of the National Association of Broadcasters. To accommodate the unprecedented number of exhibitors (nearly 1,000), the show expanded into the nearby Sands Convention Center, with frequent shuttle bus service linking it to the gargantuan Las Vegas Convention Center. To ensure that attendees visited the smaller Sands Center, NAB wisely moved its registration to the Sands, and excellent foot traffic was reported in all areas.

The show's theme, "Revolutionizing the Electronic Media," was clearly evident from walking the show floor. Computer-based desktop production systems were everywhere, and many of the systems that offered cuts-only editing a few years ago were now displaying editors with comprehensive, on-board visual effects packages. And suddenly companies such as Apple, IBM, Microsoft, Macromedia, Adobe and Quark are coming on strong as major players in the broadcasters milieu. Everybody at the show seemed to be talking DVD, and there was genuine optimism about the possibilities offered by what is now increasingly referred to as the Digital *Versatile* Disc. Speaking of new formats, Panasonic showed its DVCPRO, offering component digital video with CD-quality audio on a pocket sized cassette.

From the audio side, digital dubbers were hot, with products announced by Akai, Sony, Fairlight, TimeLine and Dolby. And digital consoles have gone from dreams to reality, as I counted more than a dozen digital mixers on display from Amek, AMS/Neve, Audio/Design, Fairlight, Graham-Patten, SSL, Sony and Yamaha.

We'll return with more NAB coverage next month.

—George Petersen

RIAA RELEASES 1995 CONSUMER PROFILE

The Recording Industry Association of America (RIAA), based in Washington D.C., recently released its 1995 con-

—CONTINUED ON PAGE 16

TEC AWARDS TO HONOR STUDER, WILSON

HALL OF FAME AWARD

The TEC Awards Hall of Fame was created to recognize those individuals whose careers have best exemplified the spirit of creative and technical excellence in audio.

This year, the TEC Awards will honor the late Willi Studer. Studer, founder of Studer Revox, began his audio career in 1948, building a small electronics equipment factory in Switzerland. In 1960, he joined with EMT Wilhelm Franz GmbH, Wettington, Switzerland, and began international shipment of Studer products. By 1986, the Studer Revox Group had more than 2,000 employees in ten countries. Studer was awarded an honorary doctorate by the Swiss Federal Institute of Technology in 1978 and received the gold medal of the AES in 1982.

LES PAUL AWARD

The Les Paul Award was created in 1991 to honor those individuals or institutions that have set the highest standards in the creative application of technology. The Les Paul Award is not presented to manufacturers.

This year the Les Paul Award is being presented to Brian Wilson, composer, producer and vocal mastermind of the Beach Boys. In 1961, the Beach Boys created a brilliant new California rock sound that would become American mythology, an endless summer enjoyed around the world.

For a complete list of this year's TEC Awards nominees in the categories of Outstanding Creative, Technical and Institutional Achievement, see page 193.

World Radio History

Introducing...

...the first new Neumann Tube microphone in more than 30 years.

Neumann understands tube microphones. We've been making them since 1928. The U 47, M 49, U 67, and KM 53 are legendary – coveted by engineers and producers worldwide. When asked to reproduce a microphone with the 'classic' characteristics of our older jems, we decided to go one better. Enter the new M 149 Tube. Utilizing the K 49 capsule and headgrill from the classic M 49, coupled with the transformerless FET 100 circuitry from our TLM 50, the M 149 Tube is a modern microphone in the classic Neumann tradition.

The M 149 Tube features 9 polar patterns and a 9-position high-pass filter. With a self noise of 11 dB-A, the M 149 Tube is the quietest tube microphone in the world. The tube and associated circuitry for the M 149 Tube are mounted on modular 'circuit cards.' In the future, a variety of tube modules will be offered, allowing you to customize your M 149... different tubes for different recording situations.

Neumann has brought more than 50 years of design expertise to the M 149 Tube, and it shows in every detail of this truly outstanding microphone.

Neumann... the choice of those who can hear the difference.

The M 149 Tube

Neumann | USA

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Neumann | USA West Coast • Tel: 818.845.8815 • FAX: 818.845.7140
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World Wide Web: http://www.neumann.com

USE READER SERVICE CARD FOR MORE INFO

World Radio History

FEATURES:

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

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

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

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

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

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

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

MORE FEATURES:

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

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

EVEN MORE FEATURES:

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

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

Data backup is achieved through standard audio DAT or Exabyte.

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

World Radio History

Now You Can See It.

OPTIONS:

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

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

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

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

ELECTRONIC MUSICIAN 1996 EDITORS' CHOICE

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

AKAI DIGITAL

Akai Digital
1316 E. Lancaster Ave.
Fort Worth, TX 76102, U.S.A.
Ph. 817-336-5114
Fax 817-870-1271

USE READER SERVICE CARD FOR MORE INFO

INDUSTRY NOTES

Avid Technology (Tewksbury, MA) appointed **William J. Miller** to the post of chairman and chief executive officer...**Sonic Solutions** in Novato, CA, announced additions to its management team: **Andrew Raguskus** is senior vice president/chief operating officer, **Ross Ryding** is vice president of engineering and **George Cagle** is director of technical services...**Tim Schaeffer** was brought on board as new sales and marketing director at **Otari Corp.** in Foster City, CA...Solid State Logic (Oxford, UK) announced the opening of **SSL Asia**, a new sales and service facility located at 447A Macpherson Road, Singapore 368157...**AKG Acoustics** (Northridge, CA) appointed **Doug MacCallum** as the first vice president of U.S. operations...**Richard Elen** is the new vice president of marketing at **Apogee Acoustics** in Santa Monica, CA...Tannoy (Kitchener, Ontario) announced the formation of a new professional division, headed by **Richard Gainsborough, Derek West** and **Philipe Robineau**...Elmwood park, NJ-based **JVC Professional** hired **Scott Watson** as national sales manager of professional products...**JBL** in Northridge, CA, appointed **Soundcraft Canada** in Montreal as its Canadian distributor...**RPG Diffusor Systems Inc.** (Upper Marlboro, MD) announced the formation of a consumer sales division, headed by new product engineer **Pamela Marchesano**...**Pinnacle Micro**, based in Irvine, CA, hired **Jonathan B. Eddison** as vice president, general counsel and secretary...**Samson Technologies Corp.** in Syosset, NY, named **Jack Knight** as director of operations and **John DiMaggio** as product training specialist...**Spirit by Soundcraft** (Auburn, CA) named **Carolina Sales** as its 1995 Representative of the Year. In other Spirit news, the company has a new Website, at http://www.spirit-by-soundcraft.co.uk...**Roger Henderson** was appointed managing director of the **Pro-Bel Group** in Berkshire, UK...Richmond, CA-based **David Carroll Electronics** brought on board **Lee Pomerantz** as director of sales and marketing, product division...**Meyer Sound** has a new Website, located at http://www.meyersound.com/...**Denon Electronics** in Parsippany, NJ, hired **Chris Ishoy** to the position of technical support for its product division...**RLS** has a new location. The address is 480 5th Street, San Francisco, CA 94107. Phone 415/541-0600...**Philip Clement** was promoted to the post of managing director of the film and television division of the **Rank Organization** in Los Angeles...**Steve Sheldon**, general manager of **Rainbo Records and Cassettes** in Santa Monica, CA, recently celebrated his 25th anniversary with the company...**White Instruments** announced a home page on the Web at http://www.eden.com/~white...**John Ackerman** joins **Scharff Weisberg Inc.** in New York City as project manager for its engineering group...Cypress, CA-based **Ramsa/Panasonic** appointed the **M. Schneider Company** as its sales representatives for the Rocky Mountain region...**Crown International** (Elkhart, IN) recently celebrated its place in *Music Trades* magazine's Top 100 List...**The International Teleproduction Society** (ITS) moved its headquarters to 310 Fifth Ave., New York, NY 10018. Phone 212/629-3266; fax 212/629-3265. Also, you can now visit ITS on the Web, at http://www.itsnet.org...**Letrosonics**, headquartered in Rio Rancho, NM, recently celebrated its 25th anniversary in business...**Moviola Digital Storage Products** opened a new rental facility in Hollywood, CA. Call 213/467-3108 for more information...**ProShow Alaska** announced a move to a new headquarters. The address is 552 W. 58th, Anchorage, AK 99518. Phone 907/561-6123; fax 907/561-6124. ■

—FROM PAGE 12, CURRENT

sumer profile, an annual research project designed to determine demographic information about purchasers of sound recordings in the U.S.

The report statistics indicated 1995 figures of $12.3 billion in domestic shipments, a 2.1% increase from 1994 totals of $12.1 billion. Rock and country continue to lead sales, with 33.5% and 16.7% respective market shares. Close behind was urban contemporary, with the most dramatic gain in 1995, from 9.6% to 11.3% of the market. Rap sales decreased from 7.9% in 1994 to 6.7% in 1995.

Record stores still rank as the top outlet to purchase prerecorded music with 52% of the market, a slight dip from 53.3% for the previous year. In addition, the 45-and-older age category purchased 16.9% of units, up from 16.8% in 1994 and up 4.4% from five years ago.

NAPRS DEBUT

The Nashville Association of Professional Recording Services, NAPRS, is a newly-formed organization geared toward promoting Nashville recording services across the U.S. and abroad, in addition to building a stronger, unified recording community in Nashville. The group is currently working on its first annual membership drive; membership is open to all recording studios, producers, engineers, record labels and all organizations interested in promoting Nashville recording. For information, contact vice president Jennifer Rose at 615/329-0555.

UPCOMING SHOWS

The sixth annual REPLItech conference will take place this month, from June 4-6 at the San Jose Convention Center in San Jose, Calif. Call 800/927-8137 for registration information.

Audio 96, an annual forum staged by the Association of Professional Recording Services, will be held in London, from June 19-21. For details, call APRS at (44) 73-475-6210.

The American Women in Radio and Television's Annual Convention will be on June 27-30, at the Ritz-Carlton Hotel and Resort in Naples, Florida. For more information, phone 703/506-3290.

Pro Audio and Light Asia (PALA) '96 is happening from July 10-12 at the World Trade Centre in Singapore. Phone (65) 227-0688 for show information.

The Summer NAMM show will take place from July 12-14 at the Nashville Convention Center. Call NAMM at 619/438-8001 for details. ■

World Radio History

MM-8 & ELF

Time-Align®

An honest system beyond audible response

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

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

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

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

20 years of excellence

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BAG END

TEC

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I'M RUBBER, YOU'RE GLUE

EVERYTHING YOU SAY BOUNCES OFF ME AND STICKS TO YOU

PART PRIME: Why didn't I see this before? It's all so clear! The whole time the answer has been there, in a child's insult. The answer to a rapidly growing problem lies before our very ears. Technology giveth, and technology taketh away. This twisted rambling actually makes sense and has a thread of continuity that is stronger and longer than most of my trick-double-meaning-lead-you-down-whatever-path-your-mind-builds-you-only-to-snap-you-back-to-my-real-point-in-the-last-fifteen-words style. This time I have already told you the answer to a *real* problem: noise pollution.

Noise pollution is so serious now that entire animal species are dying off from it, humans are getting irritable and going postal from it, or at least losing sleep and losing work days from it. And then *in* the work place, we work with sound, but we spend millions attempting to control the sound as soon as we are done with it.

This isn't a diaper problem that you can just bury and later build a planned community on top of; this is immediately acute. As soon as we have heard the sound from our studio monitors, we are through with it. We spend huge bucks and build fancy tricked-out rooms to immediately get rid of it a microsecond after it has passed by our ears.

But I get ahead of myself. The secret to dealing with noise pollution lies, as I said above, not in stopping the noise, not in sticking our fingers in our ears and not in sucking the noise up with giant expensive acoustic sponges. No, the secret lies in the playground insult: "I'm rubber, you're glue. Everything you say bounces off me and sticks to you!"

Let us examine this old counter-attack scientifically. It is a response to something that you don't want to *hear*. Right away, we should have seen it; this is the Holy Grail of noise pollution solutions. The offensive party insults you. You don't want to hear it, so you redefine the laws of physics, specifically acoustics, so that the insult simply bounces off of you, leaving you unaffected, and returns to the

BY STEPHEN ST.CROIX

ILLUSTRATION JOEL NAKAMURA

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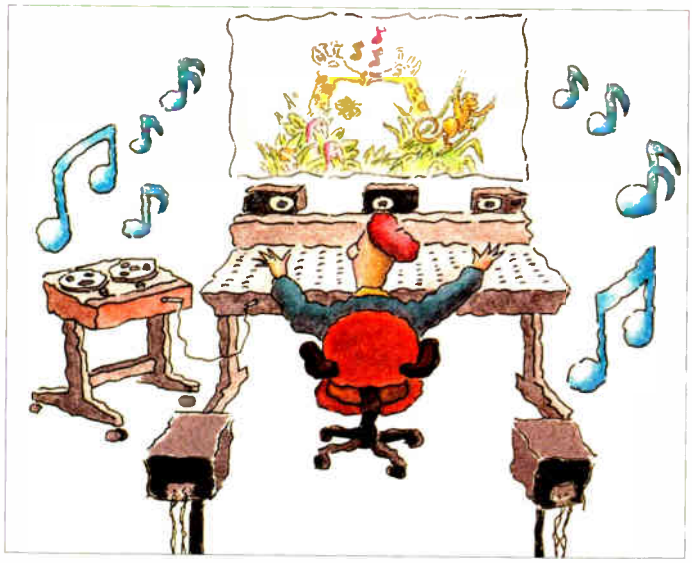
What's the best way to keep your clients



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source—the agitated jerk kid from your gym class. Aha! There is a real answer here!

Now let us look a bit deeper. If we assume that the reflected copy of the original insult is now out of polarity as a function of a complete mirror reflection, and is heading directly at the source, there should be a considerable loss of acoustic power due to *cancellation*! The amount of insult reduction depends, of course, on the exact acoustic characteristics of the rubber of which you are constructed.

Although it is true that I don't remember this clever retort actually saving my ass at any time in grade school, the fantasy of it working has stuck to me. Alas, it was to remain but a daydream for decades. But not *anymore*! A new golden age of noise un-pollution is dawning. For the first time ever, we actually *can* take it back.

PART DEUX:

I live in a beautiful community that was nearly all thick woods 17 years ago when I built. I share these woods with about ten houses and a plethora of wildlife (actually, several plethora). We all built our houses so that we could enjoy the maximum possible visual and audio privacy. As an example, I can't hear the loudest band in my studio if I am one foot outside it in the woods. I can *barely* hear a .44 Magnum fired in the indoor range, unless a bird chooses the same moment to chirp. The neighbors built their houses the same way. Very nice.

The insult simply bounces off of you and returns to the agitated jerk kid from your gym class. Aha! There is a real answer here!

But now they are adding four lanes to an already unfortunately nearby freeway. In addition, they are changing the surface to one which is 7 dB louder—dropping trees and raising the speed limit. All this comes to a noise pollution increase of around 15 to 20 dB! I can

—CONTINUED ON PAGE 226

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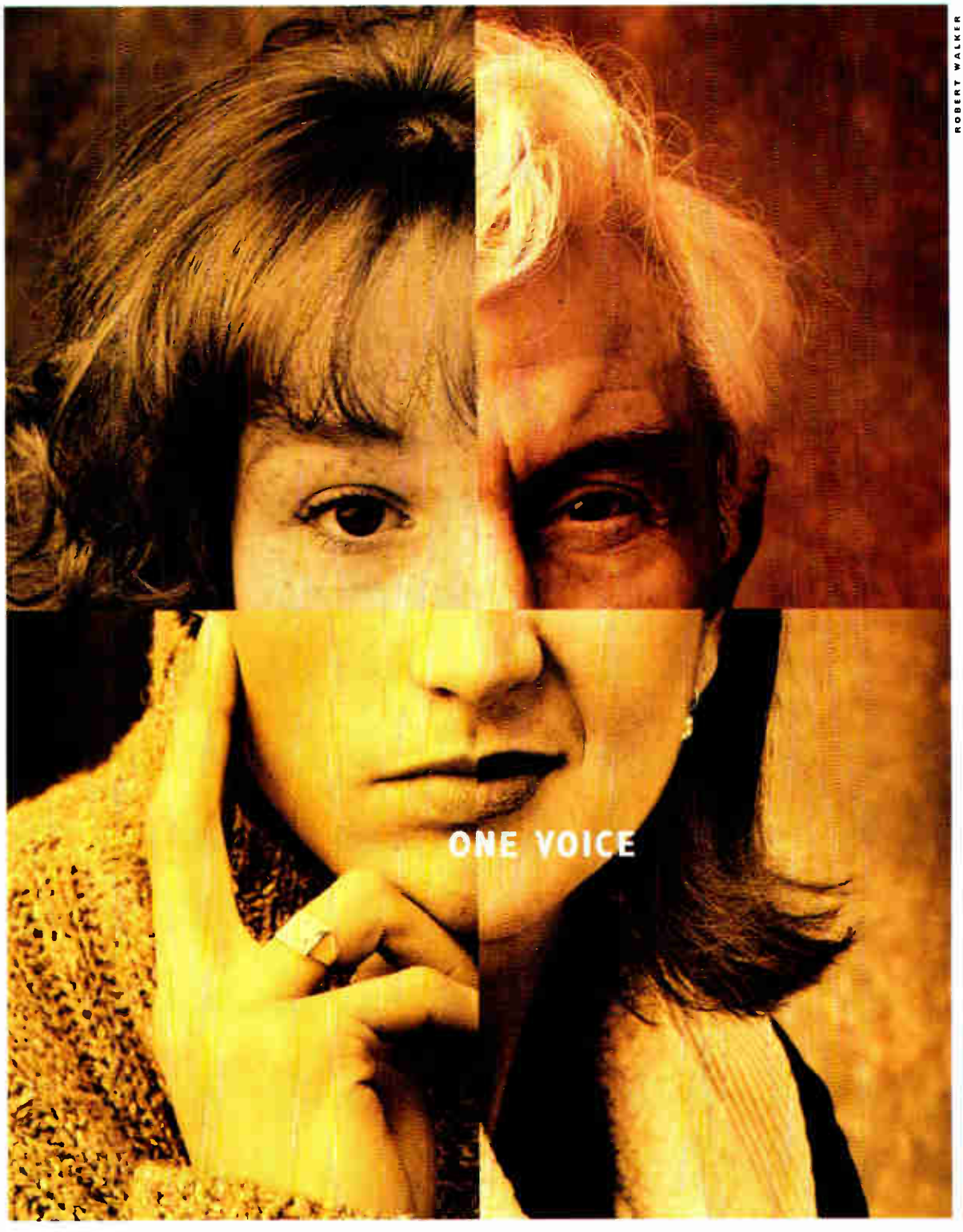

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MANUAL LABORS

TWELVE STEPS TO BETTER DOCUMENTATION

BY PAUL D. LEHRMAN

This month I received a product accompanied by the worst documentation I have ever seen for a piece of electronic equipment. Besides lacking any coherent information on how to configure the thing, how to use it or how to integrate it with anything else, this "user manual" was so lame that it took me two days and three calls to the distributor before I realized that three parts were missing and two parts were completely nonfunctional.

To be sure, this is an extreme case, but in general, the documentation in our industry stinks. As my editor puts it, writing about the state of manual writing in the pro audio field is like kicking a man when he's down.

But it doesn't have to be that way. Good user manuals (and such things do exist) can make customers feel good about a manufacturer's products, and make them eager to check out the next ones. Taken a step further, documentation can determine whether we assimilate all of the wonderful and intimidating new tools that are coming at us at warp speed, or whether we're going to run screaming out of our studios and off to the hills of Vermont to tap sugar maples.

It costs little money—only a small fraction of what R&D costs—and the payoff can be substantial, although that payoff is measured more by what *doesn't* happen than what does: The more information in the manual, and the easier it is to find, the fewer tech support calls users will make, and the less time customers will spend on hold while the manufacturer's overworked support staff get their ears chewed off by other angry users. Meanwhile, all over the world, fewer studio clients will steam quietly (and sometimes not so quietly) due the decreased down time. Everybody benefits!

So whatever you've just picked up, whether it's a new compressor, console, sampler or the latest DSP software, you can always use some help in getting up to speed with it. Every piece of new gear has some quirks that you're not going to find right away. And really complicated pieces, like DAWs and multi-effects processors, can take you weeks to figure out on your own. Just as with Harpo

ILLUSTRATION: CHARLES STUBBS

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Seems like everyone is talking about morphing these days. Yes, morphing is becoming popular, but only the Wizard M2000 offers you the truly unique application called Dynamic Morphing™.

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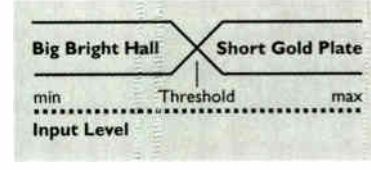

You owe it to yourself to experience Dynamic Morphing as well as the other outstanding features in the M2000. Check out the 250 factory presets, the 20 bit audio path, the AES/EBU and S/PDIF connectors, the dithering tools, as well as the very intuitive user interface.

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1 VLZ CIRCUITRY FOR ULTRA-LOW NOISE AND CROSSTALK. *Did we just make up a fancy name for the same old circuitry? Nope. VLZ (Very Low Impedance) is a Mackie innovation based on solid scientific principles. Through the careful deployment of high operating current and low resistor values at critical points in our consoles, we're able to dramatically reduce thermal noise & adjacent-channel crosstalk. Open up all the channels, subs & masters on a Mackie 8•Bus console and compare what you hear (or rather don't hear) with any Brand X console. Because Very Low Impedance circuitry needs loads of high current, we ship a humongous, 220-Watt Triple-Regulated power supply with every 8•Bus*

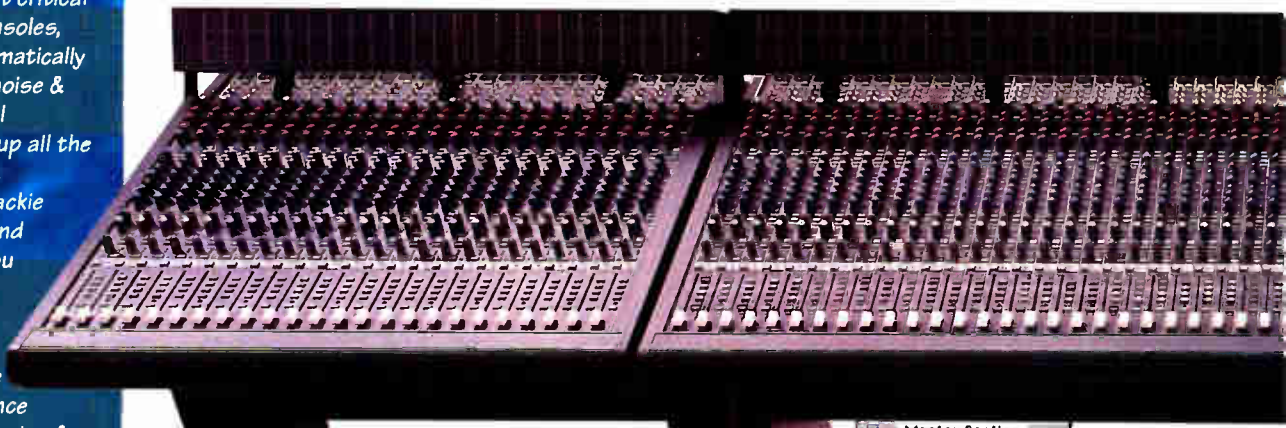
1 Mention in this ad denotes usage only, as reported to Mackie Designs, and is in no way intended to constitute official endorsement by the artists or groups listed.

*As compiled by a leading Independent Console Video Factoid Evaluation Laboratory. Your count of superior Mackie 8•Bus console features may vary.

2 IT EXPANDS ALONG WITH YOUR NEEDS AND BUDGET. *You'd be surprised just how many 8•Bus console setups like the one below are currently in use. But you don't have to start out this way. Start out with a 24•8 or 32•8 and then grow your 8•Bus console 24 channels at a time with our 24•E add-on modules. 1, 2 or even 3 of 'em connect in minutes. They come with their own 220-watt power supply; optional meter bridges are available.*

3 IMPECCABLE MIC PREAMPS. *A console can have motorized dooflammers and an optional MIDI espresso attachment, but if the mic preamps aren't good, you don't have a fully-useful production board. Our discrete preamps with large-emitter-geometry transistors have won a critical acclaim for their exceptional headroom, low noise (–129.5dBm E.I.N.) & freedom from coloration. VLZ circuitry in the preamp section also reduces crosstalk.*

4 THIS CONSOLE JUST PLAIN SOUNDS GOOD. *Sure, you may be able to buy a Brand X console for less. But you end up with a console that sounds like...well...a Brand X console. Granted, we're getting into a pretty subjective area here...but we have tall mounds of 8•Bus warranty cards that rave about our consoles' "clarity," "sonic purity," "sweet sound," "transparency," "lack of coloration" and a lot of other superlatives we wish we'd thought of first.*



Above: 24•E 24-ch. expander with optional MB•E meter bridge and stand.

6 MAC® & WINDOWS® 95-BASED AUTOMATION THAT'S RELIABLE, PROVEN AND AFFORDABLE.

Along with affordable digital multitrack recorders, the Mackie 8•Bus has made it possible to do world-class productions on a modest budget. But until now, Big Studios have still had one remaining and unattainable creative "secret weapon"... computerized level automation. That's why we developed the UltraMix™ Universal Automation System. It gives you fully editable and recallable control of input, channel and master levels — plus features not found on even the most expensive proprietary Mega-Console automation systems. Equally important, it doesn't degrade sound quality, introduce zipper noise or cause audible "stepping." UltraMix is currently being used to mix network television music themes and on several major album projects – by seasoned engineers who grew up on Big Automation Systems. Their verdict is that UltraMix is a serious automation solution – stable, reliable and frankly easier to use than more expensive systems. The basic system controls 34 channels and can be expanded to as many as 128 channels. UltraMix Pro™ software, for 030/040 & Power PC Macintoshes and PCs (Windows® 95 required), includes a wealth of features like editable fader curves, built-in level display, unlimited subgroups, SMPTE time code display, event editor with pop-up faders, optional control of outboard effects devices and the ability to play Standard MIDI files from within the program.

UltraMix™ includes the Ultra-34 Interface, UltraPilot Controller and software for $2797 suggested U.S.. retail. Macintosh® or Windows® 95-compatible PC not included.

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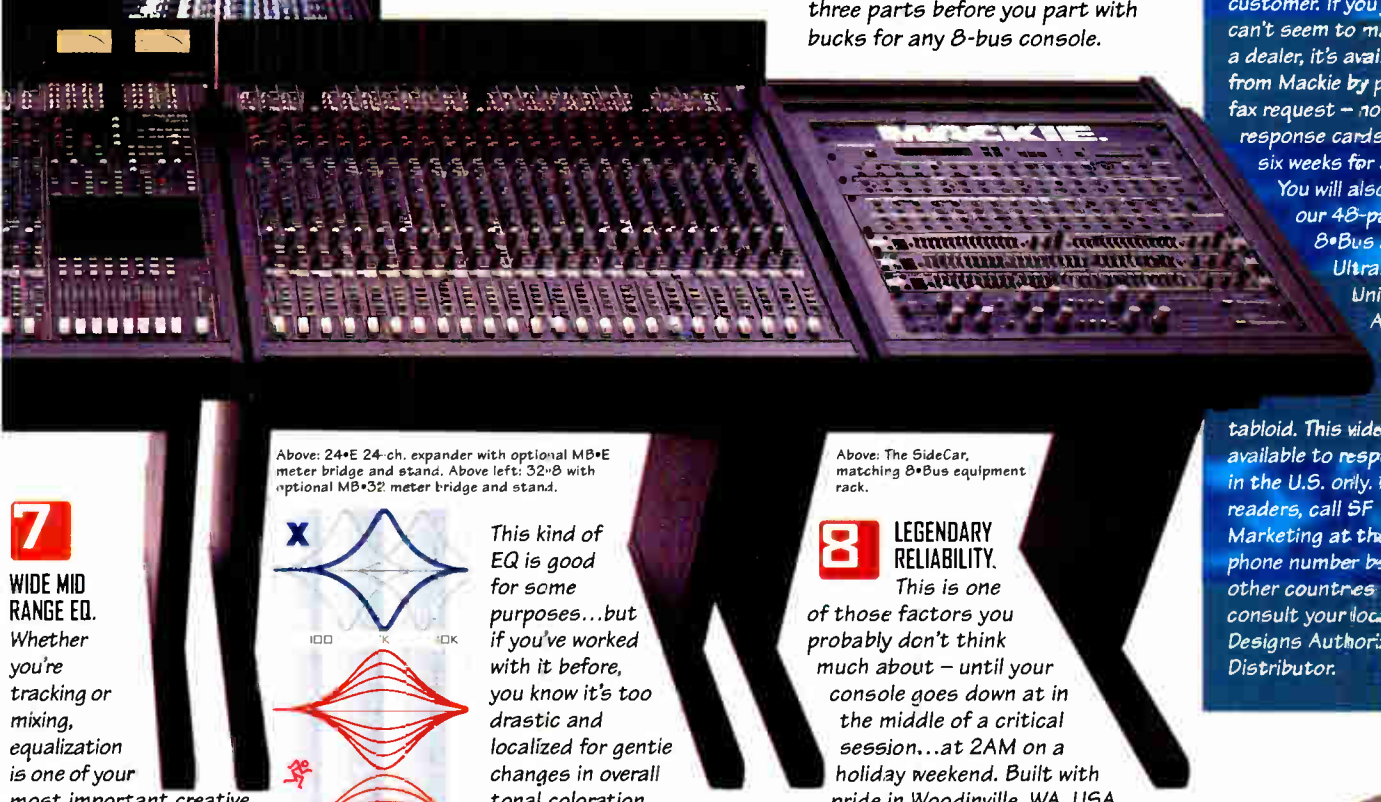
SONS TO BUY OUR 8•BUS CONSOLE. VIDEO CONTAINS AT LEAST 71.5* MORE.

5 PROFESSIONALS REALLY USE THEM. *The members of Boyz II Men could have afforded any console they wanted for their studio's second room. They chose an 80-input 8•Bus with 102 channels of UltraMix™ automation. In the studios of artists as diverse as k.d. lang, Yes, Queensryche, Lee Roy Parnell, Aerosmith, Bryan Adams, Carlos Santana, Whitney Houston, Eric Clapton & U2, our consoles really are used to make great music.*

FREE VIDEO! *Choosing the right 8-bus console can be pretty confusing these days. That's why we've whomped up a free video that gives you some solid reasons to buy a Mackie 8•Bus. This eclectic compilation contains excerpts from our epic 8•Bus Video Owner's Manual, an introduction to UltraMix™ Automation System and an award-winning short subject, The 2nd Mackie Home Video. Watch all three parts before you part with bucks for any 8-bus console.*

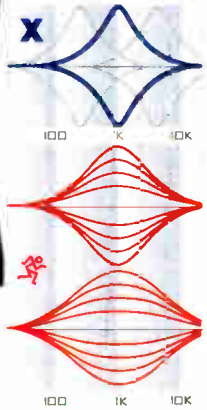
FREE VIDEO FINE PRINT. *Visit your local Authorized Mackie Dealer for a real live 8•Bus demo, and then snag your free video. This handsome offer is good while supplies last, or until August 31, 1996, whichever occurs first. So, you snooze, you looze. Limit: one per customer. If you just can't seem to make it to a dealer, it's available from Mackie by phone or fax request – no reader response cards. Allow six weeks for delivery. You will also receive our 48-page 8•Bus and UltraMix™ Universal Automation System color tabloid. This video offer is available to respondents in the U.S. only. Canadian readers, call SF Marketing at the toll-free phone number below. In other countries please consult your local Mackie Designs Authorized Distributor.*



Above: 24•E 24-ch. expander with optional MB•E meter bridge and stand. Above left: 32•8 with optional MB•32 meter bridge and stand.

Above: The SideCar, matching 8•Bus equipment rack.

7 WIDE MID RANGE EQ. *Whether you're tracking or mixing, equalization is one of your most important creative tools. We concentrated on important things like giving you Classic English Console EQ capabilities. By that, we mean extremely-wide-bandwidth peaking equalization that can be used to achieve effects that simply aren't possible with narrower EQ. Most Brand X midrange EQs have a fixed bandwidth of about 2 octaves (blue graph above right). You can sweep it up & down the frequency spectrum, but the "sharpness" of the EQ curve is always the same.*



This kind of EQ is good for some purposes...but if you've worked with it before, you know it's too drastic and localized for gentle changes in overall tonal coloration. The 8•Bus' true parametric Hi Mid lets you spread the bandwidth out to as much as 3 octaves (red curves at left). That extra octave of "width" gives you a whole new creative palette.

8 LEGENDARY RELIABILITY. *This is one of those factors you probably don't think much about – until your console goes down at in the middle of a critical session...at 2AM on a holiday weekend. Built with pride in Woodinville, WA, USA, 8•Bus consoles have an enviable 3-year track record for enduring continuous, round-the-clock use and abuse.*

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Marx, who, after a dozen years playing the harp in vaudeville, finally consulted a harp teacher, you may in the long run find you've been using it all wrong.

Unfortunately, many manufacturers forget this. Given the insular nature of the development process, they forget that the rest of the world was not in the room when they made all those brilliant engineering and design decisions. They don't realize that they have to explain to users what all this stuff is and does—they won't get it by osmosis.

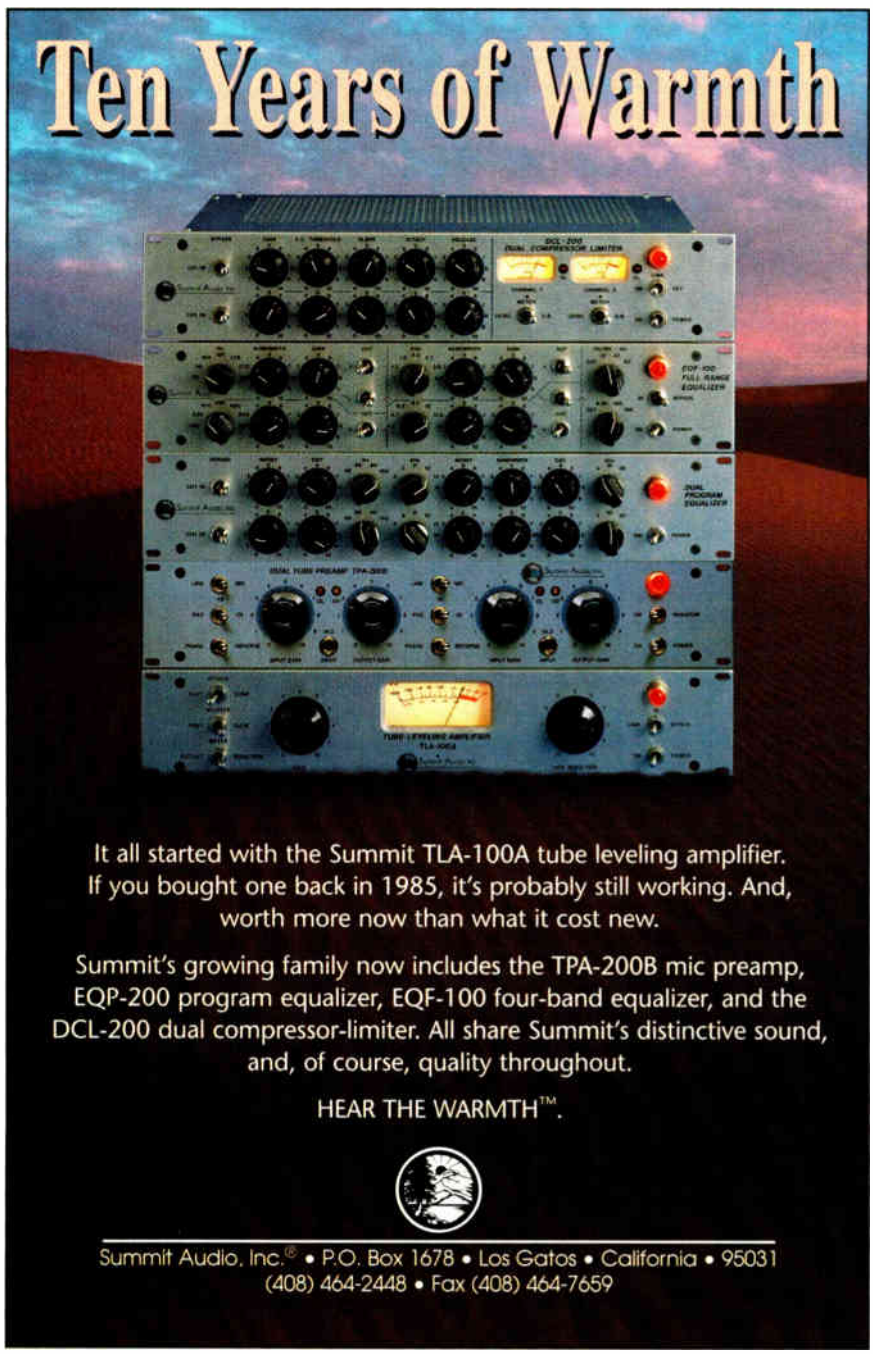
I'm not exactly neutral here: Writing manuals is one of the things I do for a living. But I'm not selfish about it, and I appreciate a good manual even if I *haven't* written it. So in my spirit of generosity, here are 12 rules I follow when I'm working on a project.

Put the important stuff up front. The first computer-music system I bought came with a 200-page, non-indexed, typewritten manual, with the installation instructions stuck in an appendix in the back. I slogged through a dozen chapters, unable to actually *do* any of the things I was reading about, until I happened to stumble across those instructions. Don't force me to search for crucial information: If your device has quarter-inch outputs, let me know whether or not they're balanced, and what their operating level is and how to change it. If I need to format a tape or disk before I record anything, tell me how to do that right away. If you make computer software, keep in mind that, believe it or not, some of your customers might want to use their computers for some purpose *other* than running your software, and if there's a program or system file that I might already be using that is incompatible with yours, don't bury that info in a Read Me file—make sure that checking for incompatibilities is part of the installation process.

Documentation can determine whether we assimilate all of the wonderful and intimidating new tools that are coming at us at warp speed, or whether we're going to run screaming out of our studios and off to the hills of Vermont to tap sugar maples.

Make the user comfortable. If I've bought a new toy, I want to get going on it right away. Not just because I have the patience of a 4-year-old, but because I want to feel good, as soon as possible, about having spent all that money. Give me an introductory tutorial or Quick Start section that will walk me through some of the more interesting and unique things your product does. I don't need to be told everything about what I'm doing while I'm doing it, I just want to see what's cool. Once I've had a peek at the highlights, I can relax and spend time learning the thing more thoroughly.

Have a special section for upgrades. If a substantial portion of your user base has worked with previous versions of your product, make sure



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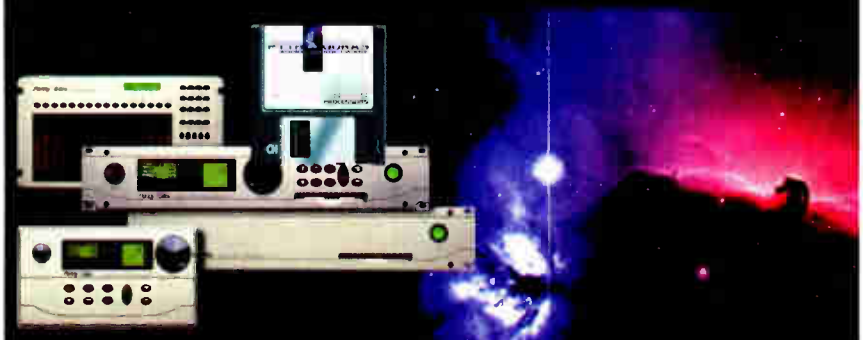

Illustrated (from top):
DC16 Digital Controller
PP10 Audio Multiprocessor
PP20 Audio Multiprocessor
PP20R Remote

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there is a section in your manual for them that describes all the changes and new features. Don't force them to pore through 300 pages of manual just to find out that the drop/non-drop time-code switch has been moved from menu A to window Z.

Use tutorials. Even beyond introductions, tutorials are by far the best way to learn about new tools. To deconstruct the old proverb: *Tell* a man all about the evolution of aquatic chordates, the physics of barbed steel and the nutritional value of segmented annelids, and you'll put him to sleep; *show* him how to put the worm on the hook and throw it into the water, and he'll have trout almandine all his days. Telling me how a feature works is far less valuable then telling me how to use it, and the best way to do that is through example. No, a tutorial can't cover every single feature of a product in depth, but it will get my excitement level up. It will stimulate my mind and make me far more receptive to learning. Then I'll be happy to dig into other features, no matter how they're presented.

If a feature cannot easily be described and its function clearly and unambiguously communicated, maybe there's something wrong with the design.

Make it easy to find things. Two words: *good index*.

Use in-context help, but don't depend on it. Onscreen help menus or display pages are great when a user has to find out something quickly. The text that appears there is just as important as the printed text, so spelling errors and weird grammar are no-nos. But unless you're building a true Hypertext engine for it, onscreen help can't go into nearly the same depth as a book, and so you shouldn't consider it a replacement for the printed manual.

Anticipate how things can go wrong. Components fail. Cables break. Software files get corrupted (usually during the installation process). If you

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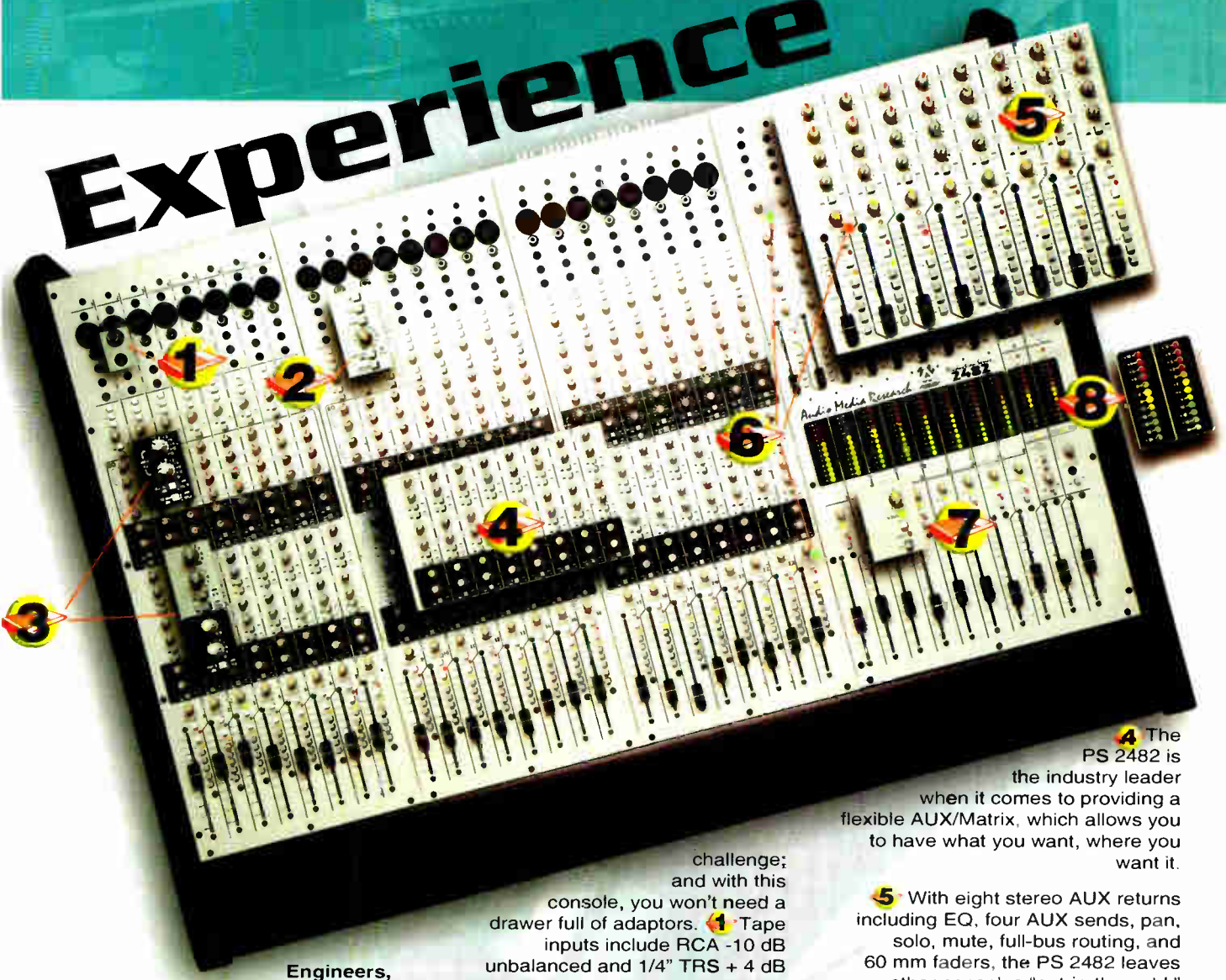
Experience



Engineers, producers, and recording artists with extensive commercial recording experience will tell you that a recording console has to be functional when the clock is ticking, but must also have superior auditory performance. That experience created the PS™ 2482. Peavey's Audio Media Research division has made "in-studio" functionality and auditory performance key objectives in the PS 2482 production console.

To get the best signal performance, input levels need to match. The PS 2482 meets that challenge; and with this console, you won't need a drawer full of adaptors. 1 Tape inputs include RCA -10 dB unbalanced and 1/4" TRS + 4 dB balanced connectors, in addition to XLR mic and 1/4" line-in and direct outputs. 2 Phantom power, polarity reverse, and pad switches are functions that experienced engineers will not do without, so we've incorporated them into our discrete preamp's gain section. A channel/tape switch allows you to "flip" between channels and tape (like every good in-line console should), and we also give you a high pass filter.

Routing is paramount to any recording console. The PS 2482 offers more flexibility with routing and features, available to each path, than its closest competitor. 3 EQ and AUX sends can be made a part of the MIX B path.

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.

Experience will tell you that the PS 2482 is designed to perform in the studio. Your auditory senses will enjoy the *experience*.

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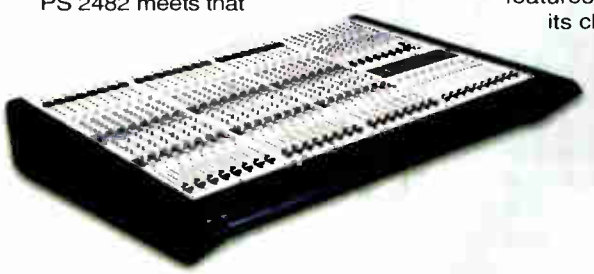

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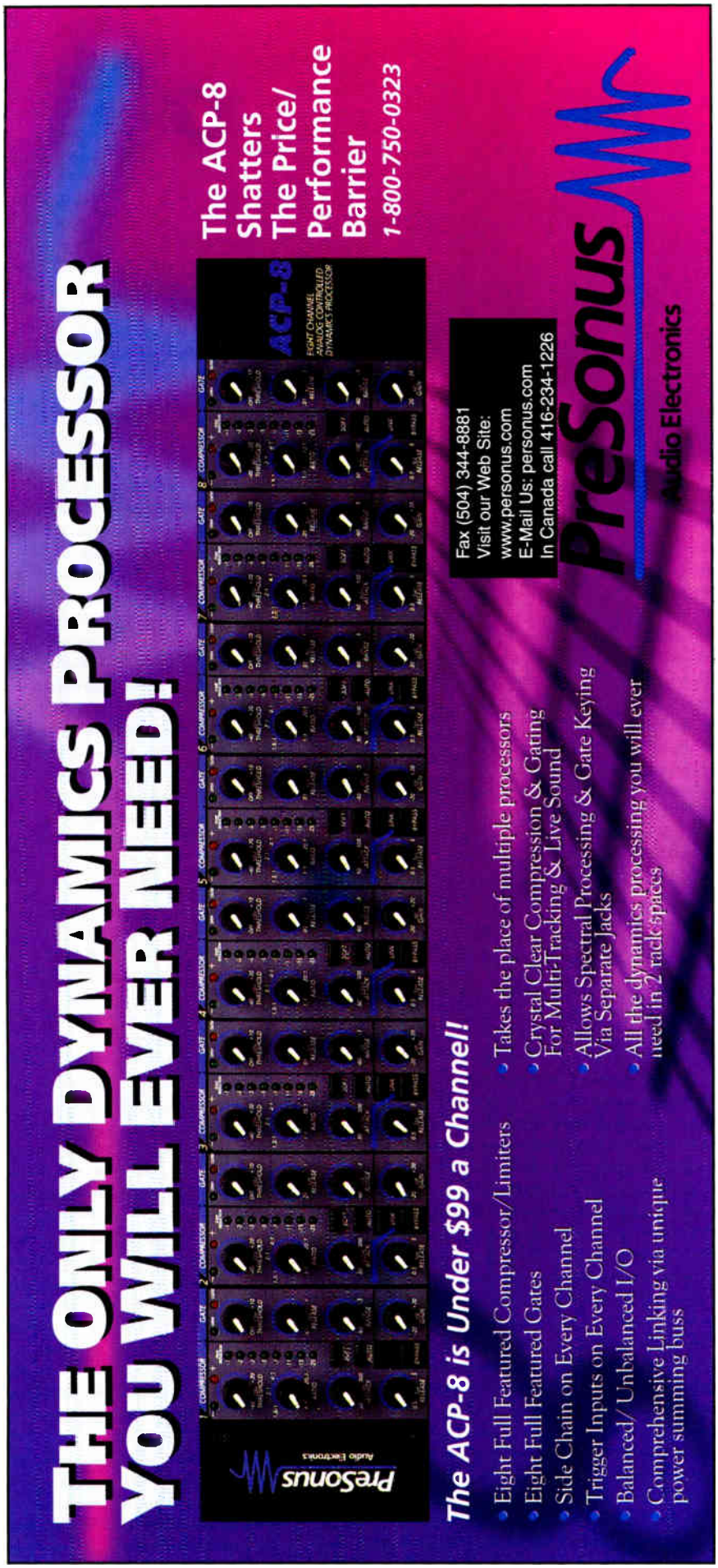
provide me with running checks on everything as I put your complex system together, then when something does happen, I can figure out where it went wrong. And when I call your tech people up, I can do something more constructive than whine, "It's not working!" Also, people can hook things up wrong and do things in the wrong order. Try to make allowances for that (we may be idiots, but we pay your salaries!), and walk me carefully through particularly delicate operations. Lots of "right and wrong" drawings can help. I never, *ever* again want to see the words, "Before you do the procedure described in the previous paragraph..."

Don't be afraid of redundant information. Some manual writers think it's heresy to put the same information in more than one place, and so their documentation is full of cross-references: "Before you save a file, see the backup instructions in chapter 14, the installation guide in chapter 3 and the troubleshooting grid in chapter 21." Whenever I see that, I'm tempted to run to my photocopy machine and copy all the referred-to pages, and stick 'em in all the sections that refer to them. It doesn't cost much more to repeat the relevant paragraphs of those chapters where appropriate, and it will save me and my kind lots of aggravation (and keep the manual a lot neater).

Don't bury me with thousands of inserts. Speaking of neatness, if I really want stray slips of paper lying all over my floor, I'll buy some magazines and shake out all the damn subscription cards. I can't believe how many cutting-edge companies, whose products constantly require upgrading, put their manuals in bound books. This means I'm constantly forced to deal with a flurry of multicolored, easy-to-lose Read This Now sheets, or lengthy Read Me disk files that refer to stuff about which I have no idea, and when I do get to the level of understanding them, I'll have totally forgotten they're there. Looseleaf or spiral-bound manuals allow for easy editing and expansion—and they have the added advantage of being able to lie flat on a music stand, console or copy stand (as long as you don't use a 3-inch binder to hold a quarter-inch worth of paper—that's pretty dumb, too). Plus, they often have pockets where I can store my key disks and all those upgrade disks you're bombarding me with.

Use native English speakers. I'm not a linguist, so I can't tell you why



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this is, but Japanese people seem to expect very different things from their documentation than Americans do. It's not just a language thing: The thought processes themselves are, apparently, utterly different.

I once read an article by a North American who had just been hired by a Japanese company to do their English documentation. The first thing he did, he said, was translate the Japanese manuals. Reading that, I knew he wouldn't last long—and he didn't. The stuff he was coming out with was no more appropriate for the American market than what his predecessors had done, although the grammar was better. What he needed to do was toss the Japanese manual in the garbage, sit down with the engineering spec and the designers and start from scratch. No matter how much English they've taken in college (and some of them seem to have flunked it in high school), Japanese writers don't know how to construct a manual for users in the English-speaking world. But even though we are their largest market, a lot of companies in Japan (other Asian and some European countries are just as guilty) just don't get this—and yet they wonder why their documentation is constantly getting hammered in the press.

Don't let your engineers write manuals. Speaking of non-native English speakers...No, I'm kidding: I know plenty of engineers with good verbal skills. But when it comes to holding the hand of someone coming to their product anew, verbal skills aren't enough. R&D engineers are way too close to the product to be of any help to someone who doesn't know it at all. Manual writers have to be "user advocates," who put themselves in the user's chair and say, "What do I need to know, and when?" Engineers need to be an integral part of the documentation process—they know how a product works, they know what's cool about it, they know how elegant it is—but they can't be in charge of it. They've long forgotten how someone might approach the product for the first time, and will have a very hard time communicating all the cool product features to someone who hasn't gone through all that they have.

Include the documentation writer in the product development process. Instead of hiring or assigning someone to write the manual when a product is finished, get that person involved in the product early. He or she can help when it comes to user interface issues: If a feature cannot easily be described and its function clearly and unambiguously communicated, maybe there's something wrong with the design. The documentor should be constantly thinking about how people are going to use the product and may well have some input into features or how they are organized that the engineering and marketing people haven't thought of.

Those who design and build tools (much as we who use them) feel that there's a lot of art in what they do. That art is about combining form, function and utility. Do it right, and you can change the world; do it wrong, and the product gathers dust in a warehouse. Documentation is an art too, and the same elements come into play, with the same effect on success or failure. It's time that manufacturers start taking it as seriously as the rest of the development process. ■

Paul D. Lehrman has written manuals for companies in Japan, Germany, Korea, Massachusetts, California and other foreign countries. He thanks Steev for the maple tree image.

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RECORDING ACOUSTIC INSTRUMENTS

MIKING TIPS & TECHNIQUES

BY MICHAEL COGAN

Mention the term "acoustic instruments," and visions of celli, mandolas and dreadnaught guitars may come to mind. Yet, in a way, all instruments are acoustic. When fully electronic instruments such as synthesizers are played back through speakers or headphones, acoustical waves are created, but for the purposes of this article, let's use a more limited definition.

By acoustic instruments, let's consider ones that produce a sound naturally in a space. For instance, a venerable Stratocaster lovingly plugged into an ancient Twin Reverb and tweaked by the guitarist until it produces exactly the right searing tone is—to me at least—an acoustic instrument. The same Strat plugged into a Rockman is not. Drums are an acoustic instrument, albeit one requiring somewhat different treatment from others. *[For more information on this topic, see the two articles on studio and live drum miking elsewhere in this issue—Ed.]* The voice is an acoustic instrument. And for that matter, an entire jazz band or symphony orchestra can be treated as an acoustic instrument. What all of these things have in common is that the job of the engineer is simply to capture what can be heard live.

ILLUSTRATION: PAUL MOCH

What all acoustic instruments have in common is that the job of the engineer is simply to capture what can be heard live.

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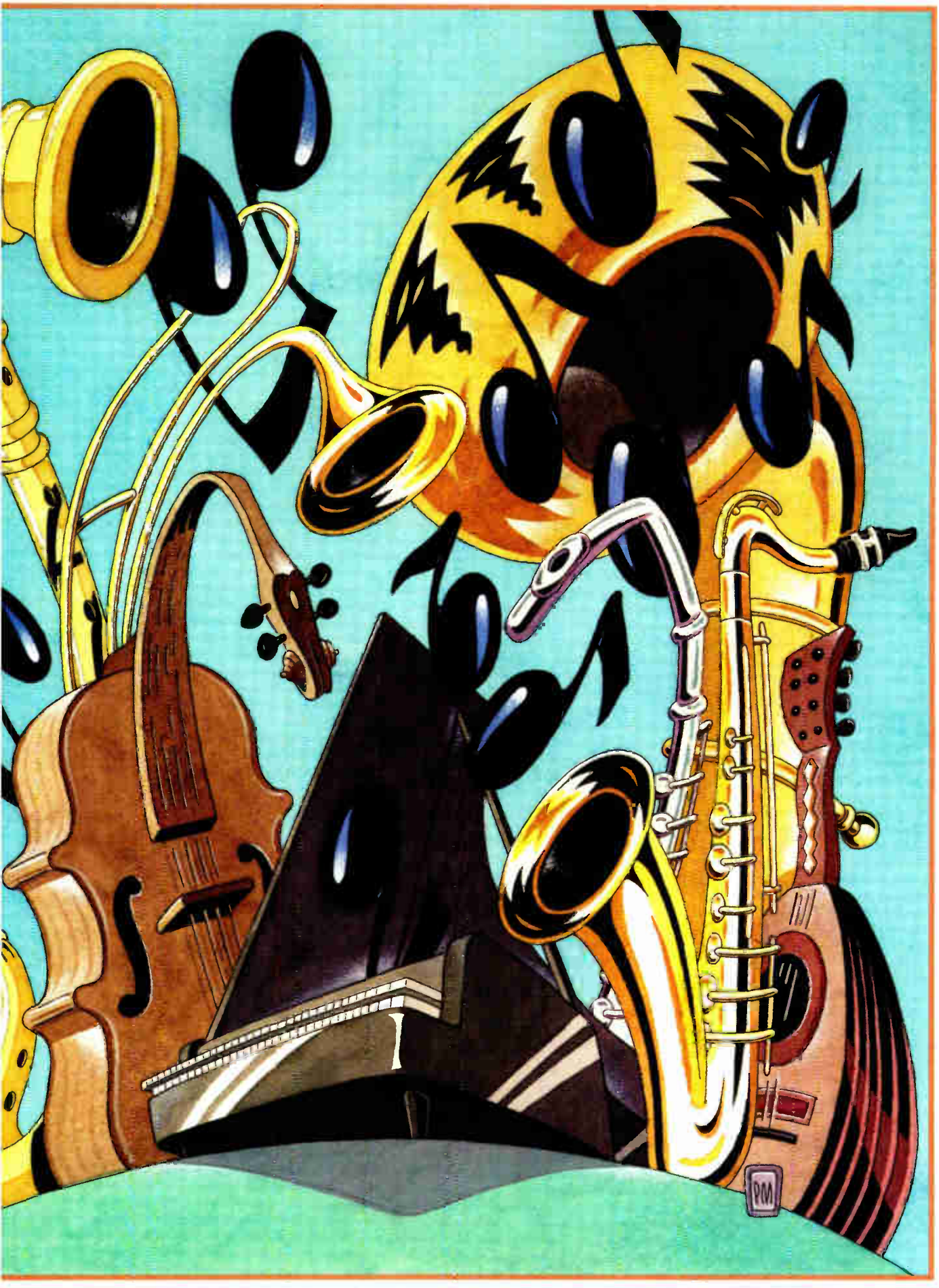

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FOUR EASY STEPS

Any acoustic recording session should include the following steps:

1. Go into the studio and listen to the instrument being played live.
2. Put up one or more mics, making your best guess at position and type.
3. Go into the control room and listen to the sound.
4. If the sound in the control room does not match the live sound, change something.

While this is obviously a gross simplification, it's amazing how far you can stray from this idea. Some years ago, I developed a reputation for recording traditional jazz, also known as "trad" or "Dixieland." There are many trad musicians in the San Francisco Bay Area, and it seems that most of them had what I refer to as a BSE, or Bad Studio Experience. They'd gone to studios where the engineer typically isolated the musicians, used tons of outboard equipment and tried all sorts of trick mic positions. I, on the other hand, just applied the same techniques to cornet, trombone, etc., as I had on folk and bluegrass groups, and it worked! The musicians thought I was an expert on trad jazz. The cornet player, for example, came up to me and exclaimed how I must be a great fan of Bunk Johnson because I'd managed to make him sound just like Bunk. I had to nod my head and not let on that I didn't know Bunk Johnson from Louis Armstrong. It was really very simple: The cornet player was making his instrument sound like Bunk Johnson. All I had to do was capture it.

Having stated the obvious, I'd like to offer some specific techniques that work for me. We'll begin by discussing methods of recording individual instruments, such as in overdub situations. Later, we'll talk about combining these techniques to record an entire group at once. But remember that these are merely starting points; the most important thing is to use your ears. If something doesn't sound right, it *isn't* right.

MIC CHOICES

A word about mic choices. The first choice should be a condenser mic. We're looking for an accurate representation of the natural room sound, and nothing does it better than a condenser. I tend to use the small-diaphragm mics for fretted stringed instruments (guitar, mandolin, banjo, etc.), violin, viola and sometimes piano. These are probably the least-colored-sounding mics available. Besides the usual cardioids, try using omnis, such as B&Ks or Neumann KM83s. Omnidirectional is the most natural pattern for a condenser mic and tends to capture more of the instrument's entire sound. Omnis are also free of the "proximity effect," which is the bass boost you hear when you get too close to a cardioid. You can use omnis much closer and still have them sound natural. In fact, you sometimes have less leakage with omnis than with cardioids simply because you can get closer.

I prefer the large-diaphragm condenser mics (U87, C-414 and that ilk) for larger or louder instruments. Maybe it's just an illusion, but bigger mics seem to have a bigger sound. Here, besides cardioid, I like to experiment with the figure-8 pattern. Like the omni pattern, there's no proximity effect, and the sharp notch at 90 degrees can be very useful.

For example, I sometimes encounter a singer who wants to record guitar while singing and have sufficient isolation to fix either part. Although I try to discourage this, if I must do it, I use two large-diaphragm condenser mics set to figure-8, one on the voice and one on the guitar. I place the guitar mic over the end of the fingerboard—pretty much flat to the guitar face—but angled down so the 90° notch points straight at the musician's mouth. I place the vocal mic in front of the mouth, slightly low and toward the fingerboard (to compensate for the fact that they're probably looking at their hands while singing) and tilted up so that the notch points at the sound hole of the guitar. It's not perfect, and frankly, I believe any leakage is too much when you're trying to replace parts, but it is amazing how much isolation this method provides.

The next mics I consider are ribbons, such as the old RCA 77DX or the even older RCA 44. I think of these as the "un-condensers," as they are about as different as you can get from a condenser mic. While a condenser has more presence than Santa Claus, ribbons are warm and fuzzy and blend in better. They give you a big fat sound and tend to gloss over imperfections. My son even used my 44 for the vocals with a punk band! I particularly like them on tuba and cornet—but not trumpet! I also use a pair of 77s in stereo, especially when I'm looking for an older "retro" sound, such as with swing. I set them to cardioid (or "U") and triangulate them as if they were two corners of an equilateral triangle, with the instrument at the third corner.

Almost as important as the microphone is the room itself. In fact, the

I prefer the large-diaphragm condenser mics (U87, C-414 and that ilk) for larger or louder instruments. Maybe it's just an illusion, but bigger mics seem to have a bigger sound.

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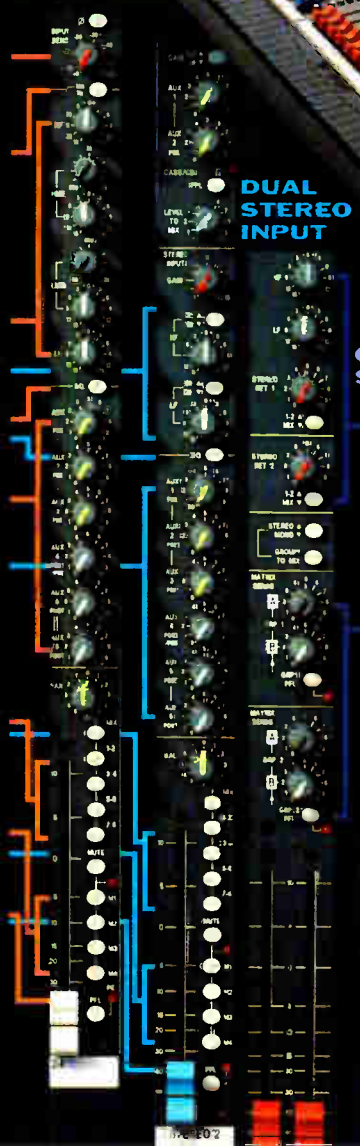

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room has more to do with the sound than many people realize. Not long ago, I had an experience recording a vocalist using one of my favorite vocal techniques, a single KM83 omni so close that it nearly touched the vocalist's lips. The project was mixed at a different studio, one with great mixing facilities but not much of a room. During the mix session, the producer discovered that they needed to fix part of the vocal and borrowed my KM83. I went along for the fun of it and found that the vocal sound was quite poor. I could clearly hear the effects of the room—reflections off the walls, hardness due to resonances, etc.—even though the microphone was less than an inch from the vocalist's lips! This brings us to the miking technique itself.

THINKING DOUBLE WHILE SEEING SINGLE

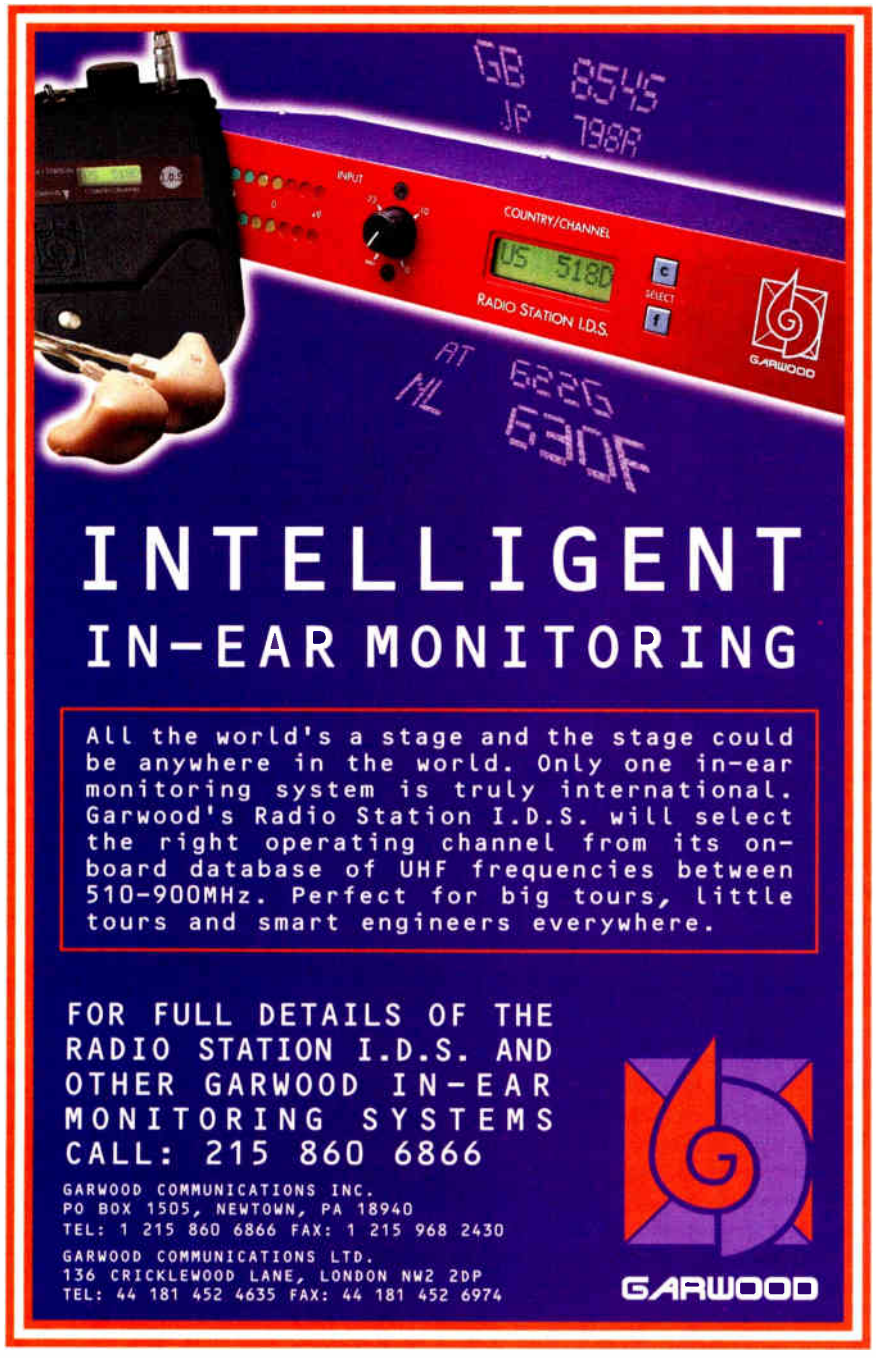
I try to use at least two microphones on nearly every instrument, and I record them on separate tracks. This may sound wasteful, but the results are worth it. Of course, you won't always have the luxury of sufficient tracks to do this, but some advance planning can really help.

This approach is more important with some instruments than others. The concept here is to get away from "panned mono," which occurs when each instrument is recorded on one track and then the tracks are panned in the final mix. Each instrument then appears to come out of a precise location. For some instruments, such as brass and voice, the sound does come out of one location, more or less, so there's less of a need to burn two tracks. For example, if the vocalist is just part of the band (as is often the case with trad jazz) and I know they'll nail their vocal in one or two passes, I will use two mics and two tracks. However, if the vocal is featured and I know there will be many passes at it, I might let the stereo image go and record it on one track to conserve space. Interestingly, as time goes on, I'm more inclined to use two tracks for vocals, and I'm usually glad when I do. And sometimes, with artists who are overly fastidious about their performances, the producer is happy to say, "Sorry, we're out of tracks," particularly after Take #47.

I use multiple mics in three ways. The first is to use a stereo pair or a stereo microphone. Although I've used all of the standard stereo techniques—X-Y cardioids, Blumlein (figure-8 mics at right angles) etc.—my particular favorite is the "spaced omni" setup, in which a pair of small-diaphragm omni condensers are set up side by side, 6 to 12 inches apart. This is ideal in a good room, where leakage isn't a problem. In fact, I've done entire projects in which every overdub was done this way, with excellent results.

More often, I'll use two microphones in different locations. This works well with acoustic guitar. Try placing one microphone over the end of the fingerboard and another somewhere around the bridge area. Record these on separate tracks and pan them to two different locations in the mix. The result is something far more—dare I use the word—"organic" than one mic in one location. This also gives good results with other fretted instruments such as banjo, mandolin etc.

My third "two-mic" technique is



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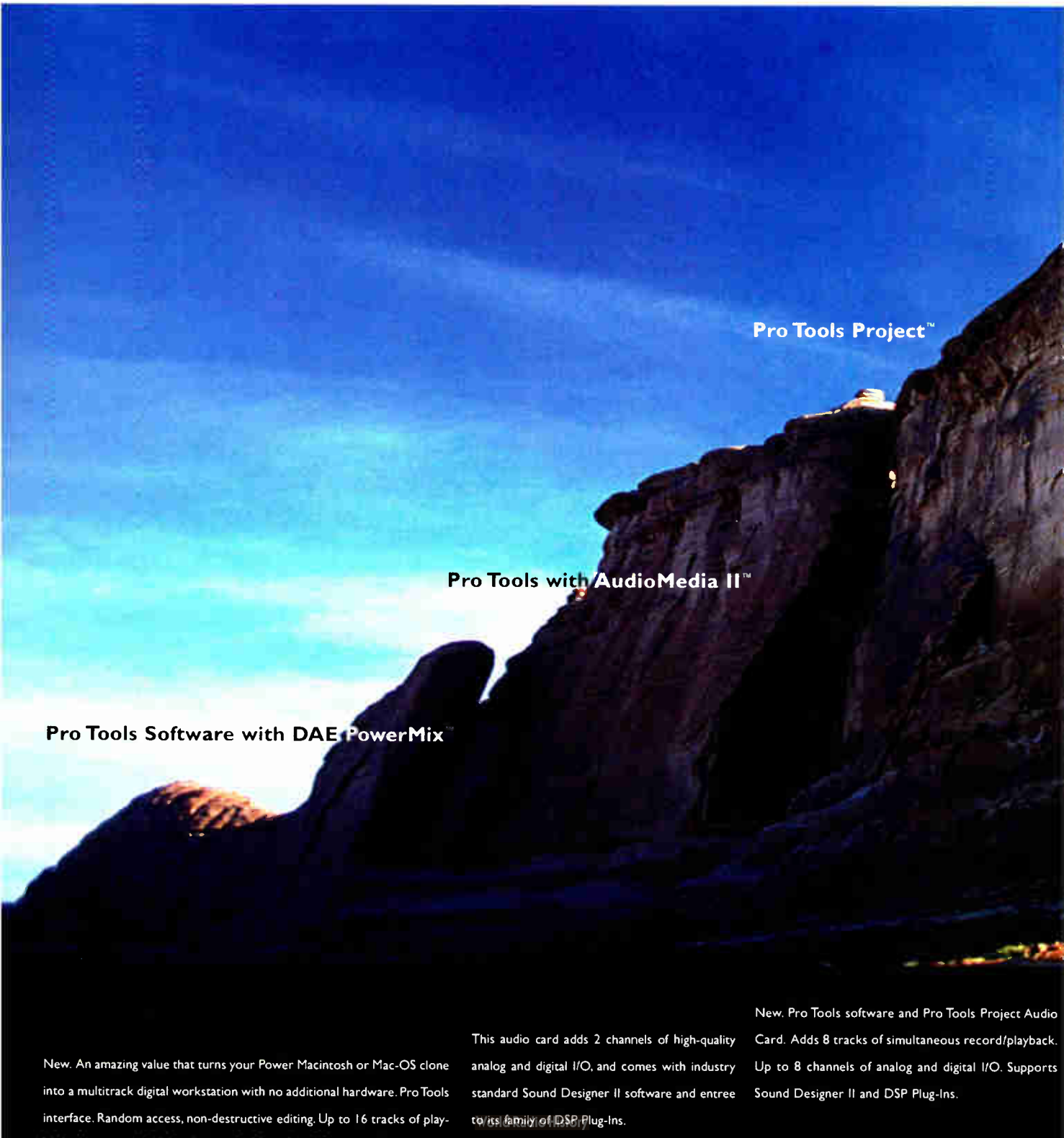

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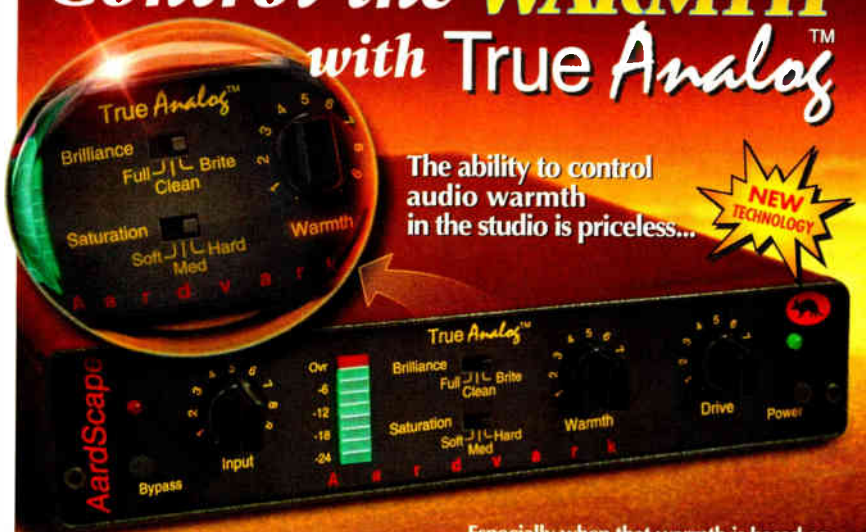

more useful on brass instruments and others where the sound mostly comes out of one place. Try placing two mics of widely differing types right next to each other. For instance, on tuba—a very important instrument in trad jazz—I put two mics right at the bell, about 18 to 24 inches away and next to each other. One may be a U87 set to cardioid and the other is my venerable RCA 44 ribbon. I record these on separate tracks and pan them to different locations in the mix, with the ribbon mic a bit left of center and the U87 a bit right of center. Again, this avoids the "panned mono" effect, even though the spread is generated a bit artificially. As a bonus, I find that the U87 gets more of the tuba's attack or "chiff" and the 44 gets the bottom end. In the mix, I can vary the ratio of these two to give me precisely the tuba sound I want. I've also had success with this on trombone, where the two mics are often a U87 and a tube U47, or occasionally an RCA 44. The trick here is in choosing the right two microphones; some experimentation is necessary.

Remember that player with the Stratocaster and Twin Reverb? This technique works well for amp miking, although I'm usually wilder here on the choice of mics, sometimes using two different dynamics, for example and often placing one much closer than the other.

PUT IT ALL TOGETHER AND IT SPELLS...

Now a brief word on how to mike an entire ensemble—brief, because this in itself could be the subject of a rather thick book. One approach is to isolate everyone and treat each musician separately. This is the method familiar to most people and certainly the safest. It works well with small jazz and folk ensembles. Without going into too much detail, in a good room it's possible to have everyone close enough to have good eye contact and still get sufficient isolation so that parts can be fixed and there's none of that "garage-y" sound caused by bleed from one mic to an-

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other. Unfortunately, many groups just can't play this way. The musicians are so used to hearing each other in ensemble that anything that upsets the balance they hear even a little bit gets in the way of their "feeling" the music.

And what do you do with a really large group? The answer here is to set them up as if they were onstage, all facing the same direction, and mike them individually. Sure, there's leakage. And no one can punch-in a bad note. But they can groove together, and if you keep at least two takes of every tune, you can fix bad notes in the edit. The important thing here is that all of the mics are facing more or less in the same direction, so what does occur isn't out-of-phase or off-axis. As a bonus, the musicians get to hear themselves the way they're used to—the trombone player hears the drums behind him and the cornet on his right, the pianist hears the tuba in front of her and pointing away, or whatever. It's amazing how much isolation you get, and as long as you pan the mics into the same positions the musicians were in when they recorded, the leakage can help eliminate the "panned mono" effect.

Of course, the purest—or should we say "purist"—method is to simply set up a stereo pair of mics and treat the ensemble as a single entity. This is commonly used in recording acoustic ensembles live, but I've had little success with this method in the studio. The sound is often fairly thin and weak, and the balance is seldom correct. Repositioning the musicians to correct the balance can help, but that seems artificial to me. I'd rather have the players sit where they're used to sitting and let me move the mics.

The next step is to use a pair of stereo mics, augmented with "spot" mics on each instrument. In the mix, start with the stereo mics and then bring up the spot mics as necessary to correct the balance. I've had a bit more success with this. Sometimes when I'm through, however, I can take out the original stereo mics and find that everything sounds better. Still, I often do this as it only requires two more tracks, and sometimes it does help, especially with large groups. Again, the emphasis here is on experimentation.

DO TRY THIS AT HOME!

These are just a few of the ideas that have worked for me, and I present them here more as food-for-thought than absolute set-in-concrete methods. Don't be afraid to try something, and don't be afraid to try something else if that doesn't work. Often on difficult instruments, such as Uillean pipes or ophicleide, I'll use a combination of techniques. On any major project, I make sure there is sufficient time set aside for trial and error. In fact, if possible, I like to bring everyone in the night before and work on the miking so they come in fresh the next day and just start recording. ■

Michael Cogan is the owner of Bay Records, a recording studio located in Berkeley, Calif. He can be reached at 73547.3254@compuserve.com.

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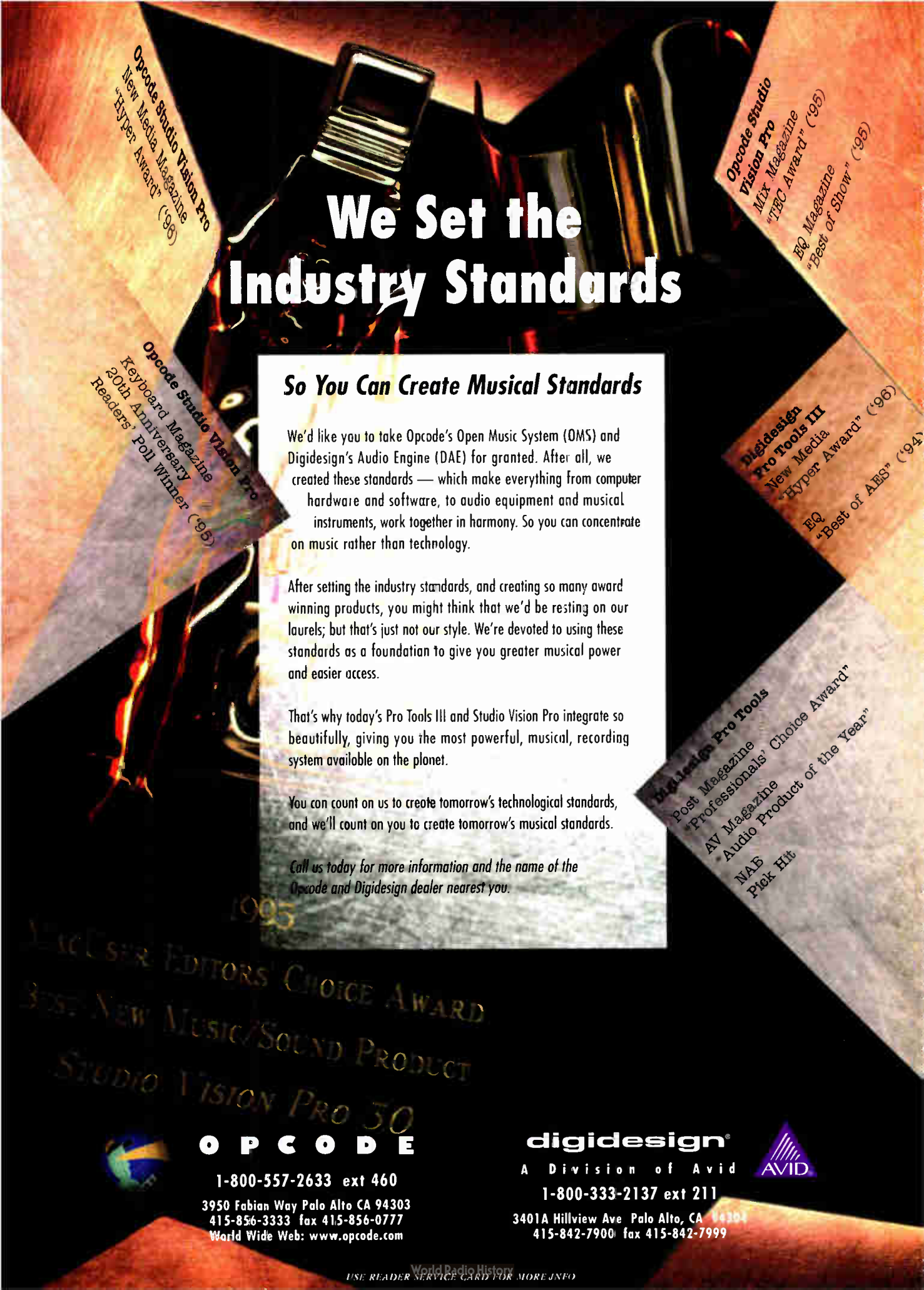

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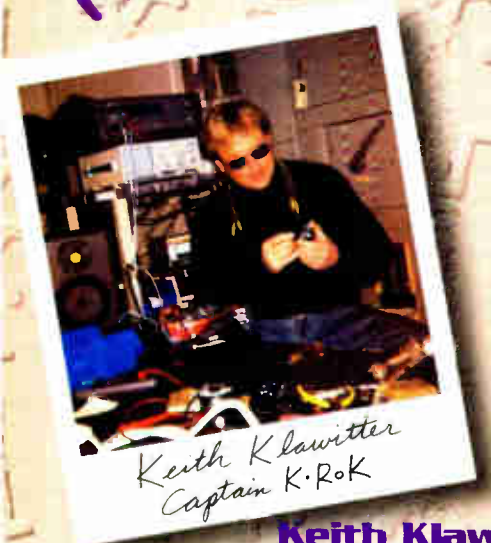

Keith Klawitter
Captain K•RoK

Chris Fichera
with KRK mascot, "Pinky"

Keith Klawitter,

KRK Systems, Inc. president and chief design engineer, started the company in 1985. Previously, Keith had worked as an independent recording engineer at many of the world's major recording and film studios and has gained numerous film credits with projects at Metro/Goldwyn, Paramount, MGM and Universal. KRK's phenomenal success can be attributed to a unique combination of exotic driver materials, proprietary crossover, stylized cabinet design and Keith's vision of uncompromising sonic quality.

Chris Fichera,

vice president, Group One Ltd., exclusive distributor of KRK Systems products worldwide, has gained international recognition as both a Grammy Award winning engineer and industry marketing veteran. "We have intentionally limited KRK distribution," says Fichera. "KRK dealers were selected on their ability to effectively serve the professional audio market with product knowledge and a thorough understanding of the recording process."

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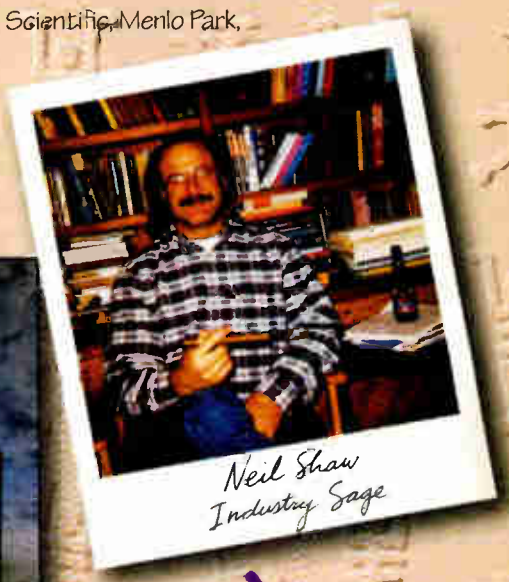

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GETTING THAT GREAT DRUM SOUND

ADVICE FROM BOTH SIDES OF THE GLASS

Great drum sounds have been achieved with everything from overly complex, mega-miked setups to the simple mono overhead-plus-kick that somehow always seemed to work so well in the 1960s. It all boils down to capturing performance sparks that embrace the soul of the moment.

Consider the great records in the history of popular music, from the swelling, dissonant sea of cymbals and toms in The Beatles' "Tomorrow Never Knows," to the thick, earthy immediacy of Al Green's "Take Me to the River," or the relentlessly ominous attack of Peter Gabriel's "The Intruder," and the floating lyricism of Tony Williams' solos on the classic VSOP recordings. The range of sounds that have been derived from a drum trap set is truly amazing.

Any engineer or producer will quickly admit the importance of getting the appropriate drum sound down right from the start. *Mix* enlisted a handful of the industry's finest, as well as two legendary session drummers, to offer some input about drum recording. Along with Kenny Aronoff, Dave Bianco, Roger Hawkins, Skidd Mills and Dave Thoener, *Mix* would like to thank Jim Dickinson and Jim Keltner for their assistance in helping put things together.

PHOTO: STEVE JENNINGS

BY RICK CLARK

DAVE BIANCO

Dave Bianco (see page 80 for a profile) has established himself as a purveyor of audacious drum sounds. Check out his work on releases by artists like AC/DC, The Posies, Ozzy Osbourne, Henry Rollins, Frank Black and Teenage Fanclub. Most recently, Bianco earned a Grammy for his work on Tom Petty's *Wildflowers* and

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was wrapping up production work on Interscope band Motorcaster, which he recorded at Ardent in Memphis and was mixing at Larrabee North in Los Angeles.

"I think my big rule of thumb is simplicity and less phasing between microphones," he says. "I try to use as few as possible. It depends upon the acoustics. You have to figure it out. There ain't no rules.

"Lately, what I have been doing for drums is to try and find one microphone that will pick up the entire drum kit, like back in the day when you were working at Sun Records and recording Elvis. I try to find the best mono microphone that will get the entire kit. It should be able to get an equal amount of kick and snare. I usually put that in front of the drums. Sometimes I will use a stereo mic, like an SM69 or a tube mic like a U67." Bianco occasionally applies some light compression, usually with a UREI 1176.

"When I worked on Mick Jagger's solo record, *Wandering Spirit*, there were a few songs where we wanted a retro-type sound," states Bianco. "I just used the one microphone for the whole drum sound in the mix. I used nothing else, and it was amazing.

"With that being the core of the sound, I like fuzzing around the off-ceiling and the close mics," Bianco adds. "I'll use [AKG] D112s on the kick or an [EV] RE20, or sometimes a [Sennheiser] 421, and outside the kick, maybe a U47 FET. Sometimes I'll double up on that, but I don't do that often.

"I usually use a [Shure] SM57 on the snare drum. I like a 57 because it has the midrange peak and it usually can take all the abuse of the sound pressure level and not break up. It's the handy-dandy.

"Recently, I will 'Y' the snare microphone and record it that way, top and bottom. I put a pair, so you will have a top and a bottom, which can phase and sometimes doesn't. If it doesn't, I will put a phase reversal on the bottom. I find that having both microphones coming down one line makes an extraordinary full and fat sound on a snare. That is one trick I use."

For the toms, Bianco normally uses 421s, because he likes the way they capture the low end and the attack, while having the ability to take intense sound pressure. SM57s also work fine for him on toms.

"Sometimes I will let the 421s get the full attack and impact of the toms and get the overtone from a [Neumann] U87, pulled back maybe six to eight inches above—maybe in between two rack toms or above the floor tom. That way you get this decay from the condenser mic," Bianco explains.

Neumann KM86s are usually Bianco's choice for overheads. However, if he can get his hands on some AKG tube C-12s, he will gravitate towards them. "C-12s are hard to get," he says. "It's hard to get one of them, not to mention two.

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They're fun to use, because they're so full-spectrum, punchy and bright. They kind of set the tone of what the set is going to sound like at the top of the spectrum on down. The problem with those sort of microphones, though, comes from the fact that they are so wide-pattern you can get some phasing and can get into a little bit of a jam with them. If that's the case, then the 86s are the answer, because they're a little tighter and clearer."

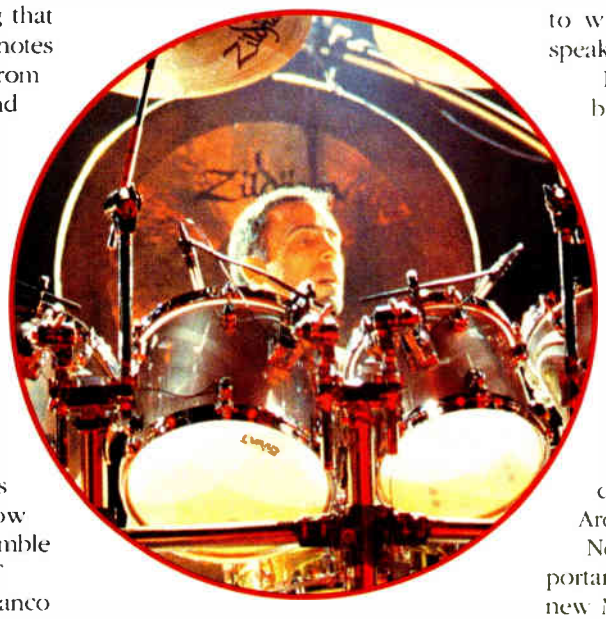
Bianco says he often likes to "shoot the room mics underneath the cymbals." Sometimes, he will place them behind the drum kit and "have them aiming at the center of the drum kit."

Experimentation is something that Bianco really enjoys, and he also notes that he draws much inspiration from hearing the raw energy drum sound found on many home demos. "It's great to study about using this tube and that tube and the cool console and all of that, but listen to what these kids do on demos and [home] 8-tracks. You would be amazed that, since the boom of home recording, how much wild stuff people are doing, and a lot of it is being done with really cheesy compressors and microphones in really funny places. The young kids are fearless, and they don't know how things work and they just stumble upon things that are just amazing."

For the Motorcaster sessions, Bianco re-amped a sub-grouped section of the drums back into the studio for maximum energy. "I just wanted the maximum resonance that I could get," Bianco says. "Basically, what I did was we sent a mix of the kick drum and the snare and the toms out in the room, through a P.A. that had a subwoofer and about a thousand watts of power. What it did was make the room resonate a bit more and we got a bit of a better room drum sound with that. There is only so much that you can do before feedback happens, but we would get the sound just under the feedback mark, where you would hit the tom and you wouldn't get a big over-ring.

"We EQ'd the P.A. as much as we could to get that resonant sound out. Basically, we had more low end that way, and it really made for a neat drum sound. I've done that on a few occasions. I think we had the most success here, because of the shape of the Ardent 'C' room. We were able to do enough dampening to it to make it work."

Bianco took Motorcaster's drum sound a step further by drawing from the freewheeling home demo aesthetic. "We had this SM58 above the drums, which we ran into a Boss guitar sustainer pedal. It's a compressor that has an input/output and a sustain control. It didn't work going right to tape, so we put the signal back through the Yamaha cassette 4-track that they recorded their demos with, and then went from the output of that to the tape recorder. I further compressed it, to get it up to a level that the tape would like to see, and it gave us the most amazing sound."



In spite of all this playful experimentation, Bianco still maintains that the key to all really good drum sounds is having a good kit that is well-tuned. "We have microphones that are really good at showing you what reality is, and if you have a good-sounding set of drums, you are going to sound good," he says. "If you have a bad-sounding set, it is the opposite. It seems obvious, but it is really the truth."

KENNY ARONOFF

Over the past ten years, one of rock's most distinctive sounds has been the cracking snare and solid grooves of session drummer Kenny Aronoff. His exciting style has restraint and taste, while conveying an ever-present sense that something explosive can happen just around the corner. Among the more than three hundred albums that bear Aronoff's trademark artistry are discs by John Mellencamp, Melissa Etheridge, John Fogerty, Bob Seger, Travis Tritt, Elton John, Bob Dylan, Lisa Germano, Jann Arden and Jon Bon Jovi.

Aronoff offered a couple of pointers that many engineers would do well to keep in mind when selecting drums and cymbals in certain ambient settings.

"If I don't properly hear my cymbals, then I start selecting different-sounding cymbals with different personalities that will allow them to speak in the kind of room I am working in," says Aronoff. "When I'm playing in a room that is real bright, I will go to a darker cymbal. The converse is true, if the room is very warm or dead. In that case, I will go to brighter cymbal with more ambience. It all comes down to what I am hearing through the speakers."

If Aronoff discovers that his cymbals are getting lost in the overall sound, he addresses the situation by changing out cymbals that work in a frequency range that isn't shared as much by other instruments, particularly guitars.

"The biggest components in getting a great drum sound are obviously the right drum equipment and the way the drummer tunes and plays his or her drums. That is what the drummer has control over," Aronoff says.

Nevertheless, mic placement is important, too. "I just did a song on the new Melissa Etheridge album called 'I Could've Been You' that had a real laid-back, bluesy feel. I used two snare drums. I played on a very small 4-inch wood drum very lightly in the verses. Hugh Padgham made that drum sound so deep and big. Then when the chorus came in, it was more aggressive-sounding, like Soundgarden. That was a 6½-inch metal drum, and that drum sounded higher than the other one. The richness of that 4-inch wood drum was so amazing; of course, it was tuned pretty low," Aronoff points out. "I said, 'Hugh, what in the world are you doing to get that sound?' He said, 'Nothing, just mic placement. I'm just capturing the drum by placing the mic in the right place, and I'm using very little EQ and basically no effects.' You can't beat working with a good engineer who can capture the sound with smart mic placement. It's great."

SKIDD MILLS

Skidd Mills has made quite a name for himself as an engineer and producer who is totally attuned to the nuances of

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great drum sounds that have energy and exciting color. His primary studio home base is Ardent Recording in Memphis, where his session credits include ZZ Top, Spin Doctors, Killjoys, B.B. King, 2 Minutes Hate and Joe, Marc's Brother.

Mills takes great pains to make sure that the components of the kit are the best that they can be. He also likes sampling an array of snares, cymbals and other elements of the kit to ensure the most appropriate tonal setting to the production at hand.

"I think that the most important thing, beyond having great-sounding drums to begin with, is to make sure that all of your mics are in phase," says Mills. "Sometimes you have to be careful. You can have a snare drum that is in phase and if you start doing something like, for instance, EQ'ing your overhead mic, then that phase can change. You have to stay on top of it."

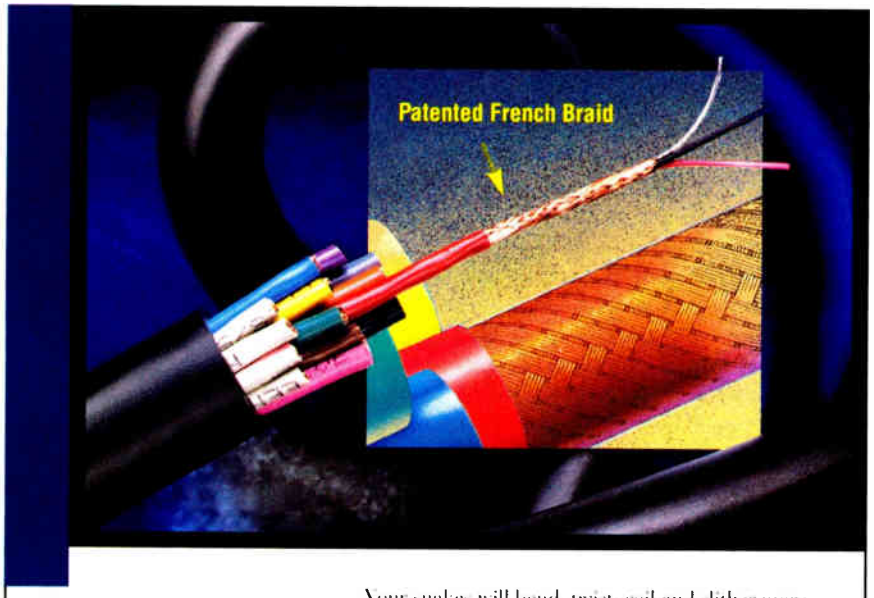
For his typical trap kit mic setup, Mills likes SM57s, one on top and one on the bottom of the snare. (Sometimes he'll use a 421 on the bottom.) Mills' favorite kick drum mic is the Audio-Technica ATM-25, while for toms he prefers 57s on the tops and 421s on the bottom. RE20s have become his mic of choice for hats, unless he wants a little more top, in which case Mills may choose a 451 or KM84—especially for a more "pristine" effect.

When Mills begins working on the drum sound, he usually starts working with the overheads. "I think how good your overheads sound has a lot to do with the final overall quality and sound of the drums," he says. "From there, I will bring in my kick drum and everything else after that point. You have to have some frame of reference, however, so I usually use my overheads as starters. Again, you want to make sure that everything is in phase with each other. It makes all of the difference in the world.

"Once that is all happening, I usually like to start concentrating on my room sounds. The room itself is probably the most important thing. As far as mics, there are about three different kinds that I will use. I'll use Neuman KM86s in front of the drum kit, maybe five or six feet back on each corner, at about chest level. Depending on how much I like the sound, I'll sometimes compress it to tape. My favorite is a stereo Fairchild. Other than the KM86s, I'll sometimes use Neumann 249s. Sometimes I'll use two [Crown] PZMs and tape them back to back and put them in the center of the drum kit and stick them up pretty high. Sometimes I like to blend those in with either my 249s or my KM86s to add some 'zizz.' It depends a lot on what the production style is and how much of a room sound you want.

"My favorite overhead mics are [AKG] 414s. I will usually, depending on what kind of a record it is, put them both in a cardioid pattern and have them placed with one taking care of the hi-hat and snare and any cymbals over on the drummer's left side, while the other one would be taking care of the toms and the ride cymbal, or any other cymbals on his right. That is your basic 'H' pattern. I would probably have them about three feet apart and about two or three feet off the cymbals. Those heights may change, depending on phasing.

"The other way I may deal with overheads is to use two 414s in an MS stereo pattern. That is what we did on the Joe, Marc's Brother material. I use one mic set to cardioid, suspended above the center of the kit and pointing straight down on it. I then use another 414 [set to a bidirectional, figure-8 pattern] butted right up and perpendicular to the first mic. The cardioid mic is assigned to two tracks, while the bidirectional is assigned to one track in-



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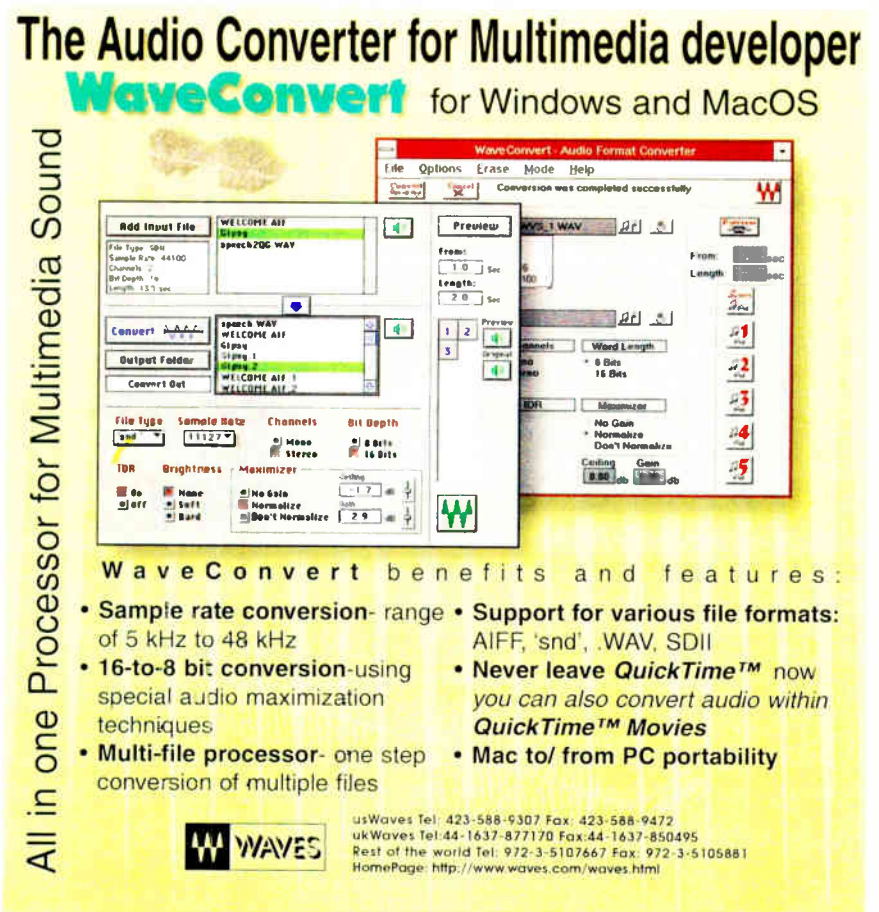

phase and the other signal is assigned to the other track out-of-phase.

"The whole trick to MS is getting them decoded correctly. I have seen people decoding by eyeballing the meters, which isn't going to give you a correct stereo picture. I've seen people decode off of the monitor faders, which is not really correct. The best way to do it is to decode off of the console buses. That way, you are basically listening to the output of the console, while you try to get those two bidirectionals completely out-of-phase. That's what you're trying to do. Once that is correct, it's a great stereo picture."

DAVID THOENER

David Thoener has enjoyed a vital recording career that has included some of rock history's most important events (Woodstock, Bob Dylan's 30th Anniversary Concert, the Rock and Roll Hall of Fame Concert) and albums by artists like John Mellencamp, J. Geils Band, Rosanne Cash, Aerosmith, Jon Bon Jovi, Beth Neilsen Chapman, Michael W. Smith, Billy Squier, Rodney Crowell and Meatloaf. Recently this longtime New Yorker, and former Record Plant alum, relocated (along with half the music industry) to Nashville.

"There's a real art to recording drums," Thoener says. "Drums are among the most difficult instruments to record, because there are so many drums you're encountering, and you're dealing with ways to get all those drums to sound exactly like they do in the room. When the drummer comes into the control room and listens, I try to get it to sound exactly like what he's hearing when he's out in that room—not only the sonics of the drums themselves, but the ambience, too. If I can achieve that, then I'm very happy, and usually the band's very happy."

Thoener says he often likes to approach a drum kit from a minimal miking approach at first. Nevertheless, he is careful not to limit his choices as the project unfolds.

"One rule I've learned over the last 20 years is that anything can work and you can never dismiss any idea when it comes to recording anything," he says.

"Someone might say, 'We'll just put a U87 30 feet in front of the kit and that's the only mic we're going to use.' Immediately I may think that is not a good idea, but the artist or the producer is hearing it in a way that's hard to describe, and that's the best way they're

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trying to describe it. You have to take what you think they want, and turn that into something that's viable on tape. Those people can change their minds, which often happens, as you start putting down overdubs, and the song turns into a beast of its own. You have to make sure that you've recorded the drums in such a way that if all of a sudden the arrangement has changed, you can still bend.

"In other words, you've got five overdubs on the track, and all of a sudden that single-miked drum balance that was perfect in the basic track is not quite the same balance anymore. Everything affects everything," Thoener continues. "Nevertheless, I'm a minimalist in that I will record with as few drum mics as possible—even one mic, if I can get away with it."

In the spirit of being flexible and creative in the quest for cool drum sounds, Thoener has gone to some lengths to apply the proper trash in achieving great rock sounds. "At Record Plant, we used to stick drums in this first-floor back area behind Studio A, where they used to put the garbage," Thoener remembers. "It used to be a real drag for the drummers, because they'd have to stay out there for eight hours a day drumming with garbage around them. But everyone agreed that it was a killer sound because there was a lot of marble around and cement walls and stuff. You know—whatever you gotta do.

"To me there are no rules whatsoever. I am open to *everything*. If someone says to me, 'Let's put the drum at the bottom of this stairwell and mic it on the first floor,' I may say 'Sure, sure!'" Thoener continues. "Sometimes, something amazing will happen that makes us look at each other and say, 'Holy shit. *That* sounds great!'"

ROGER HAWKINS

Over the past 30 years, some of the greatest records have benefited from Roger Hawkins' brilliant sure-footed pocket. For starters, consider such classics as Percy Sledge's "When a Man Loves a Woman," Aretha Franklin's "Respect" and "Chain of Fools" (in fact most of her biggest records), the Staple Singers' "Respect Yourself" and "I'll Take You There," Paul Simon's "Loves Me Like a Rock" and "Kodachrome," Bob Seger's "Old Time Rock & Roll," Traffic's "Shoot Out at the Fantasy Factory" and too many more to list here. Besides an active session drumming career, Hawkins runs the legendary Mus-

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cle Shoals Sound recording studios in Sheffield, Alabama.

"It's very important for the drummer to like the sound of his drums," Hawkins says. "If he doesn't like the sound of his drums, then he isn't going to put out a maximum performance. Sometimes session drummers—and I'm sure that a lot of session drummers can relate to this—have a great sound in the booth, but they aren't hearing it correctly in the phones. You just won't put out as much. It just isn't as possible to do, because suddenly you are fighting the drums instead of playing the drums.

"It's important for the drummer and the engineer to communicate and for the drummer to not feel afraid to mention to the engineer that it isn't sounding the same to him in the phones as it is sounding in the studio. I don't think good engineers take offense to that. I think they know what I just said."

Hawkins feels that drummers need to realize the effect of listening to the drums too loudly in the phones. He adds that the freedom offered by multichannel personal headphone mix boxes also can lure drummers into creating headphone sounds that unwittingly compromise their performances.

"One of the things that was a little tricky to me was the multichannel phone mixers, when I first started using them. Naturally, I turned myself up pretty loud. When I walked into the control room, I could tell that the drums weren't 'singing.' You're executing the parts okay, but the energy isn't there. That is something to be aware of for any drummer starting to use a multichannel headphone mix," says Hawkins, who suggests that keeping the level down a little bit and playing up to the music is one way drummers can approach the situation.

Ultimately, Hawkins feels that the engineer and drummer owe it to each other and the music at hand to have an open, respectful dialog. "The communication between a drummer and the engineer is crucial to getting things right. If you're not hearing what you're playing, soundwise and levelwise in the phones, then you're pretty much going to be a sterile player," Hawkins concludes. "A lot of times, drummers are afraid to speak up, but if you speak up in the right way, and you are serving the project, I think it is fine. It must be done that way." ■

Rick Clark is a Memphis-based writer, songwriter, bassist and producer.

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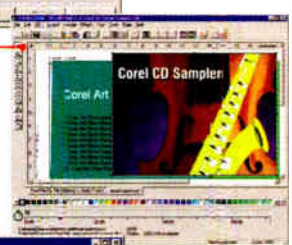

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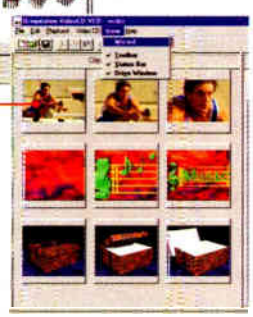

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A VISIT TO THRILL HILL

BRUCE SPRINGSTEEN'S 15 YEARS OF RECORDING AT HOME

Bruce Springsteen has always pushed the creativity envelope. Like many esteemed singer/songwriters with career longevity, he chooses his direction with little consideration for commercial repercussions. And traveling that path has sometimes led to an intimate writing and recording process best realized for him at home.

One of the first artists to experiment with home studio setups, he has also been through several incarnations of portable studios, and his current Los Angeles home base, dubbed Thrill Hill, is the synthesis of his experimentation with both of those needs. Thrill Hill, where the bulk of the work was done on Springsteen's latest release, *The Ghost of Tom Joad*, is equipped with a 96-input Euphonix CS2000 console and a Sony 3348 digital recorder.

Toby Scott, the recording and mixing engineer who has worked with Springsteen since 1980's *The River* and has been through all of his home studio incarnations, used that experience as a guide in setting up the current space. Scott seems to have solved the dilemma of where to live when you work bi-coastally—he spoke with me by phone from his home near Glacier National Park in the northwestern corner of Montana. He required little prompting to talk about how his and Springsteen's home-recording process has evolved, and our discussion was laced with anecdotes, as Scott seems to have photographic recall of the innumerable sessions the two have worked on over the years.

Most everyone can relate when Scott says demos and early rough mixes have often become the bane of existence for himself and for Springsteen, and never more than with those songs that were to become the album *Nebraska*.

That project began in January of 1982, when Springsteen had song ideas ready and asked his crew to find a machine that could record and overdub. New on the market at the time was the Tascam 144, a 4-track cassette recorder that fit the bill, so one was purchased and set up in a spare room in Springsteen's house. There he recorded about 30 songs in two days. The songs were then mixed down to a boom box cassette recorder, and that cassette was what Springsteen used as a reference a few months later when he started on the studio recording for *Born in the USA*.

About those studio sessions, Scott says, "The initial work on that record started slowly as the band got used to being back together after months on break, and I got familiar with the Power Station. On our second week in, we started recording the song 'Born in the USA.' I'd put the sounds together on the individual instruments but hadn't really heard all the

Right: Toby Scott in sthe studio
Inset photo: Bruce Springsteen

MAIN PHOTO: ED COLVER

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BY MAUREEN DRONEY

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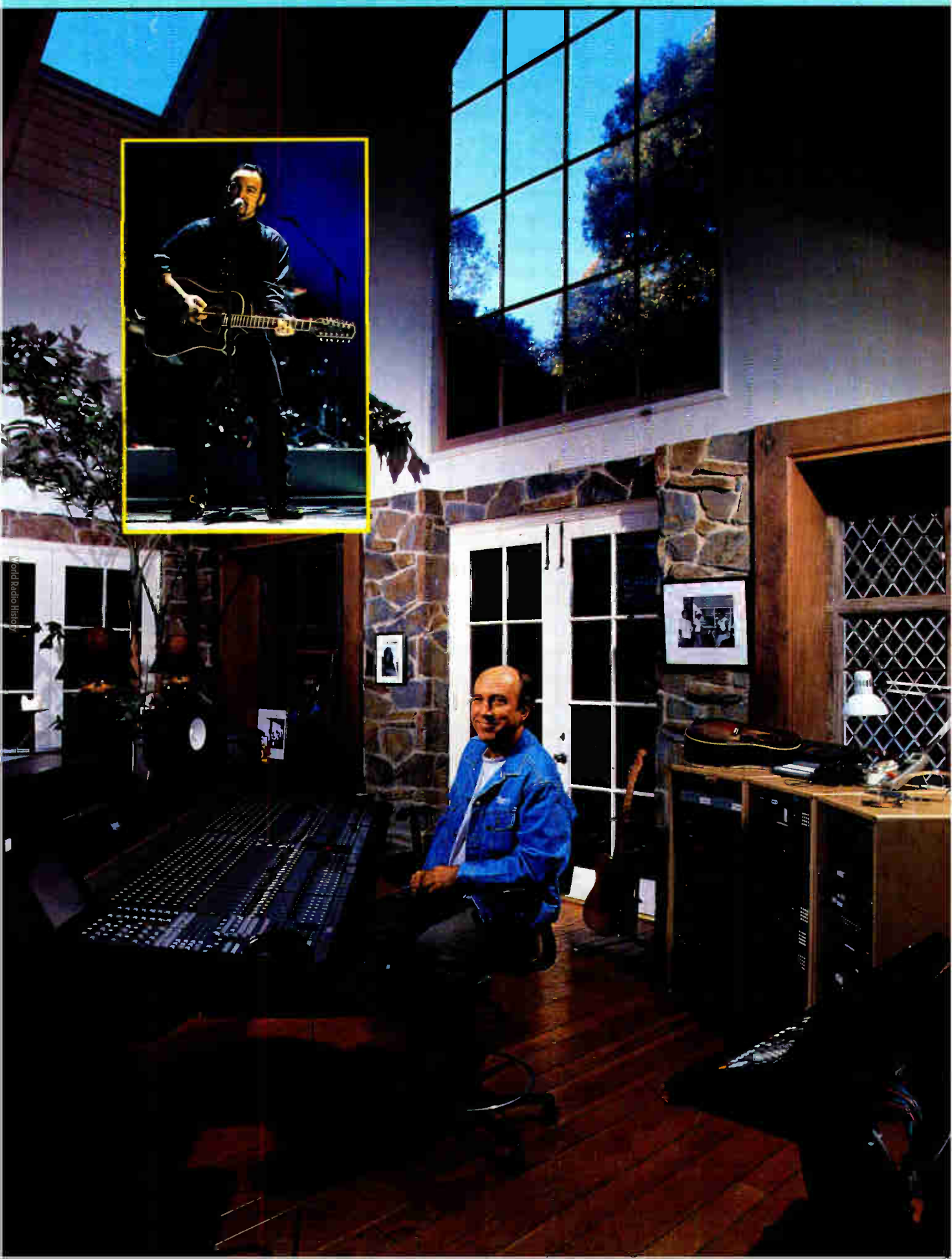

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band together, so they played it through once or twice, then did the first take. Myself, Chuck [Plotkin, producer] and Jon [Landau, manager] were sitting behind the console. And as we were listening to that first take, it was so powerful that we were sitting there going, 'Wow!'

"So we recorded like that, and within about two-and-a-half weeks we were mixing. I thought, 'This is quick.' A few weeks later, Bruce shelved the work on the band material and turned to the group of songs from the demo cassette that were more in a solo acoustic style. He tried to replay some of the stuff he'd recorded on the Tascam. And we recorded it every which way—acoustically, a cappella, overdubbing. And finally, one day Bruce pulled this cassette out, which he'd been carrying around for two or three months. And he asked, 'Hey Tob, can we use this? Can we master off this?' And so that material became the *Nebraska* album.

"For the next home recording, I bought him a 12-input Trident board called a Trimix—just a step up from an earlier portable board they had called a Flexmix," Scott continues. "Each channel's ins and outs were on individual plugs on the back of the board, and I had it modified to modularize, so that it was consolidated to several Elco connectors. It was simple, clean, small, portable and easy. A 1-inch 8-track served as the multitrack recorder, and for a 2-track mix recorder, an F1. The F1 was a new Sony product that recorded 16-bit digital via a converter and stored it on a videocassette. A bit of a hassle, but it was digital, because what we didn't want was to have something that we liked mastered onto an analog cassette.

"After about three weeks, Bruce wanted a few more tracks, so a 24-track machine replaced the 8-track," Scott continues. "He recorded a dozen or so songs on the system over the course of that winter. Now we had this home studio, and we used to take it back and forth from New York to L.A., and out with us on tour."

Following *Born in the USA* was a live album, giving a respite to the home-recording process. Then, in January 1987, Scott and crew put together the studio in Springsteen's New Jersey home. The Trident, originally only 8-in, had been expanded to 32-in.

"It was just the board, speakers, three or four synths and a bunch of acoustic and electric guitars," Scott says. "The multitrack, now upgraded to a Sony 3324 with Apogee filters, sat in the kitchen. We were knocking out about a song a day, and we did this for a few weeks, with Bruce playing all of the instruments one by one along to a drum machine. When Jon Landau heard the material and felt it was a record, Bruce called in the E Street Band to overdub their parts, replacing those he had initially performed. And that became the

Tunnel of Love album.

"When the following tour started, I suggested that since we'd outgrown the Trident, we should get a bigger console, one that we could move around easier. The Trident had never even had a box; we just wrapped it up in blankets and moved it around! So I got a 62-in Amek Angela and a second digital 24-track."

Work for *Human Touch* started in 1989, again using the Trimix system. There, Springsteen experimented with song ideas for several months, eventually opting to record in a commercial studio. Most of the tracking was done at A&M in Los Angeles, but it was done as if at home, one instrument at a time or, in some cases, with just one other player.

Comments Scott, "When we were ready, Bob Clearmountain came in and mixed 14 or 15 of the songs. He's really good at taking that rough-mix feel, slicking it up just a bit and making a record of it...After that, it seemed as though we might be done, and we took a break to consider final sequence and titles.

"About a week of the break had gone by when Bruce called me and said, 'Don't we have a big live system we could set up in my house?' "Scott recalls. "That was the start of our current studio, in the L.A. house. We don't change the rooms to make our studios. No holes, no extra insulation, no nothing. The only thing I ever did to any of the rooms was to beef up the electricity. But there was nothing done to the house for any sound modification or insulation.

"After we set up, we went into that mode like when we'd made *Tunnel of Love*—no producers, no second, just me and him—and again we'd zip through about a song a day. He played and sang along with a drum machine, then added bass to it, a couple of keyboards and electric guitar. We recorded probably the entire *Lucky Town* album in two weeks. Then we went to A&M and added drums, and Clearmountain mixed. So, that was the third record he'd made at home."

When Springsteen toured in 1992-93, he took the Amek system out with him. It was about that time that Scott began to be interested in Euphonix consoles. "You have to realize, the Amek was 11½ feet long, in its case over 12 feet, and it weighed 1,000 pounds," Scott says. "We couldn't physically get it into a lot of the rooms, even at arenas and stadiums. We had to find a place in each venue, and however big these places appear on the outside, the actual dressing areas underneath them are limited. So we'd roll stuff down the backstage gangway where the dressing rooms were, and the console would be too big to turn the corner to go into the dressing rooms. And we also had two 48-track machines to fit in!

"So most of the time I'd be relegated to the back of a truck—the semi that brought the speakers or the lighting equipment," he adds. "They'd haul all the stuff out and back it up to a loading dock. My stuff sat in the nose of it, what's called the dance floor, the very front of the truck. We'd pull everything out onto the loading dock, take it out of the cases, and then put it all back

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into the truck, plugged in and ready to record. Then they'd hang a black curtain over the truck doors. There were times when it was hilarious—in Europe, where we were doing stadium shows, they'd back that truck up to literally 15 feet behind the P.A. system. You'd step out of the truck, and 15 feet in front of you was a wall, like 25 speakers wide and five stories high, maybe 90 of those big A4 cabinets. I've got monitor mixes of those shows that sound pretty good, considering that the entire truck was shaking from the sound! I'd have to turn my little Yamahas up till their speaker cones were leaping in and out about 2 inches, and then I could barely hear what it sounded like! As well as being too big to fit into where we needed it, the console also ended up being too small for our needs! When we had a guest performer for a show, the 62 inputs weren't enough and required an outboard mix console to handle the additional instruments. After that tour, I started seriously talking to Euphonix."

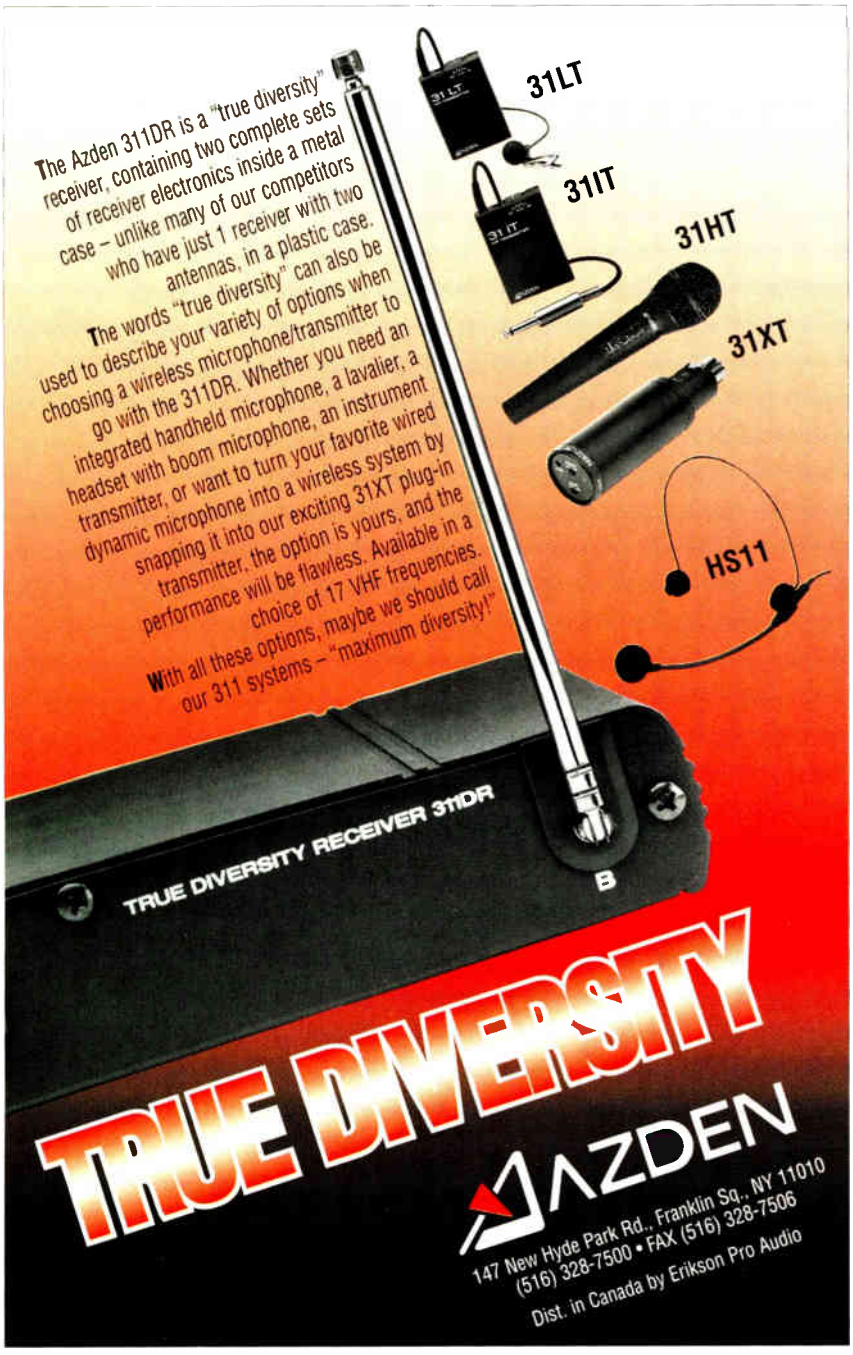
In the spring of '94, Springsteen began working on another record using the Amek system, recording a group of songs that were a complete departure from his previous styles. "Missing," one of the tracks for the Sean Penn/Jack Nicholson movie *The Crossing Guard*, is the only one that's seen the light of day so far, but there were several pieces of music completed, and at the end of '94, Springsteen was mixing the songs at Bob Clearmountain's Los Angeles studio.

"We were impressed," Scott laughs, "because generally when we see Bob, we go from our funky home environment with cables all over and nobody around, into a studio. Now Bob has his own home studio, but it still looks like a real studio, with a big SSL, all the buttons and all the whistles, whereas our studio is nothing more than a house with a console in the living room."

Those sessions at Clearmountain's led Springsteen to reconsider the purchase of a new board, according to Scott. For a year, Scott had been suggesting a digitally controlled Euphonix. But it wasn't until Springsteen experienced the automation and control at Clearmountain's, Scott says, that he committed. "[The Euphonix] is smaller than Bob's and cheaper than Bob's. It's half the price!" Scott told him. Soon after, Scott ordered a custom board, asking for modifications that would make it transportable.

At Thrill Hill, instruments and vocals are set up in the main room with no baffles between them. The drums sit in the adjacent dining room, which has a lower ceiling than the main room and is equipped with a video link for communication with the drummer.

Besides the Euphonix console and Sony digital recorders, Thrill Hill is equipped with a custom patchbay designed by Scott and Gary Myerberg, and built by Scott Hasson of WCCS. A custom Lemo patchbay was also designed by Myerberg for house sync and digital audio crosspatch that uses multicoaxial DB connectors and Lemo triaxil patch points. Portability improvements for the studio include custom flight cases, removable legs on the Euphonix and modifications to connectors, which are, in most cases, custom-housed 360-point DL connectors—quarter-turn connectors that unlock with a drum key. Myerberg, who is on staff at A&M Studios and is Thrill Hill's regular tech, also worked on routing design at Bob Clearmountain's home studio and at Royaltone Studios. He painstakingly researched various cables and connectors before deciding on DL, and tells us that the use of flush-mounted DLs not only means fewer cables overall (only one for each 3348!) but also reduced stress on the connections themselves. So far, the studio has been moved three times, and setup for



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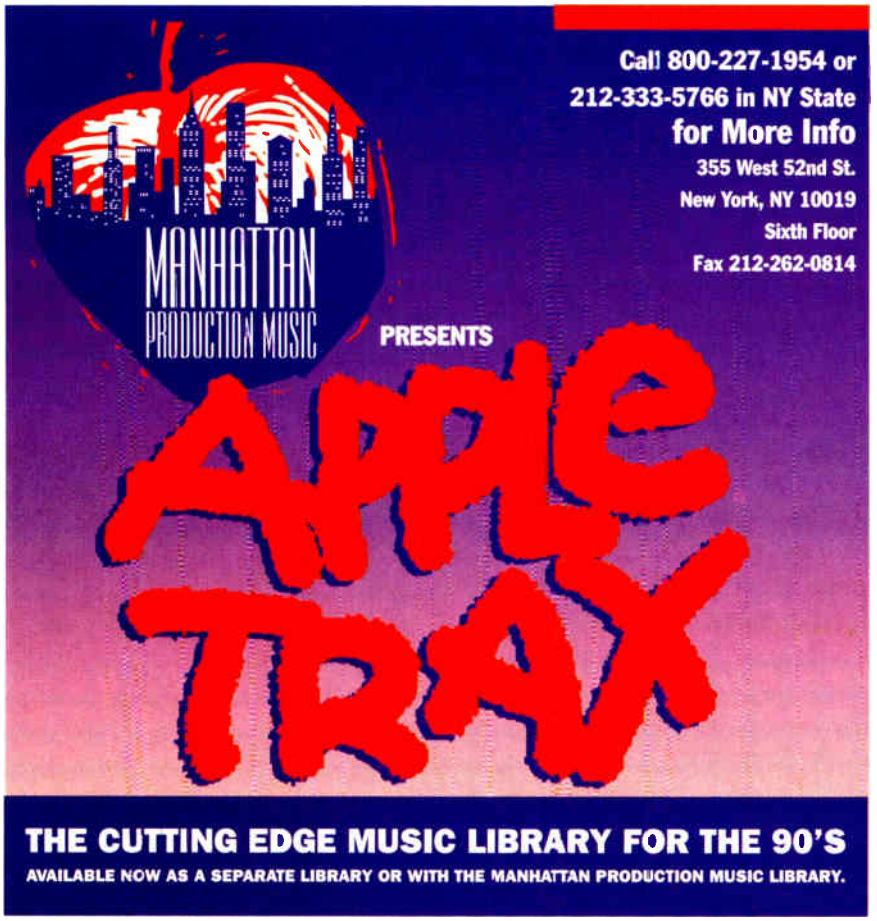

the studio, from roadcase to running, takes less than two hours.

Outboard gear is shrouded in two handsome, wheeled, hardwood racks that look good in the studio and are easy to pack up for the road. In the racks are two Eventide H3000s, AMS reverbs and delays, Roland SDE 3000s with AES sample modifications, a Drawmer vacuum tube mic pre/comp limiter, an Ursa Major Space Station, dbx 902s, and Ed Evans-modified LA-3As, but, surprisingly no other outboard preamps.

"I don't use it that much," Scott says of his choice of outboard gear. "I've always been one for proper mic placement over compression and EQ. And as for vocals, well, Bruce has been doing this long enough to work it. He knows where he's at on the mic—he just backs off or closes in. Or sometimes he'll say, 'Tob, I want a really close, in-your-ear sound,' so I'll add some compression. But he knows just how to get right up or turn his head to the side to avoid pops. He makes it real easy. And the Euphonix has gotten me down the road to using a lot of their dynamic systems rather than outboard—you can program them to be as audible or inaudible as you like."

Thrill Hill's Euphonix was up and running in April 1995, and according to Scott, 12 songs were recorded on the first day they were running. He says, "When you like a take, you just push the button to make a snapshot, and everything is saved. Bruce rarely goes back to replace the orignial vocal, but he will occasionally change a word or two in the lyrics. What's great about this console is that you can recall a snapshot of the entire mix, and the mic level is set, tape is set, everything is just as you left it. And we like the sound we get off the board, a combination of clear, warm sound and an open top end that isn't brittle."

When you consider that singer/songwriters were the original personal studio owners, it makes perfect sense that Springsteen would feel most comfortable working at Thrill Hill. The music he makes thrives on the intimacy inherent in home recording, and for 15 years Springsteen and Scott have developed a process that allows the artist to be creative and relaxed, with professional results. The studio has advanced technically over the years, but Springsteen has never lost the personal, down-to-earth quality that runs through his work, from *Asbury Park* to *The Ghost of Tom Joad*. ■

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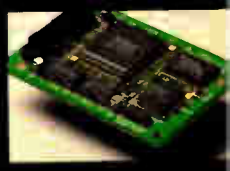

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With the VS-880, you get fully non-destructive editing capabilities. You can copy, move, exchange, insert, cut and erase tracks. Because it functions like a word processor, you can select the perfect chorus of your song, copy it or move it somewhere else without re-recording it. Or cut out another section and have the remaining material slide over and fill the open space automatically. And if you're not satisfied with a particular edit, simply return to the previous performance. Instant locate points make editing on the VS-880 as user-friendly as it gets. For advanced applications, functions like Scrub Preview or Time Compression/Expansion are available.

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KEITH BARR

FOUNDER OF MXR AND ALESIS CORPORATION

BY MEL LAMBERT

Rarely does lightning strike in the same place twice. Keith Barr founded MXR in the early '70s to develop and manufacture analog and digital signal processors, earning his spot in the pro audio history book. Then, in late 1984, he formed Alesis Corporation—the second bolt.

Any successful business involves a certain amount of shrewdness in assembling individuals that share the same vision—people who can wrap themselves in a strong team ethic and offer complementary skills. Having formed Alesis, Barr quickly brought in Russell Palmer, whose savvy for spotting commercial potential had already earned him a strong reputation in the recording industry.

As Barr stresses, "Alesis' primary goal from day one was to create a high-quality product that was priced to fit the budget of the consumer musician, yet still delivered the performance of products that cost many times as much. This is still true today."

The Alesis team has created a series of award-winning products that surely rank among the world's most popular recording and processing devices. Starting with the XT digital reverb, MPX MIDI patch transmitter and the original MidiVerb, Alesis' product development strategy took advantage of the nascent digital explosion in the music industry. In 1987, the firm released the MMT-8 multitrack MIDI recorder and, the following year, the popular QuadraVerb. The MidiVerb III, DataDisk and 1622 audio console followed, then the SR-16 16-bit stereo drum machine, M-EQ 230 precision equalizer, MicroVerb III, RA-100 reference amplifier and 3630 compressor/limiter.

In 1992, Alesis introduced a product that revolutionized the recording industry—the ADAT multitrack digital audio recorder—garnering two TEC Awards for Recording Product of the Year and Recording Device of the Year. More than 70,000 systems are in use around the world at last count.

During the past four years, under Barr's direction, Alesis has introduced a variety of innovative products, including the 24-channel X2 console, QuadraSynth (the firm's first synthesizer), Monitor One and Two reference monitors, MidiVerb 4, MicroVerb 4, QS6 Synthesizer, NanoVerb and ADAT-XT. The name Alesis has come to symbolize the newest technology combined with the highest manufacturing quality. And the products have proven extremely popular in the marketplace.

Having broken away from your MXR partners in '84, what was your original idea in setting up Alesis?

MXR product was analog. I desperately wanted to put a new company together and had some wonderful ideas on how to make inexpensive reverb systems. The name of the company was chosen from a long list of possibilities—I liked the idea of Algorithmic Electronic Systems and tried to put some letters together that would convey that. I don't think anyone considers Alesis to be "Algorithmic Electronic Systems"...Most people ask, "Who's Al?"

My partners in MXR were really nice people and are still my friends. Rochester, New York, was the biggest problem for me. There is so much more available in centralized large cities. Los Angeles, with the entertainment industry and the Hollywood community, was a better place to locate.

Are you a player yourself?

I used to play guitar, but I don't do that anymore; there are so many others that do it so much better.

So, you make systems for people that make music.

I've always designed products for people that were making music. I can think of few things that I've done in my life that weren't involved with the music industry in some way. In the past, we made products that surrounded the music industry, like special-effects processors. Only recently have we gotten into the more direct recording aspect of the business, with ADAT and the consoles, amplifiers and things like that.

Was developing ADAT part of your game plan for Alesis?

I first had thoughts of building an 8-track digital tape recorder in the late '70s, when I bought a U-matic videocassette recorder. I poked

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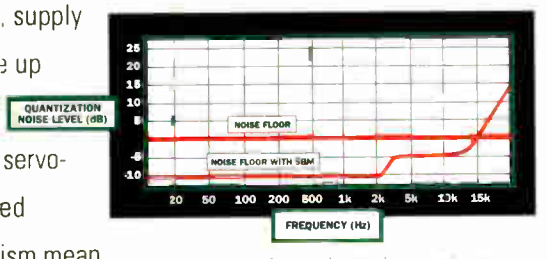

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around in it, imagining how such things might be done. But it wasn't until integrated circuits were more easily designed that it could be done.

Broadening the Alesis product line seems to have been a logical progression. You looked to see what wasn't available and chose to develop systems because people were asking for them.

It's a lot of fun to produce something that is really amazing. And to amaze folks, you have to look around for what would be amazing. Oftentimes in the past, that was our criteria. Don't get me wrong; we've produced things that aren't amazing, but...I'm particularly interested in those opportunities that have the potential for amazement.

The marketing department may stay your enthusiasm, if something you're thinking of allocating R&D funds toward already exists.

I'm not the only one that comes up with ideas. As soon as our engineers come up with product ideas—or they've developed it sufficiently [to a point where] they can express it to someone else—they hustle over to the marketing department to see how many raised eyebrows they get. In any company, you need that critical mass of enthusiasm before the whole company can become committed to the product.

Did ADAT come into being in that way?

It was a large project. It did develop, but really it's been a sequence of neat ideas—clever ideas that developed amongst a couple of us in engineering.

The design criteria was to develop a low-cost multitrack recorder using affordable media?

In essence, yes. The ADAT concept began as a reel-to-reel multitrack analog tape recorder that had great servo systems. And something that could be synchronized very quickly with great accuracy. It grew into an inexpensive digital system based on [S-VHS] videocassette. All of this was conceptual, with a little bit of bench work between it.

Analog was dismissed early on, I imagine, because of the common problems with such systems. Noise, distortion, wow and flutter, etc.

Sure. We wanted to make a recording product for the audio industry that could cover a pretty wide range of potential markets—all the way from home/portable studios up to professional multitrack machines. There's a wide range of price and features that you can address; you just pick where you want to place your entry. To find out more about the possibilities, you have to look at what can be done in each area and evaluate the results.

The base ADAT machine was supported by peripherals that would let it find applications in other environments, where it might be locked to picture, for example. Were the BRC, AI-1 and AI-2 designed as extras, rather than burden the product with unnecessary functionality that might make it too expensive for some users?

Yes. We began to realize the feasibility of a rotary-head digital machine, and what price bracket it would fall into. As the end product defined itself, the need for other surrounding support devices became obvious.

In any company, you need that critical mass of enthusiasm before the whole company can become committed to a product.

ADAT seems to be very popular and successful in the music/project studio market, but not so successful, so far, in the post and film sectors, which seem to have embraced the DA-88. Any reason to account for that?

As a tape-recording device, that's probably correct. But in the post-production arena, where users need fast access time, I think that hard disk machines will be increasingly taking over. ADAT is an audio recording device more than anything else; we haven't concentrated on synching to video so much.

Audio machines have difficulty synchronizing to video for the same reason that video machines have a difficult time synching to video. There are a lot of different transports and formats for video. For an audio recorder to do a good job in synchronizing to them, it has to be capable of running, seeking and locating at the same speed as the video machine. Hard disk machines are perfect for this, because as soon as the video deck comes to a stop and starts to output timecode, the hard drive can go to that location and track it instantly—you don't have to have software that knows the speed of one machine vs. another, and how to anticipate where it will be at one point in time.

For bulk storage of multitrack information, audio recorders can stand on their own. But for video applications, where you need to get from one spot to another quickly for high-efficiency video editing, hard disk machines are going to win out.

Are you looking at emerging technologies, including hard disk and removable media?

Every day.

But nothing you can talk about?

No, but I can say this: Whether it's a hard disk backed up on some external device, or a removable-media type of random-access digital recording, before we would entertain building a product around it, we would ensure that it would be very reliable and good value for the customer. Ultimately, whatever product you will see from us along those lines will be the best we can possibly make.

How did Alesis' association with Fostex come about? They made a version of your original ADAT and are now making a version of the new XT. Were you looking to have additional manufacturers support the ADAT format?

I'm in business to make money and be successful, but I don't want to have enemies anywhere; I don't like the idea of fierce competition. When we came into the market with ADAT, Tascam and Fostex were two of the best-known makers of low-cost multitrack tape recorders. I didn't like the idea of putting them out of business or hurting them. Getting other people involved makes the product more of a standard; everyone benefits from that. This is also the ADAT Group's philosophy of sharing experience with other users and other manufacturers. [The ADAT Group is an affiliation of manufacturers that includes Fostex, TimeLine, Digidesign, Steinberg Jones, Mark of the Unicorn, JLCooper and Panasonic.]

How did the revised XT version of ADAT come about? Was a "Mark II" pretty much an inevitable progression?

Absolutely. We got a lot of feedback [from] customers, but it was, more than anything, an engineering exercise. Ale-

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the products we produce to be outstanding in some way, but we can't always do that. Oftentimes, there are product areas where we can offer a customer something that's maybe just slightly better. In some cases, it's something that will fit particularly well with the other equipment that you build, and therefore has validity in the product line. Personally, I like to lean away from that—I like to make things that don't exist. That's personally gratifying and, I think, has had a lot to do with our success.

What was the thinking behind, for example, the X2 console? There are many designs within that price/performance profile; what were you thinking of adding to the equation?

I didn't personally have much to do with [the X2]. But we produced a board with a connector scheme that allowed it to be interconnected to ADAT very quickly. It was about the size and scale that would be ideal for an ADAT studio—and it came in at a reasonable price. Since then, very small boards have grown to be popular, and that's perhaps changed the scene in terms of mixers. I think you'll find that a lot of ADATs are now hooked up to relatively small mixers without the best EQ and a very limited sound capability.

Is that because people can't afford a more complex board?

You just don't need a more complex board. It's my impression that recording has virtually exploded in the last three or four years, particularly with ADAT. A lot of people are very interested in recording and, of course, the high quality of digital makes the result much more satisfying. It may be that a lot of people don't need a full-on professional studio—they just need a recorder that delivers very accurate [playback quality].

Where is the future for Alesis? Products that incorporate random-access hard drives? The new Iomega Jaz 1GB removable media seems to be a buzzword with a lot of manufacturers. Maybe digitally controlled analog and/or digital boards?

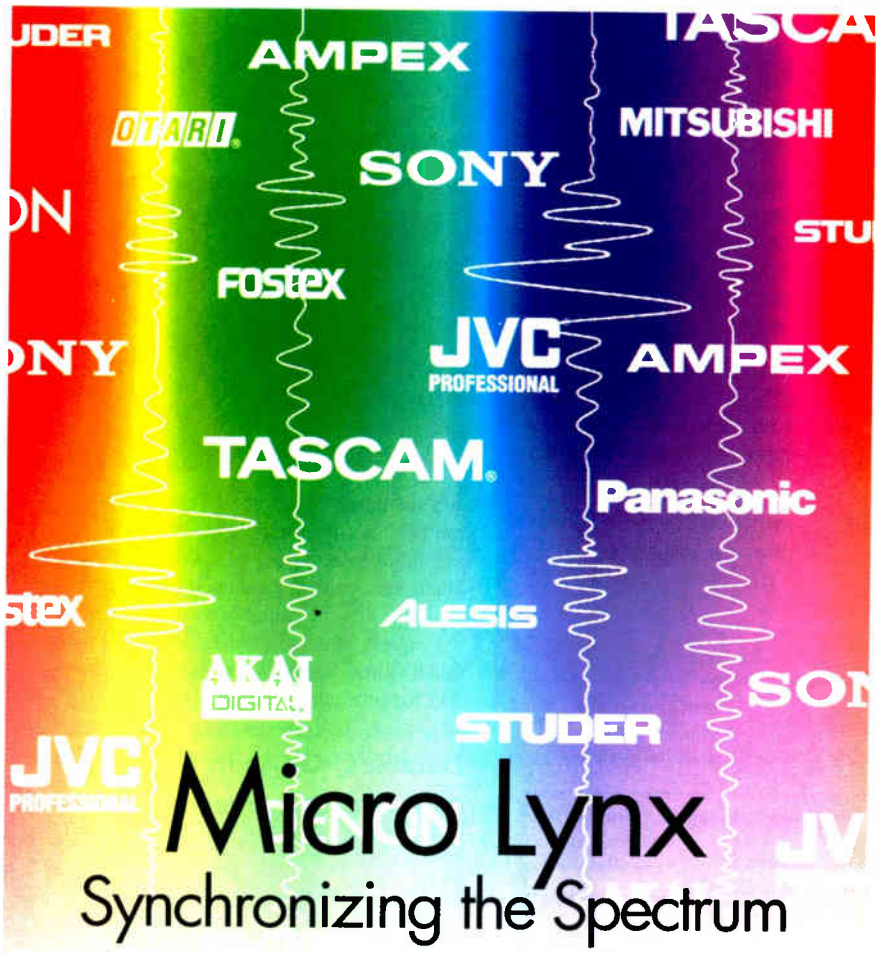
Well, digital is going to overwhelm the audio industry, if it hasn't done so already. There's no question that Alesis is very digitally oriented when it comes to producing product. My interests are in anything that could involve physics or optics or mechanics, not just electronics. But, at the same time, we're now working to develop a semiconductor division. I'm very keen on IC design. Not only logic circuitry that we can produce in-house, but analog circuits. All digital circuits at the circuit level are analog devices, believe it or not; digital is merely a method of expressing signals unambiguously so that they may be manipulated mathematically. A gate, for example, is not a logic element at its core; it's an analog device—an amplifier with two inputs. What fascinates me is the hand-wringing out of novel, particularly fast or space-efficient circuits at the transistor level, which, ultimately, perform digital functions.

When you design circuits by hand, or when you intervene in the design process to manipulate devices at the transistor level, whole new levels of cost and activity can be achieved. The circuits can be smaller, you can get more [circuit elements] on one chip, cost to the customer becomes less, and, as an engineer, the whole process becomes much more exciting.

Will these custom ICs be intended for use in your own products, or will Alesis become a bit like Yamaha, which also makes chips for other manufacturers?

In fact, Yamaha is possibly a good ex-

—CONTINUED ON PAGE 225



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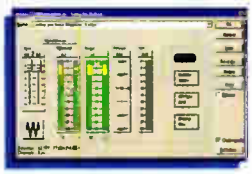

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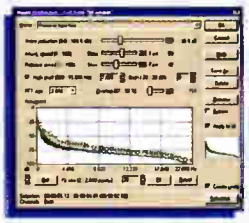

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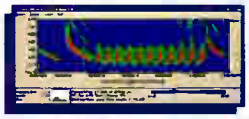

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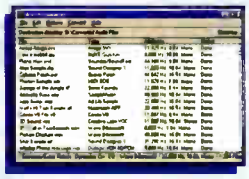

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PRODUCER/ENGINEER

David Bianco

FROM R&B TO ALTERNATIVE

PHOTO: EDWARD COLVER

BY MAUREEN DRONEY

He's in Memphis, no, he's in Seattle, no he's in L.A., oops, missed him! Now he's in Memphis again—wait, he's back in L.A., and at least in L.A. I know where to find him! If he's not at home with his family, David Bianco is ensconced at his favorite mixing studio, Larrabee North, where I finally caught up with him. Soft-spoken and articulate, he has a wry sense of humor and a creative way of fitting his words together. After a lot of years in the trenches of all genres of recording, Bianco has great stories to tell but evinces none of the "been there, done that" jaded vibe. Instead, he projects a

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quiet enthusiasm, and you get the feeling that this guy would be really fun to work with.

Two weeks after our conversation, he was declared one of the 1996 winners of a Grammy Award for Best Engineered Album (Non-Classical) for his work on Tom Petty's *Wildflowers*. He didn't make it to the awards show, though, as he was back in Memphis, producing the Interscope label's Motocaster, a group he describes as "a real cool three-piece rock band—real players that other musicians come out to watch. They're incredible!" When queried about his reaction to winning the coveted Grammy, he laughed and said that he now had to deal with Motocaster's penchant for scoring his punches as "Grammy-worthy" or "not-Grammy-worthy." Oh, and how he found out he'd won? It was that prank call from his cartage company wanting to know where to pick up the statue and how heavy it was.

You've sure been going nonstop lately.

Yeah, so much stuff back to back! Last summer it started to get really crazy when I went to work with Heather Nova in England. Then Drag Mules in New York—then I stayed in New York and mixed Ozzy Osbourne's record, and then went right into Red Five, then Throwing Muses, then You Am I...

So how did you get so busy?

[Laughs] Word of mouth, I guess. I

LARRABEE STUDIOS

by Maureen Droney

The all SSL-equipped Larrabee Studios that David Bianco favors actually consists of two complexes about ten miles apart. The original two-room Larrabee, now designated West, is on Santa Monica Boulevard in West Hollywood, while five-year-old Larrabee North (which also has two studios) is situated in the Valley on Lankershim Boulevard.

Larrabee is somewhat of an anomaly in this difficult era for recording studios. While many top facilities are attempting to shift their focus from music-for-music to other income-producing areas of audio, or are getting out of the business entirely, Larrabee owner Kevin Mills is recommitting to music.

Mills' determination runs counter to a recent article in *Billboard* magazine that stated the case for switching direction. In it, Seattle's Bad Animals Studios announced their decision to exit music recording and concentrate on post-production. Steve Lawson, Bad Animals' president and CEO, was quoted as saying, "I love the music business...but the long and short of it is that with the competition in the music business and the expense of maintaining a happening place, it just doesn't pencil out...we weren't making any money." Meanwhile, in Los Angeles, other established studios facing these problems, such as Devonshire and Milagro, have finally just thrown in the towel and closed down.

—CONTINUED ON PAGE 84

PHOTO: EDWARD COLVER

Kevin Mills at Larrabee North

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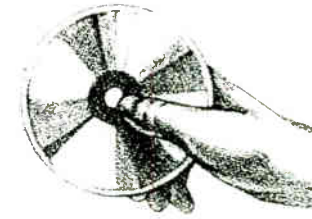

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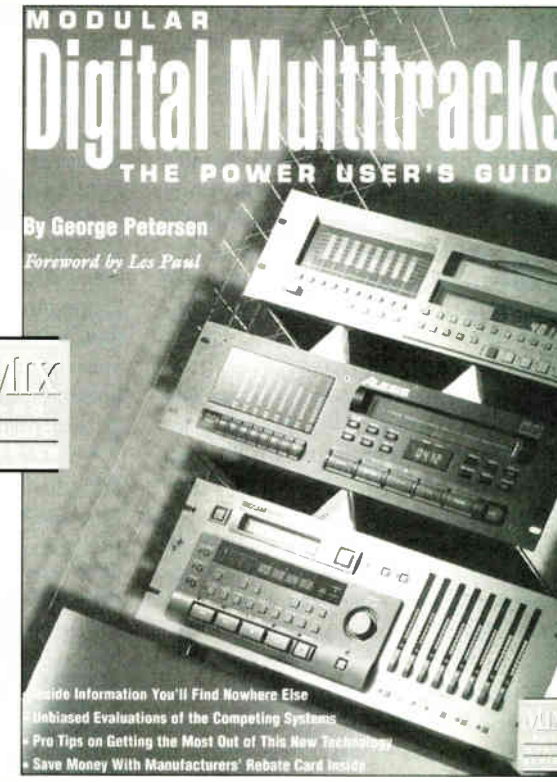

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GETTING TO KNOW YOU

IT'S YOUR BUSINESS

PUBLICITY FOR STUDIOS

BY DAN DALEY

In recent years, the recording studio business has become just as market-driven as the equipment industry that serves it. Having the gear is no longer enough to ensure success. Studio owners and managers have to market the facility and services proactively.

One effective marketing tool is public relations (PR). Also known as media relations, press relations and image consulting, PR is not to be confused with advertising. When a facility manager commissions advertising, he or she has near-total control of the final form, the pictures are chosen and the copy is written according to how the creator wants readers to perceive the product, and the ad is placed in those publications that the target audience most commonly reads. This control is offset by the fact that readers are well aware that they are looking at an advertisement and judge the veracity of the advertiser's claims accordingly.

When a facility is included in a publication's "editorial"—which includes almost anything that is not a paid advertisement—the initial impact may not be as great as that of a four-color, full-page advertisement, but the reader's perception is likely to be different. For example, if a studio is included in a regional survey or equipment roundup, the reader may get the impression that the facility is a leader in its region or technical specialty. While this perception may not be readily and directly translatable into actual revenue, it becomes part of the overall image of the studio. If a studio manager is convinced that positive and frequent press coverage is good for the bottom line, then a PR program is called for.

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AGENCY OR IN-HOUSE?

You can hire a PR firm, or do the job in-house. Typically, a PR firm is staffed with professionals who have experience in getting coverage for their clients' products and services. Provided you choose the right agency and jointly agree on a defined set of manageable goals, you can expect to achieve those goals on time and within budget. Agencies generally work on a contract basis with terms ranging from three months to a year, and are usually paid monthly on a retainer basis. Fees in major markets range from as little as $500 to $3,000 per month, depending on the size of the agency and how involved a game plan the client wants.

Choosing an agency is not unlike selecting any professional service—get references, interview and shop around. Whomever you choose should be familiar with your industry, your market and the publications that cater to it. If the agency is really interested in landing your business, you may be able to get them to prepare an "audit" as part of their sales pitch to you. An audit may include a survey of the current and potential market and an informal poll of how potential customers and editors currently perceive your facility or service. This can be immensely valuable information and you should be prepared to pay for it, if necessary. For example, if it turns out that nobody knows that you have the only 128-track recording studio west of the Pecos, changing that perception should go on your list of marketing goals.

Working with an agency successfully depends on communication—clear agreement on what it is you are trying to accomplish and regular meetings to judge the effectiveness of the approach and, if necessary, make mid-course corrections. Obviously, your agency account executive can't know everything that goes on at the studio, so he or she should be kept abreast of technology purchases and clients passing through. Typically, the agency will provide a monthly status report that tracks all activities on your behalf—brainstorming sessions, calls to editors to pitch stories, time spent writing and assembling press kits, etc. Remember that monthly magazines have two- to three-month lags between the time an article is written and the time it appears in print. Add to that a month or two of pitching ideas, and it becomes clear that any agency needs at least three months to show you any results, so wait at least that long before any final performance evaluation.

One word you'll hear a lot in PR is "positioning." No PR agency or advertisement can change the facts about your facility—either you recorded a Top 10 album, or you didn't. But a skilled PR agency will be able to identify and if necessary, change, your "positioning"—the way that others think of you. Your studio may contain an unusual amount of older equipment, for example. It might be foolish to attempt to create the image of a state-of-the-art facility, but quite possible to position yourself as a facility that concentrates on vintage equipment and "rootsy" sounds. Your positioning message will depend on what assets and strengths you have available to you—a hot engineer, a fabulous location, unusual technology expertise—and your overall marketing plan.

THE PRESS KIT

Whether or not you need a full press kit will depend on the size of your program (and your positioning goals) and the style of the agency—some account execs are good writers and believe that written materials are most effective, others work best in person and on the phone. A press kit, when appropriate, does have the advantage that it includes everything of interest to an edi-

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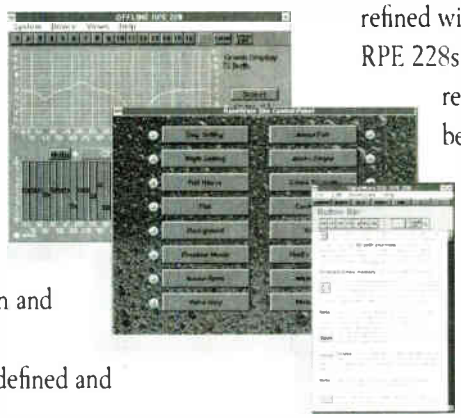

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master pieces

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.

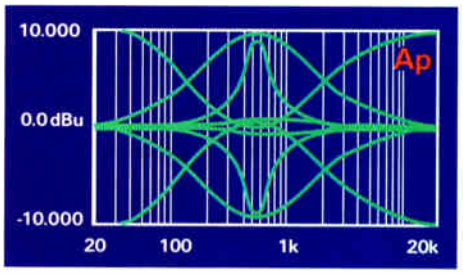
The Blue 315 Mastering EQ and the Blue 330 Mastering Compression Limiter both make use of the highest quality switches for all rotary functions. These provide precise and repeatable settings in units of unequalled build quality, ensuring long-term reliability and performance.

Blue 315

It was the widespread desire to see the legendary ISA 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 medi. Private discussions with individual mastering engineers, coupled with careful research, revealed many small differences between a programme equaliser and a product designed for top-quality mastering. These differences were the starting point in the design of the impressive 315.

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



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

This technological 'masterpiece' has been achieve without any sacrifice of Focusrite's traditional standard You are assured of the best performance paramete (often superior to digital), the highest qualit components and construction, along with bot transparency of sound and ease of use.

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

– Tom Coyne, Sterling Sound. New York.

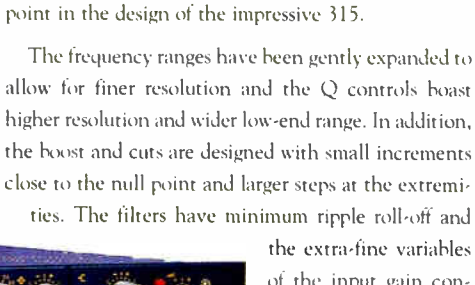
"In almost a year I've use my three old EQ three time Any other questions?

– John Matousek, Masterworks. Los Angele

Blue 330

Also the product of customer demand and extensive research, the Blue 330 represents the transformation of the Focusrite Red 3 Compressor and Limiter into a Mastering format. Unique and unrivalled in all its attributes, 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 cleaner and less intrusive than that which can be achieved with a compressor that rolls over into limiting.



Blue 330 Block Diagram (single channel)

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

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

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

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tor or journalist, and some of the materials have a long shelf life and will not need frequent updating. But press kits can get expensive and cannot substitute for a well-thought-out plan. They should also not be confused with sales brochures, which are intended for a different readership.

The staple tool of PR is the press release, but a press kit can also include any of the following:

- Q and A. This purports to be an interview with one of your company's executives or senior engineers. It provides the answers to frequently asked questions and, when carefully written, supports and amplifies the positioning message. It also provides the editor with ready-made quotes.
- Application stories. An application story describes how a particular problem was solved. Somewhere in the story your facility or service is mentioned as an essential component in the solution. Not all publications accept application stories, but a one-page synopsis may be effective in getting an editor to assign the story to one of his or her writers.
- Viewpoint articles. These are useful for raising the visibility of an owner or staff person who can be positioned as an authority on a particular subject. Editors may then call for comment on any other story concerning the same issues, and will generally identify their sources, and your facility.
- A company backgrounder. This explains who owns and runs the company, why it was formed and the products and services it provides; outlines revenues and growth figures; lists past successful projects; and includes short biographies of the executives.
- A technology backgrounder. This explains equipment or technology for a general audience. For example, if your positioning message seeks to convince editors that you are experts in analog-to-digital transfers, a concise explanation of the principles will be useful. Keep it simple without being patronizing—the aim is to educate, not show off how much you know.

There are many other possible components to a press kit, including photographs, equipment lists, reprinted articles and press clippings, but the general rule is that nothing should go in that isn't potentially useful to an editor. If you or your PR agency can't create a coherent and newsworthy press release, no editor is going to want anything else in the kit. Which brings us to the Press Release.

THE PRESS RELEASE

The press release is, for most companies, the single instrument of communication with the trade and general press. In simple terms, a press release is an announcement—a new console or other major piece of gear, a highly credited engineer joining the staff, a particularly challenging project tackled in an innovative manner.

Read the preceding paragraph again, this time concentrating on the adjectives: "major," "highly credited," "particularly challenging." Press releases are not for every little thing that happens at a studio. Adding another reverb to the outboard rack does not usually qualify as news; installing a 96-input

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ROB CHIARELLI

CREATIVE MIXING/REMIXING

PHOTO ED COLVER

Mix engineer/remixer Rob Chiarelli is on track to become a music industry powerhouse. In the '80s, Chiarelli was an established recording artist, songwriter and musician, contributing in countless ways to the recording and production of his own band's records. In the '90s, he is using his knowledge for the benefit of others. And by doing so, he has become one of the most sought-after recording and mix engineers in Los Angeles.

Chiarelli's enthusiastic attitude and professionalism have contributed to projects by many industry veterans, including producers Livio Harris, Richard Perry, QD3, DJ Battlecat, and Jorge "G-Man" Corante, among others. His engineering/mixing credits include Ice Cube's *Lethal Injection* (Platinum), Coolio's *Gangsta's Paradise* (Platinum), Adina Howard's *Do You Wanna Ride?* LP and the *Above the Rim* soundtrack, just to name a few. Other artists he has worked with range from Silk, and Ce Ce Peniston, to Queen Latifah, Boyz II Men, En Vogue, Ray Charles, Madonna, Quincy Jones and Janet Jackson.

While in Los Angeles attending Winter NAMM, I was able to catch up with this talented mixer at his office in Hollywood.

How did you get started in the business?

In 1981, I studied classical percussion and jazz bass at the University of Miami. After that, I started performing in my own group and making records. I was in a group called Inferno that was gigging down in Miami. Like with most groups, there was a period where things were going great, then we had a terrible fall. For two years after that, I was completely out of the business, but I soon realized I wanted to get back into it. That's when I moved to L.A. During my hiatus, I played some local gigs with several other groups working in and around Boston and New York.

What made you want to get back in?

I couldn't live with myself. I really wanted to be involved in the music [business].

What opportunity enabled you to return?

When I moved to L.A. in 1989, the first thing I did was call every studio in the local studio directory and ask for a job. I didn't know what I was doing; all I knew was that I wanted to work in a studio [laughs]. The reason I looked into recording studio work was that a good friend of mine, Keith Cohen, was out here and doing very well. It was he who made the suggestion that I call the studios. Two studios hired me right away: Wildcat and Paramount. I would do anything. I would empty the trash, assist the engineer, whatever the [studio] needed, I would do. Because I had some engineering experience, I was able to get the job at Paramount working in the MIDI room. I assisted the engineering staff there, and after a short time, they realized I knew what I was doing and started giving me regular sessions.

That, in turn, led me to Jay King of Club Nouveau. It was on a holiday weekend, and there were no other engineers around, so he gave me a shot. I was only hired initially to record the album. He took the project for mixing to someone else, but he brought the album back to me to mix after things weren't turning out how he hoped. We mixed the album at Aire L.A. in Glendale. It was there I met Craig Burbidge, another great mixer. It's Craig who I credit as being the father of my engineering career. He took me under his wing and helped me out. While I was

BY CHRISTOPHER PATTON

World Radio History

mixing the Club Nouveau album in Studio A, the Calloway Brothers were working in Studio B on their single "I Wanna Be Rich," which became a huge hit. That single was the first Gold record I ever worked on. From working with these people, I was able to meet and work with other artists, such as Chuckii Booker and Gerald Albright. This was the start of my career.

You mentioned earlier that before you got your break, you'd had some engineering experience.

I got that experience from producing and engineering my own records in Florida. I also did some work with an engineer in New York by the name of Micheal Laskow. He and I would have long talks about engineering. I would ask a lot of questions. He worked out of Howard Schwartz Recording. I would schlep my bass and drums to New York to do some recording with him, and at the same time I got an education about the recording process. All of that was important earlier on. There was also a period in Boston where I worked in some of the local studios, producing and engineering independent-label projects. Although it was satisfying, it still wasn't quite what I was looking for, primarily because of budget restrictions. There were times that I was engineering great talent, but because the projects were generally funded by the members of the bands, they sometimes weren't able to get the recording time they needed. It wasn't the record business I envisioned, so that's when I decided to move to L.A.

Do you feel an artist who wants a professional-sounding demo needs to record in a professional studio environment?

No way! I think you can get great-sounding recordings with just a few thousand dollars. In my home studio, I have keyboards, two [Alesis] ADATs, a Mackie 32x8 [mixer], an [AKG] 414 and two [Alesis] QuadraVerb 2s, all of which I think sound amazing. Even with this great equipment, I don't think great demos, or great records for that matter, are based on the sound of the recording but rather on the feeling. One of the hardest things to learn is when the recording feels good, to say "stop." The recording at that point doesn't have to achieve sonic excellence. What is [important] is to have a great feel, lyrics, melody and accompanying music. The records that most

"RUNAWAY" AND "TWENTY FOREPLAY"

JANET JACKSON'S HARD DISK RECORDING SESSIONS

by Christopher Patton

Recently, Rob Chiarelli was involved in a hard disk recording session that he described as complex. The sessions were the single remixes to "Runaway" and "Twenty Foreplay" from the Janet Jackson *Design of a Decade* album. The remixes were edited in Pro Tools.

"G-Man and Mark Mazzetti from A&M wanted to change the arrangement of the songs," Chiarelli says. "Cutting tape would have been impossible, so we decided hard disk was the way to go." Though knowledgeable about hard disk recording, they called Ritchie Vanilla, a Pro Tools expert, to help with editing. "When we first got "Runaway" there were tempo changes, because originally the track was cut with live drums. There was a big tempo change halfway through the song. It almost went into a double-time feel, because the click ran out and the band kept playing. It must have sped up a good 5-6 bpm. So we had to sample all of the vocals, the string parts, etc., fly them in, and time-stretch them to fit into the original tempo. This took hours and hours. Then we printed the mix down to Pro Tools for the editing I mentioned earlier.

"But after that, [Janet] wanted to sing another verse," he continues. "So she came in and did it, but that created other problems. The original recording used different microphones and effects. It was also recorded with Dolby SR. To make it work, we went to the instrumental version, cut out a section, printed her vocals with the same reverbs, and flew it all back in over the track in Pro Tools. After all was said and done, we went to mastering, and then Janet wanted to make a couple of changes at the last minute. So Stephen Marcussen at Precision removed the part we had done with the additional vocal, put in a new instrumental, took her 'naked' vocal and ran it in Sonic Solutions. After all of this, it sounds great! If we knew we were going to be going through all of that, we certainly would have done it differently. But if we had stopped to find a 'better' way to overcome each obstacle, we would still be mixing that song! When the creative juices are flowing between the producer, A&R and the artist, you don't stop, you go with it. Janet was getting tapes every few hours to listen and critique each step. That record was one of the most incredible projects I've ever been involved with.

"The actual mixes [on both songs] only took a few days, but with all the changes and edits, it ended up taking about a week, working 16-hour days. For me as the mixer, I was responsible for getting the songs recorded and mixed correctly. G-Man and Mark and Janet were responsible for the artistic decisions."

To help enhance the "street" feel of the remix, the team enlisted the help of Coolio to write and perform the rap in the song. "With 'Runaway' almost finished, I was asked what I was doing for the next project. I told G-Man I was mixing Coolio's album. [Upon] hearing this, Mark asked if I could get Coolio to do the rap on Janet's record. I asked him, and he agreed. Then we had Coolio to stick in. Mark was making arrangements with Coolio literally while I was in the middle of mixing Coolio's album. When Coolio was ready, I took a TV mix, had him rap over it and Ritchie V. flew him back in over the original record in Pro Tools. In this session, digital [recording] played a big role."

Despite the boon brought on by technological advances, Chiarelli still puts forth an anti-technology argument. He feels the "Runaway" remix session was an example of where technology was used to bring out the "essence" of the song. "The [overuse] of technology available today is just engineering overkill. Technology is used to help you create the music, not the other way around." ■

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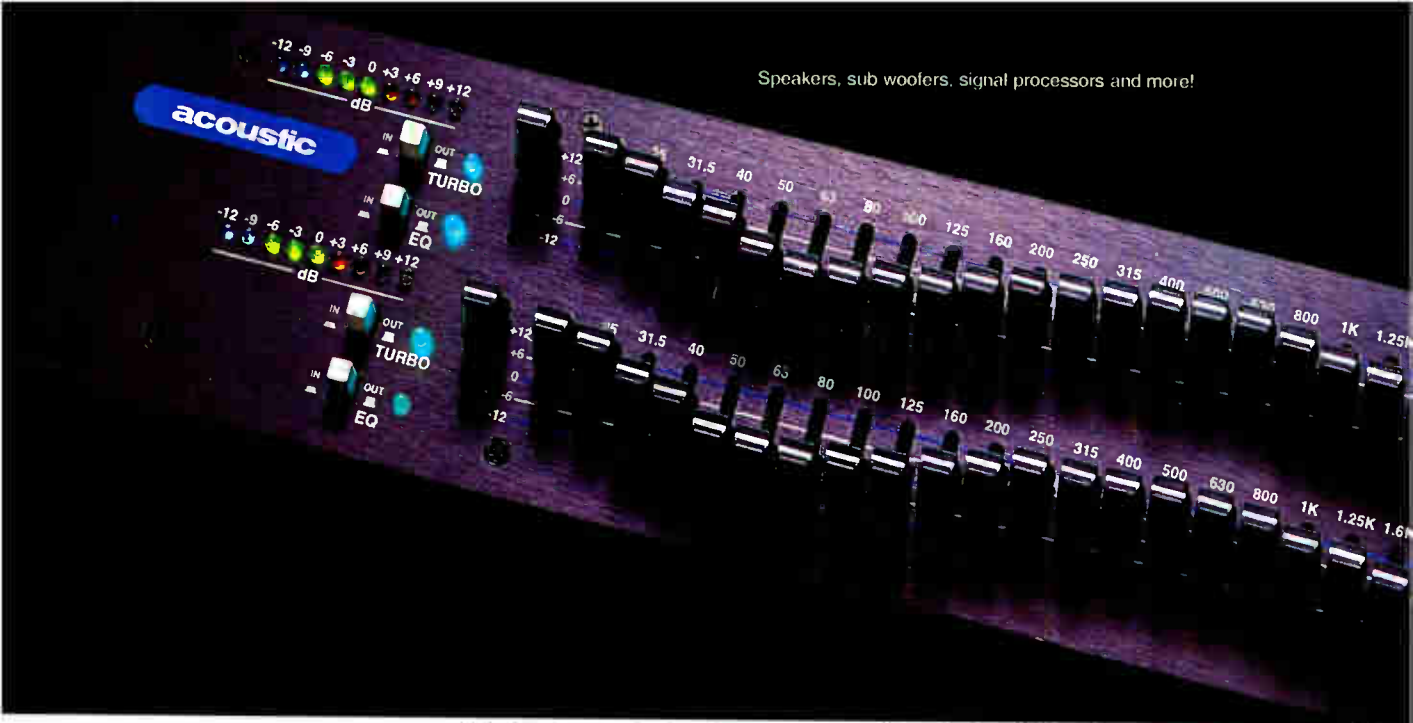

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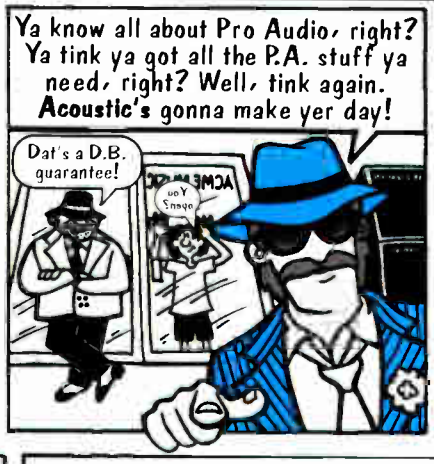

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people are familiar with that I've done I don't consider to be great-sounding records. The hardest thing for me is to fight trying to make everything sound incredible when it doesn't have to. I'd love it to, but sometimes it's overkill. For example, on Ice Cube's *Lethal Injection* I mixed about eight songs with QD3 producing, and we consciously kept it simple, dry and mono. When we got what we felt was the right feel and "vibe," we printed it. The album did phenomenally. It was one project I was most proud of. In that project we were able to say, "It's the song."

But you have to admit, most manufacturers, and some engineers, for that matter, like to talk more about specs than about the creative process.

I'm glad you've brought that up. Today, almost everything [R&B] has a hip hop flavor, even the pop stuff. These records are enhanced by their use of samples. There are certain [sounds] you wouldn't use on a Whitney [Houston] record, because she generally makes clean records. The Janet [Jackson] stuff I worked on with Jorge "G-Man" Corante and Mark Mazzetti were primarily clean recordings. Imagine if you took some of the "dirt" off the samples used on Coolio's, Ice Cube's or Yo Yo's records. You can just forget it. You've ruined it! Remember, someone recorded the original tracks to 2-inch, printed them down to half-inch, mastered it and pressed it to vinyl. Someone then sampled that, put it on 2-inch, mixed it and so on. Before you know it, you're listening to probably seven generations, and it sounds cool! (laughs) That's the vibe I was talking about. If the recording was perfectly clean, it wouldn't have the flavor. But I love clean records, too. The trick is to know when to and when not to.

Taking all of what you've said into consideration, what then makes a "good" mix?

When you can get the creative elements to gel, and all parties are satisfied artistically, then you've got a good mix. What we are ultimately trying to do here is take the visions of the artist and producer, through the expertise of the engineer, and create art. I feel my job as an engineer is to take the *essence* of the song, that the artist and producer have been working so hard to create, and bring that out. And if I can make it sound great in the process, that's a bonus.

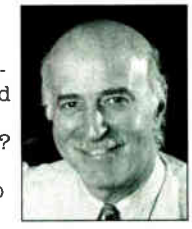
Some artists and producers pay closer attention to certain aspects of the recording. What do you do to bring the entire song into context during mixing?

I'll put all the tracks up and listen to the song first. No one can know what the song is about by just throwing up a kick and a snare. It might take an hour, or it might take three hours, but eventually it will click and I'll know what the song is about. But usually it will come to me quickly, where I'll understand what the lyrics and all the musical components are saying and how important each element is. I try to think musically, instead of technically.

I'll also have some idea as to who the artist is. Working with Janet [Jackson] can be quite different from working with Ice Cube. Ice Cube's vocals, for instance, are "in" the track, and Janet's are "on top." Most of what I mix is pop, R&B and dance—rhythm-based music. Rhythm is the "feel." Occasionally, I have to really focus in on certain elements. It might just be a catchy little synth line, and of course the hook of the song has to be treated special. Sometimes a synth pad can be catchy and should require special attention. I was working on the latest Temptations album with Richard Perry producing. The tracks had lush string orchestrations, five-part vocal harmonies—all of

THANK YOU MIX READERS!

An open letter from Morris Ballen, Disc Makers Chairman



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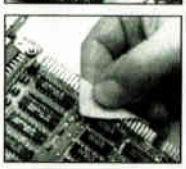

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developing a library that will be used exclusively with his music. We do this by creating a unique sound during the mix and resampling it for studio re-use. With QD3, we've exchanged a lot of samples and developed sounds that I will only use on his records. Livio Harris also has his own collection of sounds. It gets easier to develop sounds, because the more you and the producer [work together], the more you all understand the sound palettes of one another. With G-Man, I can go into a session and know exactly what he wants because I work with him so often.

Do you have a favorite mix?

It wouldn't be [one of] mine, if that's what you mean! [Laughs] But seriously, if at the end of my day I can listen to the song I've worked on and enjoy it, it was a good mix. There are many guys I like that create great mixes consistently, and some of them are John Gass, Craig Burbidge, Brian Malouf, Dave Way, Bob Clearmountain and Hugh Padgham. I respect them a lot.

Do you listen to these engineers for recording tips and mixing techniques?

No. [Laughs] I don't listen to other people for [recording and mixing] ideas, and I don't believe anyone should. All one has to do is listen to the radio and be open-minded. Your "ear" will develop itself. It's true that there are some engineers and producers whose influence is greater-felt in the industry. Each engineer has his or her own thing that makes them unique. The thing to do, after you've found your ear, is to develop and enhance what you do well. For me, I'm not looking to knock the world off its axis with some new mixing technique. What I want to do is use what I know to enhance the music I'm working on.

Why are so many people coming to you to mix their records?

Some people come to me because I'm easy to work with, others because of my approach to mixing drums and bass. If you listen to the [records] I mix, they all have a certain sound, and there are those who like that sound. But most important, there are producers and artists who choose me because I'm a musician first, engineer second. I'll listen and try to bring a musical approach to the mixing session, and I will try to respect the hard work they put into the creation and recording process. That comes from when I was in a band and recording my own music. The songs were my babies, and I didn't like it if an engineer was forcing his views on my music. Good engineers realize that there are no records out there that say, "Engineered by So and So, Featuring Janet Jackson!" [Laughs] That's backward thinking! The name of the artist, the producer, and then the engineer, maybe, are way down on the credit list. I don't want to minimize our importance, but it is the artist's record!

I'm not looking to knock the world off its axis with some new mixing technique. What I want to do is use what I know to enhance the music I'm working on.

Why is remixing so popular in R&B?

The reason for remixes is to be able to expose the song to different markets. If you have a pop song like "Runaway," produced by Jimmy [Jam] and Terry [Lewis]—the song was already great. I've never met those guys but would love to. Steve Hodge mixed it brilliantly, but the record company wanted a "street" version of the song. They may later present the track slightly different for the dance crowd by doing a house remix. For its release in Europe, they may mix it with a European flavor. Different marketplaces are accustomed to hearing different sounds. By hiring specialized remixers, the record companies can increase the song's chances of being successful in another market. ■

Chris Patton is owner/operator of Ars Nova Productions, a MIDI pre-production studio in Oakland, Calif.

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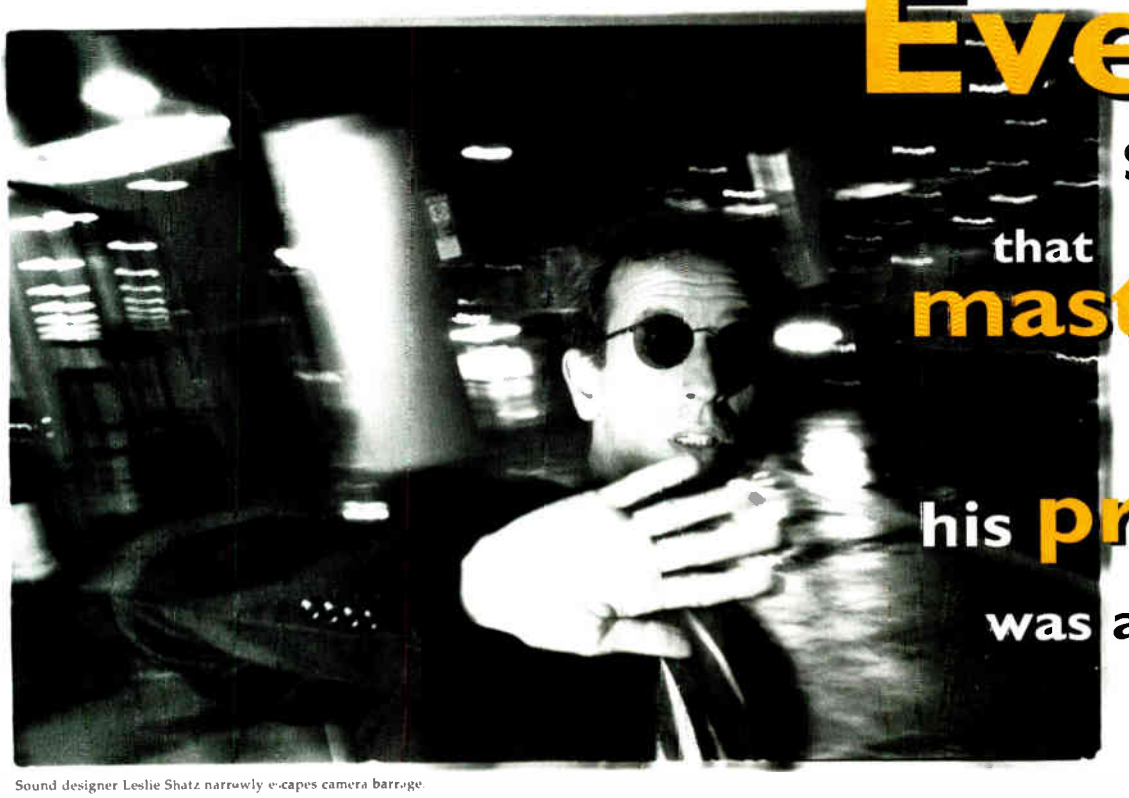

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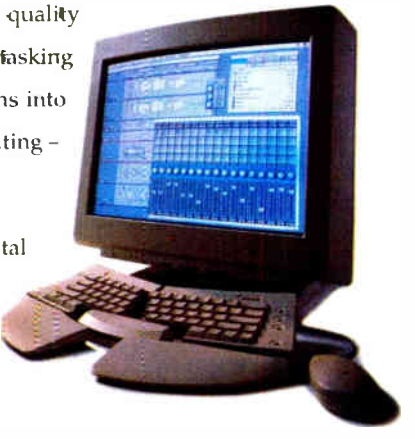

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Apollo 13 sound edited at Hastings Sound and Wonder Dog Music. *Dead Man Walking* sound edited at Hastings Sound.

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PHOTO: DAVID GOGGIN

L to R: Rik Pekkonen, Allen Sides and Don Was

Ocean Way/ Record One:

TRADITION IN SEARCH OF PERFECTION

BY HILLEL RESNER

IF THE BIG-STUDIO BUSINESS IS SHRINKING, YOU'D NEVER KNOW IT AT LOS ANGELES' OCEAN WAY/RECORD ONE. OWNED BY VETERAN ENGINEER AND AUDIO GURU ALLEN SIDES, THIS WEST COAST RECORDING STUDIO COMPLEX IS BOOKED TO THE MAX IN ALL SEVEN OF ITS STATE-OF-THE-ART ROOMS; MANY OF THEM ARE LOCKED OUT FOR MONTHS AT A TIME BY ARTISTS SUCH AS QUINCY JONES, MICHAEL JACKSON, BONNIE RAITT AND BRIAN SETZER.

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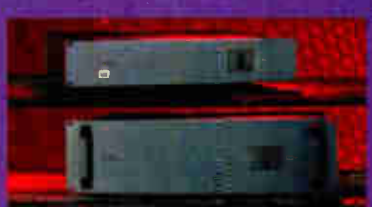
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Recent activity at Ocean Way/Record One has included Quincy's *Q's Jook Joint*, produced by Jones and mixed by Bruce Swedien; the newest album from the Brian Setzer Orchestra, produced by Phil Ramone and engineered by Sides; a new project by Tina Turner, produced by Trevor Horn and engineered by Steve McMillan, to be released this summer on Capitol; the soundtrack for the hit movie *Dead Man Walking*, featuring Eddie Vedder, Johnny Cash and others, with tracks produced by Ry Cooder and engineered by Sides; Tori Amos' *Boys for Pele*; Green Day's *Insomniac*; and *Songs of West Side Story*, an ambitious collaboration by numerous top-flight artists, produced by David Pack and engineered by Sides. Other artists working on new projects at Ocean Way include the Black Crowes, Lindsey Buckingham and Glenn Frey (engineered by Elliot Scheiner).

Ocean Way/Record One's tremendous success on the charts (the studio has recorded the Grammy Record of the Year for three years running—songs by Bonnie Raitt, Natalie Cole and Whitney Houston) can be attributed to a marriage of artistic tradition and a determined quest for technical superiority.

Originally United Western Studios and built by legendary engineer Bill Putnam, Ocean Way has been the site of some of pop music's most historic recordings. Sides, who was hired by the studio as a runner when he was a teenager in 1968, can recall from personal experience many of the studio's most memorable sessions. He began to acquire his appreciation for great sound in what is now Ocean Way's Studio One.

"I remember being in that room on a Sinatra date with Nelson Riddle," Sides says, "...actually standing in there with the full orchestra, listening to that when I was a kid and just being amazed at what it sounded like...I remember standing on top of the console, taping up the air-conditioning ducts when the Righteous Brothers were working, because it was too cold for them. And when Nancy Sinatra was doing 'These Boots Are Made for Walking.' The studio has a heritage that just won't quit."

More recently, Sides has endeavored to synthesize Studio One's '50s tradition and the technical advancements of the '90s: The studio has been substantially refurbished. The large main room (45 feet wide, 60 feet long, with a 22-foot ceiling) was reconditioned, aesthetically, to the way it was when Ol' Blue Eyes recorded in the '60s.

"The studio is really stunning," Sides says. "We haven't done anything to the room but restore it to the way it was originally. It had gone through a number of changes and been deadened down over the years, and we brought it back exactly as Bill Putnam had the room when it opened up. It looks just the way it did in 1961."

The control room is another story. Although he did not do much acoustic redesign (Sides says it "really sounded quite good before"), a couple of hundred square feet have been added to accommodate what Sides calls "my favorite console on the planet"—a customized 80-input Neve 8078 with GML automation, the largest totally discrete board of its type in the world.

The console is actually composed of *two* Neve consoles: one formerly at The Village Recorder in L.A. and the other from Woodland Sound in Nashville (two historic studios in their own right). "We put the two consoles together," Sides says, "but we added every possible function you could conceive of in regard to being a brand-new console, including replacing every switch and every capacitor in the console. I think we even came up with some improvements to reduce the noise floor even

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Brian Setzer and Allen Sides

further from the original console, and it's incredibly quiet.

"It's kind of a state-of-the-art classic console. I think it took us over a year to build it; I had four or five technicians working on it continually for a year. We rewired it with special low-capacitance cable, and we have all new patchbays with all gold normals. I think we did everything you could possibly do. And when Rupert Neve came over and saw it, I think he was astonished. It looked like it was made at the factory!"

Although the Sunset Boulevard complex may represent the "classic" side of Sides' devotion to sonic purity (Studios 2 and 3 also house extensively modified Neve consoles), his Record One facility in Sherman Oaks has a more cutting-edge personality.

"Record One is a little more of a 'designer' kind of place," Sides says. "Ocean Way is a place where the hallways are sort of old-timey, everybody knows everybody—it's a real scene over there. At Record One, a lot of clients who come in will actually lock out both rooms. It has a living room with a fireplace, office suites, a full kitchen and everything else. It's a very comfortable place. We've done the last three Michael Jackson albums, including *HIStory*, there.

"Val Garay and Mel Simon were the original builders of Record One," Sides continues. "It was quite a successful studio when we bought it, and Mel Simon just made the determination that he really didn't need to be in the studio business, and so I purchased it. And then we completely rebuilt the studios. The first room we rebuilt, of course, was for Quincy. And then we rebuilt the second room, essentially for Michael. The A room there has a huge SSL console, which is the 100-input custom 8000 G Plus. And then the B room has the 80-input SSL 9000 J."

If it sounds as though Sides is trying to corner the market on ultra-large consoles, be advised that the four-time TEC Award winner is not through yet. Some time this summer, the Ocean Way/Record One franchise will make its Nashville debut with a new complex built in a totally renovated 1850s-era church and rectory building on Music Row. Featuring three studios, including an 80x50-foot main room with 30-foot ceilings, the Nashville facility will also incorporate at least one 9000 J Series console. And though you're not likely to see Sides standing on the board to tape up the air-conditioning ducts, there's a good chance you'll find him in his favorite place: *behind* the board, listening for the perfect sound. ■

Hillel Resner is the publisher/editor-in-chief of Mix.

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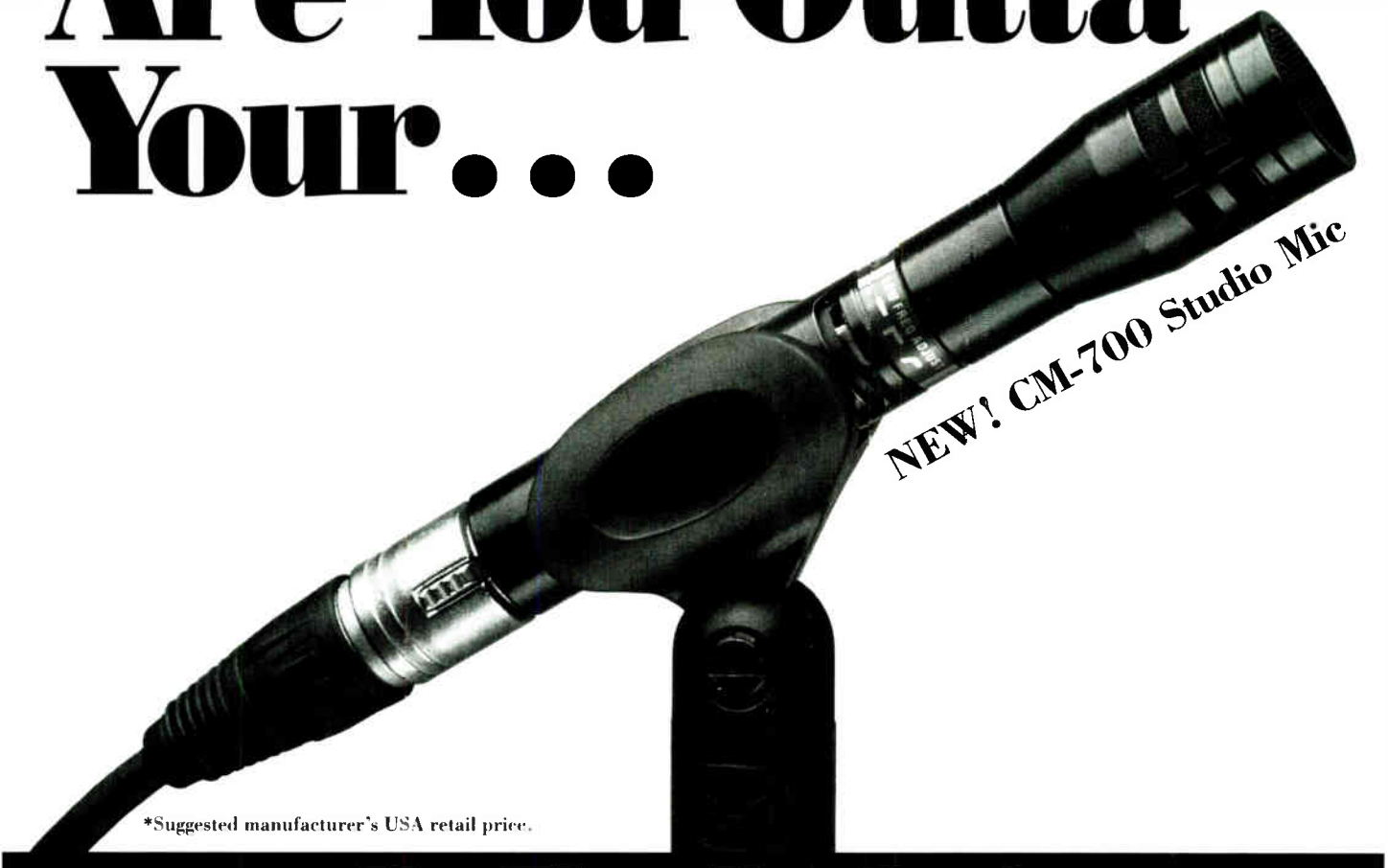

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DAMIAN F/X STUDIOS

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It's an evolving truth of the '90s—if you don't want to leave yourself to the mercy of increasingly clueless corporations, you have to get in there and take care of business for yourself.

Drummer Aldy Damian figured this out some time ago. From his music-business beginnings pounding the skins on other people's sessions, he has moved into song writing, producing, publishing. Now, with his Damian F/X Studios, he's become an engineer, studio owner and head of his own label, Damian Music.

Even as a session drummer, Damian always felt the need to have more control over the material he was working on. To that end, he put the money he made from sessions into buying gear and slowly building his own studio. He also studied piano and began writing his own songs and collaborating with other musicians.

Out of that came the band LA Rocks, which was signed to Capitol Records, and another project called *Eyes*, which was released on EMI. Says Damian, "From these deals, I learned that with all the legal and publishing problems in this business, the only way to really make money is to control your own masters—to own them and license them."

Damian refined his song writing with his good friend Steve Dougherty—the guitar player from the band Berlin whom he describes as "a very, very talented guy"—and they started recording their own music. Along the way, Damian discovered that there were a lot of unknown bands out there with recorded material that needed distribution, so he went into business doing sub-licensing deals. Now he works with Intercord/EMI in Germany, Warner/Chappell in Japan, Sony in Australia and EMI in Canada, distributing primarily compilation projects. He laughs, "I do it all myself. I'm up at three in the morning, working on my computer, faxing, calling...

"I found that you really have to divide yourself up between being a songwriter and a businessman to try to make a good living," he adds. "So what I've done is retained the rights to all the masters and expanded on that. At first, none of these projects had been released in the U.S. Then, through my attorney, I had discussions with Navarre Corporation, one of the biggest CD-ROM distributors in the States that also distributes audio titles, and we reached an agreement. Since then, I've reissued *The Dance Box Vol. 1, Larry Tagg*, and *The Black Side Brown* and *Generation X* in the U.S. on my label Damian Music, and they've been doing fantastic. Now I've got a couple of major labels interested in picking up the whole line."

PHOTO: MAUREEN DRONEY

Crucial to the company is its studio, Damian F/X. Situated in the outbuilding of a house isolated high in the hills above Glendale, the room looks out over the San Fernando Valley and features a pool and Jacuzzi. Equipment includes a 64-in automated Allen & Heath console and an Otari RADAR (Random Access Disk Audio Recorder) system. Damian considers the RADAR, one of only 16 now in L.A., to be key to his facility.

"At the NAMM show four years ago, I hooked up with a company called Creation Technologies, which makes the RADAR system," he says. "It's fully proprietary 24 tracks—fully separated, each with its own digital I/O. It acts like a standard tape machine but with instant access as far as fast-forward and rewind. It's truly a joy to work on. After using one of these, I can't find any reason at all why people would use tape! I knew I wanted it when I first saw it, but it wasn't released yet. So I told them, 'Tell me whatever agreements you need me to make. I'll be your test pilot.' At the time, I was working on the *Watcher* TV series soundtrack, and they wanted to see how the system would work locked to video.

"It wasn't easy at first, of course," he says. "There were a lot of bugs, and I went through 14 sets of software. But now it's working fantastic."

Damian is still a drummer at heart, and his studio is not just set up for electronic work. Most of the recording he does there is of live instruments, and he keeps a miked kit ready in the 1,200-square-foot studio.

"I've had all kinds of engineers up here besides myself," he concludes, "Niko Bolas, Chad Munsey, Frank DeLuna, Cliff Zellman and Joe Chicarelli, to name a few, and everybody seems to think it sounds pretty good." ■

BY MAUREEN DRONEY

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"ALASKA"

ON·LOCATION

BACKGROUND PHOTO: ROSEMARY CHASTNEY/IMAGE BANK

Top: Baby polar bear Agee checks out John "Johnny Boom" Motyer's lunch pack for treats. Top right: Production sound mixer Eric Batut recording with the Stelladat atop Blackcomb Mountain. Right: Batut with the postage-stamp sized digital tape for the Sony NT 1, which was used in the whitewater scenes.

When Vancouver sound mixer Eric Batut read the script for the new Castle Rock feature *Alaska*, a film about two kids who go searching for their father after his plane crashes in the mountains, he knew he had his work cut out for him. "I knew the locations were going to be tough from a sound perspective," explains Batut. "We would be shooting on rough salt water with waves crashing, and we were going to shoot on white water down a river with dialog between the two kids. There were a number of scenes which involved a live baby polar bear. And then we were going to shoot at high altitudes on glaciers, where we wouldn't be able to take a lot of equipment because we would fly up in helicopters every day. I had done *Alive*, so I knew what shooting on a mountain was like. It was the salt water and fresh water that concerned me. Salt

PHOTOS: DOUG CURRAN

BY TIM MOSHANSKY

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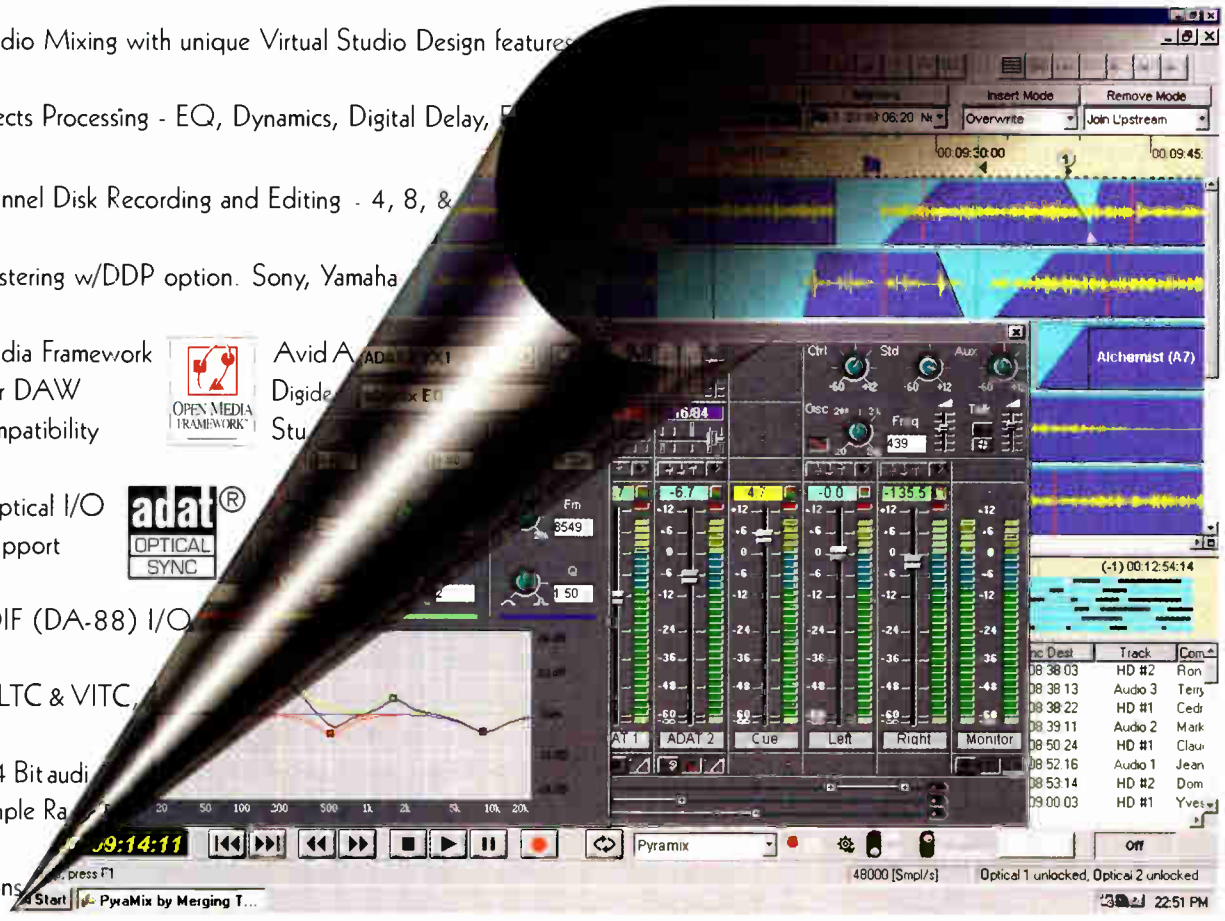

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water is really tough on equipment—every night when you come home you've got to clean it and spray all the cables and connectors."

The editors had requested that all of the production sound be recorded to DAT for ease of loading into the Avid picture-editing system for dailies, and Batut agreed on the one condition that he record without a Nagra backup and only if it could be a Stelladat. The Stelladat worked flawlessly for 45 tapes. "Something happened at that magical 45th tape," says Batut in his thick French accent, "and to this day we don't know what it was. We think it may be the auto-tracking circuitry, or the DAT machine they used for transferring it to the Avid. It then became a recurring problem that bugged us for at least six occasions. At that point, it became logical to use a Nagra backup, even though we never did have to use [the tapes]. At the moment, I'm reluctant to go to DAT again, period. I think the technology is there, but the DAT cassette format is too fragile."

In a number of scenes, the two kids are canoeing down a river, and at one point, they get into some white water and eventually go over a waterfall. Director Fraser Heston wanted to shoot these scenes with a very small unit, which meant the safety guys, himself, the camera operator, the focus puller and the director of photography. They were going to go for hundreds of yards, so there was no way a radio microphone would work.

"At one time we discussed putting the Stelladat onto Fraser's lap," says Batut, "but once I saw what type of raft they were going on, I realized that it wasn't feasible, seeing as it's a $25,000 machine, and if it got wet, it would be a write-off. One of the EPK (electronic press kit) guys that came up showed me a little Sony micro-digital cassette recorder called an NT 1, and I thought if I got a couple of those, we could hide them on the kid's bodies and we could send them on their way, then transfer the dialog to the Stelladat when they came back. We finally tracked down a couple of them in L.A. [they weren't available in Canada], and they worked flawlessly. They use a digital cassette about the size of a postage stamp. We put them in baggies and siliconed the edges so they would be waterproof, then plugged a microphone into them and put them just above the actor's hairlines, and they worked fine. Then we would just press Record and send them on their way. The tapes would last 45 minutes per side. The only drawback was that I had no

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World Radio History

way of monitoring them. The whole time they were gone, I didn't have a clue if they were working or not."

Many of the film's scenes were shot thousands of feet above sea level atop the Pemberton Glacier and Blackcomb Mountain, two hours north of Vancouver. "The high-altitude glacier stuff was wonderful," says Batut, "because there's no background noise, so you can use perspective sound recorded onto the Stelladat. You can hear dialog up to 300 yards away. We did a big wide shot where the kids were leaving a helicopter, and you could hear them talking as they were coming toward the camera. My biggest problem on the glacier was keeping the crew noise down. They were about 800 feet away, but you could hear them talking or walking in the snow. Up there, there's no background noise to mask anything."

Batut's equipment includes a 6-channel Cooper mixer, Nagra IV-S with timecode and Neumann microphones (140s, 150s, 81s and 82s). He was assisted on the show by boom operator John "Johnny Boom" Motyer, assistant sound mixer Ruth Huddleston and sound effects recordist Ezra Dweck, who recorded original sound effects, including wind noise on the glacier, helicopters taking off and landing, bear noises, elephant gun blasts, paddling sounds and many others.

Batut, originally from France, is considered one of the top sound mixers in the provinces. He came to Canada in the early '70s and did a long stint in radio and television audio with the Canadian Broadcasting Corporation. While working in television sound, he traveled the world with a television program called *Fifth Estate*. He worked for a few seasons on the popular Canadian series *The Beachcombers* as a boom op and then spent four years mixing the highly successful *McGyver* series. He now concentrates primarily on feature films and the occasional television movie. Recent projects include *Little Women*, *Needful Things*, *Unforgettable* and *Underworld*.

He has been responsible for pre-production, production recording and even audio post-production on many of the shows he worked on. "I think if you're going to do location sound, you should do some post," he says, "so you know what you're dealing with—what you can do and can't do." ■

Tim Mosbansky is currently writing and recording with his band, the Bush Pilots, in beautiful Vancouver, B.C.

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BY TOM KENNY

POST·SCRIPT

SOUND FOR FILM

READY OR NOT, MUSIC INDUSTRY, HERE COMES SURROUND

PART 2

by Larry Blake

In my last column (published in the April issue), I proposed that music mastering facilities should start preparing today for what I predict will be a sudden change tomorrow: the release of music in multichannel surround sound. Though on the one hand I certainly can't take credit for being the only person who feels this way, as of this writing I know of no major mastering facility that has built a surround-sound-ready room. I mean built and in use; talk is cheap.

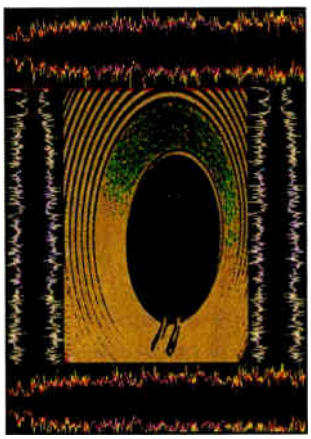

ILLUSTRATION: TIM GLEASON

Music recording and mastering engineers will find themselves in the same position that film re-recording engineers were in the late '70s, when Dolby Stereo not only resurrected stereo mixing for films but also made it

—CONTINUED ON PAGE 122

SOUNDELUX AND "BRAVEHEART"

On Oscar night, the award for Best Sound Effects Editing went to Lon Bender and Per Hallberg, supervising sound editors for *Braveheart*. In their 20-second slot for acceptance speeches, they managed to squeeze in a thank you to Wylie Stateman and the crew at independent editorial facility Soundelux of Hollywood (co-owned by Bender and Stateman). Here is who they were thanking:

- First Assistant Sound Editor: Karen M. Baker
- Dialog Editors: Dan Rich, Richard Dwan Jr., Sarah Rothenberg Goldsmith, Mark Lapointe
- ADR Supervisor: Joe Mayer
- ADR Editors: Robert Heffernan, Beth Bergeron, Mary Ruth Smith
- Foley Supervisor: Craig Jaeger
- Foley Editors: Lou Kleinman, Phil Hess, Stuart Copley, Hector Gika

PHOTO: ANDREW COOPER/© PARAMOUNT PICTURES

Lon Bender (L) and Per Hallberg of Soundelux

- Foley Artists: John Roesch, Hilda Hodges
- Foley Mixer: Mary Jo Lang
- Foley Recordist: Carolyn Tapp
- Sound Effects Editors: Peter Michael Sullivan, Christopher Assells, Randy Kelley, Joseph Phillips, Jeff Largent, Jay B. Richardson, Nigel Holland, Scott Martin Gershin, Chris Hogan, Peter J. Lehman, Craig Harris
- Assistant Sound Editors: Horace Manzanares, Judson Leach, Timothy Groseclose, Elizabeth Tobin Kurtz
- Digital Assistants: Phillip D. Morrill, Tony Lamberti, Paul Flinchbaugh
- Additional Audio: Kim Waugh, Charles P. Meister
- Re-Recording Mixers: Andy Nelson, Scott Millan, Anna Behlmer
- Re-Recordists: Andrea Lakin, Samuel F. Kaufman
- Engineers: Tom Newbon, Bob Weitz ■

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FACILITY SPOTLIGHT

TELL-A-VISION POST

by Tom Kenny

Online video editing house Tell-A-Vision Post, Hollywood, opened an audio bay in 1995, then brought in former Interlock editor/mixer Peter Nusbaum to make it work. Talent, Tell-A-Vision Post seems to have recognized, is every bit as important as equipment, especially in the competitive world of commercial/promo audio.

On the September day he walked into his new job, Nusbaum says, "It was a finished bay, but there were a lot of things that I changed in terms of making it more efficient. My emphasis is on efficiency and speed, because I think it's really important for a client to be on time and under budget. They don't really care what kind of mic preamp you have, necessarily. They want it done on time...and it has to sound great, of course.

PHOTO: TRACY-LEE TAYLOR

Peter Nusbaum in front of the Dyaxis

"So my first order of business was to assess the room, deciding what equipment would fit the bill and how to customize it—how the patchbay needed to be changed and so forth. Then I started to look at digital audio workstations, and based on my own experience, and after talks with a lot of people in the industry, we ended up going with the Studer Dyaxis. The thing I like about the Studer is that it was designed for audio post. It's not like a music workstation where they said, 'Oh, there's another market we can go for.'

"My 'console' then, is the Studer Multidesk—eight full motorized faders with unlimited virtual tracks," he continues. "I'll usually set up my overall levels for voice-over and dialog without using the faders, then once I get everything generally placed, I turn on the automation and start mixing the music, doing any tricky ups and downs with the au-

—CONTINUED ON PAGE 125

DAVID KATES

FROM CARTOONS TO "CLOCKERS"

By David John Farinella

Composer David Kates is sitting back in his studio watching some classic Disney cartoons. He's on deadline, but he just can't pull himself away. Luckily he's on deadline for the Disney series *Sing Me a Story*, and his intent viewing is all part of the job. There are worse ways to spend a day.

Unfortunately all of the work that Kates is doing right now will be replaced, but it's a planned obsolescence. "We started electronically and then we replaced that with real people," he says. It's the best way that Kates, who got his start scoring corporate videos, film trailers and television commercials with a sequencer and a handful of modules, has found to bring a track to life. "I found that after a while, it became grating on my ear to only hear the electronic sound. Since I've gotten some better modules like SampleCell and the upgraded Kurzweil 2000, I'm now able to do augmented scores, where we bring in live players on top of electronic scores." He's not necessarily talking about augmenting the entire score, however, but "the instruments that are in focus at a particular point. If I have a series of violins playing with SampleCell and I bring in a violin player to play, it completely comes to life."

PHOTO: DAWN HADMAN

For Kates, the idea of working with full orchestras, or session classical players, is a return to his roots. After studying at UCLA's film scoring school, Kates started working as a composer in the early '80s. He found that, as an upstart composer, there weren't a lot of companies willing to pay for an

—CONTINUED ON PAGE 126

World Radio History

DIALOG EDITING

BETTER TOOLS, BIGGER CHALLENGES

by Loren Alldrin

Sometimes, amid all of the flash of today's blockbuster pictures, it's easy to overlook the very heart of most films—the *dialog*. It's the dialog that develops a film's plot, reveals its characters and drives the picture forward.

Dialog editors are the unsung keepers of a film's spoken word. Their job is to turn a potpourri of clean and not-so-clean production tracks, ADR lines and background sounds into a seamless whole. And where dialog editors once cut and spliced film mag tracks, most are now using digital workstations, which have brought vast improvements in quality, flexibility and speed over traditional mag-style editing.

And these improvements have arrived none too soon. Many dialog editors face increasingly tight post-production budgets, massively compressed schedules and frequent last-minute revisions. Without today's digital technology, some editors say, they wouldn't be able to keep up at all.

We spoke with four dialog editors/supervisors who use workstations every day. Dan Rich, senior dialog editor with Soundelux (Hollywood), has used a TimeLine (WaveFrame) on such notable films as *Heat*, *Braveheart*, *JFK*, *Natural Born Killers*, *Last of the Mohicans* and *Pocahontas*. Philip Stockton is vice president and working dialog editor/supervisor for New York-based C5, one of the first East Coast post houses to use the Sonic Solutions system. Stockton's credits include *Get Shorty*, *The Birdcage*, *Clockers* and all of Martin Scorsese's and Spike Lee's pictures going back to *Last Temptation of Christ* and *Do the Right Thing*. Curt Schulkey is a Southern California-based freelance dialog editor with such credits as Bill Murray's *Larger Than Life*, *Aladdin*, *The Empire Strikes Back* and *Raiders of the Lost Ark*. Schulkey currently uses a Digidesign Pro Tools system. Michael Silvers, dialog editor with Skywalker Sound (Nicasio, Calif.), has been cutting dialog for more than ten years. Currently using a TimeLine StudioFrame system, Silvers has worked on such productions as *Rush*, *Backdraft*, *Jurassic Park*, *Quiz Show*, *Jumanji* and *Casper*.

POWER TOOLS

When asked if he misses any aspect of cutting dialog with traditional tools, Stockton answers with an emphatic "no." "And I was a die-hard critic of every electronic system we looked at," he says. "But now, I can't think of a single thing that I prefer about mag. Working electronically feels much less like an assembly line. There are so many different solutions for a problem. With mag, editing was much more tedious; it was challenging, but not really fulfilling. Electronic editing changed the whole game."

"Compared to how we used to work, I don't think the ultimate steps we take are that much different. It's just that the tools are so much better," says Silvers. "Where we used to cut, say, one reel a week, now we might be able to prepare a reel and a half, depending on the project. That's one scenario. Or, you still cut one reel a week, but you've been able to do so much more in that reel. In the old days, you had synchronizers that weren't always great, bits of mag building up on the heads, a

C.A.S. AWARDS

On March 9, a couple of weeks before the Oscars, the Cinema Audio Society hosted its awards banquet and honored Michael Kohut of Sony Pictures Studios with a Lifetime Achievement Award. Also honored were:

- Frank Jones, Will Yarborough, Allen Stone and Michael E. Jiron for Outstanding Achievement in Sound Mixing for Television Series for their work on *ER*.
- David E. Fluhr, Sam Black and John B. Asman for Outstanding Achievement in Sound Mixing for Miniseries or Specials for their work on *The Piano Lesson*.
- Scott Millan, David Macmillan, Rick Dior and Steve Pederson for Outstanding Achievement in Sound Mixing for Film for their mix on *Apollo 13*. The team also won an Oscar for Best Achievement in Sound.

The Apollo 13 mix team of (L to R) Scott Millan, production sound mixer David Macmillan, Rick Dior and Steve Pederson. The mix took place at Todd-AO East in New York City.

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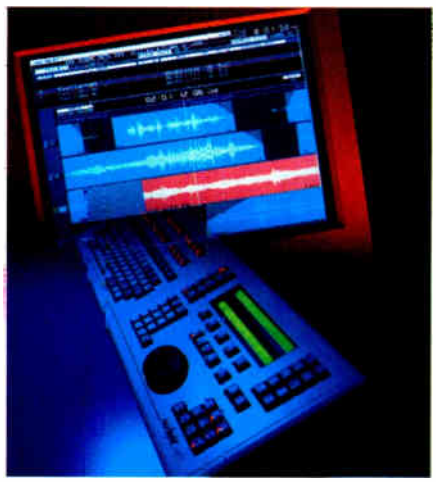

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"Straight film shows are becoming more and more rare as the technology changes," says Schulkey. "Editors are learning new systems, and schedules are forcing them to do films electronically. Yet the actual editing, in some ways, hasn't changed a whole lot from how we worked on film—the goal is the same, and the end result is largely the same. I have a few really incredible new tools available that I never had before. But in general, what I'm delivering to the dubbing stage is not all that different from when I was working on film. The difference is, I can do it in a significantly shorter time, and a few things I can do far more effectively."

"I'm doing everything I could with traditional tools, but much faster," echoes Silvers. "We're in an interesting time, sort of on the bubble between the old technology and the new technology. We're defining things as we go. I think one of our new challenges is this: As the technology is improving for the dialog editor, it's also improving for the picture editors. They're able to make their soundtracks more complicated. Sometimes, I'm getting shows with three or four guide tracks because the editors have more time to work with the production track to make things better."

Silvers mentions the creation of seamless backgrounds as one of the digital editor's biggest strengths. "I'm always trying to make backgrounds out of pieces of things not intentionally recorded as backgrounds, but as dialog," he says. "I'm finding these little pieces of 'air.' If I use a long crossfade with other material—even from totally different areas of the track—it will still have the feel of that room and will still work to help me blend the dialog. This is a wonderful trick that would be much more difficult to do in the mag world."

SHRINKING SCHEDULES

As technology progresses, it usually brings with it an overall increase in the pace of production. And when the new tools allow editors to keep up with the pace, everyone benefits. But when expectations actually exceed the capabilities of the new tools, quality takes a hit. Such is the predicament of some dialog editors—they're trapped between shrinking schedules and heightened expectations.

"Overall budgets are getting larger, but post-production budgets aren't changing," says Rich. "The schedules are so accelerated these days—it seems every year we shake our heads in amazement at how schedules are even tighter than the year before."

DIALOG EDITORS ARE THE UNSUNG KEEPERS OF A FILM'S SPOKEN WORD. THEIR JOB IS TO TURN A POTPOURRI OF CLEAN AND NOT-SO-CLEAN PRODUCTION TRACKS, ADR LINES AND BACKGROUND SOUNDS INTO A SEAMLESS WHOLE.

"Schedules are definitely getting shorter," agrees Schulkey. "These tools allow us to move so much faster, but we now have to move even faster than that. Someone may see how long it takes us to cut one line of dialog, extrapolate that out to an entire reel or an entire show and think we can just cut this stuff a mile a minute. But it still takes a certain amount of thinking and planning to do the actual editing. If you're searching through the outtakes for a specific line to swap out, for example, that search time isn't a whole lot less with the new tools."

"Folks think that because we've got these digital editing tools, we should be able to work that much faster," says Silvers. "Then schedules get shorter and crews get smaller. My fear is that these systems will actually cut into the quality because we won't have the ability, with short schedules and small crews, to spend the time we need to on the editing. I think this is going to be the struggle of the next few years—to make sure we have the time and the people to use these machines to their full capability."

Though the trend may be toward accelerated post-production schedules, some dialog editors are not feeling the crush. "Tighter schedules? That hasn't been my take at all," says Stockton. "I'm often in on the budget, so I do have a little more input than most editors. With the exception of jobs that have heavy changes down the line, we usually leave ourselves an adequate amount of time. Whenever possible, we try to leave four to six weeks before the dialog predub for editing time. Though I have done two-week dialog editing projects, where we don't re-transfer or fix the things that really need to be fixed, they're the exception. We're fortunate in this way."

Not only are schedules being cut to the bone for some dialog editors, but last-minute picture changes seem to have become more the rule than the exception. "Usually, right before a mix, we receive a set of change notes," says Rich. "We update our tracks to the final current version—that's what we call a 'locked picture.' Now, that process of locking the picture has gone further into the process of the final mix. It's common that, right up to the last minute, they're still making picture changes. I think it's partially because of the new technology we deal with on the picture-editing side.

"In the old days," Rich continues, "there was a long gap between the temp dub and the final dub. The way it is now, we're doing temp dubs constantly throughout the preparation for the final mix. Now, on the larger features, the temp dub and the final are handled by two separate crews. This is all due to the acceleration of the schedules."

"If I have time, I like to listen through the outtakes, find alternative lines and clean them up," says Schulkey. "Then we spend almost no time trying to fix those problems when we're mixing. It's those times when we can't dig into the outtakes—because of the production schedules—that it takes more time in the mixing. Dealing with those pops and clunks and other inappropriate sounds when you're mixing is the *worst* time to do it. It's very expen-

World Radio History

sive to spend the time at the mix vs. the editing, but often the time is saved in the editing and ends up getting spent at the mix."

Dialog editors feel the effects of rushed location recordings, as well. "We can only do as good a job as the location recordists' work allows," says Silvers. "Sound recordists need a run-through, a little rehearsal, so they can give us the best tracks they can. Instead, they're often having to rush things through. I hear this more and more, that location recordists just aren't being given any time. Give the location recordists enough time to the best work possible—it makes everyone's jobs, from the actors and directors on down to us, that much better."

NEW CHALLENGES

Advances in other facets of production often effect the dialog editor, in the form of sounds that find their way onto production tracks. Gone, it seems, are the days of the simple one camera/one mic shoot.

"Along with the changes in *our* electronics, new things are happening in production," says Rich. "And when a film is turned over to us, there are often a lot of problems in the track. There are new cameras, gadgets and servo-driven equipment, and quite a few strange noises end up in my cutting room. You can always tell when there's a moving shot—you can hear the servo motors. Radio mics are also used much more frequently than they used to be. It's very common to have multiple radio mics on different characters, and they may be causing a lot of rustling or ticks and pops. Part of our jobs is to get rid of those noises. These are just added challenges of editing dialog in the '90s."

"One change I'm beginning to see is a loss of synchronization," notes Schulkey. "Some films posted electronically have come to us as a work track that was not in sync with the picture. Sometimes, we have to struggle to get everything lined up by eye, because there's no hard sync reference to work with. It appears that the tracks go into the nonlinear editing system in sync but leave the system out of sync. In some cases, the film went through a bad telecine conversion, or there's a mistake in the database. By the time it gets to us, there's no easy way to get things back in sync. This is a new issue, one we've never had to deal with before."■

Loren Alldrin is a freelance audio and video producer.

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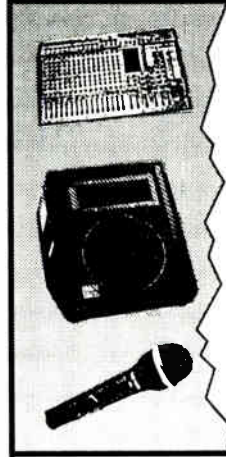

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—FROM PAGE 116, SOUND FOR FILM

available for a wider range of releases. In comparison, though the record industry flirted around with quad in the early '70s, it never took hold for a variety of reasons, key among them being the reluctance of consumers to upgrade their B-Chains (the film industry's term for the sound reproduction system, including amps, crossovers and speakers) in the face of confusion over which quad format to use.

Thanks to the who-would-have-predicted-it growth of home theater, the music industry has been spared the trouble of convincing consumers to add speakers to their stereo systems. You have to look hard to find a receiver that *doesn't* have Pro Logic decoding, and current estimates of the number of units in homes worldwide is upward of 10 million. These numbers go far beyond the hardcore laserdisc dweeb contingent, which accounts for only about 1% of the marketplace. (It cracks me up to talk to my "non-pro" friends about their home theaters and to see how conversant they are with what was three years ago only the domain of film sound nuts.) So, with B-Chain hardware already in place and software coming soon courtesy of digital video disc, all that remains for the music industry is to educate and equip itself.

All of us in the world of film sound started getting pretty lazy in the '80s, when a simple stereo recording, assigned left-right, would nicely fill across all four quadrants (left/center/right/surround) courtesy of the Scheiber matrix encoding/decoding, which was (and still is) the heart of the Dolby Stereo optical process. Common in-phase information would bleed into the center, while the surround channel would be the repository—like it or not—of out-of-phase material. The inevitability of the matrix was assumed when editing and mixing stereo films back then. (Yes, I know that 70mm Dolby Stereo offered non-matrixed playback, but that was only for a select few films.)

Re-recording mixers have to be really careful today about the behind-the-screen stereo image because a stereo recording assigned left/right will play back just like that in digital release formats such as Dolby Digital, DTS or SDDS—no center or surrounds are added. While the intent might be for a wide image, the result is frequently an image that is *distractingly* wide unless you are seated in the exact center of the theater.

You might think that the sweet spot of your average large 400-seat multiplex theater would be large enough that a phantom center would work for people generally seated in the middle. Not so. If you are playing a 2-track music cue and are not seated on the imaginary line equidistant between left and right screen speakers, you will hear the whole stereo image shift to the side you're on—the singer, the snare, the whole damn thing. This is extremely distracting, and you can see why films have used three screen channels since the get-go, even with the old 1.37:1 screen ratio that was standard until 1953. (The boys at Bell Labs drew the line that a "phantom"

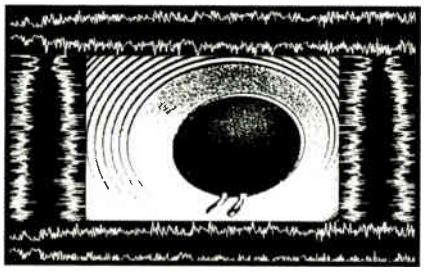

image fell apart when speakers were separated by more than 20 feet, thus the need not only for three speakers in almost every theater, but for five speakers when you have screens more than 40 feet wide. More on this next month.) Bringing the topic back to quad, we see that not having a separate center speaker was not a very good move, and thankfully the widespread use of 8-track MDMs has made the leap above four tracks a non-issue in practical terms.

So, how can film re-recording mixers get around this problem today in digital mixes, and how can music mixers plan for this both for film mixes today and for record mixes tomorrow? First and foremost, think "separate center channel" at all times. This might seem like bad news until you realize that it can often mean simply recording on another track what was panned in the center. You don't really need to listen to a separate center speaker at the mix to *record* this way; you can be recording your kick and snare into a center track of your stems (see my April column) while listening to the output panned across a normal 2-channel stereo spread. This situation gets more complicated only if you start talking about pans slightly left- or right-of-center; to do this, you really need three-channel panpots.

The example stated above assumes that we're dealing with a standard "pan-potted-mono" stereo mix, where the source material has precious little natural acoustic space. But what if you need to record a concert, both in terms of music and sound effects concerns? It would be very smart of you to record on an MDM with a separate center-channel mic. (It's assumed that you will have at least some form of release in a 5.1-channel format, and will therefore cut, premix and final mix in a L/C/R/LS/RS/sub configuration.) If you just record the four quadrants (L, R, LS, RS), with no center, when the event is played back discrete, anyone not seated in the dead center—that is, left-right—of the theater (or, more to the point, of the living room) will hear material primarily coming from the side they're closest to. This empirical evidence of the Haas precedence effect is very unnatural-sounding and is partly the product of habit (center channels being phantom in records, and stereo recordings working well through the 4:2:4 matrix in films) and partly of the misconception that something played back with two channels as opposed to three will be "wider," as in "better."

As I hinted at in my previous column, if you start taking the stems-and-center-channel approach to your music, you will be that much more prepared to do scores for films, since you would be making records in the manner considered the optimum way of preparing music for theatrical mixing. If a song will be used in a film, your stems would allow the basic mix to be used with minimal tweaking (primarily for action-based POV).

Adapting an existing record today is a no-win situation resulting from "don't touch my mix" paranoia: Either we use the composite 2-track mix, severely handicapping our ability to fill it into the center speaker, or we find out that no one wants to trust anyone else with remixing their 48-track masters. You don't have to wait until you are mastering and releasing for 5.1-channel surround sound to print your mixes as stems. Even if you will still be making a 2-track mix that will wind its way down the standard mastering path today, you will be protecting yourself if you simultaneously print onto an MDM (using the multitrack bus assignments) an exploded view of the elements of your mix, preserving all of your carefully tweaked outboard EQ, compression, etc., plus relative fader moves.

I wish I could jump five years in the future and find out what percentage of music recording people have not only adapted to the 5.1-channel film format, but also how many then find two speakers distracting for *all* music listen-

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ing. I assume, of course, that standard stereo material would be played back via 2:4 matrix decoding such as Dolby Pro Logic. And, indeed, I rarely take my stereo out of the Pro Logic mode (usually when listening to the boys from Liverpool in their pre-*White Album* days) and find hearing the singer coming from the center speaker to be simultaneously more intimate and spacious. The voice and other center information has its own speaker, leaving the sides to the "wider" parts of the stereo image, instead of everyone piling up together. In addition, the out-of-phase information going to the surround channel nicely fills everything up, while the "anchoring" of the center image allows Joni Mitchell to stay put right on top of my TV, where my (shielded) center-channel speaker sits, regardless of where I am in the room.

This complete use of Pro Logic also applies to TV viewing, because a standard stereo TV mix will similarly fill out, regardless of whether the show was mixed for surround sound. Mono programs like those from CNN will come out of the center—unless your cable company throws some bizarre phase shifts your way. Though we can expect that any system that can play back 5.1-channel "discrete" mixes will also provide Pro Logic decoding, don't let this prevent you from taking the step into full surround mixing. You might find yourself getting used to it against your instincts.

Before I lay the subject of stems to rest, I should make a plea for you to understand the chronology of the mastering process as it might be practiced in the future. You need to realize which parts of the process are upstream and downstream from each other. For example, regardless of at which step in the mastering process your mastering engineer likes to EQ your tracks, you can take it for granted that any edits you want for your 5.1-channel discrete mix will have to match those in your 2-channel mix; ditto the EQ and compression applied to the stems. Therefore, editing should probably happen after processing, but before the mixdown to composite 2- and 6-track. Or maybe the EQ will happen during mixdown. This will be a radical change in the *modus operandi* of releasing music, and there will be many paths to achieving two mixes from the same source material. Just remember to talk things over with your mastering engineer before you mix; assume nothing, because you will be pushing the edge of technology even at top facilities.

It might seem like a glaring omission that I have spent two columns talking about multichannel surround music and have spent almost no time talking about the channels that are really fundamentally different from today's practices: the surrounds. Certainly, with orchestral music this is a fairly straightforward issue, as one is capturing a live event and it doesn't take much imagination to place a pair of mics in the rear of the hall. The exact placement of these mics, plus the degree to which front mics will be bled into the rear, certainly can make a difference, but one's options are relatively limited.

However, the situation will be quite different with rock music, which almost never exists as a live event. Will the stems contain individual instruments panned around the surround spectrum, or will the surround information be created during mastering, either by sucking out-of-phase information to the rear or by using tasteful reverb? (All of this adds even more complexity to the mastering console of the future.)

Clearly, along with the options comes a great potential for cheesiness. I have to come clean and say that a large part of my lack of emphasis on surrounds comes from my personal feelings as a film sound re-recording mixer. I believe that the down-side of surrounds is as great or greater than their potential creative benefits. Not many people know that *Apocalypse Now*, which is justly famous for its use of surrounds, had them only in its carefully tweaked 70mm showcase engagements! The 35mm Dolby Stereo printmaster did not have any (intentional) surround information, so great was sound designer Walter Murch's fear that the surrounds would be screwed up. And although I do print surround information on all of my mixes, I don't believe that the situation has improved very much in the past 17 years; hence, my conservative approach.

Now that I hope I've established the need for three main channels at home, next month I'll turn my attention to the benefit of five screen channels in the cinema. As always, I can be reached at P.O. Box 24609, New Orleans, LA 70184; fax 504/488-5139, or via the Internet: swelltone@aol.com. ■

Larry Blake is a sound editor/re-recording mixer who lives in New Orleans for reasons too numerous to mention, although one of them is simple: He grew up there.

World Radio History

—FROM PAGE 117, TELL-A-VISION POST

tomation. I do have a console for monitoring purposes only, so my Studer outputs, CD and DAT machines, and my DA-88 come up on the mixing board, but I don't route signals through it. Everything goes directly to the Dyaxis, digital or analog."

Nusbaum's own sound effects library resides on a partition of the hard drive, so he simply goes through the browser and auditions effects. From there, it's a simple cut and paste into the EDL. (He's also reduced common moves to a single keystroke by assigning commands to QuicKeys II.) Other effects libraries include Hollywood Edge and Sound Ideas.

The Dyaxis room, like the SADiE radio production room downstairs, is tied into the main machine room for access to any video suite. There are AES and S/PDIF sections to the digital patchbay, and everything is normaled to inputs on the Dyaxis—machine room tielines 1-4 are normaled to Dyaxis 1-4, and vice versa; Dyaxis outputs 5-6 are normaled to a Lexicon reverb and a DigiTech Studio 5000, which Nusbaum uses regularly for pitch-shifting. Engineer Kevin Sanders handled all the wiring, and Nusbaum says it's so clean you won't see a cable.

The bulk of the work at Tell-A-Vision Post revolves around the one-stop shop for the company's video clients, which at this point are primarily commercials and television promos. One of the more unique aspects of Tell-A-Vision, and Nusbaum's approach, is that there is no vocal booth—talent stands at the producer desk, watching either a built-in, angled monitor or the large-screen projection up front, no headphones, which is how many of the networks work, according to Nusbaum. The mic of choice, though many more are available, is a Sennheiser 416. Lines are recorded directly to the Dyaxis hard disk.

"A lot of the talent like Chuck Reilly or Ernie Anderson, or some of the other major VO artists, refuse to wear headphones, so they want to be in the room anyway," Nusbaum explains. "Typically, I'll set up a mix and sort of ride a fader on the Dyaxis. When we're recording, I'll pull it back about 12 dB so the talent can hear it just loud enough to cue—I usually pump the dialog bright so they can cue off that. Then when the producer wants to hear playback, I just push it back to zero and we'll listen at full volume.

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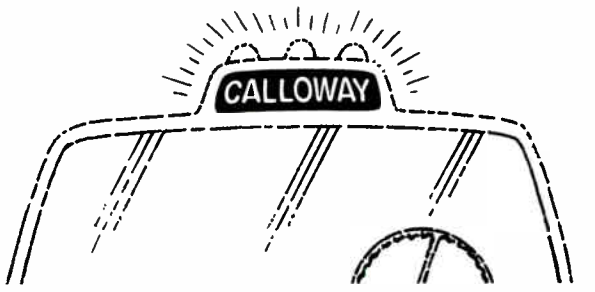

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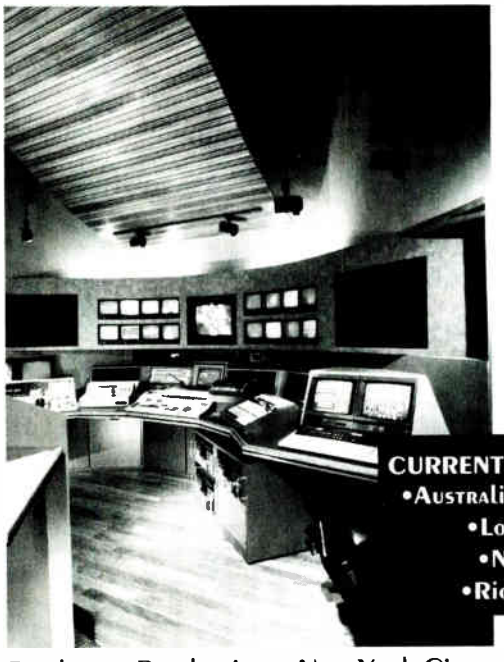

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"Now obviously, it is an issue that we have to be quiet," he continues. "Let's just say our chairs don't squeak. If there are extraneous noises between lines, it's so easy to do a sync cut between VO bites that you can take anything out with ease. I just think that the whole idea of everyone being together and having that kind of communication works really well. Sometimes the VO artist may feel isolated in a recording room, like they're not on the team. But when they are in here, everyone is working together and it's more of a community."

Nusbaum, a double-degree (song writing, Music Production and Engineering) graduate of Berklee, works alone, no assistant. He says the audio room is jam-packed, and there has been talk of adding a second suite if and when the workload demands it. He has an eye on multimedia and CD-ROM audio production, and the commercial work has grown recently with a recent after-shave spot and a series for Suzuki, not to mention the 50-odd radio spots produced on the SADiE for *Home Improvement*'s syndicated launch. "The sky's the limit," Nusbaum says. "I left Interlock on good terms, with no intention of taking away clients. They have solid relationships. We'll build our dynasty from scratch."■

Tom Kenny is a Mix *associate editor.*

—FROM PAGE 117, DAVID KATES

entire orchestra and studio time, so he turned to technology to get work. "In 1985, when things started becoming electronic, I gravitated toward it because it was a lot of fun and it was easier to get work," he says with a laugh. "It was a way to work in an industry that was very difficult to work in unless you were doing top-level scores. But I always approach everything from an orchestral viewpoint in the way that the parts are written and in the way the feel comes across."

One of the first things he learned was that working in the electronic medium gave him a lot more freedom than working with musicians. "You can create really cool ostinato patterns that keep growing and building," he says, "and they don't have to stop to breathe, which is a purely electronic phenomenon. You can't do that acoustically, although you can create that effect acoustically."

It was a recent session where the French horn was being augmented that brought that point home for Kates. "Executing on an acoustic instrument is very different from executing on a keyboard. A lot of people will execute an electronic French horn part that is easy to do on the keyboard, but is not natural to the acoustic instrument. So, one has to be really aware of what you are composing for, the tessitura of the instrument," he says.

On a recent trailer for Spike Lee's film *Clockers*, Kates had produced the entire spot electronically, then word came back that the team wanted a wailing quality in the trailer. So he first turned to a muted trumpet, which, he says, "was very effective, but with the trumpet it made it feel like it was on the street at night. It was a very cool sound." In the end, however, they decided that a guitar would carry both the wailing and live feel better. So, he called on guitarist Steve Carnelli, who Kates feels blends qualities reminiscent of Eric Clapton and David Gilmour. "The guitar was explosive; it was a fuse that got closer to the bomb and that's what Spike liked."

Then there are those trailers that fall completely out of the modern age, like a score for *Dragon Heart*, which is currently slated for European release. "It was cool because I was exploring Gregorian chant music and voices as a way of building a track, which I had not done before," says Kates. So he delved into the history books and began to research the music of the 13th century and wrote a theme based on a Gregorian chant. "It's amazing the emotions it brings up when it's combined with the picture. The fascinating thing about scoring is that what's on the picture doesn't have to be in the music. Matter of fact, sometimes the more a composer juxtaposes what's on the screen, the stronger the statement's going to be."

You'd think that an electronic cat like this would be king of the digital domain, but Kates has tried hard to hold on to his older, analog equipment, and he says he's working hard to bring it back. "It didn't seem to matter for a really long time [how you delivered the tracks] as long as the product sounded great," he says. "Recently, things are really changing. In film, everybody wants everything delivered on DA-88, so we've had to adjust and do it that way." He's still held on to his trusty old Tascam TSR-8 and a Fostex E-2, but he owns and uses three DA-88s and a Panasonic SV-3700 DAT machine. His desk is a Mackie 24•8, and he uses a Hill Multimix as a submixer for drum tracks. His outboard gear includes all the standards like Lexicon's PCM-80 and Alex, Roland's SRV-2000, SRV-3000 and SRV-1000, the Yamaha SPX90 II and Aphex's Dominator 2, Aural Exciter, Expressor and a Tubessence 107 tube preamp, which he's trying out for the first time on live violins and clarinets. In addition to SampleCell II and the Kurzweil K2000RS with orchestral block, Kates' modules include Proteus 2, Roland's U-220, R-8M, Yamaha TX 802, an Emax and a Korg M1. And from his Macintosh IIvx he runs Performer 5.1 and Encore. He listens to it all through a pair of Yamaha NS-10Ms and Tannoy 6.5s.

He does the bulk of his writing at the keyboard, using Performer, which has helped the way he creates demos for clients. "I have a tendency to orchestrate as I write. I don't create a little sketch, try it out and then build it from there. I've got my sequencers already lined out to the sounds that I use most regularly, and I'm literally orchestrating as I'm writing. I have this need to see it already designed as much as possible."

Which all goes back to where he started. "I see myself as a composer," he explains. "I produce finished product out of necessity. When somebody comes here, they come to me mostly to compose, and I think that I have a natural intuition about bringing the emotion out in a piece." ■

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

POST NOTES

Facility News: Paul & Walt Worldwide, the award-winning Hollywood commercial radio production company, has changed its name to **World Wide Wadio** and taken delivery of the world's first **Fairlight F.A.M.E.** integrated digital recording, editing and mixing system. In other Fairlight news, **Clack Studios** in NYC purchased an MFX3, **SoundHound** of NYC bought two MFX3s, and **Todd-AO Studios** of Hollywood bought eight!...**Music Annex**

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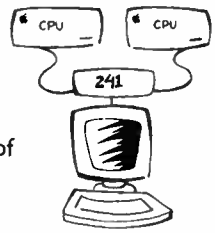

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Audio Post Production of San Francisco recently installed a **Euphonix CS2000P** in Studio One, and **In Your Ear Music & Recording Services** of Richmond, VA, added a second 56-fader CS2000D...**Otari Status** consoles have been placed at **MediaForce** in New York City and **Platinum Productions** in Salt Lake City...**Skywalker Sound** in Nicasio, CA, added four more **TimeLine Studioframe** workstations, bringing its total to 14...**Fox 11**, the West Los Angeles affiliate, received three **Graham-Patten Systems D/ESAM** digital edit suite mixers for use on station promos, IDs, etc....**DuArt Film & Video**, NYC, put in some **Quested H108** passive near-fields, then asked the manufacturer for a little more bass. The result was a new monitor, the **HQ108**, which Quested is now marketing as a new product...***The Orlando Filmbook***, a directory of services in and around the Florida production/post community, can now be read online at www.film-orlando.org...**Openings, Additions:** Mixer **Robert Feist** has established a full-service mix studio, **RavensWork**, within sound design/music house Machine Head in Venice, CA... **Clatter&Din**, the relatively new Seattle sound design facility, is adding production rooms (one based around a **Pro Tools** and **Kyma** workstation, the other an **Avid AudioVision** mix room) but has already picked up **Randy Yount** as a multimedia specialist and **Scott Weiss** as a senior production engineer... **EDNet**, the San Francisco-based provider of long-distance transmission services, has acquired **Mad River Technologies**, inventor of the VideoFax system. Also, EDNet added **John C. (Jack) Kraft** to its board of directors...The Todd-AO Corporation and Chace Productions have formed a joint venture, **Todd-AO/Chace Media Preservation Company**, for the protection, preservation, storage and retrieval of motion picture and television soundtracks. The first account is to preserve the soundtracks of 80 films in the Turner Entertainment library...**Vyvx Inc.** and **Time Warner** have inked a strategic service agreement whereby Vyvx will provide dedicated video transmission services to Time Warner...**David Frederick** has been named director of product marketing at **TimeLine**...**Russian Hill Recording**, San Francisco, has just opened a new 16-track **Pro Tools III** suite. The facility also had Don Johnson in recording ADR for the new TV series *Nash Bridges*, engineering by **Sam Lehmer** and **Scott Strain**. ■

World Radio History

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New Products For Film/Video Sound

KLIPSCH SURROUNDS

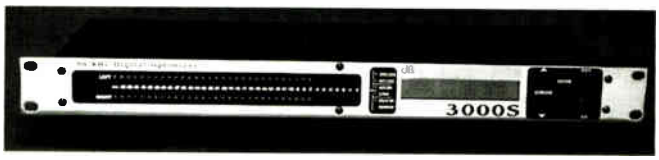
The KPT-250 from Klipsch Professional (Hope, AR) is a three-way loudspeaker designed for cinema surround applications. Available with a 15- or 30-degree downward angle, the KPT-250 features a 12-inch woofer and Tractrix Wave™ mid and HF horns for a 90°x40° coverage pattern. Klipsch claims a 300-watt power handling capability and offers optional HF protection. The system is available in a variety of trims and is compatible with industry-standard mounting brackets.

Circle 190 on Reader Service Card

HARRISON SMARTSTICK

Harrison by GLW (Brentwood, TN) announces the availability of its SmartStick™ programmable joystick for the Harrison Series Twelve and MPC automated consoles. SmartStick allows the real-time control and automation of all panning moves and assignments in 2-, 4-, 5-, 6- or 8-channel surround formats and is fully integrated within the Harrison automation package. Featuring components from Penny & Giles, SmartStick provides repeatable automated panning moves which may be updated at any time during a mix, and snapshot recall of multiple preprogrammed setups.

Circle 191 on Reader Service Card



BRAINSTORM SR-3

Introduced at NAB, the SR-3 Timecode Repair Kit from Brainstorm Electronics (distributed by Audio Intervisual Design, Los Angeles) is a timecode regenerator that identifies and repairs faulty timecode. The system includes a video phase analyzer and timecode generator and can repair dropouts, reduce jitter, correct video phase and drop-flags. A front panel LED display shows timecode readout and standard frame rate formats. Retail is $595.

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DB TECHNOLOGIES DIGITAL OPTIMIZER

The dB3000S Digital Optimizer from dB Technologies is a digital audio data converter for post and broadcast applications. Providing full monitoring and measurement facilities, the rackmount device offers frame delay, 60 dB of signal boost or cut, dither/noise shaping, external sync input, and an internal digital tone generator (44.1 to 96 kHz). Sample rate conversion for 40 to 51, 88.2 and 96 kHz surpasses current standards. Distributed by Audio Intervisual Design of Los Angeles, the price is $4,950.

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DOREMI V1 RANDOM ACCESS VIDEO RECORDER

Doremi Labs of Los Angeles is shipping the V1, a random access video recorder/player designed for audio post-production applications. Built into a 3-rack-space chassis, the V1 stores two digital audio channels, VITC and LTC timecode and video information using Motion JPEG compression (4:1 to 32:1, selected by the user). The unit has familiar rrd/ffd/stop/play/record controls and a jog wheel. Also standard is Sony 9-pin serial control, SCSI support and two front panel drive bays to house Jaz drives, hard disks or removeable M.O. media. Retail is $5,995; an optional hard-wired remote control is $695.

Circle 194 on Reader Service Card

JBL CINEMA 3000 SERIES

JBL Professional (Northridge, CA) has introduced a new line of cinema loudspeakers for small and mid-sized theaters. Priced at $640, the JBL 3677 Screen Channel System is aimed at budget-conscious theaters. The JBL 3678 Screen Channel System, a THX-approved system, is $1,184. Also in the new 3000 Series are the JBL 3310 Surround Speaker for $200 and the JBL 3635 Subwoofer.

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mounts are offered, including removable mounts for violin, viola, cello, acoustic bass, horns and sax. Frequency response is rated as 40 to 20k Hz (±2dB); self-noise is typically 19 dB, A-weighted.

B&K also announces the Type 3529 ($8,295) and 3530 ($7,195) A-B Stereo Kits, which are complete recording packages with a matched pair of either two Type 4010 (48 VDC) or Type 4009 (high-voltage version—power supply included) omni mics with a stereo mounting boom (optimized for A-B pair stereo recording), along with windscreens, replaceable grids, nose cones and a flight case.

B&K's Head and Torso Microphone Simulator (HATS), Type 5930 takes the concept of dummy-head recording one step further by incorporating an upper-body section with the dimensions of an "international human adult," which should be ideal for "seated" placement in halls, theaters, automobiles and listening rooms. The 5930 is equipped with removable silicon rubber pinnas (ears) coupled to either a 130V or 48V phase-matched, 16mm studio microphone. Retail is in the $10k range, and because of its ability to capture a realistic stereo sound field, I imagine that more than a few of these will end up in creative binaural recording applications.

Neumann M149

The **CAD** (Conneaut, OH) Equitek Surround microphone is a 4-channel mic with four ⅝-inch condenser capsules. The outputs can be recorded as four discrete channels or combined to stereo through an external controller box. Retail is expected to be $1,500, with deliveries scheduled for this summer.

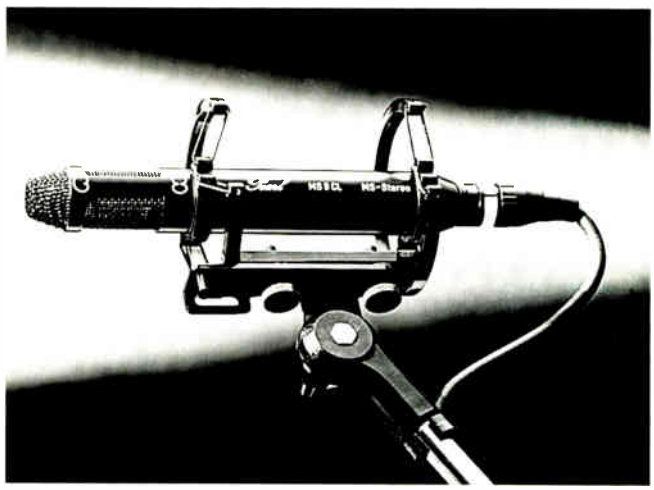
The CM-700 from **Crown International** (Elkhart, IN) is a studio cardioid designed for miking acoustic or percussion instruments, drum overheads and vocals. Priced at $289, the CM-700 features a lightweight diaphragm for improved transient response and a three-position bass roll filter. The back electret capsule handles a maximum SPL of 151 dB (at 3% THD), and the stated frequency response is 30 to 20k Hz. The finish is satin black, and the mic includes both a foam windscreen and a foam pop filter.

SoundField SPS 422 studio microphone system

Electro-Voice RE200 condenser microphone

Earthworks (Milford, NH) manufactures a series of small-capsule/big-performance mics whose wide, flat uncolored response makes them equally at home in studio recording or measurement applications. These 48VDC phantom-powered condensers are housed in precision-machined stainless housings. Earthwork's newest is the the TC40K, an omnidirectional condenser with a bandwidth said to be 1 Hz to 40k Hz (±1dB). The TC40K specs include a maximum SPL of 151 dB and a flat, uncolored frequency response that is ideal for studio recording, sampling or test/measurement applications. Retail is $900. The company also offers the TC30K ($499), a similar omnidirectional model with a slightly narrower—but still quite wide—bandwidth of 3 to 30k Hz (+1/-3dB).

Pearl MS8 stereo microphone



Electro-Voice (Buchanan, MI) offers the RE1000, a true condenser studio microphone. The RE1000 is an externally biased, high-voltage cardioid condenser with an ultrathin 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. Also designed for project and smaller studio applications is the RE200, a compact condenser designed for instrumental miking in tight spaces. The RE200 has a continuous presence rise and is finished in a neutral beige color for an unobtrusive look.

InnerTUBE Audio (Santa Barbara, CA) introduces the InnerTUBE Retrofit, which replaces the standard electronics in your Neumann U87 with an internal tube preamp. The kit retails at $1,795, and the procedure requires no tools, takes

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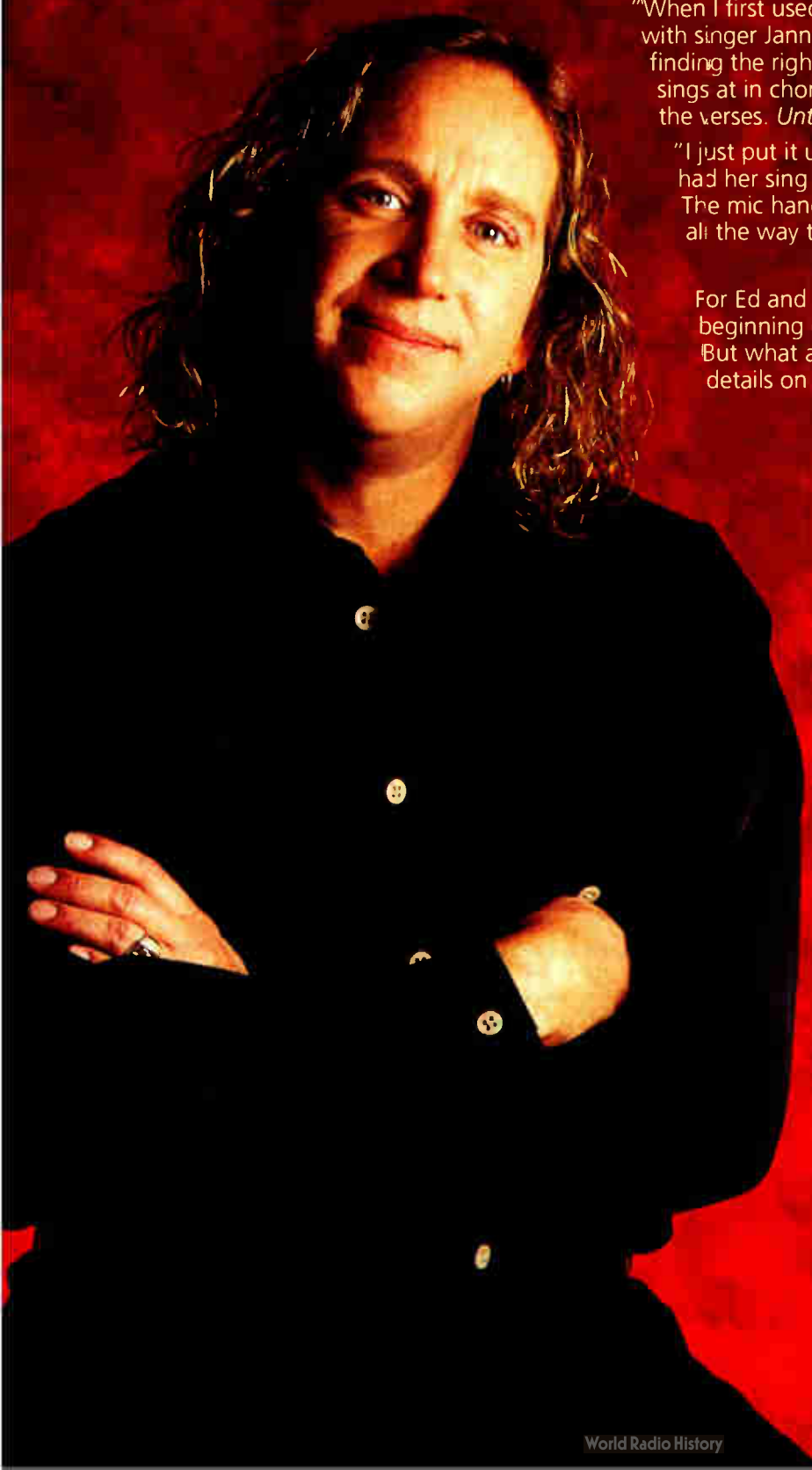
Two Studio Veterans Team Up.

Ed Cherney and the AT4033

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



Here's what Ed had to say about it:

"When I first used the 4033, I was working on a ballad with singer Jann Arden. But I'd always had trouble finding the right microphone to handle the level she sings at in choruses as opposed to lower volumes in the verses. *Until I tried the 4033.*"

"I just put it up with no compression, no EQ, and had her sing into it. And I mean, *it was right there.* The mic handled everything, stayed clear and open all the way through, and ended up sounding great."

For Ed and the AT4033, it sounds like the beginning of a long, successful partnership. But what about you? Just call, write, or fax for details on how you can team up with the AT4033.

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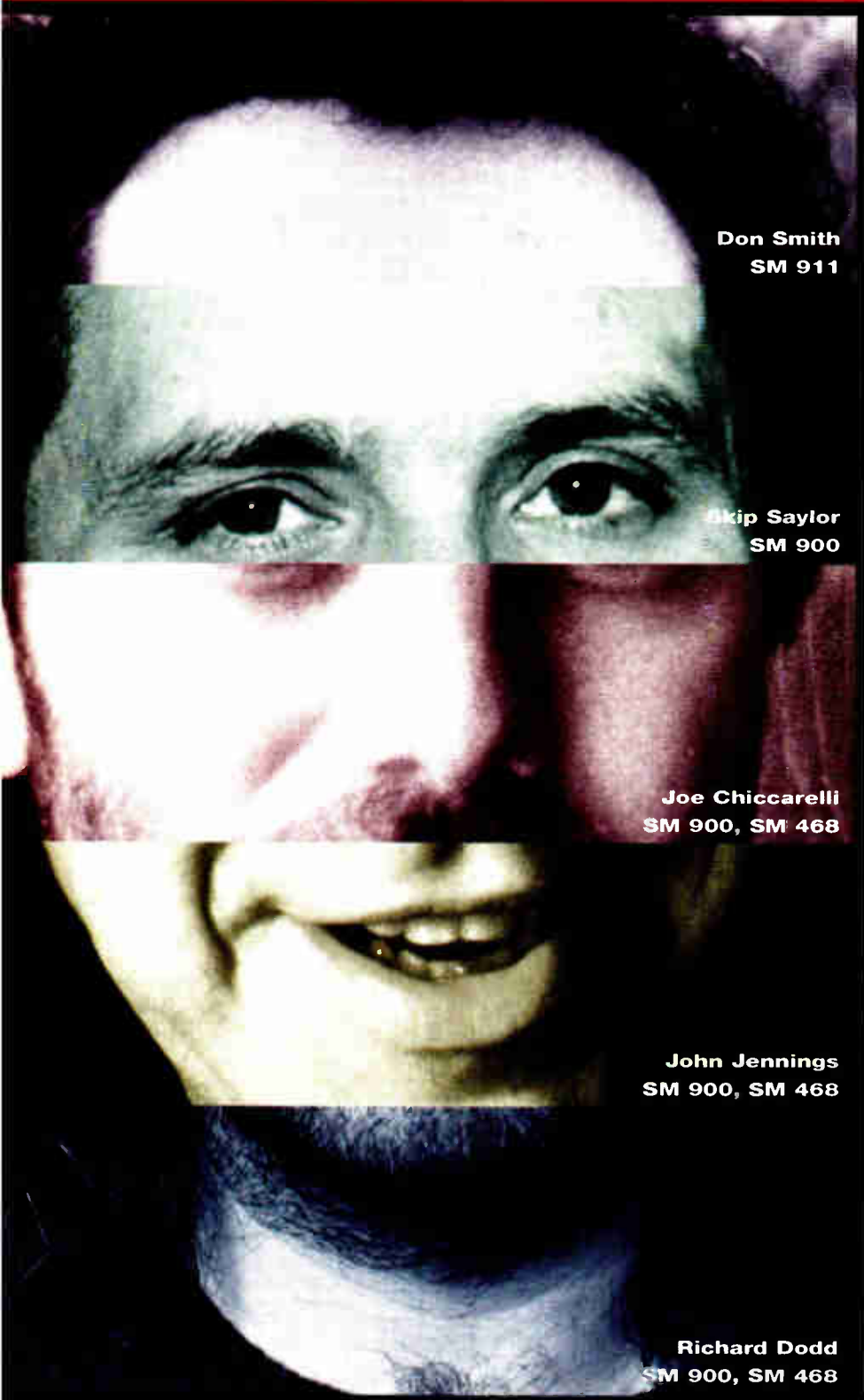
We brought together some of the biggest names in the industry to tell you about their choice in studio tapes.



"I had to look to see if the band was in the control room or playing live, because this stuff has so much dimension to it." -Don Smith

"The music sounded better coming off the tape than it did going on to it." -Skip Saylor

"I've tried everything else. Once."-John Jennings

When it comes to capturing sound that's crisper, warmer and more alive than when it was laid down these guys are of one mind: BASF studio mastering tape is the best there is. No matter what music they record or whether they need the normal bias analog, high output analog or tape for digital media, BASF is their top choice. But don't just listen to what they have to say, use it yourself and see if the results don't speak for themselves.

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BASF

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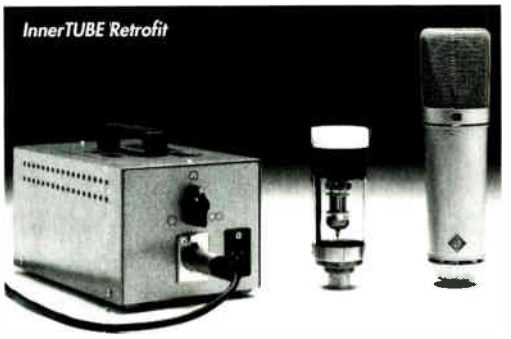
only a few minutes and involves no permanent modifications to the U87, allowing a simple return to the stock electronics if desired. The kit includes a replacement internal tube preamp, external power supply with remote pattern switching and cables.



Two interesting mic designs are the M900 cardioid and M910 hypercardioid models from **Microtech Gefell** (distributed by G Prime of New York City). Designed for vocal recording applications, but also suitable for instrumental miking—especially in percussion or drum applications where the placement of a traditional large-body condenser mic is difficult. These large-diaphragm condenser mics feature large-diameter cardioid capsules, transformerless electronics and a built-in pop filter. Retail is $995.

Microtech Gefell debuted several new mics at last month's AES show in Copenhagen. The UMT 800 large-format condenser mic has five switchable polar patterns and transformerless solid-state electronics. The capsule is the "classic" M7, made of two large PVC diaphragms sputtered with gold. The UMT 800 is available in matte black or satin nickel finish. Pricing is expected to be in the $1,500 range. The first dynamic microphone in the Gefell line, the new MD 100 is a joint effort of Gefell and its partner Microphone Technique Leipzig (MTL). The MD 100 has a tight cardioid pattern and frequency response extending to 15 kHz. Pro net pricing is in the $375 range, including wooden case.

Microtech Gefell and German Broadcast's Institut fur Rundfunktechnik (IRT) have developed a mic with a unique pickup pattern. The model KEM uses a multi-microphone array and beam forming techniques to attain a frequency-independent directional characteristic. The pattern is supercardioid in the horizontal plane, and a 20° beam in the vertical plane. KEM is designed for picking up sound sources that are spread across a plane or sounds that are moving within a plane, while suppressing sounds from other directions. For example, comb-filter effects from floor, ceiling or table reflections are minimized.

Neumann (Old Lyme, CT) is now shipping the M149, a large-diaphragm tube mic, its first new tube microphone in 14 years (for more information, see the October '95 *Mix*). The first microphone to offer a transformerless output combined with vacuum tube electronics, the M149 offers a choice of nine polar patterns: cardioid, subcardioid, hypercardioid, omnidirectional and figure-8, with an intermediate step between each. The microphone will be delivered as a package, including an elastic suspension, cable, power supply and case. Retail is $4,750.

Now available in the U.S. through Zero THD Audio (Chicago) is the Swedish-made **Pearl** TL4, a studio condenser mic with a unique mono/stereo capsule arrangement whereby the mic can operate in mono (cardioid, omnidirectional or bidirectional) or as a 180-degree XY stereo pair. The TL4 features a rectangular dual membrane capsule with only 5mm separating the two, thus eliminating phase error in stereo response. Retail is $1,650. Also from Pearl is the MS8 ($1,410) an MS stereo mic

The Original
Revolution

Equitek E-200

Introduced in 1989, as the Equitek II, the first microphone under a $1000.00 featuring:

- State of the art servo head amplifier, eliminating coupling capacitors phase anomalies and feedthrough distortion.
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- Non capacitive 20dB pad
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.....CAD created a revolution in the microphone industry by redefining high end performance and great value. With continual enhancements the E-200 has established a bench mark which remains to be equaled or excelled.

Every hour of every day, in thousands of project and world class studios arcund the world, Cad Equitek servo-condenser microphones continue to provide a unique level of performance, with a unparalleled return on investment.

E-200 Shown with optional ZM-1 Shock Mount

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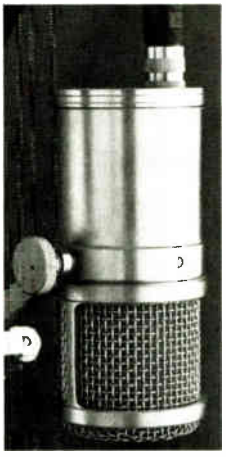
available in two versions, with either omnidirectional or cardioid capsules for the "mid" element. The MS8 outputs uncoded (discrete) signals for the mid and side mics; Pearl's MS2 ($1,450) is identical to the MS8 models, but includes built-in matrixing circuits that produce left/right signals at the mic.


RØDE Classic

Event Electronics (Santa Barbara, CA), is now distributing **RØDE** products. The RØDE Classic Tube Mic combines a 1-inch gold-sputtered, dual-diaphragm capsule with electronics based on the rare 6072 tube, of which Event founder (and former Alesis CEO) Russell Palmer says the company has procured an ample supply. Nine polar patterns, a heavy, hand-finished brass body, power supply and a flight case are standard with this $1,799 model.

Although shotgun mics are generally thought of as location recording tools, high-quality shotguns are finding their way into the studio millieu, particularly for drum-miking applications. Distributed by AID (West Hollywood, CA), the **Sanken** CSS-5 shotgun stereo microphone combines superb shotgun performance with stereo capability in a lightweight mic less than 12 inches long. In Mono mode, the CSS-5 functions as a shotgun microphone with excellent low-frequency definition. In Normal mode, the CSS-5 becomes a "stereo shotgun" that maintains accurate stereo localization along with precise directional hypercardioid focus. The Wide mode expands the stereo image to 140.

When phantom power is unavailable, you may need the new battery-powered CMBI microphone electronics/powering module from **Schoeps** (distributed by Posthorn Recordings, New York City). This device provides portable power for all of Schoeps' Colette series microphone capsules. Eighteen different Colette capsules can be attached to the CMBI, and battery-powered performance is comparable to Schoeps' standard CMC Series. The unit includes a 15dB pad and LED warning light to signal the end of the battery life (up to 80 hours).

As shown in Copenhagen last month, **Sennheiser** (U.S. offices are in Old Lyme, CT) has redesigned its classic MD-421 dynamic microphone. The new MD-421 II is said to retain the sonic characteristics and flavor of the original, while incorporating new materials and improved mechanical characteristics. The familiar shape is still there, but the housing is now an impact-resistant polyacetate/glass composite, with a hardened steel screen and a metal inner chassis providing RF screening. The large-diameter capsule has a neodymium-iron magnet and a low-mass, copper-clad aluminum diaphragm. A five-position bass roll-off switch is standard, as is an internal humbucking coil to reduce magnetic interference.

The newest addition to Sennheiser's popular K6 modular condenser microphone system is the ME64 cardioid capsule. Frequency response is stated as 50 to 20k Hz (±2.5dB); A-weighted EIN is 17 dB and maximum SPL rating is 130 dB.

Shure (Evanston, IL) is now shipping the second generation of its Beta Series mics. The dynamic Beta 57A ($220) and 58A ($266) offer extended frequency response and reduced handling noise over their predecessors, but more intriguing from a studio aspect are the Beta 56 ($240) and Beta 52 ($310). Other dynamics in the product line optimized for drums and instrument miking include the Beta 56, a short-body mic on a swivel mount, similar to the classic SM56 (long discontinued); and the Beta 52 is Shure's first mic tailored specifically for kick drums and other LF sources. All have hardened grills for protection against the occasional stray drumstick and are supercardioid models, for high gain before feedback and improved rejection of nearby high-SPL sources.

Soundelux U95

Distributed by Group One Ltd. (Farmingdale, NY) is the U95 studio mic from post-production specialists **Soundelux.** Featuring a 1-inch-diameter capsule, the vacuum-tube based U95 offers omnidirectional, cardioid and figure-eight patterns with six intermediate settings, for a total of nine polar varieties. To ensure trouble- and noise-free operation, there are no switches on the microphone body; pattern selection is made at the power supply, which is switchable between 115 and 220 volts. The U95 offers a frequency response of 20 to 20k Hz, will accept a maximum input SPL of 135 dB (0.5 percent THD) and has a dynamic range greater than 117 dB. List price, which includes power supply, shock mount and wooden case, is $2,900.

QMI (Holliston, MA) distributes the **SoundField** SPS 422 studio microphone system, which at $3,500 opens up the market for Soundfield microphones to a wide audience. Designed specifically for "main microphone" recording studio applications, and based on the same technology as the acclaimed SoundField Mk.V, the SPS 422 uses four capsules mounted in a tetrahedral array (two forward-facing/two rear-facing); from its single-rackspace remote controller, users can remotely adjust the mic's directionality from tight mono cardioid to four-capsule stereo spread—or anything in between.

Stedman (Richland, MI) is now shipping the SC3, its large-diaphragm studio condenser mic priced at $998. Housed in a 7x2-inch body, the mic has a stated frequency response of 25 to 20k Hz and two attenuation settings (-9 and -18 dB), for handling SPLs of up to 150 dB. The SC3 provides three sonic modes, including Enhanced (with extra HF detail) and two "vintage" sounds (one flat, one with LF roll-off) that use a current-limiting scheme to emphasize even harmonics to simulate the sound of tube mics.

Wright Microphones (distributed by Olsen Audio Group of Scottsdale, AZ) has introduced the Model SR, a small-diaphragm, mylar gold-sputtered condenser cardioid microphone that according to its inventor, Tom Wright, "sounds like a large-diaphragm mic." Designed for instrumental miking applications (drums, piano, reeds, horns and acoustic instruments), the Model SR has a 20 to 20k Hz frequency response and max SPL handling that exceeds 130 dB. Retail is $600. ■

Mix editor George Petersen became a microphone junkie at age 10, when he first discovered the joys of driving a speaker directly from a high-output carbon mic element.

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The Electro-Voice RE1000 is a monumental breakthrough in studio condenser microphone performance and value. Its sound quality and performance rivals many of the world's finest microphones, regardless of price. One listening test will reveal that this serious audio tool belongs in your studio.

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PREVIEW

lower price. Upgrades include gapless transparent hinges, nonslip steel-reinforced base channels, cable cutouts and butyrate edge protectors. Standard 8-foot-wide systems are available in 6-, 5- and 4-foot heights, priced from $325; heavy-duty covers and acoustic foam attachments are optional.

Circle 236 on Reader Service Card

FURMAN VOLTAGE REGULATORS

Furman Sound Inc. (Greenbrae, CA) has revised the AR-117 AC Line Voltage Regulator and renamed it the AR-1215. Featuring eight regulated, spike-suppressed AC outlets on the rear panel and one on the front, and input voltage level and emergency shutdown indicator LEDs, the 1U AR-1215 is priced the same as its predecessor at $599. Furman also announced its new 20-amp AR-1220, a 2U unit that provides 14 regulated outlets and LED bar graphs for input voltage and output current. Price is $899.

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HOT OFF THE SHELF

TRF Production Music Libraries releases three new CDs of production music, adding to TRF's 50,000-selection library. New selections include orchestral performances of 27 national anthems, authentic Australian folk/bush music, and energetic guitar/percussion-based tracks for sporting events. Call 914/356-0800 or fax 914/356-0895...From Focal Books, the ***Fiber Optic Reference Guide*** by David R. Goff ($34.95) is a 208-page primer on the fiber optics industry and a reference resource, covering basic theory and use in real-world applications. Call 800/366-2665...Sonic Foundry's **Batch Converter Plug-in for Sound Forge 3.0**, converts among Macintosh AIFF, MS Wave, Creative Labs VOC, Dialogic VOX, Amiga SVX, Next/Sun AU/SND, SampleVision, Sound Designer 1, MIDI SDS and raw files. Features include resampling with anti-aliasing filtering, EQ, gain adjust, compression and gating, and the ability to remove, add or modify summary information. Call 800/577-6642...The **Musician's Ear CT/1 Chord Transcriber** will identify the chords in a musical composition from the line-level audio source, enabling musicians to transcribe the chords from almost any recorded music, including sixth, seventh, augmented and diminished chords, and it comes with a three-year warranty and money-back guarantee. Call 800/884-3139...**Network Music's Presentation Audio™** is a CD-ROM audio library of production music and effects for PC-based presentations. Each CD-ROM in the five-volume series contains 30 original music beds, plus 100 sound effects and 100 production elements. Genres include business, pop, high tech, atmospheres and comedy. The system can create stereo or mono, 22 or 11kHz, 16-bit or 8-bit files in .WAV or ADPCM-compressed form. Each CD-ROM costs $49.95, including necessary licenses. Call 800/854-2075 ...**Clark Wire and Cable's MINK cable jacket** provides longer service life, better appearance and added flexibility and is now available on the MINK4 microphone cable, featuring four conductors, 98% braid shielding and a drain wire, available in black, red, blue and gray. Call 800/CABLE-IT...Pacific Microsonics Inc. is now shipping its **Model One High Definition Compact Digital® Processor**, a 2-channel DAC for encoding and decoding the HDCD® process. Call 510/644-2442...Ricoh Corporation has cut the price of its popular RS-1060C **double-speed CD recorder/player** to $995. The half-height external unit is SCSI-2 compliant and is supplied with Ricoh's CD-Print premastering software for Windows and Macintosh, and six media blanks. Supported formats include CD-ROM (Mode 1 and 2), CD-I, Video CD, Enhanced CD and Photo CD. Call 408/432-8800... **Power Technology's FX•Direct sales program** allows DSP•FX™ dealers to continue to profit from system upgrade sales, even when the customer purchases direct from Power Technology. DSP•FX™ is a 32-bit digital effects processing system for pro audio applications; the Basic System is shipped with five FX•Plug-Ins that are accessible in demo form for a limited time. Users may unlock the Plug-Ins with a password available from the dealer or manufacturer. Call 415/467-7886... ISTHMUS Technology Group has developed an **electronic chip for broadcast-quality video and audio transmission** through twisted-pair telephone cable for up to 3,500 feet. With applications in remote broadcast, cable TV, video-on-demand, closed caption, security systems and teleconferencing, the $100 ISTHMUS chip offers a cost-effective alternative to fiber-optic technology for short-haul transmissions. Call 913/696-0011 or fax 913/696-0012. ■

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OTARI STATUS

DIGITALLY CONTROLLED MUSIC-RECORDING AND POST CONSOLE

Observant *Mix* readers may recall my review of Otari's Concept 1 console in the August 1994 issue. In my summary, I offered that, when it gets down to price and system flexibility, the Concept 1 offers a great deal of power, speed and versatility. The new Status owes a lot to the Concept 1; it is based on the same digitally controlled, in-line topology, but with some useful features the Concept lacks. The system's DiskMix VCA and moving-fader automation is intuitive and never slows you down. In addition to the conventional storage/recall of switch designations, Image Recall enables rotary control settings to be scanned, memorized and then recalled. Powerful options include a flexible Dynamics Package that is used in conjunction with the console's VCA gain-control elements.

Status is a recording/production console highly recommended for small recording or home-studio facilities, or for modest-budget mix-to-picture or editorial rooms; in a pinch, it could also be used in live-sound applications. Prices range from around $25,000 for a short-loaded 32-input mainframe with 24 I/O modules and VCA-based automation, on up to $43,000 for a fully loaded 48 I/O frame; patchbays are supplied as an option. Moving-fader DiskMix costs between an extra $8,000 (24 channels of moving-fader automation) and $13,500 (48 channels); additional dynamics functions cost between an additional $8,200 (24 channels) and $12,700 (48 channels). And for more advanced surround-sound assignments, you could always add Otari's PicMix system.

IN-LINE, DUAL-PATH INPUT MODULES

Like Concept 1, Status offers dual signal paths per input strip, labeled Channel and Mix. The Channel path normally connects the mic/line inputs via the routing matrix to the multitrack buses, and the Mix path connects the multitrack outputs/tape-machine returns to the left/right two-mix bus.

As is becoming increasingly common with in-line topologies, the upper, short-throw faders control levels to the bus outputs, while the lower, long-throw faders adjust the individual contributions to the main mix; a fader-swap button enables each module's designation to be modified on a per-channel basis. Both mono and stereo input modules are available. VCAs are provided in both the upper and lower faders; moving fader automation is available as an option on the Mix-fader elements only.

In terms of layout, Status is reasonably uncluttered and easy to follow. The neutral gray color scheme is easy on the eye, although I would have preferred to have seen more color coding used on the control knobs, if only to break up the various channel strips into more easily recognized sections. The top of each module has a mic/line gain control, with a 54dB range (nominal sensitivity -60 to -6 dB). Individual switch selection for each input source would have been nice, with separate gain trims, but you can't have everything. Phantom 48V in/out switching is also provided.

BY MEL LAMBERT

Eight aux sends are provided per input strip, accessed pre/post either to the Channel or Mix fader. Aux 1/2 is configured as a stereo path, with independent level and pan controls, while the remainder are mono. In addition, aux 1/2 and 7/8 feature in/out switches. Usefully, aux 7/8 can be connected directly on the module's track-assign matrix. In this way, additional submix buses are available during mixdown, with reassignment to the main mix buses—a handy feature indeed, and one that makes full use of the Status' otherwise redundant internal buses.

The 4-band EQ section offers HF shelving, with continuous adjustment between 1.2 and 18 kHz; parametric upper-midrange between 400 Hz and 8 kHz (switchable Q/bandwidth between 1 and 0.2 octaves); parametric lower-midrange between 75 Hz and 3 kHz (Q=1 or 0.2); and LF shelving between 35 Hz and 600 Hz. Boost/cut is 15 dB on each section. In addition, a highpass filter, with a 3dB down-point at 80 Hz, and a slope of 80 dB/octave, can be switched in and out of the circuit.

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The EQ section is shared between the Channel and Mix signal paths. A pair of switches enable either the HF plus LMF sections or the LF plus HMF sections to be removed from the Mix path and inserted into the Channel path. Though it would have been nice to have been provided with individual access to each band, the arrangement is easy to master and not too much of a drawback.

As with most Otari consoles, the EQ on the Status sounds great. While it is all too easy to compromise circuit components in cost-competitive, midrange consoles, the Status' 4-band EQ is smooth-sounding and easy to adjust. The two midrange sections are particularly musical-sounding; it is surprising how much boost you can lay onto a vocal track, for example, without it sounding "gritty" or nasal.

The Channel Path has a 60mm fader, pan control, on/off switch with companion LED, Solo and EQ in/out switch. A separate Mute LED lights to show that the path has been turned off under automation control, Solo or the On/Off switch. A user-programmable SoftKey can be configured from the master section to provide on/off control of any designated function; more on this later.

Located beside the Channel fader is a handy 16-segment LED array that provides either level indication or a quick visual display of the module status. Three modes are offered. Level mode is used to display either Channel or Mix input levels, or Group output levels. Status mode can be set to display the module's current track assignment, together with the Channel and Mix path input source; Channel and Mix path assignment to the stereo mix bus; the track-assign sourcing for both the Channel and Mix paths; sourcing for Aux 1-4 and 5-8; and the Group Master identity for both paths. Finally, Function mode is implemented when the Master Section is set to display a user-selectable function. In addition, these LEDs are used to null the position of the various rotary controls during Image Recall, with high- and low-precision; you simply adjust each control until all the LEDs are turned off. Multiple controls can be adjusted simultaneously during Image Recall, which helps increase the process of resetting Status to a previous configuration.

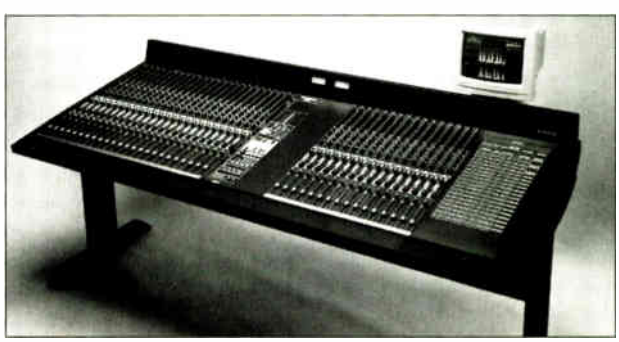
Finally, the lower 100mm long-throw Mix Path fader and pan control are supplemented with Stereo AFL, Mono PFL and In-Place Solos that can be selected for either signal path. Also located here are simple controls for the integral DiskMix fader/mute automation package, including an Auto button and companion W(rite) and U(pdate) LEDs that once again can be used in either the Channel or Mix signal path.

Also available is a stereo version of the mono channel strip, with the split signal paths labeled Return and Main. A simple 2-band EQ section is provided for the Return path (+/-15 dB shelving at 8/16 kHz and 60/120 Hz); the Main path incorporates a 3-band section (identical LF and HF shelving to the Return path, plus a sweep midrange from 3 to 6 kHz and fixed Q/bandwidth). Otherwise, the stereo module offers the same basic functionality as the mono version, aside from pan controls being replaced by balance trims.

CENTRALIZED CONTROL: THE MASTER SECTION

The power of Status' functionality lies in the central command section, much like the Concept 1. Here, a large, uncluttered master area houses the various assignable switches and controls that handle centralized routing and a variety of other I/O switching functions. Having selected the channel or channels to be adjusted by hitting the appropriate Select button on the targeted module, the master section then controls the internal computer-controlled switching of the signal path within each channel strip.

All crosspoint assignments and system settings can be memorized and recalled from one of 99 internal memory registers and/or floppy disk; using the integral PC-based DiskMix automation that handles fader/mute data, they can also be stored/recalled from external media against timecode.



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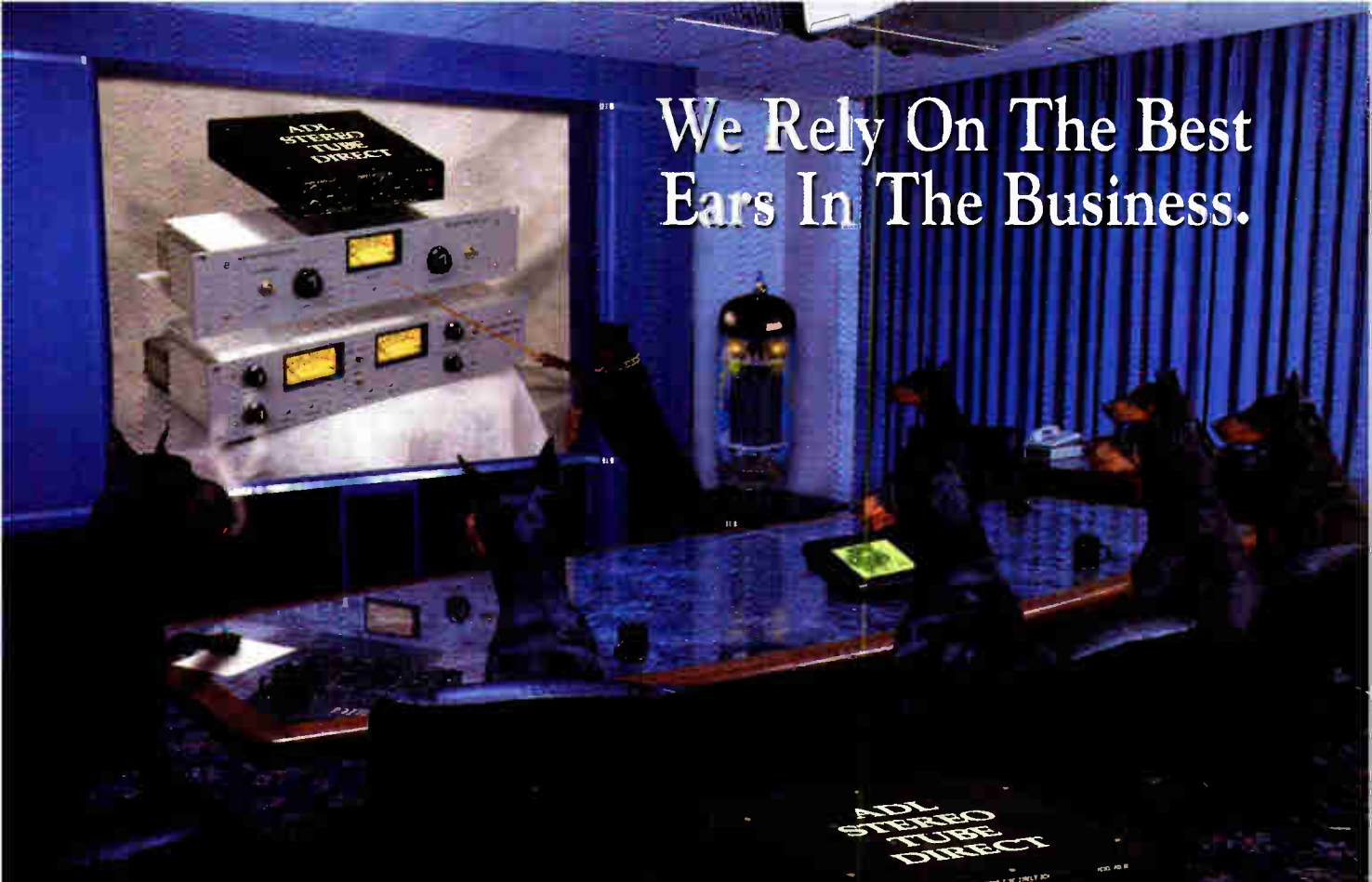

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FIELD TEST

In terms of basic routing, Status features 12 track buses, set up in split pairs to provide 24-output designation. As would be expected, these buses can be accessed from the Channel and/or the Mix signal paths, thereby offering enhanced flexibility for submixing. As mentioned earlier, aux 7/8 can also be directly routed to these buses to provide an additional dozen independent assigns.

Also featured here are centralized routing for the eight aux buses, plus post/pre switching and on/off functions, as well as selection of several Solo modes. DiskMix makes use of the various Write/Update buttons on each module to set up a number of different functions. All switching designations are clearly labeled and very easy to interrogate. Setups can be duplicated freely between modules; a Transparency mode allows certain settings to be excluded—such as EQ in/out—while copying multiple setups across the console.

Storing and recall of complete console settings, including the majority of rotary controls via Image Recall is a breeze, thanks to the bank of LEDs that light to show the amount of offset between the current and stored parameter settings. Image Recall settings of rotary controls can currently be off-loaded to and recalled from floppy disk. A soon-to-be-released version of the system software will enable storage of data with switch settings to an external PC, the company says.

Conventional master controls are also provided for the aux sends, talkback and communications, plus myriad studio and control-room monitoring options. Grouping can also be set up here; using the built-in VCA gain-control element within each fader, any channel fader can serve as a master for any number of individual channels. Finally, a SoftKey function allows regularly used switch combinations to be assigned to one button accessible from each module. (One use might be as a dedicated polarity-reverse switch for each channel strip, or maybe a related function.)

In terms of setting the entire Status topology for different operations, simplicity is the watch-word. There are several factory presets that can be used, for example, to set the console for basic recording, tracking, overdubs, mixdown or Broadcast mode (the latter routing all signal paths to the main mix); favorite configurations can also be stored and recalled as necessary.

The optional Dynamics Package is accessed from the same LCD Menu System used to call up parameter fields. Using the various VCA elements within each of the Channel and Mix paths, the dynamics package enables a number of noise-gate, expander, keying and compressor-limiter modes (with and without side-band EQ processing) to be set up as individual or linked arrangements. System parameters, including attack and release times, can be adjusted on a channel-by-channel basis, or globally. Gain reduction can also be displayed on the corresponding channel level meter. Two or four processor paths can be linked to ensure correct stereo and surround sound imaging.

Space precludes me from providing anything more than a brief overview of these functions; once bitten however, it is hard to consider using a console that doesn't offer such dynamics power built right into each signal path. To see what is going on with the input and output levels, system settings and various level plots can be displayed on an external color monitor. All in all, the Dynamics Package is very easy to set up and recall, yet offers a remarkable amount of creative possibilities.

DISKMIX VCA-BASED OR MOVING-FADER AUTOMATION

DiskMix automation provides dynamic automation of all fader and mute settings and comes in two basic flavors. The familiar VCA-based system includes freely assignable subgrouping on any fader, with masters assignable to any channel fader, plus full Read, Write and Update modes. A moving-fader version provides visual display of relative mix levels, as well as internal level control.

I describe DiskMix as a mature product; I don't use that adjective in a derogatory way, but simply to express my opinion that the system has reached a plateau where its designers fully understand what a recording/production engineer needs to get the job done—they haven't loaded up the user interface or visual displays with unnecessary clutter. Using DiskMix is completely intuitive; you know what's going on at all times, and you know where you are in a mix.

Data is stored automatically each time you stop tape, and previous mixes can be rolled around in a shuffle stack until you have reached a point at which you want to save a pass to hard drive, or continue to refine what you are working on. The various operational modes—Write, Relative Update, Touch

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Write, Touch Update, Fader Isolate and Manual Modes—are very easy to understand and enable mixes to be built up in sections, and then refined as necessary. It's a system that makes life a whole lot simpler, especially when combined with the computer-controlled Switch Reset and Image Recall functions offered by Status.

A STATUS IN YOUR FUTURE?

In terms of overall value and integral user flexibility, the Otari Status offers a great deal. Despite being designed down to a price point that makes it affordable to a wide range of potential users—Otari has not cut corners. Cosmetically, Status is a plain product—no fancy color schemes or expensive panel trims. It's a functional workhorse that sounds great.

But, delve a little deeper into the assignment functions, Image Recall, VCA moving-fader DiskMix automation and the optional dynamics functions, and you soon realize that this is well-thought-out system, one that lets you get the job done with a minimum of fuss. Sure, there are compromises: It lacks individual mic/line gain trims; the full EQ section cannot be used simultaneously in both signal paths; it only offers 12 individual bus sends; the central LED screen is pretty small, and so on. But these are really minor beefs. The Otari Status is a fine product and deserves a look. It has the features and functions you need, and it's priced to move.

Otari Corporation, 378 Vintage Park Drive, Foster City, CA 94404; 415/341-5900; fax 415/341-7200.

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My sincere thanks to Gary Fradkin and the engineering staff at Sound Services, Hollywood, for providing access to the facility's new Studio "Z," an Avid-based mix-to-picture room that houses a 32-input mainframe Status, equipped with 24 I/O modules, dynamics and DiskMix moving-fader automation.

POSTSCRIPT

Anyone who looks at a Status console may wonder where the name Status 18R comes from. The "Status" designation is easy enough to figure out, but the "18R" part had me puzzled. It turns out 18 was the product's final revision number during development, and it kind of stuck around; the "R" designates Recording. Thought you'd like to know; it just may turn up as a question in a future edition of "Pro Audio Trivial Pursuit." ■

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AUDIX NILE V

STUDIO MONITORS

Audix has been involved in pro audio for more than a decade. Yet over the years, the company has focused most of its efforts on research and development—rather than slick marketing campaigns—resulting in a rather low profile for some rather high-performance loudspeaker systems. Today, Audix makes a wide range of monitors, from its big-sound/small-cabinet Mini series to the popular Studio series for mid-budget project rooms. In fact, the Audio Studio series Model 1A received *Electronic Musician* magazine's 1995 Editor's Choice Award in the category of unpowered near-field studio monitors. The newest additions to the Audix family of studio monitors are the flagship Nile V and Nile X models.

Both monitors (pronounced Nile Five and Nile Ten) are two-way systems combining a 1-inch cloth dome tweeter and either one (Nile V) or two (Nile X) 7-inch Kevlar cone woofers. The drivers are custom-made for Audix by a Scandinavian supplier. Upon dissecting a Nile V, I noticed that the woofer frames were die cast in a high-strength, nonmetallic composite material. According to Audix, this was selected to avoid interfering with the flux fields of the magnet structure. Inside the cabinet, where users rarely venture, I noticed other little touches, such as high-quality crossover components and the use of natural wool—rather than inexpensive Dacron batting—to control unwanted resonances and increase dampening.

The cabinets are finished in a matte-black "sand coat," and input connections are recessed, five-way binding posts. The Niles are supplied with removable front grilles, and though users disdain (and/or discard) grilles on studio monitors, Audix takes this notion one step further by enclosing the following notice with the Niles: "The grilles on your new Audix speakers are for transportation and storage purposes only. Please remove grilles when in use." I typically remove monitor grilles when in the studio, but this is the first time I've heard a manufacturer recommend it. So with such warnings in mind, I took the Audix advice and removed the grilles for my listening tests.

The Nile Vs are built in non-mirror-imaged pairs, so there's no difference between the right and left speakers. The monitors are front-ported, with a slotted vent along the bottom edge, and although designed for vertical (upright) use, they work equally well on their sides. Each cabinet is 22.5x10x13.5 inches, and at 24 pounds each, may require some reinforcement before placing them on a fragile meter bridge.

The monitors have a rated sensitivity of 87 dB (1W/1m), which is slightly low (most compact monitors are in the 90dB range), so when making A/B comparisons with other speakers, the Nile Vs don't "jump" out as much. However, when comparisons are made at equal playback levels, the Nile Vs shine. The maximum rated power handling is 250 watts, for max SPLs in the 110dB range, which should be loud enough for close monitoring.

Over a period of weeks, the Nile Vs proved impressive. There are few models in its $1,495/pair bracket that offer such excellent imaging. The Nile V's soundstage allowed me to visualize the left/right placement of various elements in the mix with ease. The Nile Vs offer tight, well-damped bass response down to 50 Hz, with LF continuing to 40 Hz but at a lesser level. On the high end, the monitors seemed slightly bright: The net effect may have had more to do with the fact that the response extends out to beyond 20 kHz, while competing models typically begin tapering off at the 15 to 16kHz point. In any case, it was pleasant to hear upper harmonics reproduced intact, especially with percussion and upper strings.

Anyone looking for non-fatiguing, natural-sounding, compact reference speakers should consider the Nile Vs. If you need more SPLs and more bass, the double-woofer Nile X models should do the trick. And on a related note, Audix is currently working on self-powered versions for future release.

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BY GEORGE PETERSEN

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AARDVARK AARDSCAPE

ANALOG TAPE COMPRESSION EMULATOR

Most everyone would agree that recording digitally offers distinct functional advantages over analog tape recording. But today, the battle lines are drawn over which format sounds best. For all of digital's unwavering proponents, there are some engineers who love its ease of use but miss the "warmth" of analog. Manufacturers have responded to these concerns with a tidal wave of vacuum tube microphones and outboard gear. And although not tube-based, Aardvark's AardScape is a box that actually emulates the characteristics of analog tape compression to warm up digital recordings.

BEEF IN A BOX

The AardScape is a single-channel, tabletop unit housed in a half-rack-sized metal chassis. The unit's audio path circuitry is completely analog and solid-state. According to the cursory owner's manual, Aardvark's research indicated that "analog tape saturation produces unique combinations of odd harmonics," a characteristic distinctly different from that produced by tubes.

The AardScape does not use compression circuitry per se. Rather, the unit uses overload principles to produce various distortion curves, determined by the setting of two three-way switches (labeled Brilliance and Saturation) and a single Warmth control knob on the front panel. Describing in simple terms what these interactive controls actually do is not all that easy, as their unique processing does not invite direct comparisons to any other existing equipment. Perhaps the folks at Aardvark were also reticent to reveal their hard-won trade secrets. In any event, technical details were hard to come by. Here's what I was told:

The Soft, Medium and Hard settings of the Saturation switch are pretty self-explanatory. The Warmth knob can be thought of as a sensitivity control for the Saturation function, although it transposes its own, slightly different curve on the processing. By turning the Warmth knob clockwise or counterclockwise from about its mid-position, you can get sounds that bridge the difference in timbres available between the soft, medium and hard Saturation switch settings.

The Brilliance switch can be set to either Full, Clean or Brite positions. The latter two positions alter the distortion curve produced by the full setting, which can perhaps be best described as the "starting point" effect. The Clean setting takes out the "grime" in the low end; the Brite setting cleans up both the lows and highs. All three Brilliance settings do more than mere equalization. They also change the overload characteristics imparted to the signal.

If the theory behind the processing sounds somewhat vague, at least the operation is totally straightforward. The truth is that you can be completely clueless about how this box works and still get great sounds out of it by limited trial and error. This is due in part to the AardScape's very simple front and rear panel layouts.

AARDSCAPE'S LANDSCAPES

Three rotary control knobs grace the unit's front panel: one each for input and output gain (the latter labeled Drive) and the previously mentioned Warmth knob. They're all detented, facilitating easy repeats of your favorite settings. You can also get midway settings by positioning the knobs in between their detents, which is particularly useful in optimizing the unit's input level (more on this in a moment). My only complaint is that the knobs should have a protruding pointer or a large white dot to show the level they're pointing at—from as little as a foot or two away, the three o'clock and nine o'clock positions are indistinguishable from one another. A small dab with Liquid Paper® solves the problem neatly.

A nine-segment LED bar graph meter shows the AardScape's input level, which should be optimally set for a reading just below the red Over LED at the top of the scale for

BY MICHAEL COOPER

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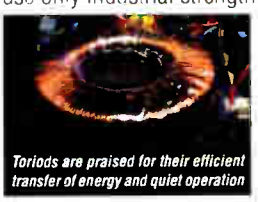
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hearing the full saturation effect. The power switch's associated LED changes from green (power on) to red when the output stage is clipping. A Bypass switch and associated LED, plus the aforementioned Brilliance and Saturation control switches, finish off the unit's front panel.

The AardScape accepts line-level sources (from tape, synth, etc.) via rear panel connectors. An input-select switch switches between +4 dBu, balanced XLRs and -10 dBV unbalanced ¼-inch phone jacks for both input and output. The power supply is an external, two-prong affair, which detaches from its rear panel connector.

IN SESSION

I used the AardScape over the course of a couple of months in both recording and mixdown sessions with ADATs, and did some critical listening on my own as well. Overall, I was very impressed. Even on the most extreme settings, this is not a device for getting crude overdrive or fuzz box tones—the effect is much more subtle and refined than that. But, make no mistake, you can immediately hear what the AardScape does, and in most cases it's good (sometimes awesome).

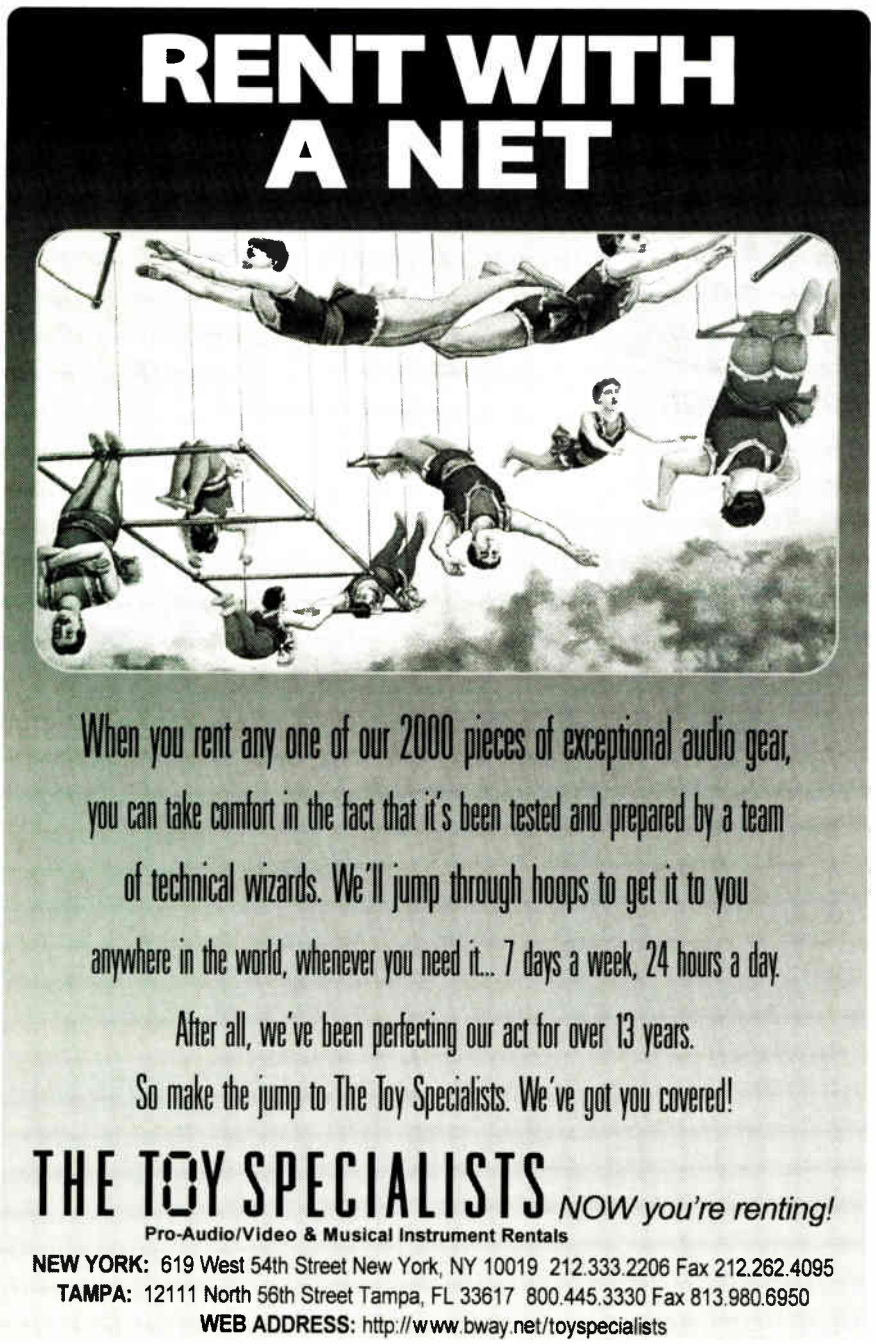
The AardScape really shines on DI'd bass guitar (patched after the DI box), dramatically increasing the body, richness and (surprisingly) presence of the track. On lead guitar (a Les Paul played through a Marshall stack) the AardScape yielded a monster fat sound that also cut through the mix better. Even old E-max piano samples sounded beefier through the AardScape. On most electric or electronic sources, the Brite setting along with medium or hard Saturation provided the best combination of fullness and cut.

The AardScape also sounded great on drums. The Hard and Brite settings added presence and grit to snare drum, effectively emphasizing the sound of the snares themselves—great for rock 'n' roll. On kick drum, the AardScape imparted a beefy fullness that—more than with any other input source—sounded a lot like analog tape saturation. (I'm not convinced that the processing sounds like analog tape saturation on other instruments, but the effect is valid regardless.) The only drawback was that the sound was also a tad muddy.

Next came the acid tests: feeding AardScape more pure-sounding timbres. First up was acoustic guitar, both strummed and "slow hand" styles. If I expected the AardScape to completely fall down here, I was surprised. Although the pristine aspects (transient detail and transparency) of the instrument were slightly compromised, there was a flattering increase in both size and warmth (without added boominess!) and a brunt that was particularly well-suited to rock productions.

The AardScape yielded mixed results on vocals. On one particular female jazz singer, the AardScape dirtied the bell-like quality of her vocals on even moderate settings and was not appropriate. But I was again surprised when I heard the AardScape on male, alternative rock vocals. Adjusted to soft Saturation and Brite settings, the vocals took on a very complimentary warmth, weight and size. In the alternative rock context, the slight grit that was added to the track gave the vocal a fairly natural-sounding, ragged edge that increased its impact. Curious as to how far I could take this, I tried the medium and hard Saturation settings on the same vocal track, but this sounded artificially and electronically distorted and did not work for me. (However, I'm sure such tomfoolery will resurface in *Mix*'s next installment of "Sick Production Techniques"!)

The last instrument to taste Aard-



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Scape's offerings was Native American wood flute. Even on the soft Saturation setting, the AardScape emphasized the instrument's natural harmonics too much, making an inherently somewhat crude instrument and performance a tad more ringy and less pure and clean-sounding. And even the darkest Brilliance setting brightened the track too much.

REMASTERING

I next tested the AardScape on a variety of rock and acoustic folk mixes that had come out of my studio. But even on Soft and Brite settings, the processed sound was too dirty for both acoustic folk and rock 'n' roll. More specifically, the sound was a bit hazy and the detail, especially on high-frequency content such as cymbals, was somewhat smeared. The overall effect was not unlike that imparted by multiple conversions between digital and analog domains.

CONCLUSIONS

Aardvark tells me they may make a 2-channel, single-chassis version of the AardScape available in the future. This would be a most welcome option for discrete dual-mono processing, but I would not use the AardScape on mixed stereo program material due to the distortion artifacts it adds. The AardScape sounds great on many individual sources where you can fine-tune the effect. I wouldn't use it on every track, but that's true of virtually all gear. Considering that the AardScape is essentially a one-trick pony, some might view the $595 list price for one channel as a tad pricey.

Does AardScape's processing sound like analog tape saturation? Only to the degree that oranges taste like grapefruit. That is, it clearly sounds different, but there are definite similarities. It's a very unique and useful effect that sounds quite different from that produced by traditional compression circuitry.

To summarize, if you're shooting for a super-pristine sound, the AardScape is not the way to go. If, on the other hand, you want warmth, subtle grit and added size (without adding noticeable noise), you won't be disappointed—this box sounds huge.

Aardvark Computer Systems, 202 East Washington, Ste. 306, Ann Arbor, MI 48104; 313/665-8899; fax 313/665-0694. ■

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

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VALLEY AUDIO 730 DYNAMAP

DIGITAL DYNAMICS PROCESSOR

Valley Audio, long associated with quality outboard processors such as the Kepex, GainBrain and Dynamite series, continues the trend with its 730 DynaMap. Designed by Rick McCollister—who was responsible for the Valley Audio DCE dynamics processor in the late '80s—the 730 represents the next step in flexible architecture matched with a degree of control that analog systems simply cannot equal.

At first glance, the 730 is impressive, if a bit daunting, tightly fitting its features within a single rackspace. Wisely, the manual includes a quick setup page. The first units shipped on the market came without presets, but this was remedied once common applications were gathered from users. Howard Tool of Jukebox Audio in Nashville compiled and tailored the presets for the update, and, to his credit, they're uniformly excellent. Included are suggested treatments for solo acoustic guitar, piano, vocals (including background vocals), guitar and voice, de-essing, a "ducker" for voice-over, as well as standard and enhanced compression algorithms. The unit has 99 factory settings, as well as 396 locations to store personal programs.

A straightforward front panel features color-coded, illuminated keys. Three primary menu keys—Setup, File and Panel—address all major functions. Setup controls I/O sync routing, dynamics processing modes, external control configurations and general setup functions; File allows you to save or load any part of a 730 setup and provides access to storage areas for factory and user banks; Panel covers all metering, display, function keys and other preferences. Programmable A and B keys offer selection between two metering configurations, compare two different setups or separately enable/disable individual processing functions.

Luckily, the 730 has a generously sized LCD main screen. On it, data is divided into two sections: a small navigator and a larger display of either parameters or menu choices. Programmable level and gain meters are stacked in a row of four, providing stereo or dual-mono operation. Back-lit status indicators show meter configuration, limiting and threshold. A programmable flag indicator is also included. Next to the meters are three back-lit status sections. These include an input section, which indicates the main input source (S/PDIF, AES/EBU, optical, analog, etc.) and status of the inputs; a sync section, which shows the current sync source, sync mode, sampling frequency and status of source; and a useful mode section, which indicates current dynamics processors in use. Even with the complexity of the system, the interface becomes fairly intuitive. Once you're comfortable, you essentially have a roadmap before you at all times.

The rear panel offers analog I/O with XLR connectors (Model 730 ADD only) and 18-bit A/D conversion. The digital I/O supports AES/EBU, S/PDIF and TosLink optical. Analog and digital I/O for word sync are also provided. All common sample rates are supported, with the ability to lock to externally varispeeded digital sources. Other ports include MIDI I/O, RS-232 and a fader port for passive linear remote faders. These were not implemented in the 730 we reviewed, but Valley expects to have them available soon.

BY ALEX ARTAUD

For this review, I compiled recordings of solo piano, solo acoustic guitar, percussion, electric bass and a string quartet. All were recorded to hard disk and transferred to DAT through the 730. In general, I tend to let the dynamics of instruments remain untouched with acoustic recordings that have a clear character. Here, the trade-off of riding faders vs. judicious compression is a matter of flexibility and taste. In my case, emphasis for all sound sources was first placed on straight-ahead compression and limiting, which the 730 did wonderfully. One of the unit's strong points is that it doesn't disturb the spectral content of the music when you start modifying the dynamics. I also ran solo vocal recordings through the unit, adjusting for sibilance. The solo recording retained its crispness without any distracting artifacts.

Another nice feature is the ability to change the stereo spread, which is found within the Static parameter. This allows you to select continuous mono to extra-wide "ambient" stereo imaging. The attraction here is that it doesn't seem to alter phase between the channels as you add stereo enhancement. I found its application invaluable when running a DAT-to-DAT transfer of a bass, cello, guitar and cymbalom ensemble, where creating a slightly wider image brought out the definition of all the strings. A/V and post users should find this ability to tweak stereo perspectives quite useful.

I queried other users about the 730. Henk Kooistra of 9 West Mastering said he's never heard a limiter that you could drive so hard. Phil Peters of International Family Entertainment found he could run surround information through it without altering the soundstage.

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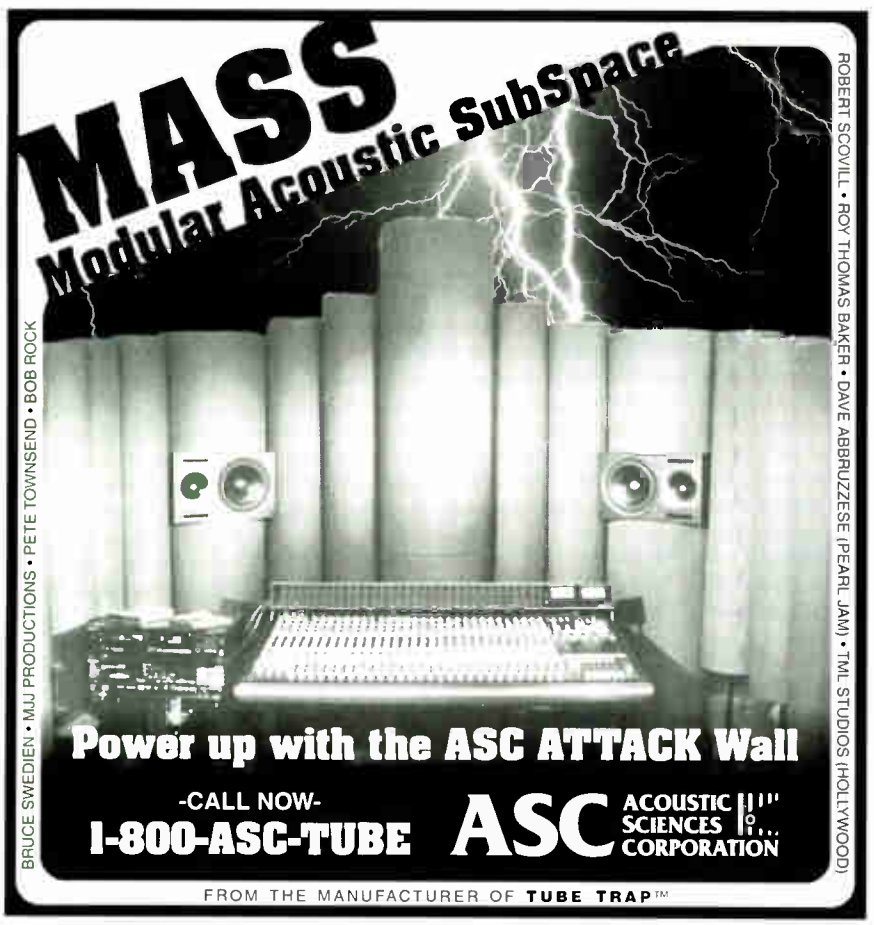

When you decode, things that are in the back stay in the back, Peters said, adding that other dynamics processors tend to make the image shift around.

Another engineer said it's the only digital dynamics processor that works for video uplinks or for any processing of audio-for-video where you have the surround information encoded in the video track. On the experimental end, another user syncs two pairs of the same stereo tracks, routes them through different width settings, and then mixes them to create unusual stereo relationships.

The heart of the 730 is its DynaMap compressor, which allows you to create an arbitrary "dynamics map" of up to eight segments. Nine threshold/gain end-points can be assigned, with the 730 calculating and displaying the ratio between segments. From simple relationships to the sonically bizarre, the DynaMap parameters can be controlled internally or via an external Key signal. The trick is to carefully plan the sequence of compression/expansion algorithm ratios. Valley provides a few examples to try out. The rule is simple: If you understand what you are trying to accomplish relative to what the program source is, DynaMap lets you create the transfer function that you want rather than restricting you. It requires some patience and experimentation.

For sound quality and flexibility, the 730 DynaMap is in a class by itself. Valley is planning a software upgrade that includes a leveler preset, a background noise suppressor, and a greater range for high-frequency compression. With its applicability in recording, post-production, broadcast, duplication chains and live sound, the DynaMap is a veritable dynamics toolbox. And given what it offers, it's fairly priced: The digital I/O version is $2,798; the model with both analog and digital I/O is $3,548. The bottom line: What you trade off in tube warmth, you get back in control, quickly dialing in your parameters and creating patches in a way no analog unit could match. And as you strive to bring out the musicality in your mixes, the flexibility you are afforded with the 730 makes it a powerful choice.

Valley Audio, a subsidiary of Galaxy Audio, 601 East Pawnee, Wichita, KS 67211; 316/265-9500 or 800/323-2746; fax 316/263-0642. ■

Producer/engineer Alex Artaud is the editor of the Spanish-language edition of Mix.

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GOLDLINE FD23

FEEDBACK DETECTOR

Goldline's FD23 Feedback Detector ($259.95 list) is a marvelously simple tool. I have been using one for the past year and, although there is nothing glamorous about the FD23, it prevents trouble and saves time on every gig. The unit is housed in the familiar 12-ounce, brick-shaped case that Goldline uses for its other handheld instruments. It can be powered by either an external 12-volt DC wall wart or by eight rechargeable AA NiCad batteries, which gets you through most of a day without needing recharge.

The FD23 has two vertical rows of LEDs, representing 80 Hz through 12.5 kHz, with the lows at the top and highs at the bottom. Using 23 frequencies on the same ⅓-octave ISO centers found on a graphic equalizer, the LEDs are, in effect, a single-point 23-band RTA. There is a built-in omnidirectional electret condenser mic, which illuminates the LEDs above a threshold. Sounds picked up by the mic show their frequency content, with the brightest LEDs being the loudest bands. A gain control thumbwheel, which also has the power switch at the low end of its travel, is used to adjust so that only the loudest sounds light up the LEDs, making it easy to identify peak tones.

The FD23's belt-holster makes it convenient to carry at your side as you work onstage. Because the unit is compact and portable, it's always within reach and fits easily into your gig bag or briefcase. How many times have you heard the beginnings of a squeak when you weren't right at the console or EQ rack? You can also whistle or hoot tones that you hear ringing into its mic and catch them before they take off.

The FD23 isn't a replacement for properly equalizing your sound system. I still say, "Use your ears." But first you must learn to trust them. The FD23 provides a constant visual reinforcement for what you may already know. I save a few minutes on every show by having the FD23 nearby when I need to quickly decide which slider on a graphic to adjust, reminding me what different frequencies sound like. Many engineers tend to overequalize a system simply because—in the heat of the moment—they are not sure which frequency to pull down. The FD23 solves this problem simply, quickly and affordably.

Many engineers tend to overequalize a system simply because—in the heat of the moment—they are not sure which frequency to pull down. The FD23 solves this problem simply, quickly and affordably.

Some of you may be too cool to be seen using one of these. Yes, I know many engineers who can call out EQ frequencies with uncanny precision, but I know even more who must guess and, when the going gets tough or they just don't care, will grab several sliders and push them all down, hoping for the best. While the FD23 won't improve your gear or your ear, it will help you use them better. At about the same price as a decent vocal mic, the Goldline FD23 is a time-saving investment that helps you move on to more important decisions, like which mics to use on the drum kit or whether to order Evian or Perrier to stock the ice chest you keep at the mixing position.

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BY MARK FRINK

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The NADY 950GS wireless microphone system

Wireless Microphones

UHF Systems Take Center Stage

BY MARK FRINK

In a very competitive field, many wireless mic manufacturers have been working hard to bring affordable quality UHF wireless systems to market this year. With few transmissions to interfere with most UHF frequencies, these systems have become very popular, and the advent of frequency-agile synthesized UHF means that even if a problem arises, it can be avoided. In last September's *Mix*, we provided an overview of the year's wireless developments, but new products keep coming out. Here are some new UHF systems that have debuted recently.

AKG WMS300

AKG's (Northridge, CA) WMS300 UHF wireless system, introduced at the winter NAMM show, operates in the 800MHz range. Available with AKG's C5900 condenser capsule, the system lists for $1,899. The half-rack receiver has a front panel rotary switch to select one of 16 available frequencies. Recessed pots allow adjustment of squelch and output level, and LEDs indicate "low" or "OK" RF level, audio signal and clip, diversity channel and automatic muting. The HT300 handheld transmitter runs on three AA batteries, with alkalines offering up to 12 hours and

Whitney Houston with a Sennheiser SKM5000 wireless mic

World Radio History

rechargeable NiCads more than 5 hours of use. The handheld can also be purchased with either the D3700 or D3800 dynamic "TriPower" capsules, which are interchangeable and can be purchased separately ($129 and $219, respectively). One of 16 frequencies can be selected via four internal DIP switches, and up to eight systems can be used simultaneously within the same 20MHz-wide channel. Accessories include the PS300 eight-way splitter and RA300B powered antenna ($849 and $199). The PT300 bodypack can be used with a variety of AKG's condenser lavaliers or Series II MicroMics which, counting the three handheld elements, offer a total of ten different AKG microphone combinations.

AUDIO-TECHNICA ATW-7174

Also introduced at NAMM, Audio-Technica's (Stow, OH) ATW-7174 (retailing at $ 1,698) is a 16-channel-capable UHF system operating at 900 MHz and offering a maximum usable range of 1,500 feet (200-feet minimum). The ATW-T74 handheld transmitter features a cardioid neodymium dynamic element with a double-dome diaphragm and runs on two AA batteries. A bodypack transmitter is currently in the works. The ATW-R71 receiver has true diversity operation, with dual antennae feeding two completely independent RF sections on the same frequency. Both ¼-inch and XLR outputs are provided; dynamic range is stated as 110 dB (A-weighted) and signal-to-noise is rated at 95 dB (1 V, 1 kHz, IEC-weighted).

Shure UHF system

AKG D3700 WL and D3800 WL dynamic capsules

AKG HT300 Handheld transmitter and C5900 condenser capsule

AZDEN 41-SERIES UHF

Azden, of Franklin Square, NY, will begin delivering its first UHF products next month. The new series combines the 411UDR dual-conversion superheterodyne, true diversity receiver with either the 41HT handheld or the 41LT bodypack transmitter, which operate at 60 frequencies within the 794 to 806MHz band. Retail is $995.

Beyer 600 Series

BEYER 600 SERIES

Beyer (Farmingdale, NY) released the S600 handheld UHF wireless mic at the 1996 Frankfurt Musikmesse. The S600 ($2,599 list) works with Beyer's frequency-agile NE600 UHF receiver ($2,999 list). The U600 system operates on one of 64 different frequencies, in four groups of 16, allowing up to 15 units to be used on one TV channel. They operate in the high-frequency range of 854 to 862 MHz, and can also be purchased as 794 to 822MHz systems (TV channels 68 and above 69). Packaged in a half-rack format, the receiver's LCD shows channel, RF and audio, mute and battery level. Beyer's "Grip" tone encoding locks the receiver to its transmitter, excluding other signals or interference that does not have that channel's identifier tone. A unique Multi-User Mode (MUM) enables the system to toggle between two different transmitter channels, allowing a single receiver to quickly go to

World Radio History

another transmitter set on another frequency. The 8600 handheld transmitter is available with a variety of field-replaceable Beyer mic elements, including the TG-X 60 and 80 neodymium dynamics, the M-500 ribbon, and the MCE 81 condenser.

Beyer's PCI 600 Windows-based software controls and monitors up to 16 NE600 receivers. A display for each of 16 receivers shows audio and RF signal strength, as well as antenna, channel grip information and current frequency. Clicking any of these displays RF power from both antennae, pre- and post-companded audio level and mute setting. The software lets engineers record a "walk test" by recording a graph of RF power over time to find nulls, optimize antenna placement and monitor the system's performance.

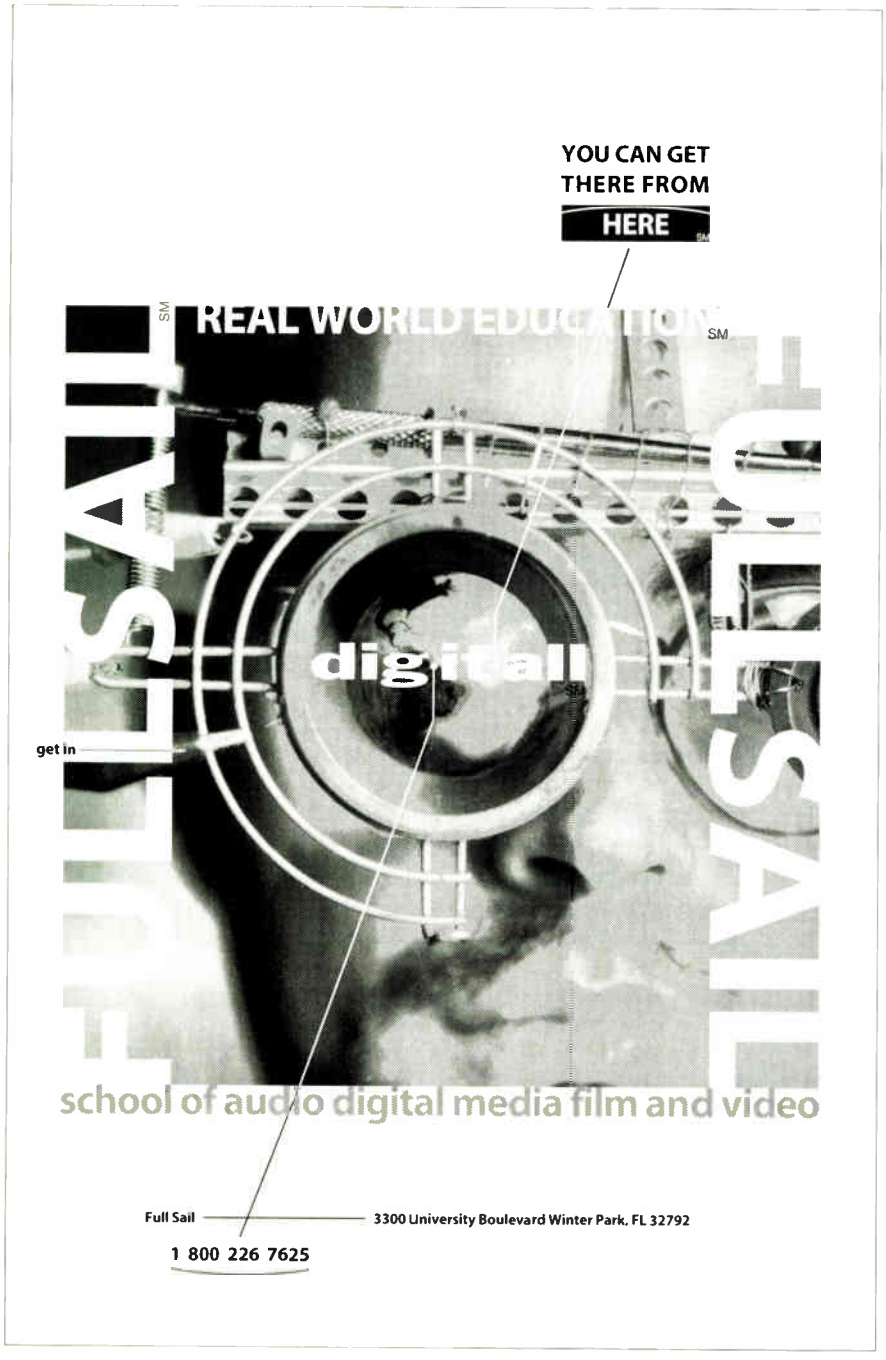
Lectrosonics UDR200B UHF wireless microphone receiver

The Beyer PCI 600 software, designed primarily for theatrical applications, allows set-up for specific productions by creating individual scenes, assigning performers' names to channels, putting unused channels into audio mute and combining them into a single file. Setup configuration can be programmed ahead of time, with the computer 'offline' from the receivers. By changing the operating frequency of the receivers, the production only needs to have enough receivers to accommodate the maximum number of players on stage at one time, switching between receivers and changing names on the channels on a scene-by-scene basis.

LECTROSONICS UDR200B

Lectrosonics (Rio Rancho, NM), an established name in the film and broadcast market, has introduced the UDR200B, a high-performance frequency-selectable UHF wireless microphone receiver. It offers 256 frequencies in 0.1MHz steps and operates in the range of 512 to 806 MHz (TV channels 21-69). The 200B features a unique 'tracking' front end that retunes as the frequency is changed, preserving the benefits of selective fixed-frequency designs, while providing the frequency agility necessary to deal with interference problems. Lectrosonics' Opti-blend ratio diversity combining blends the audio outputs of two separate receivers together seamlessly, eliminating switching noise and level anomalies common in conventional switching diversity designs.

Audio performance of the 200B is improved through the use of a proprietary dual-band compander, crossing the audio signal over at about 1 kHz and companding the signal with slower time constants on the lows than the highs. The FM deviation is a wide ±75 kHz, which improves the signal-to-noise ratio and eliminates



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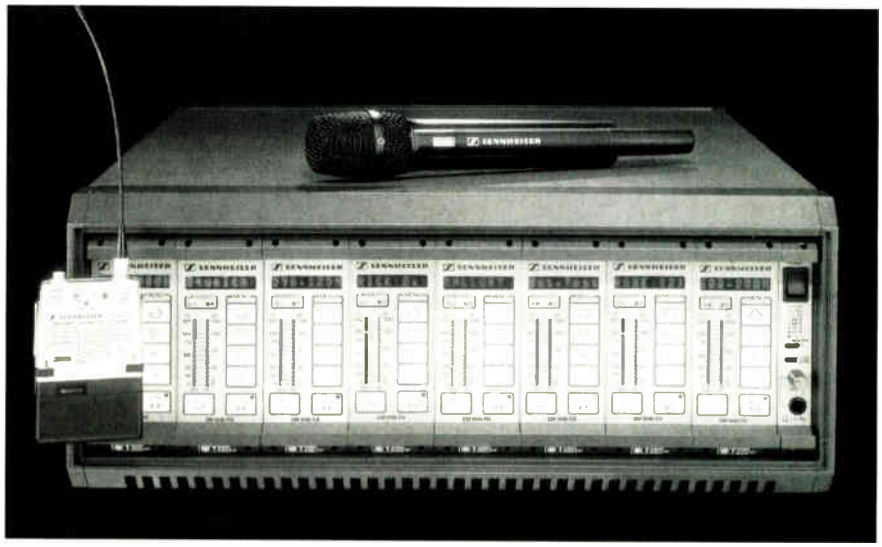

Sennheiser EM 1046GR

The UH-6 handheld transmitter is available with various capsules. The beltpack transmitter has the Hirosi P-6 connector, with the battery door and antenna permanently attached for durability. Operating in the range of 790 to 820 MHz, depending on which part of the world they are sold in, up to 19 of these systems can be run simultaneously. There are 1mW or 10mW modes of operation, and in the 1mW mode, up to 96 channels can be used at once.

SENNHEISER 1000 SERIES DIVERSITY SYSTEM

Sennheiser's (Old Lyme, CT) new 1000 Series frequency-agile PLL diversity UHF system (about $2,000) uses the same HiDyn Plus noise reduction and audio performance found in the high-end 5000 Series Sennheiser wireless systems. It operates on one of 16 frequencies between 674 and 698 MHz (TV channels 48 through 51). The receiver 's half-rack chassis has displays for RF level, audio deviation and diversity indication. Up to eight channels can be used simultaneously. The BF 1081's handheld transmitter has a dynamic supercardioid capsule and looks similar to the VHF BF 1051. It's made of a glass-composite material, has an integral antenna, and runs on a 9-volt battery for 6 to 8 hours. The BF 1083 is a bodypack version of the system with an MKE-2 omnidirectional electret condenser lavalier.

SHURE UHF SYSTEM

Shure's (Evanston, IL) new frequency-agile UHF wireless system debuted at April's NAB show. Capable of selecting from 188 frequencies in the 782 to 806 MHz range (TV channels 66-69), up to 20 systems can be operated at once. The microprocessor-controlled receivers and transmitters have LCDs for setup, information and control. In addition to a battery gauge on each transmitter, there is also a remote battery meter on the receiver. Typical life from two AA batteries is 12 hours. There is also RF and audio metering on the receiver, plus a headphone output. The receiver incorporates a universal switching power supply, allowing it to operate on any international voltage. The single-rackspace receivers, which incorporate tone-key squelch and Shure's Maximum Ratio Combining Audio Diversity (MARCAD) circuitry, are available as single- or dual-channel units. Handheld mic element choices include the Beta 87 condenser and the new Beta 58A dynamic, as well as the SM versions of these capsules. Single-channel handheld systems list from $2,390 to $2,590, depending on the element. Body packs with Tini QG connectors ($688) are compatible with a variety of Shure's lavalier and headset mics, but are also available with Lemo input connectors ($760). Optional accessories include an antenna distribution system, active antenna kit, and extension cables for remote-mounting antennae.

SONY WD-880A CHANNEL MULTIPLIER

Sony's (Montvale, NJ) WD-880A Channel Multiplier (about $4,695), shown recently at the NAB, allows 42 systems to be run simultaneously for a more uniform assignment of seven channels over six TV channels. The new WRR-850A receiver (about $5,000), shown at the New York AES show, has tighter

World Radio History

filters on the front end, more features and a better display. As a result, it has improved audio and is designed primarily to be used with the 880, but works with any Sony UHF transmitter. Its RS232 port can currently be used for an external display, but is also intended for "future developments." The WRT-830 handheld transmitter ($1,350) has an electret condenser capsule. For high-end entertainment applications, the WRT-867A UHF handheld transmitter ($2,125), introduced last year, has the same dynamic element found in Sony's F-780 wired mic. The 867 has a smaller body than the 830, with a shorter antenna, and its channel select switches and LCD channel indicator are mounted inside the housing. It uses a single AA battery instead of two, providing up to four hours of use. Both handhelds operate from 794 to 806 MHz (TV channels 68 and 69), and now up to 14 of these transmitters can be used simultaneously, in conjunction with the new products mentioned above. They also work with Sony's WRR-820A single-channel ($1,600) or WRR-840A dual tuner ($2,400), both of which operate over the full range of 770 to 806 MHz (TV channels 64 through 69), as do the WRT-810A handheld and the WRT-820A body pack.

The Vega R-2020 UHF receiver with handheld transmitter

VEGA SYNTHESIZED SYSTEMS

Vega (El Monte, CA) has released two products that the company has been working on quietly for some time. The U-2020 synthesized system ($1,100 to $1,270) was shown at NAMM and is available through both EV and Vega dealers. Using one of two groups of frequencies, 746 through 766 MHz (TV channels 60 to 62), or 762 through 782 MHz (TV channels 63 to 65), up to 22 channels can be used at once. It features dual-mode squelch and uses a variant of Vega's Dynex III noise reduction called DX-20. Two numbered rotary controls combine to allow selection of 100 different frequencies over three UHF channels. The handheld transmitter is available with either an N/D 757 or 557 capsule and runs 8 hours on a 9-volt alkaline battery.

Vega has also released the R-672 ProPlus synthesized receiver ($2,700), which runs on one of 16 synthesized frequencies in one of five groups or "splits" in the 512 to 806MHz range (TV channels 21 through 69). It uses Vega's Dynex III companding noise reduction and is compatible with all previous fixed-frequency T-680 handheld and T-677 or 678 bodypack transmitters. A four-position switch allows the user to lock the frequency, enable front panel frequency selection, or reprogram frequencies via the RS232 port. It can also be controlled and monitored using VegaNet software. ■

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SOUNDCHECK

DRUM MIKING TIPS AND TECHNIQUES FOR LIVE SOUND APPLICATIONS

PHOTO: STEVE JENNINGS

Neil Pert, drummer for Rush

If the *Jeopardy* game show ever did a pro audio version, you might encounter the following: *Answer*: "K-S-H-1-2-F-O-O." *Question*: "What do the first dozen channels of many mixing boards have in common?" (Kick-Snare-Hat-Tom1-Tom2-Floor-OverheadL-OverheadR.)

There is no area of sound that remains more stagnant, more force-of-habit, more reflex and me-too repetitious than the treatment of and selection of mics for the drum set. Consistency is important, yet with the wide variety of quality SR microphones available today, creative live sound engineers should take the time to experiment and compare different models and approaches—at least every couple of years or so. I began my musical life as a drummer, which means this subject holds special interest for me. So, though I don't usually make product-specific recommendations in this column, I will this month...

BY MARK FRINK

Of course, good mics on bad-sounding drums can still sound awful. Engineers are used to setting the mics on the kit while the drummer is whacking away at them. Drummers have an instinctive reaction to the mics on their kit being touched that makes them want to whack a drum. They don't understand that others might be bothered by the sound of drums being hit at point-blank range, as this is quite usual to them. Engineers should cherish these moments, using them to discover how the drums actually

—CONTINUED ON PAGE 174

VINTAGE LENNY KRAVITZ

Lenny Kravitz onstage at The Warfield Theatre, San Francisco, in January 1996. Renowned as a vintage recording gear enthusiast, Kravitz makes use of an unusual collection of ancient and modern analog equipment in live performance: Both Kravitz and guitarist Craig Ross use offstage analog tape machines for guitar delay effects. FOH mixer Tom Edmonds also uses analog tape delay (an Otari MA050 2-track at the FOH position) and re-creates the Kravitz sound with mic preamps from Helios, AKG spring reverbs, and Summit TL100A and DCL-200 tube compressors. ■

PHOTO: STEVE JENNINGS

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CARLY SIMON AT FOXWOODS

New England Shows With Hall & Oates

1995 JOHN ATASHIAN/RETNA LTD

Pop icon Carly Simon recently teamed up with Daryl Hall and John Oates for four shows at Foxwoods Resort & Casino in Ledyard, Conn., situated halfway between Simon's homes in Martha's Vineyard and New York City. Foxwoods' large multipurpose room, which is also used for bingo, holds 4,400, and has hosted top acts ranging from Pavarotti to Luther Vandross to Liza Minelli. The room is 300x160 feet with a 27-foot clearance to low steel.

Foxwoods' lead engineer Brian English says his mission has been to create the premier venue in the country for top casino entertainers. "I've been on both sides of the board, and I know what it means to have an audio crew take care of you," he comments. "When the act walks in, they should feel confident that they are getting the very best." English started out in Atlantic City at the Golden Nugget and moved on to Bally's Grand before helping to open the Taj Mahal grand ballroom as the lead audio engineer. He is assisted at Foxwoods by New England sound veteran Dave Albro.

To minimize the distance between the stage and the audience for the Simon show, the stage was placed on the long side of the room. Bleachers elevated patrons at the far ends of the room. Twenty-eight V-DOSC cabinets were arranged in four columns, alternating left and right to render a stereo image throughout the listening area. A column of six V-DOSC cabinets was hung over the downstage corner, and two more columns of eight cabinets were hung 35 feet upstage and turned outwards for the portions of the room to the sides. Eight double-18 subwoofers per side were wrapped around each downstage corner.

"The entire rig went from the truck to hanging in two hours," comments English. "For the previous show in this room we used another popular modular system that took ten hours to rig using twice as many enclosures, and we still had coverage problems." Since the Simon show, Foxwoods has purchased 28 L-Acoustic V-DOSC cabinets, 16 subs and three of the smaller two-way ARCS enclosures for use as a center cluster in the smaller Fox Theater showroom, or for down fill as needed. The system is powered by QSC PowerLight 4.0 amplifiers and uses BSS Omnidrive crossovers.

Mark Deadman mixed the show on a Yamaha 56-channel PM4000 and used a Yamaha ProMix 01 for extra inputs. Deadman, who has been Hall and Oates' regular engineer for several years, was filling in on Simon for David Lohr, who was out mixing John Hiatt (now opening for Bob Seger and the Silver Bullet Band). Deadman used Foxwoods' standard house inventory of outboard equipment, which includes BSS DPR-404, DPR-901 and dbx 160xt compressors, Aphex 612 gates, Aphex Expressors and a Summit TLA-100. Front-of-house mix effects were accomplished with a Lexicon 480L, an Eventide H-3000, and Yamaha's REV5, SPX990, SPX900 and a D5000 delay. "The only big effect is a couple of sax echoes, which I usually get out of an SPX," comments Deadman. "They really like that old R&B sound."

Foxwoods house engineer Dave Albro (L) and FOH mixer Mark Deadman

Daryl Hall and John Oates sing into Shure Beta 58s, both at their downstage vocal positions when they both play guitar

BY MARK FRINK

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One path for tube suppliers is to simply buy thousands of tubes from the existing factories, throw away most of them, and sell the ones that happen to accidentally perform well. That system is inherently unpredictable, however, and there is no way to guarantee that the tubes which do pass will continue to perform after a few hundred hours of use.

So with the services of some of the top engineers from the world's classic tube companies, Whirlwind set out to match and surpass the best of the classic tubes using selected Chinese manufacturing plants.

Achieving this goal required the modernization of systems at partner factories and the installation of equipment capable of producing better mechanical connections and higher vacuums—keys to consistent performance and longer tube life. High-tech alloys were brought in for a new generation of superior tube designs, and rigorous quality control procedures were developed. PM staff were placed at these factories to work hand in hand with their production staffs. The result of these efforts was quality unparalleled in the history of tube manufacture.

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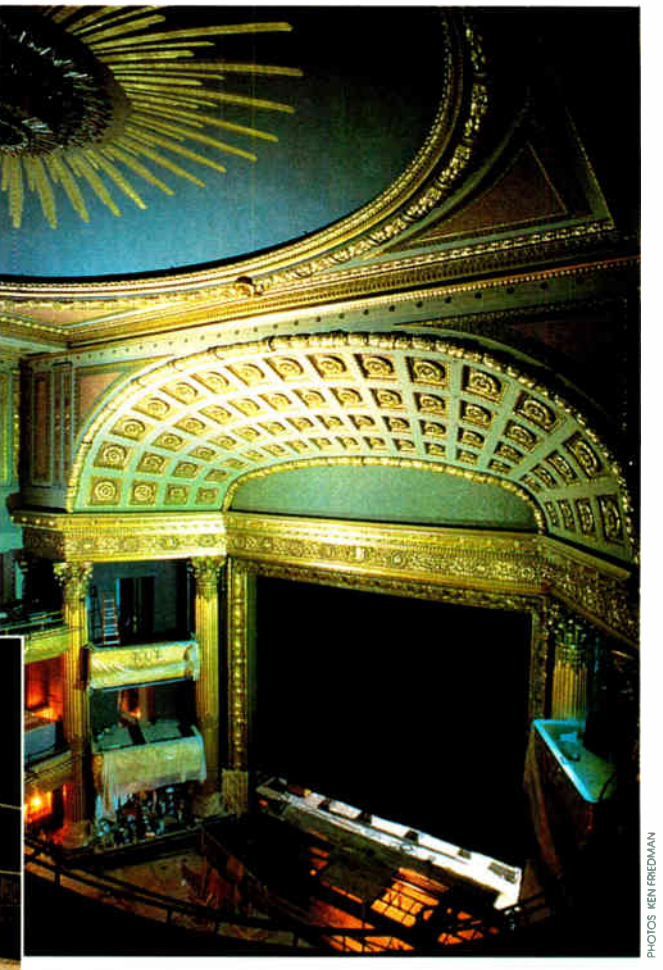
and at an upstage position when Hall switches to keyboard. The rest of the vocalists also use 58s. "They used SM87s back when they first came out," veteran MSI monitor engineer Jack McCue comments, "and before that they were using Sennheiser 431s." Michael Braun's drums are miked with a Shure SM91 on kick, 57s on snare top and bottom, and SM98s on toms. Upstage left, Charlie DeChamp plays keys, percussion and sax on a riser. Bobby Mayo is opposite him, upstage right on Hammond B-3 and Korg O1-W. T-Bone Wolk's Peavey SC212 amp was miked with a Sennheiser 409, as were the other guitar amps onstage. The multitalented Wolk, who used to play in the *Saturday Night Live* band, did double-duty, shifting to play bass in Carly Simon's band. The two bands shared much of the onstage equipment, and the only set change was the replacement of Hall's keyboards with Carly Simon's couch.

Gregg "Fish" Salmon, another seasoned MSI regular, provided earphone monitor mixes from a 56-channel PM4000M using a Garwood Radio Station wireless for Simon. Inserts were dbx and Aphex dynamics and "fairly standard mixes for in-ear monitoring," Salmon comments. "Lots of reverbs, with a Lexicon PCM70 for her voice, and shotguns from the stage for audience mics, panned hard so they work just like her ears." Garwood PRS-II in-ear monitors were used by the rest of her band, except for music director Teece Gohl. Gohl shares keyboard chores with Mick Rossi—each at one side of the stage and both using Garwood's hard-wired M-packs. The legendary Rick Marotta also wore wireless ear monitors and came down from the drum set and sat on the couch to play percussion on an acoustic number with Simon. Hall and Oates also sat in for one number at the end, when things got dicey, due to the combined use of speakers and ear monitors with the same vocal inputs. I spoke to Salmon by phone at Wembley, where he was mixing monitors for Michael Bolton. The first words out of his mouth were that Carly Simon is "the coolest person to work for." She used a Beyer M88 for her vocal, although in the past she has used a Beyer M500. The rest of the vocalists used Shure Beta 58s.

Jack McCue, who's done monitors for Hall and Oates since 1979, mixed wedges and sidefills on Foxwoods' 40-channel Ramsa 840 console, which he calls a "good, solid, consistent board. As long as I have a Ramsa, I'm pleased." The house's inventory of monitor processing equipment includes Klark-Teknik graphic EQs, BSS and dbx compressors, Aphex gates, with a Lexicon LXP-15, three Yamaha SPX900s and a REV5 for effects. Hall and Oates always use a pair of Meyer UM-1 floor monitors each, brought in specially for them. "We tour internationally and

RETURN TO THE GEARY THEATER

The American Conservatory Theater (A.C.T.) recently celebrated its return to San Francisco's historic Geary Theater with a production of Shakespeare's *The Tempest*. Closed since the 1989 Loma Prieta earthquake, the Geary Theater underwent an 18-month, $27.5-million seismic, functional and cosmetic renovation. A.C.T.'s resident sound designer Steve LeGrand took the opportunity to make some significant upgrades to the sound system and added a Macintosh-based 16x8-matrix automated level and panning control system from Level Control Systems (Los Angeles, Calif.). Noted Bay Area sound designer James LeBrecht created 100-plus sound cues for *The Tempest* and used the LCS to control three Akai DR-4 digital 4-track disk recorders and route outputs from a Mackie 24•8 to multiple speaker positions in the auditorium. A.C.T.'s current loudspeaker inventory includes models from EAW, and MSL-2, 650-R2, UM-1C, MPS-305 and MPS-355 systems from Meyer Sound. ■



PHOTOS KEN FRIEDMAN

Above: The newly renovated proscenium of the Geary Theater, San Francisco; left: A.C.T.'s production of The Tempest, *directed by Corey Perloff.*

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they're readily available worldwide, giving us consistency and quality every night," says McCue.

Due to sight-line restrictions, two V-DOSC enclosures were used per side as sidefills and angled up with wood blocks, giving them a combined height of only three feet. "They worked extremely well—I was really surprised," McCue comments. "They work well for any act that moves up- and downstage a lot. The consistency in the coverage pattern is really even. The V-DOSCs require very little EQ in spite of the fact that the Hall and Oates stage is very loud," he adds.

Foxwoods' monitor technicians Jeff Nelson and Jim Skiathitis assisted onstage. A pair of EAW SM-500 floor monitors were used on the drum riser, with another used on the percussion riser and the bass player. EAW SM-400 wedges were used at Hall's keyboard position, and another up on the key riser. EAW SM-200 monitors were used by the rest of the band.

"They're getting the best-quality equipment and doing it right," McCue says. "I've been up [at Foxwoods] with a few different bands now, and I've always been pleased with the facility, crew and the gear." ■

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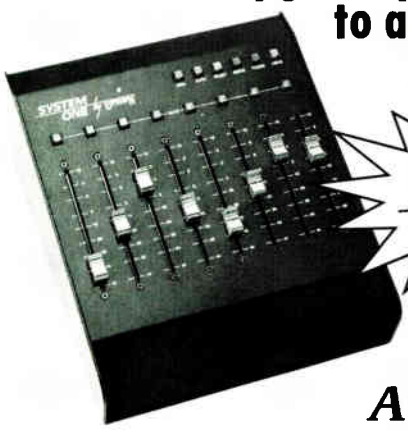

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—FROM PAGE 170, DRUM MIKING

sound; this is the raw material you have to work with. Also, compliment drummers on their kits. Ask about any unusual modifications or apparatus. The drum set is as serious to them as are those mics you're positioning. The old touring adage applies: "If it's important to the show, you should carry it with you." Perhaps the easiest thing to carry is a box of good mics.

Where to start? The kick drum always comes first, doesn't it? Kick drum mics have been as much a fashion item the past few years as tennis shoes and sunglasses, and every respectable mic inventory has several to choose from. The Sennheiser MD-421 is an old favorite, and Electro-Voice RE20s and their progeny have been popular over the years. The old AKG D-12 had its place until people found out how easily it breaks. Several years ago, after "Cubby" Colby and Phil Collins helped us all discover the Beyerdynamic M88 for vocals, others started using them in the kick, and it remains a favorite. Remember, however, that after a while of being used as a kick mic, M88s no longer sound so good on vocals, because their diaphragms start to fatigue. Those using M88s on kick regularly should do other engineers a favor and label these mics "kick only." The Shure SM98, first used in many casinos, both east and west, has also found favor as a kick mic. A more recent rage is AKG's D-112, which provides a certain, consistent sound without too much tweaking, although anyone who has used them repeatedly knows that their diaphragms can also get tired. Shure's new Beta 52 is going to be something to look out for, though it may take some time before these are found in your local club or in the sound company's mic box.

An old road-dog tip is to open up a 57 and bypass the transformer. This changes the impedance of the mic and takes an inexpensive transformer out of the way, and it can be plugged into a good direct box if needed. You'll be surprised at the sound when used on the kick, and it's one of the cheapest tools you can carry.

Using two different mics on the kick can be a good strategy, allowing the layering of complementary characteristics of two mics into a powerful sound, as well as offering monitor engineers more flexibility to meet their own special needs. Double-miking any drum gives the engineer the ability to experiment without going to the drum riser

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over and over to make changes. With the advent of larger consoles, double-miking the kick drum seems to be becoming a more standard practice.

The kick drum is often the only drum miked on the opposite side from where it is struck. Kick drums with two heads offer the engineer the opportunity to place a mic on the beater side. Pay attention to the orientation of the mic to the snare drum, though snare leakage can be used effectively with the mic's rear "lobe" angled up at the strainer on the bottom of the snare. My favorite for this is a 441, but successful results can be obtained with a 421 or many others. Squeaky pedals can be annoying here, though not as much as roaring drum monitors; this approach is best tried with quieter jazz groups or on drummers who use headphones or in-ear monitors. For acoustic music, this approach, along with a Crown SASS overhead, can be all you need, although more traditional condensers may be easier to find.

Well, as in a typical rock 'n' roll sound check, we've spent much of our time on the kick drum. On to the snare. Interesting alternatives to the universally accepted use of a Shure's SM57 include a Beyer M201, Sennheiser's new MD-504 and the little-known Audix D Series. Each of the three Audix D mics has a pleasing midrange with different overall tonal balance; the D-1 has a high-end emphasis for "crack," the D-3 has extreme accuracy (also very good on guitars), and the D-2 has more of a 421-ish, Fletcher-Munson effect.

An old studio trick involves taping a Shure SM57 to an AKG 451 so that their diaphragms are physically aligned, and using them on snare drum. The question of course is exactly what to do with the two mic signals—gates, compres-

QUICKTIP

SMALLER...BETTER?

The most overlooked condensers for miking drums are the smallest. One of my favorites is the Crown GLM-200. Last year, for Tony Bennett's "Unplugged," I used a pair of these on Clayton Cameron's 4-piece Ludwig jazz kit—one each just below the hi-hat and the ride cymbals. Using a short piece of coat-hanger, these were duct-taped to the cymbal stands using a small piece of foam as a shock-mount, so that they were facing each other over the snare drum from each side of the kit. On snare, I used another excellent-sounding miniature, the Countryman Isomax headset mic, tucked in just below the rack tom's rim. It comes mounted on a wire headpiece that fits between the snare's lugs and shell and serves as a shock-mount. It has the headroom to take all the dynamics Cameron can dish up from light brushes to sticks, and sounds extremely natural. For kick drum, AKG's C-409 clips nicely to the rim on the beater side. I place it at about 2 o'clock, near the bottom of the floor tom so it helps out by adding some extra lows. Panning the cymbal "underhead" mics, a wide drum sound is achieved, with the snare and kick mics adding to make it big and fat. This four-mic technique compares favorably to individually miking kits where dynamics and skill, rather than volume, become the focus. The microphones can't be seen, and I've had people come up and ask where the mics are or why the acoustics are so good in the hall.

—*Mark Frink*

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sors, EQ, etc.—but we can't give away all the secrets. A variation is using Shure's [now-discontinued] SM56—you know, the old 57 with the built-in shock-mount and swivel. If you have one of these and you start to get the hang of it, you may want to just leave the two mics permanently taped together to save setup time. The new Beta 56 is an evolution of the SM56 that should prove quite popular. Use of a second mic under the snare is well-known and widely practiced (don't forget the phase switch), and variations from the standard 57 that are worth exploring range from other dynamics to a variety of condensers.

Double- or triple-miking the snare can also provide a wide palette of sounds that are quickly available. Though you may want a tight, gated sound for the heavy-hitting numbers, it's nice to switch quickly to a different treatment for ballads. Use of an alternate mic for brushes or "side-stick" work on the snare allows the use of a dedicated reverb. This second snare sound is then available as a preset on a single fader without having to change reverb, level, insert and EQ all at once for a single song in the middle of the set.

Tom-tom mic selection at one time was limited to a 57 or maybe Sennheiser dynamics for the acts with hits. Today, with the proliferation of smaller dynamics and condensers, there's a wide range of possibilities. One advantage to miniature mics is they're harder to hit with a stick. For a classic drum sound, my favorite is the Sennheiser MD-441. Once a big-tour staple with companies like Clair Brothers, these are harder to find in any inventory these days, perhaps due to their price, but often "you get what you pay for." Another favorite is the flat, square Sennheiser MD-409, but these make a good target for drumsticks, and they're difficult to replace these days. If small is essential, the EV N DYM 408 "egg" mic

NEWSFLASHES

Britannia Row Productions (Wandsworth, UK) made a significant new-equipment investment this year to gear up for summer tours. New acquisitions include a Turbosound Flashlight arena system, which debuted at Oasis' Manchester show this spring, and Langley EX 56 and Recall mixing desks... The sound reinforcement system at the **Monte Carlo Resort and Casino**'s (Las Vegas) new 1,300-seat theater (opening this summer) will feature 24 channels of music and sound effects from an Otari RADAR digital recorder. The first show there will be magician Lance Burton, whose sound designer is Michael Cusick of Specialized Audio Video; Cusick's previous credits include work for the Boston Symphony, the New York Ballet and the Philadelphia Orchestra...In other casino news, **Harrahs Casino Riverboat** (Shreveport, LA) has installed five Symetrix 421 AGC levelers. The units are being used to control background music in the casino and pavilion areas...**Autograph Sound Recording** (London) is handling a number of international productions of *Les Miserables* this year. A 60-channel Cadac E mixing console is being used; the rest of the gear comes from **System Sound** of Melbourne...**Stage Accompany** reports that the artist formerly known as Prince carted his SA Performer system and SA monitor system along on his Hawaiian honeymoon; the gear was used for practice and island jam sessions. SA also recently imported a Cinema system, via Stage Systems of Georgetown, to a theater on the island of Penang in Malaysia...The Portland Trailblazers' **Rose Garden Arena** employs a good deal of Panasonic Ramsa equipment for broadcast, recording and video playback, including an SX-1 console that is used for TV production, and audio mixing and mastering...The Broadway production of Pete Townshend's *Tommy* opened in March at London's **Shaftesbury Theatre**. The show features sound design by Steve Canyon Kennedy; gear includes a 66-input Cadac J mixing console equipped with Cadac's Programmable Routing Modules and 38 motor faders. ■

World Radio History

offers a punch that cuts nicely through most mixes and has a midrange quality that also works well on guitar. I'm not usually a fan of condensers on rack toms, but this is a matter of taste, and there are many offerings from different manufacturers. My recommendation, as with all microphone choices, is to compare two at a time in a live situation. Drummers are the only ones who will notice, and they never complain about extra mics on the kit.

Condensers are properly used for cymbals, with two overheads plus one on the hi-hat being standard, and commonly available choices in sound reinforcement inventories are the Shure SM81 or AKG 451. More popular (and fragile) as overheads are AKG 414s. A less expensive approach is a little-known AKG mic called the C-5600, fondly referred to as the "potato" mic. It's part of AKG's Tri-Power series and has a sound similar to a 414 for about half the price. Audio-Technica has some very good-sounding alternatives in its AT4033 and large-format 4051, and the entire 40 Series line of condenser mics is a great value, with some excellent high-performance/small-diaphragm models. An esoteric approach with an increasing number of advocates is B&K's 4000 Series condensers. But whatever you choose, improving the sound of your overhead mics will enhance the sound of the entire kit. It's money well-spent.

One neglected issue is the placement of the hi-hat mic. Typically placed one to two feet apart, the combined response of the snare mic with the hi-hat mic can produce a coloration. The addition of the high-hat mic at loud enough volumes changes the mids and highs coming out of the snare. Best placement occurs when the hi-hat cymbals physically mask as much sound from the snare as possible, but don't take my word for it. Next sound check, after you do the hi-hat, go back to the snare and listen to what happens when you turn the hat mic up and down.

Louder music formats require a separate mic for the ride cymbal if it's going to have any cut. Another trick is the use of short shotguns on individual cymbals, offering good control and rejection, allowing you to close-mike and pan them effectively, but these are expensive and start to eat up channels. Other overhead arrangements include use of a stereo mic or an X-Y coincident pair over the drum throne to reduce the path length differences inherent in the traditional spaced-pair approach, where drum overheads are placed at each side of the kit. Using a short shotgun overhead from behind along with area-miking cymbals is another approach that can add dimension and depth. Engineers can take advantage of drum sets that are isolated with Plexiglas and use these large, flat surfaces to mount Crown PZM mics to take advantage of boundary effects. Two PZMs, placed correctly and panned, will often eliminate the need for other mics.

The real trick here is to take the time to try fresh ideas. Take a few extra minutes to listen to and compare microphones in real-world situations. With the size of most consoles these days, there is often room to double-mic several items onstage. This allows you to go back and forth, comparing mics and investigating different techniques, and you'll learn something new every day. ■

Mark Frink is Mix's sound reinforcement editor.

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New Sound Reinforcement Products

ALLEN & HEATH FOH/MONITOR CONSOLE

The GL3000 8-subgroup mixing console from Allen & Heath (Sandy, UT) is a full-function board for FOH (also usable for monitor) mixing. Available in 16-/24-/32-/40-channel versions, it has dual-matrix and balanced mono outs for FOH, plus 2-track facilities for recording. Inputs feature long-throw faders, PFL, 4-band sweep EQ, high-pass filter, EQ in/out, mute and channel input meters. The 24-channel and larger frames have four stereo input channels; 8- and 12-channel expander modules are available. The eight aux buses can be used for monitor mixing and feature AFL, insert points, XLR connectors and full talkback functions. Aux signals may be sourced pre or post EQ, mute and fader for maximum flexibility. An optional SYS-LINK™ system links all output buses and PFL/AFL of one or more A&H consoles.

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RADIAN 500 SERIES COAXIAL TRANSDUCERS

The 500 Series of coaxial transducers from Radian Audio Engineering (Orange, CA) combine 8-, 10- and 12-inch woofer designs with 1-inch compression drivers. All offer extended low-frequency response in modest-sized enclosures with high power handling. Available in stamped steel or cast aluminum woofer frames, the 500 Series features edge-wound copper ribbon voice coils and aluminum diaphragm domes bonded to a Mylar® surround.

Circle 213 on Reader Service Card

GARWOOD IN-EAR MONITORING

Targeted at theater applications, the Model LV1 in-ear monitoring receiver from Garwood Communications (Newton, PA) is one-third the weight of Garwood's Radio Station beltpack. Featuring an internal antenna, on/off switch and volume control, the LV1 is compatible with all Garwood transmitters and runs more than three hours on an AA battery. The receiver can be factory preset to any frequency between 400 and 900 MHz and features onboard compansion noise reduction, a compressor/limiter and noiseless shutdown for smooth audio quality. Price is $1,755. Garwood Micro Monitor™ custom-molded in-ear monitors will work with all Garwood in-ear monitoring systems. Garwood claims up to 26 dB of attenuation, with extended low- and high-frequency response.

Circle 214 on Reader Service Card

SOUNDTRACS TOPAZ MAXI 8

The new Soundtracs Topaz Maxi 8 console (distributed in the U.S. by Samson Technologies, Syosset, NY) is available in 24- and 32-channel versions and can be used as an FOH or monitor console. With up to 28 mono and two stereo mic inputs, plus four stereo effects returns, the Maxi 8 offers subgroup buses and eight aux sends per channel. EQ is 4-band quasi-parametric.

Circle 215 on Reader Service Card

QSC CX4 AMPS

QSC Audio Products (Costa Mesa, CA) has expanded its economical CX Series amplifiers for contractors. The CX4 is rated at 150 watts/channel into 8 ohms and 225 watts/channel into 4 ohms. The CX4T features additional constant-voltage outputs with isolated toroidal transformers for 25-, 70- and 100-volt distributed systems. The CX4T can also run a low-impedance system on either channel or constant-voltage and low-impedance systems on the same channel. Features include detented gain controls, bridge/parallel switch, fan cooling and 45Hz LF filter.

Circle 216 on Reader Service Card

dbx 1034 STEREO CROSSOVER/LIMITER

The dbx 1034 stereo crossover/limiter from dbx Professional Products (Sandy, UT) is a three-way stereo crossover with integral limiting. The one-rackspace unit features front panel crossover frequency selection; individual PeakStopPlus™ limiter threshold and gain makeup controls for each of the six crossover channels; and 8-step LED ladders to monitor gain reduction and output levels. Phase reverse and mute switches are provided for each channel. The unit may be used as a four-way mono crossover and can produce a summed LF output for subwoofers when used in stereo three-way mode. All inputs and electronically balanced outputs are RFI-filtered.

Circle 217 on Reader Service Card

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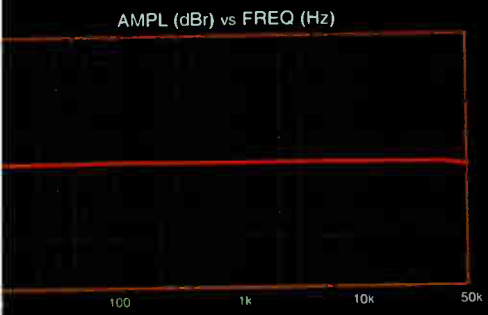
• Convection cooled •

• Gold connections •

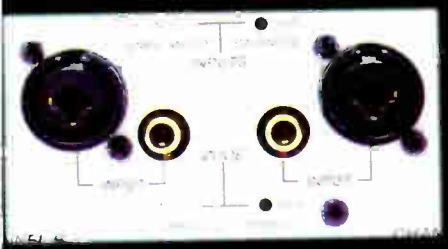
• Excellent signal-to-noise ratio •

RP™ 500

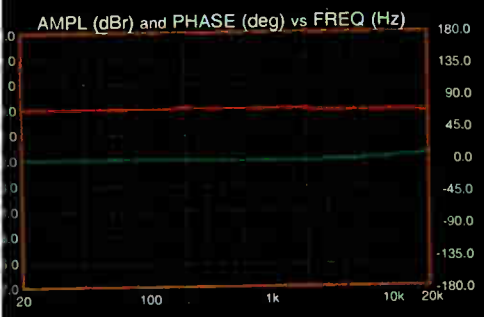
An all discrete MOSFET design provides a ruler-flat frequency response from sub-sonic to 50 kHz which is enhanced by the gold input and output connections.

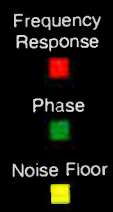


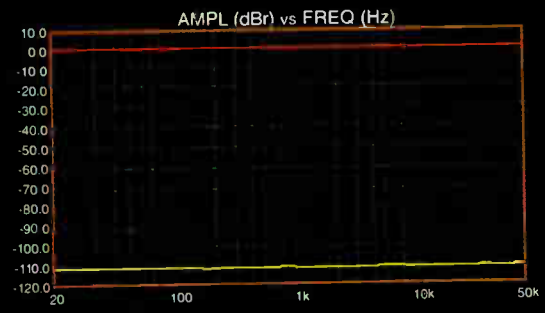
The RP™ 500 MOSFET studio reference power amplifier gives you the purest audio signal that money can buy. Throughout its development process, close attention was paid to every detail to ensure superior sonic performance. The RP 500 is accurate, translating into a perfect mix!



Frequency response, phase and signal-to-noise are technical terms that may make your brain hurt to think about, but they mean everything to the accuracy of your mix. Many amplifier companies strive for excellence in one area, being excellent in all of these is what makes the RP 500 the perfect studio amplifier.







PURE IMAGE

The RP 500 has an exceptionally smooth phase response which enhances the stereo image. Phase shift can cause phase cancellations in the mix position, which leads to a "smeared" or reduced stereo image found in other amplifiers.

Audio Media Research
PEAVEY

IT'S SILENT!

It is important for a studio amplifier to be quiet. Traditional amplifiers produce electronic noise from op-amps and mechanical fan noise, which is unacceptable in the studio. The RP 500 uses convection cooling for quiet installation, and an all discrete transistor design provides signal-to-noise of -110 dB (UNWEIGHTED). Therefore, you hear the mix and not the amp.

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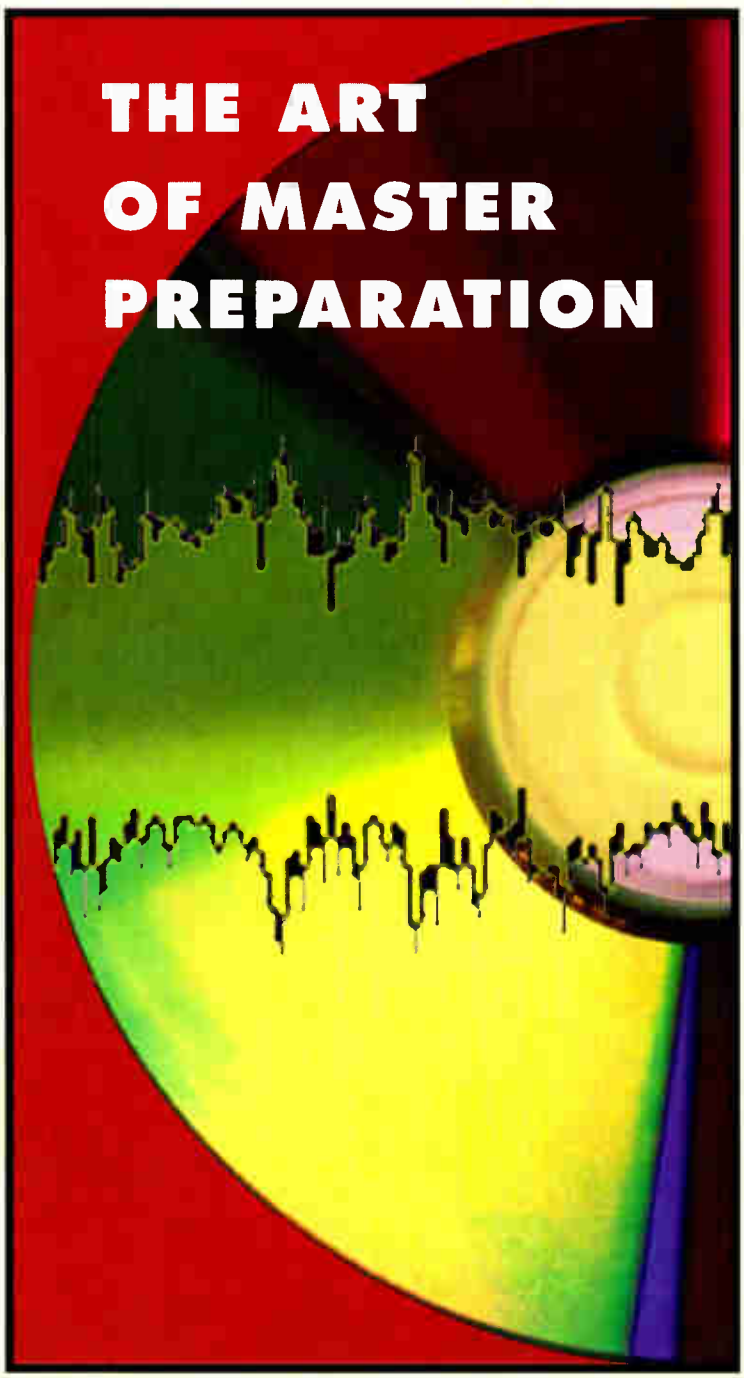
YES, MASTER

THE ART OF MASTER PREPARATION

BY NYK FRY



I am in the rare position of being both an active studio engineer and duplication facility mastering engineer. As the latter, I am responsible for ensuring that your painstakingly crafted voice or music project makes it to the destined media. With experience on both sides of the tape, so to speak, I would like to share my experience and knowledge with studio engineers, many of whom obviously know too little about mastering.

The masters I receive typically vary in terms of artistic merit and technical quality, but even the best usually exhibit one common problem, and it is this aspect of mastering that I would like to address: the physical preparation of material to be mastered.

The "bread and butter" of many studios and duplication facilities is promotional/instructional/talk programs. All too often, I receive an unmarked DAT, with no A-Time, incorrect or missing program numbers (PNOs) and multiple versions of the program. In the absence of notes or instructions, it becomes my job to time the program and choose a split point for projects destined for cassette.

My first reaction when presented with unmarked masters is that the client does not care about the project. It also says something unflattering about the studio that produced it, and I wonder what world they live in, without A-Time! All DAT machines can encode A-Time, PNOs and END mark. It takes about two minutes to learn how and requires only a little bit of extra effort in the preparation stage.

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tation is also very important. Analog noise reduction type and speed information is vital. Very often, especially with DATs, the actual tape is left anonymously plain. Often a client owns a few or only one DAT and, naturally, does not find it necessary to mark it because "Of course I know what's on there, it's the DAT." Unfortunately, despite my incredible superhuman powers, I am unable to read the psychic imprint. Sometimes only the name of the client is written on the tape, with the project name written on the J-card. This is fine if you know the secret combination of how to assemble these. In short, only too much information is enough.

Occasionally, there may be very comprehensive information written in microchip-scale print but written only on the DAT sticker. This is fine, except that in many DAT machines it is impossible to see the tape when it is actually in the machine. Even if you feel that your master is never going to be superseded, an indication of the date of generation may be useful at an unforeseen future session.

I recommend including the recording engineer's contact number. Talking directly to the studio engineer will often prove invaluable when questions arise, as he or she can often offer technical insight and relay artistic comments discussed in the session. It also avoids getting into long conversations with a client who has no knowledge or desire to know anything about the technical side of their project. Most clients are very good to work with, but it only takes one bad one to spoil your day! Nothing is worse than having to explain recording basics to a client when all you wanted to know was where to split the program.

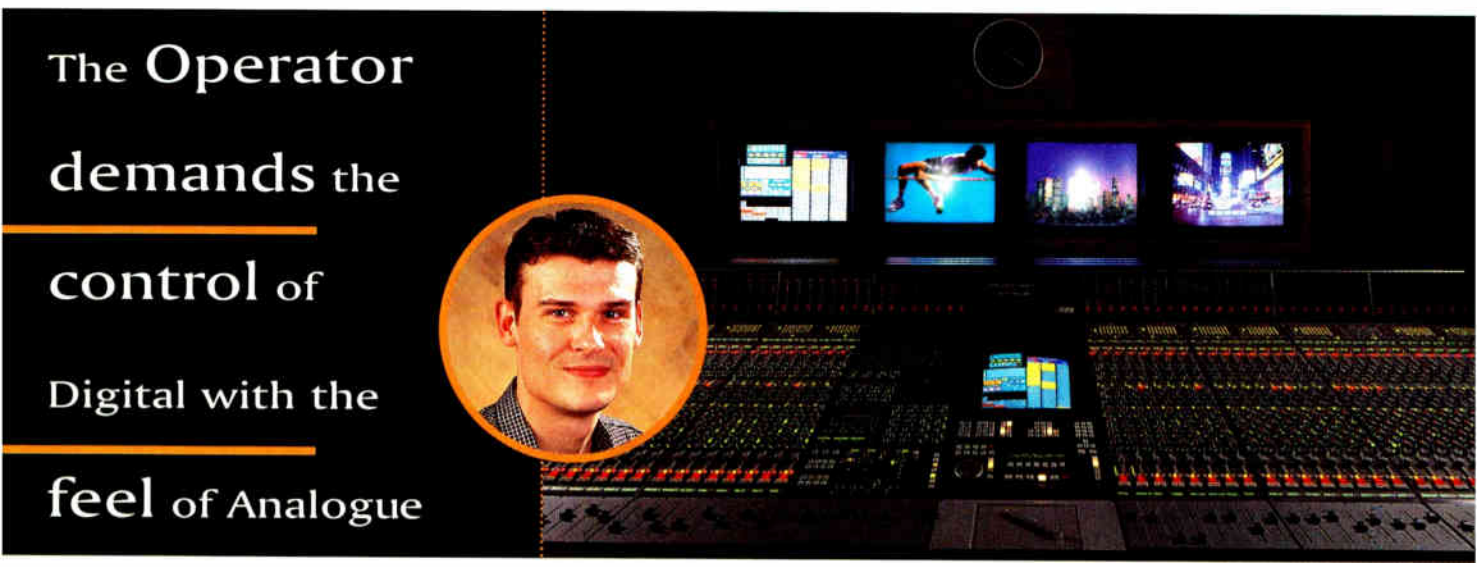
Often I find that even when the enclosed notes are very comprehensive, there is no marking on the spine of the box! This, of course, applies to all formats. Whether or not you expect to archive your client's tape, it is often useful to be able to identify it on a shelf (or in a pile) from the spine label.

LEADER OF THE PACK

It is good practice to rewind DAT tapes. Of course, analog tapes should be stored tails out. The use of "Hold Down" tape for analog masters is essential, especially for tapes that are to be shipped. Without it, the pack will unwind and become annoying at best. Damage may result; even expertly recovered tapes can pull and jar as the machine attempts to play the uneven tension.

Now (this is my favorite part), I have received masters with everything from splicing tape, masking tape, Scotch tape (the sticky variety), duct tape and even a beautifully cut Band-Aid used as Hold Down tape. If any of this sounds familiar...cease and desist! The real stuff is not very expensive, and it has been created specifically to hold the tape and not damage it. Although the colored paper varieties can be used to indicate tape orientation (green for heads, red for tails), I have found the striped "Zebra" 3M stuff to be the best (Model #8125A), as it doesn't leave any "resi-goo" and has good tack/release properties.

Okay, so now we have the tail in one hand and the correct grade of sticky stuff in the other...What next? I suggest that a reasonable amount of Hold Down be used. I have previously mentioned the perils of shipping unsecured analog masters; however, at-



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World Radio History

tempting to weld the tail of the tape to the reel is perhaps overzealous. ONE strip of approximately three inches will do just fine. Once you are in the habit of preparing tails this way, you will wonder why you ever did it any other.

It is important to have enough leader tape. Splice on more if necessary. In general, you need enough leader to allow easy lacing of the machine with enough extra to allow a fast rewind and stop without losing the lace. Also, allow enough leader for a good pre-roll for speed stability on start-up. Splicing leader right up to the beginning of the program will allow precise starts and timings. If a reel contains more than one program, putting enough (say ten feet) leader between programs to indicate splits will provide an easily recognized visual cue before the reel is played. Don't forget to add leader at the end of the program.

Compared to modern back-coated tapes, paper leader is much weaker and not usually necessary. The plastic timed leader is very good. Use it with the arrows pointing in the direction of play, which provides a visual confirmation of tails out. As with the Hold Down technique, use the correct splicing tape!

Accurate and comprehensive documentation is very important. In short, only too much information is enough.

HEY! WHAT'S DAT?

If your project is destined for CD, it is most advisable to provide a DAT at 44.1 kHz...enough said?

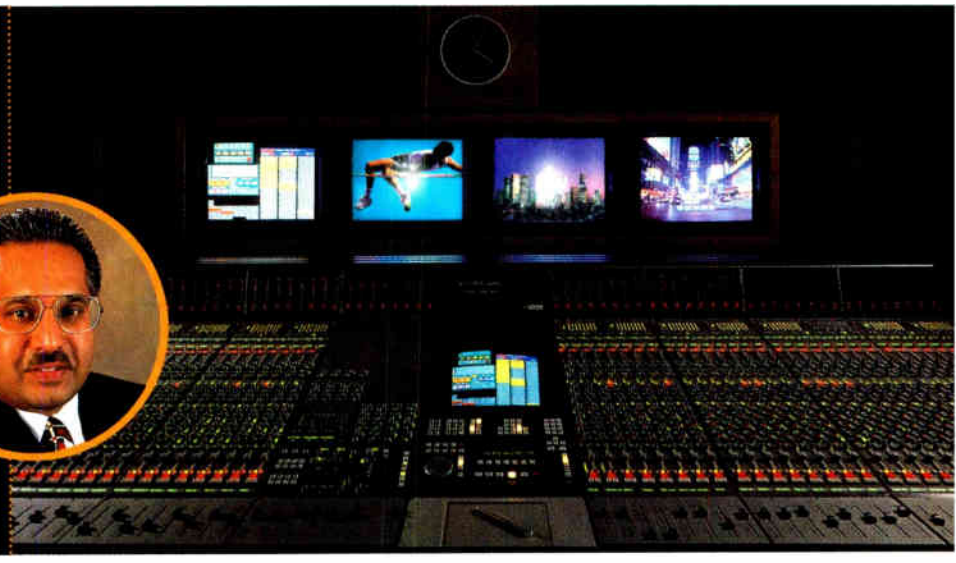
Sample rate conversion is, of course, possible, but it is so much more convenient to switch the DAT machine's selector. The worst situation is when programs come in on mixed-rate tapes. This presents great problems, especially in digital editing and conversion. Mixed-rate problems can also happen when assembling from various sources to one DAT machine—pay attention to what the sample rate indicator is doing! The finished tape may play on your machine, but the converting unit may cause a click at the switch-over points. These clicks will be very annoying or impossible to deal with in digital editing. In the worst-case scenario, no one down the production chain notices until it's actually gone all the way to manufacturing. That's when your clients become the proof listeners!

Digital errors are of great concern. Listen to your tape to detect any problems. Some machines will read out error rates. With this feature, it is possible to trace problems from generation. Making a digital copy of a corrupted tape will not cure it in the copy!

Digital level is a much-discussed

—CONTINUED ON PAGE 229

The Chief Engineer demands an excellent long term investment



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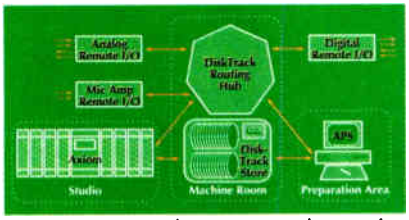

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World Radio History

BRUCE BROMBERG

THE HIGHTONE ROAD

Integrity can come at a high price in the music business. So can running an independent record label. But producer/songwriter/label-owner Bruce Bromberg has managed to hold onto both. Bromberg is one of the founding partners of Oakland, Calif.'s HighTone Records, where the order of the day is honest, roots-based rock, country, honky-tonk and blues music, mostly by singer/songwriter types such as Dave Alvin, Rosie Flores, Heather Myles, Buddy Miller, Dale Watson and the irreverent Reverend Billy C. Wirtz. These names might not be terribly familiar to everyone, but if history repeats, they will be soon; some of the first acts HighTone signed and cut were Jimmie Dale Gilmore, Joe Ely and the very first HighTone artist, Robert Cray.

In the first days of the label, Bromberg and/or his founding partners Larry Sloven and Dennis Walker produced almost every HighTone release. And Bromberg's early contributions, which include Cray's early recordings and Gilmore's second CD, reveal his knack for recognizing the real deal and bringing out the best of an artist's individual sound. Today, he doesn't go into the studio with every artist he signs, but only because HighTone's volume has grown so much that it would be impossible. Bromberg still produces several artists a year and does a lot of songwriting in addition to his responsibilities running a small but growing label. We spoke to Bromberg just after he'd produced a second HighTone CD for the too-country-for-country Dale Watson (whose first release, *Cheatin' Heart Attack*, received high praise from the critics) and after he'd sealed a new distribution deal with Rhino Records. Bromberg, it seems, is in that enviable position of making a decent living doing work he loves with material he respects.

Tell me about your background, before HighTone got started.

Well, I always knew I wanted to make records. So, in '64, when I got out of the army, I went to work for Dot Records, which had Pat Boone, Billy Vaughan, Lawrence Welk. Dot had actually been an interesting label in the '50s. There were surf records on Dot. There were even a few blues way back. But I was working in the shipping department.

Then this guy from Oregon got a job there: Dennis Walker, who became my good friend for many years. We were both interested in music, and we answered an ad and got to be in a band with this blues singer called Long Gone Miles. Long Gone was a protégé of Lightnin' Hopkins—used to hang around with him when he lived in Houston—but we had this little band, and that was when we did the first record we ever made in 1965. It was a 45.

But also in '65, I got married and had a kid and so I had to get a real job, which I did for a couple of years, but then I talked a record distributor into giving me a job. This distributor had Chess and Checker and Motown and Stax. So as the years went by, I worked for this record distributor, but all the labels started leaving, getting bought up by the big guys like Atlantic and MCA, and so [the distributor] sold their business, and it closed down in '71. Then I went to work for CTI, a jazz label, and then RCA for almost five years.

By then, were you doing production for all these companies?

No. Not at all. I was selling records. But I was producing records on the side: singles, mostly all blues in those days, for wherever I could sell them. Then I went to work for Tomato, and the only reason was they told me I could produce records. That's when I found Robert Cray and produced him.

Was he already signed to Tomato?

No. I brought him to Tomato. The record we did finally came out a year-and-a-half after it was cut, and then the label went out of business.

I met Larry [Sloven] in '77 when I was working for Tomato because he worked for a distributor in the San Francisco Bay Area. Larry asked me if I wanted to start a label, and I really tried to talk him out of it. I said forget it, I've tried it, invest your money. But he talked me into it. So, this was already four or five years after the Tomato Cray record was cut, and I ran into Robert at the S.F. Blues festival, and we ended up making another record, *Bad Influence*, and that ended up being the first HighTone release.

It wasn't necessarily going to be, because I thought he was too big for us, and I tried shopping it to other labels like Rounder and Alligator, where I had some connections, but they didn't want it. They said it didn't sound enough like an Alligator record. Well, is it supposed to sound like an Alligator record or a Robert Cray record? And fortunately for us, it started just

BY BARBARA SCHULTZ

World Radio History

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slowly but surely to pick up steam. Albert King recorded "Phone Booth." Eric Clapton recorded "Bad Influence," which gave it a big boost. The second one we did at HighTone, *False Accusations*, was a hit in England that kind of bounced back over here, and it started to happen. We were very lucky to start our label with an artist who became a star. I'm sure if it weren't for Robert Cray, we'd be long-gone by now, frankly.

What came after Robert Cray?

Well, after *Bad Influence*, we recorded a local guy named Doug MacLoud, but that didn't do too much. And then we did a Frankie Lee record that's kind of a soul/blues record, and that didn't do anything. And we did a gospel album, and that didn't do anything. But the record after that was Joe Louis Walker's first record. And he got some notoriety. And then after that, in 1986, when *False Accusations* started to do well—I think it actually went Gold in England—Larry and I made a deal with Mercury and we produced the next Robert Cray record, *Strong Persuader*, for them. So when *Strong Persuader* came out and was a big hit we were pretty flush, and we sat down and said, "Well, who would we like to get on HighTone?" I can't remember the full list, but two of the names I remember: One of them was Joe Ely, who we got; another was Gary Stewart, who we got.

Was another name Jimmie Dale Gilmore?

Not exactly. When we picked up Joe Ely, Jimmie was just kind of there, because Mike Crowley who was managing Joe at that time managed Jimmie and still does. Mike played me a video that Jimmie had done, which I loved, because Jimmie's a really talented singer. So we had some dough, and we said, "Well, what the hell, let's do Jimmie, too."

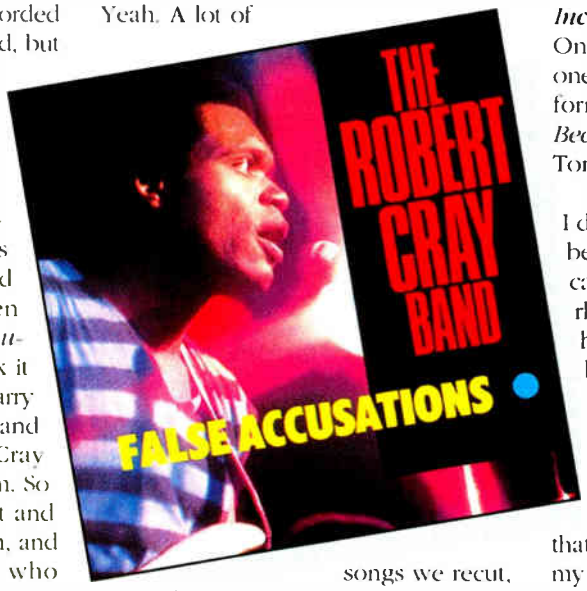
His first record was produced by Joe [Ely], and it got a lot of critical attention. We got a couple of singles low on the country charts, so then we thought, "Well, we'll make him a country star." That's why we recorded his second album in Nashville. We figured people would like it better if it came out of Nashville. We got some of these serious finger pickers to play on it. And Jimmie was a pleasure, I've got to say. He was playing with all these guys who had played 30 million sessions, like David Briggs [keyboards] and Harold Bradley [guitar], and it didn't freak him. He just played the song, got up there and sang it. But we could only get him so far, so we eventually let Jimmie go when Elektra came along.

Another HighTone project you produced was Dave Alvin's* Blue Boulevard, *which is great. That album made Rolling Stone's best-of-'91 list.

Yeah. But when we signed Dave, there were demos already made that sounded pretty good. In fact, that song "Andersonville," that was pretty much as-is.

You used the actual demo?

Yeah. A lot of



songs we recut, but "Andersonville," we left it pretty much as it was. We gave Dave a budget and I was going to produce, but he already had [producer] Chris Silagyi, who had been helping him with the demos. Anyway, Chris had already booked the studio and stuff, so I just kind of came in and helped out on it, and it worked out. I love that record a lot. That was kind of an event. David hadn't made a record for four or five years.

When I interviewed Dave [November '95* Mix*], one of things he talked about was how part of his role as a producer is setting bands at ease in the studio, particularly somebody who hasn't been there in a while or doesn't have a lot of experience. Is that an important part of your job, since you work with a lot of new artists?

To me, the whole thing of being a producer is being able to find good songs and sign people who have good songs, but, yeah, to make it a pleasant experience. Maybe it's because I come from a different era, but with the kind of stuff I do, the live-er I can do a record, the happier I am. I'm not going to lie and tell you we don't overdub and fix things, but that's why I really enjoy Dale [Watson's] new record; we had quite a bit going live, and everybody was having fun with it.

To me, no matter how perfect you can make something by overdubbing it, you lose a lot. And you find that there can be problems overdubbing rhythm parts, where if you stick with the piano, you're out with the drums; if you stick with the drums, etc. But when everybody's playing together, it just hangs together better. When I started making records, I cut everything live—horns, the whole deal.

Including the Robert Cray records?

On the first Robert Cray, the Tomato one, there's a lot of just totally live performances on there. It's called *Who's Been Talkin'?* Actually, the first HighTone one is largely live also.

Robert is just a genius guitar player. I don't think he gets enough credit for being the great guitar player he is, because he's like an incredibly excellent rhythm guitar player. Now, I haven't hung with him in a number of years, but he was easy to produce. He was cooperative, and he was one of those guys that just had it. It's hard to explain Jimi Hendrix or Charlie Parker or Hank Williams, but some people just have it, and that's all. I could practice for the rest of my life and never have that.

One thing about his sound, though. He's playing a Gibson on the first record, but then he became a Strat guy, and that's when he found his sound. And I think that sound developed just being on the road all the time, because honestly in my heart I can't imagine Robert just sitting there practicing. Now, I can hear three notes of Robert Cray and know exactly who it is.

That first Dale Watson album is really good. Where did you find Dale?

Well, Dale lived out here [in L.A.] for about three or four years, and he was in the Palomino house band and I used to see him. Anyway, about three years ago, he called me on the phone. He was in Nashville at the time. He had a songwriting deal for this guy Gary Morris, who was a country star at one point. Morris had a publishing company, and Dale was a writer for it. But Dale's not that kind of guy. He's not a committee songwriter. So Dale calls me up and says, [in a very "country" accent] "Wull, uh, you know, uh, I'd kind of like to be on HighTone. I wanna be on an independent label. Morris says they're going to reactivate MGM and he could get me on there, but I just don't know..."

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Then he sent us some demos, and Larry called me up and said, "You know, this is our kind of stuff," and he sent me the demos. I went over to see Dale's manager, and he gave me, literally, 50 cassettes more worth of demos. I started listening to the stuff, and it was just major overload. I tried to wade through them, but mainly I listened to the ones he sent to Larry, because we figured that was his most up-to-date stuff. But he had so many songs. Even when I went down there to Texas to cut the first record, I went to a couple of gigs, and he sang this one song, and I said, "Well how come that one's not on there?" And he says, "Oh, yeah, that one. Okay." So we cut it. It was "Tell 'em I Ain't Here." And that's just how he is. He wrote a song the other day while we were mixing. He just does it.

Dale's the real deal. He's been singing in beer joints since he was 16, and he's a dreamboat to work with, because he totally knows his music.

And this was his very first album.

Yeah, and we had all kinds of problems. This drummer who had been in his band for three years for some reason decided the second day of tracking that he wanted to be on somebody's video and bailed on us. So we wound up getting Dave Sanger, who was great, but Sanger was going on the road the next day, so we got Sanger on four cuts, and we wound up auditioning drummers for two days right in the middle of tracking.

That's my production philosophy: looking for people who can write songs and sing.

Another thing was, Dave Biller, the guitar player had only been in the band for three days. This is typical, now. I go to the rehearsal hall, and I'm the first guy there, and pretty soon this little guy comes waddling up to me, and he says, "Hey, where's Dale going to be?" And I said "Room 3" or whatever, and he says, "I'm Dave. I'm the guitar player." And I'm going, "Wait a minute. I thought Dale was the guitar player."

Members of the HighTone Records family (L to R): Dave Alvin, Bromberg, Big Sandy (without his Flyrite Boys), co-owner Larry Sloven, and artist Chris Gaffney.

Where did you record his new one, the one you just finished?

We did this one out at Pedernales, Willie Nelson's studio. It's a great place to work. It's in Spicewood, Texas, just 25 miles out of [Austin]. I used to do everything in L.A., and now I do hardly anything in L.A. I've been mixing some of the records there, though. This summer I did this young blues guy, James Armstrong, and got a really good response to that, and I just did Billy Wirtz's new record. Half of it at Willie's and the other half live in North Carolina, and a few years ago, I did a couple in Memphis.

Do you have favorite engineers to work with in these cities?

Oh, you bet. My main engineer for years was Billy Dashiell. The first thing I ever worked on with him was Ted Hawkins. Billy was 17. He was an apprentice at the old El Dorado studio, which is now just a parking lot next to The Palace, but that's where we did a lot of stuff, including the first Robert Cray. He pretty much did everything I did from 1971 up until 15 years later. Then we were kind of dragged kicking and screaming when we made the deal with Mercury [to produce Robert Cray]. They wanted some big-time mixer, but we wound up with Jeff Hendrickson, and it was just great. On the *Strong Persuader* album, six of the songs were Jeff, and four were Billy, I think. Billy cut the blues record I did this summer. I still like to work with Billy. And there's a guy I met in Austin with Joe Ely ten years ago whom I've used over the years a lot named James Tuttle.

He recorded the Dale Watson albums.

And he did the first Jimmie Gilmore, and he worked on both of Joe Ely's with us. And he recorded and mixed the new Billy Wirtz studio tracks. James and I are tight.

For a while, I also used a guy named Charlie Brocco at The Village [Recorder], who I like a lot, but Charlie moved to Florida, because he couldn't stand L.A. He mixed [Dave Alvin's] *Museum of Heart*. And for my country stuff, I used to have Dusty Wakeman mix stuff like Heather Myles and the Lonesome Strangers, and Dusty's partner, Michael Dumas, mixed Dale's first one. But everything I do in Texas, like this latest Dale Watson, I do with James.

Did you do anything differently on the second Dale Watson album from the first?

Yeah, we had one drummer all the way through it [laughs]. And we used Floyd Domino on the tracks, and I got Lloyd Maines to play on some of the tracks, so we were cutting way more live this time than last time and using more of the live stuff. Willie's is big enough to do that.

During the last couple of days, though, Willie came back, and they have a sister studio called Arlyn, so we finished up there. But it's mainly the same people. Gene Elders plays fiddle. This time we had Lloyd playing steel, but pretty much the same cast of characters. I'd say the tracks are a little more solid this time, though when a guy makes his first record, especially after playing for so many years, it's often hard to beat.

What are your preferences in terms of equipment?

I like Neves and APIs. I'm sure most

—CONTINUED ON PAGE 248

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BY BLAIR JACKSON

RECORDING NOTES

JACKY TERRASSON

CAPTURING JAZZ PIANO WITH A "CELLO"

by Eric Rudolph

Imagine the scene: A young lion of the jazz world is recording his second CD for a major American label. The drummer and bassist huddle at their instruments, less than a yard from their leader's keyboard. The musicians are not wearing headphones, and there are no glass-enclosed booths, control room, multitrack recorders or even a console. *In the room* with the musicians are the audio engineer and all of the recording gear: an Apogee 81000 A-to-D converter; a Nagra D digital quarter-inch reel-to-reel recorder, custom mic preamps and assorted high-end accessories. Above the 7-foot Steinway piano hang two modified industrial calibration mics, set a few inches apart on a single boom. No other mics, or mic locations, are used during the sessions.

Welcome to the recording of the new CD by jazz piano tyro Jacky Terrasson, *Reach*. The record was cut in two five-hour sessions at the studios of Mark Levinson, Cello Ltd.'s founder and president. Cello Ltd. has been best known since the mid-'80s for its residential and professional high-end audio systems that range in cost from $10,000 to $150,000.

"With the Cello recording system, there is no editing, no mixing, no post-production at all," says Levinson. "We've eliminated a tremendous amount of junk, because what's really important is the life energy of the music. The important questions are 'Do you feel you're in the room with the musician; does the sound grab you?' Headphones, overdubbing, cue tracks and iso booths all create a very limiting atmosphere. What ends up on a record that way is not what musicians had in mind, nor is it what music lovers want to hear. The Cello system puts musicians back in control of their music," Levinson says.

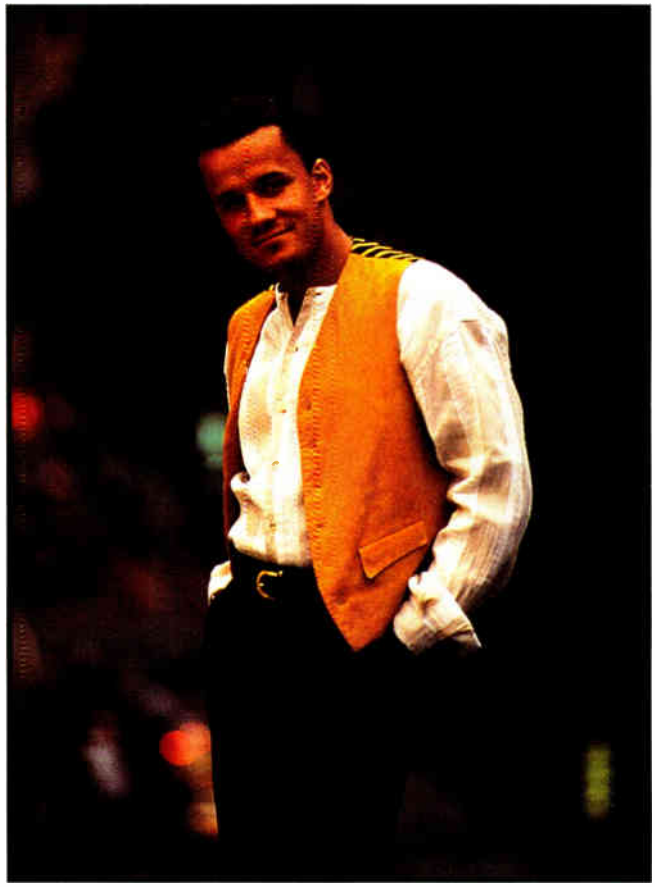

PHOTO JIMMY KATZ

The routing of the Cello recording system is as follows: two modified B&K industrial calibration mics are connected by Swiss-made Fischer connectors to Cello String cable to the Cello mic preamps, and then to an Apogee A-to-D converter and into the Nagra D recorder. That is the entire system. "Two microphones are the most you can use when the music will be played back through two speakers, and still get accuracy," Levinson explains. "But a lot of people use only two mics to make records; that's not the essence of this system. Getting the live sound right in the first place, before recording, is the essence of the system.

"The first part of that process is to get the music to sound right in life," Levinson continues. "Most musicians don't know how to play acoustically anymore, because they're not asked to do so very often. This system only works with musicians who know

—CONTINUED ON PAGE 194

World Radio History

PRESERVING ALI AKBAR KHAN'S LEGACY

by Blair Jackson

Last year marked the 40th anniversary of Indian master musician Ali Akbar Khan's first concerts in America; indeed, the first concerts of Indian classical music in America. Appropriately enough, he was nominated for a Grammy for a fine double-CD that came out last year—*Then and Now* consisted of one CD of material originally recorded in 1955 (in fact, it had been the first long-playing album of Indian classical music ever made), and another disc of more recent recordings. Though cut nearly 30 years apart, both discs reveal Khansahib (*sahib* is a term of respect; his name is pronounced "con-sob") to be a musician of uncommon virtuosity and sensitivity; he is widely regarded as the finest sarode player in the world. The sounds he coaxes from his 25-string unfretted instrument cover an astonishing range of different timbres and feelings as the ragas he plays move from languid, meditative spaces to speedy, intricate, highly rhythmic plucking and strumming. "This kind of music should open your mind," Khansahib says, sipping black tea in the main teaching room at the San Rafael, California, school that bears his name, the Ali Akbar College of Music. "The mood, the melody...they purify your heart and mind, for the player *and* the audience—the audience also benefit because they get their soul response; the body gets fresh air."

Asha Bhosle and Ali Akbar Khan

It's difficult not to feel humble in the presence of such an esteemed musician. Khansahib's musical lineage goes back hundreds of years, and his father, Allauddin Khan, was known as one of the greatest musicians in the world; a one-time court player to the Maharaja of Maihar, he played 200 different instruments and lived to the age of 110. Ali Akbar Khan's music lessons from his father began at the age of 3, and basically he's been devoted

—CONTINUED ON PAGE 196

FAITHFUL TO SCARLATTI

MIKING AN EARLY MUSIC ENSEMBLE

by Paul Stubblebine

Although I spend most of my days in the mastering lab working on recordings from a very wide range of musical styles, I also do a lot of location recording of acoustic music, from classical to bluegrass and beyond. Here I am going to describe the steps I followed in selecting a microphone technique for a recent recording.

The group was the Arcadian Academy, directed by Nicholas McGegan (who also plays harpsichord), with soprano Christine Brandes. The record was produced by David Bowles for Swineshead Productions and should be out by the time this article appears. McGegan and Bowles had selected a number of Alessandro Scarlatti sonatas and the instrumentation was to be harpsichord, two baroque violins, viola da gamba, and archlute (doubling on theorbo).

Paul Stubblebine (L) and producer David Bowles on location. Inset: Nicholas McGegan

There are a couple of implications inherent in such a lineup: first is that the project would be an acoustic recording. By that I don't just mean acoustic instruments. I mean that these instruments (including the voice) play the acoustics of the room in which the music is made, and the interaction of instruments with the room is part of what we intended

—CONTINUED ON PAGE 198

World Radio History

MASON WILLIAMS' "CLASSICAL GAS"

by Blair Jackson

When I think about the music of 1968, the records that jump into my mind are Hendrix's *Electric Ladyland*, Big Brother's *Cheap Thrills*, The Beatles' *White Album*, the Stones' *Beggar's Banquet*, maybe Cream's *Wheel's of Fire*. What can I say?—I'm an acid rock kinda guy. But I also still listened to AM radio in those days, so I know that 1968 was also Otis' "Dock of the Bay," Bobby Goldsboro's heinous "Honey," the Supremes' "Love Child" and Archie Bell & the Drells' supremely funky "Tighten Up." It was also the year that two unlikely instrumentals charged up to the top of the charts—Paul Mauriat's lush, romantic "Love Is Blue" and Mason Williams' bouncy, melodic guitar-and-orchestra opus, "Classical Gas." Both were inescapable radio fixtures—"Love Is Blue" in the winter and "Classical Gas" in the spring and summer.

Mason Williams was a virtual unknown when he went into United Western Studios in Los Angeles to record his first album for Warner Bros. Records, which was *the* hip label for aspiring singers and songwriters in that era. As Williams wrote of that era in the liner notes of his and Mannheim Steamroller's 1987 version of "Classical Gas," "I had just finished my first season as a writer for the *Smothers Brothers Comedy Hour* and was taking a few weeks off to work on a couple of art projects—the life-sized poster of a Greyhound Bus [which resides in New York's Museum of Modern Art], and the Skywriter Sunflower drawing. Toward the end of July, Tom and Dick [Smothers] were playing in one of the casinos in Las Vegas, and I went down to hang out with them. It was a wild gig. I don't think Tom or I slept for the entire two weeks; I remember virtually living in my sunglasses.

"After the gig, I came back to L.A., slept for a couple of days, got up and then spent an entire weekend alone with the guitar. I hadn't been playing the guitar very much during the past few months, as I had to concentrate on writing for Tom and Dick's show, and it felt good to get back into it. In honor of this refound feeling I decided to write a piece for classical guitar. I didn't really have any big plans for it. I sort of figured on it just being something flashy to play at parties when they passed the guitar around. I thought of it simply as repertoire, or 'fuel' for the classical guitar, so I called it 'Classical Gasoline.'

"The second season for the *Comedy Hour* started up in late August, and I worked on the piece on and off for a couple of months, polishing it up. In November of 1967 I started working on *The Mason Williams Phonograph Record* (my first album for Warner Bros.) and 'Classical Gasoline' was one of the tunes we decided to go for. We gave the score to the copyist, and on the parts for the session [players] he inadvertently abbreviated 'Gasoline' to 'Gas,' so that's how it came by that title. It truly wasn't until sometime later that I realized most people were thinking that 'Gas' meant to be hip, as in 'Hey man, it's a gas!' Anyway, it hit the top of the charts [actually #2] a year later, in August 1968. It also won three Grammy Awards—two for me (Best Instrumental Composition and Best Instrumental Performance) and one for Mike Post (Best Instrumental Arrangement)."

Cut to 1996. Williams, speaking on the phone from his home in Eugene, Oregon, where he has lived for many years, says of the song's recording, "That was my first big recording session and one of the first things we did for the record. Everybody was kind of excited about it. It was a 37-piece orchestra, and there was definitely electricity in the air. We rehearsed it quite a bit, and what you hear on the record is actually the first take. We went over all the sections and all, but the first take where we said, 'Okay, let's go for it,' we kept it. It had a buzz on it that was amazing. We might have done a couple after that, but none compared with the first one."

The session for "Classical Gas" took place in United Western's large Studio One, whose control room was equipped with a 18-input tube console with Universal Audio modular equalizers in every channel and 1008 line amplifiers; the board was custom-built by the studio's electronics genius, Bill Putnam. According to Allen Sides, who was an assistant at United Western in that era (and who *owns* the place now; today it's called Ocean Way Studios) the popular microphones in use at the studio included such workhorses as "a pair of Sennheiser 405s over the drums, maybe a [EV] 666 on the kick; that was pretty standard. Different engineers were different, but a lot of times, they'd use [Shure] 57s on strings, [Sony] C-37As on acoustic guitars, [RCA] 44s and 77s were popular with some engineers for brass; others liked [Neumann] U47s, as long as they were far enough away." Michael Lietz (who I was unable to track down) engineered Williams' album, and Mike Post—two thousand TV themes ago—was producer.

Although United Western was taking delivery of its first 3M 8-track around this time, "Classical Gas" was cut on an Ampex 351-4 4-track.

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Twelfth Annual TEC Awards Nominees

Listed below are the nominees chosen by the Nominating Panel of the Twelfth Annual Technical Excellence & Creativity Awards. A special TEC Awards nominees supplement and voting ballot will appear in the August issue of Mix. *The TEC Awards will be held November 9, 1996, at the Biltmore hotel in Los Angeles. For more information contact Karen Dunn at (510) 939-6149.*

Outstanding Institutional Achievement

Acoustics/Facility Design Company
- Russ Berger Design Group, Inc., Dallas, TX
- Tom Hidley Designs
- Pelonis Sound, Santa Barbara, CA
- studio bauston, Los Angeles
- Walters-Storyk Design Group, Highland, NY

Sound Reinforcement Company
- Audio Analysts, Colorado Springs
- Clair Brothers Audio, Lititz, PA
- Electrotec Productions, Inc., Westlake Village, CA
- Showco, Inc., Dallas, TX
- Sound Image, San Marcos, CA

Mastering Facility
- Bernie Grundman Mastering, Hollywood
- Bob Ludwig's Gateway Mastering, Portland, ME
- Future Disc Systems, Hollywood
- Georgetown Masters, Nashville
- Masterdisk Corporation, New York City

Audio Post-Production Facility
- Howard Schwartz Recording, Inc., New York City
- Pacific Ocean Post Sound, Santa Monica, CA
- Skywalker Sound, San Rafael, CA
- Sony Music Studios, New York City
- Sync Sound, New York City

Remote Recording Facility
- Effanel Music, Inc., New York City
- Le Mobile, Encinitas, CA
- Remote Recording Services, Lahaska, PA
- Sheffield Audio Video Production, Phoenix, MD
- Westwood One Mobile Recording Division, Culver City, CA

Recording Studio
- Hit Factory, New York City
- Masterfonics, Inc., Nashville
- Ocean Way Recording, Los Angeles
- Record Plant, Los Angeles
- Sony Music Studios, New York City

Outstanding Creative Achievement

Audio Post-Production Engineer
- John Alberts
- Lou Bender/Per Hallberg
- Rick Dior/Scott Millan/Steve Pederson/David Macmillan
- Ken Hahn
- Gary Rydstrom/Gary Summers

Remote/Broadcast Recording Engineer
- Biff Dawes
- Randy Ezratty
- Ed Greene
- John Harris
- David Hewitt

Sound Reinforcement Engineer
- Robert Colby
- Dave Kob
- Ricky Moeller
- Greg Price
- Robert Scovill

Mastering Engineer
- Greg Calbi
- Bernie Grundman
- Ted Jensen
- Bob Ludwig
- Denny Purcell

Record Producer
- Glen Ballard
- Tony Brown
- Trevor Horn
- Rick Rubin
- Don Was

Recording Engineer
- David Bianco/Richard Dodd/Jim Scott
- Ed Cherney
- Bob Clearmountain
- Mick Guzauski
- Bruce Swedien

Outstanding Technical Achievement

Ancillary Equipment
- Apogee Electronics AD1000
- Audio Precision System Two
- dB Technologies AD122 22-bit A/D
- Otari Corporation Pic Mix
- Symetrix Model 620 20-bit A/D
- Whirlwind MASS Connector (pinable type)

Mic Preamplifier Technology*
- Amek-Rupert Neve RCMA
- ART Tube MP
- ATI Pro² preamp/EQ/dynamics
- Crookwood Paint Pot
- Focusrite Red 7
- Night Technologies, Inc. Pre-Q3

Amplifier Technology
- Crown International Studio Reference One/Two
- Focusrite Red 5
- Mesa Engineering The Baron
- QSC Powerlight 4.0
- Stewart Electronics PA500

Computer Software & Peripherals
- Apogee Electronics UV22 Master Tools
- Digidesign DINR v. 2.0
- E-magic Logic Audio 2.5
- Macromedia Deck II 2.5
- Mark of the Unicorn Digital Performer 1.6
- Opcode Studio Vision Pro 3.0

Microphone Technology
- Audio-Technica AT873R
- Earthworks OM1/TC30K
- Microtech Gefell M900
- Peavey T9000
- Sanken CSS-5 Stereo Shotgun
- Shure Beta 58a

Sound Reinforcement Loudspeaker Technology
- Eastern Acoustic Works KF860 virtual line array
- JBL Professional EON System
- L'Acoustic V-DOSC
- Martin America Wavefront 8
- Meyer Sound Labs MTS-4
- PAS/Professional Audio Systems RS-2.2

Studio Monitor Technology
- Bag End Studio-A Monitoring System
- Dynaudio Acoustics BM15
- Genelec 1039A
- KRK ROK-Bottom subwoofer
- Tannoy AMS 10A
- Westlake Audio Lc6.75

Musical Instrument Technology
- Alesis DM-5 drum module
- Digidesign Sample Cell 2/TDM
- Ensoniq KT-88
- Korg Trinity Plus
- Kurzweil K2500XS
- Roland VG-8

Signal Processing Technology
- dbx 1066 compressor/limiter/gate
- DigiTech Studio Quad
- Ensoniq DP/4+
- Lexicon PCM90
- Sony DPS-77
- tc electronic M2000

Recording Devices/Storage Technology
- Alesis ADAT-XT
- JRF Magnetic Sciences 2-inch, 8-track headstack
- Panasonic SV-3800
- Pioneer D9601 DAT recorder
- Rane PaqRat
- 360 Systems Instant Replay

Workstation Technology
- Akai DR16 hard disk recorder
- Digidesign Pro Tools III v.3.2
- E-mu Darwin
- Roland VS-880 DSU
- SADiE Master System
- Sonic Solutions Multitrack USP

Sound Reinforcement Console Technology
- Allen & Heath GL-3000
- Crest Century Vx
- Mackie 24•4
- Midas XL200
- Ramsa WR-SX-1
- Soundcraft K3

Small Format Console Technology
- Mackie MS1402-VLZ
- NVision NV1055
- Oram Series 8
- Spirit Pro Tracker
- Tascam M-2600 MKII
- Yamaha 02R

Large Format Console Technology
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Hall of Fame
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Les Paul Award
Brian Wilson

* New category for 1996

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Williams says, "The orchestra is on two tracks, I played my guitar on one track, and then I overdubbed my 12-string on the other track because we didn't feel there was enough presence out of the classical guitar; it needed something to back it up and give it a little more meat."

Williams' album was an eclectic affair, to say the least. Even "Classical Gas" itself was impossible to pigeonhole—Williams has described the song

We rehearsed it quite a bit, and what you hear on the record is actually the first take. It had a buzz on it that was amazing.

as "half flamenco, half Flat & Scruggs and half classical." Whatever it was, it took the public's fancy, and it has become a permanent part of the American musical landscape. "It took eight months for it to become a hit," Williams says. "A DJ in Houston broke it. He liked it enough that he played it every hour on the hour for about 48 hours. It became a regional hit there and then in Colorado. It bubbled under for a long time and then it hit. It was one of those tunes that seemed to capture people's imaginations in the summer of '68, and I think one of the reasons it did is it became a tune that people heard in their heads while they were surfing or bicycling or doing whatever it was they were doing that summer. It's got a tremendous sports connection. People would even use it for body-building routines," he says with a laugh.

Williams kept his writing gig with the Smothers Brothers (even becoming head writer of that great program—we have him to thank for the 1968 Pat Paulsen presidential campaign, among many other comedy nuggets), and a bonus of working on the show was that he was able to perform "Classical Gas" and other tunes he'd written live on the show; quite a publicity boon. A few other songs by Williams touched the bottom of the pop charts in late '68 and in '69, but nothing hit for him again like "Classical Gas."

"Songwriters tend to make albums that explore their material, but people in the record business want to make records that are hits, so those two kinds of people have totally different perspectives," he says today. "My [first] album had comedy stuff and syrupy romantic songs and all kinds of odd things on it. And from a consumer standpoint that was rough, because what they wanted was probably an album of 'Classical Gas.' My act would routinely bomb about a quarter of the time because I always liked to try out new material. 'Classical Gas' was only one thing on the menu, but it was the one that really connected with people. Mike Post was one of those guys who was always saying 'Nothing matters but the hit,' but I never saw it that way. I didn't like his approach much. I actually fired him off my second album."

Williams went on to make five albums for Warner Bros., he's written several books and he continued his career in television writing through the '80s, even working for a year as head writer for *Saturday Night Live* in 1980. His 1987 album with Mannheim Steamroller has sold close to a million copies and garnered a Grammy nomination for his tune "Country Idyll." Williams still tours with some regularity, sometimes hooking up with orchestras in different cities, and also traveling with a smaller ensemble to perform a two-hour concert called "Time and Rivers Flowing," which consists of 35 different songs about water and rivers, ranging from 18th- century tunes like "The Banks of the Dee" to Talking Heads' "Once in a Lifetime." So Williams' eclecticism continues unabated. ■

—FROM PAGE 190, JACKY TERRASSON

how to play well acoustically. The next step is to get the sound in the room right, through acoustic treatment. When it comes to recording, everyone worries about the storage medium first—should it be digital, analog, direct-to-disk? At Cello we believe that one should not record until one can get the sound coming out of speakers sounding right. We concentrate on getting the analog right, and *then* we worry about the storage medium."

Levinson chose the Nagra D recorder because it is "the most accurate-sounding recorder we found, once we matched it with external Encore D-to-A converters, a Cello Ltd. product we developed in association with Apogee, which contains Apogee's digital and Cello's analog circuitry." The modified B&K instrumentation mics were originally intended for determining the noise levels of industrial machinery and jet engines. "They're heavily modified by our staff; they would not be usable for music in stock form," says Levinson. "I chose these mics because they have tremendous dynamic range; they can handle over 165 dB SPL with no clipping. Nothing man has made makes enough noise to clip them! From 2 Hz on out they are flat and smooth. Their off-axis response is excellent; even in back of the mics the sound is natural.

"The transparent Cello mic preamps and Cello String cabling are the heart of the matter," Levinson says. "We designed and built both with uncompromised parts quality, so we can milk every last drop out of the signal. Using the Cello Strings you start to hear everything." (The Cello string cables made for home system use consist of three-conductor shielded high-purity oxygen-free copper Litz wire in a Teflon jacket, feature a resistance of 0.033 ohms/m and cost about $600 per two-meter pair.)

For all the dramatic simplicity of the setup, Levinson isn't out to change the way the world records. "The Cello system is not for recording all kinds of music; some music requires a more flexible approach, the ability to add tracks and build a construction. I'm not against any particular style of recording, but for the great acoustic players this system is perfect; they really come to life when they are freed from normal workings of studio-land. Jacky Terrasson was perfect for the Cello System. Terrasson and his group make their music with their hands and instruments, not pickups, mics, synths and amplifiers. Drummer Leon Parker's drum kit consists of only one cymbal, one snare and one bass drum, but he gets 10,000 sounds out of each, because of his high level of musicianship."

Terrasson agrees that Cello worked for him, saying, "We're an acoustic trio that uses a lot of dynamics. When the mics are close to the instruments you get sound, but no feeling of space or air. With the Cello system we've managed to capture the air, the real sound of the whole band. The setup was nice because we were right next to each other like we are onstage and in rehearsal. We could hear each other acoustically, and that helps to control

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the dynamics much more precisely. With headphones, if one knob is a little too high the whole audio image can be thrown off, and so you do not have as much control of your playing."

Terrasson's first record, *Jacky Terrasson*, was recorded at New York's legendary, high-tech Power Station. As might be expected, compared with *Reach*, the first record has a decidedly punchy, in-your-face sound. By contrast, *Reach* has something of the expansive feel of an acoustic after-hours jam session in a club. The acoustic bass especially seems to benefit from the single mic position. The sound of the bass appears to expand across the aural canvas; it feels as if you can truly hear and feel the vibrations from the wood as well as those from the strings.

Terrasson was raised in Paris, the son of a French classical pianist and an American woman. He began playing piano at the age of 5 and studied only classical technique until he was 12. He went on to the Berklee College of Music in Boston, but left to play jazz in Chicago with a fellow student, bassist Dennis Carroll. Terrasson went on to tour in Europe with Ray Brown and Dee Dee Bridgewater, then moved to New York in 1990 and worked with drummer Arthur Taylor and singer Betty Carter. In 1993 Terrasson won the Thelonious Monk Competition and was signed by Blue Note.

Terrasson has gained notice in large part thanks to his virtuosity, bravado and his ability and willingness to fill the air with a barrage of cascading notes. Especially on *Reach*, he is all over the keyboard, demonstrating tremendous technical prowess and inventiveness, if not much restraint.

For Levinson, the Terrasson record was a chance to realize a long-held dream. "I was a big fan of the old live Bill Evans *Sunday at the Vanguard* and *Waltz for Debby* records, both of which were recorded live by David Jones at the Vanguard in 1961 with a custom-modified Ampex half-inch tape recorder running at 30 ips. Since I'd heard those records, I had wanted to do something with a great piano trio. [Blue Note head] Bruce Lundvall and I got to know each other when I played Tim Duffy's field recordings of some of the last of the authentic blues artists from the South, which blues preservationist Duffy makes using a portable version of the Cello System. Bruce became enthusiastic over the sound quality. He played those, as well as jazz recordings I had made, for Jacky and other Blue Note artists, and

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Francisco. The sarangi and pakawaj were overdubbed at Fantasy Studios in Berkeley. In all, the sessions took about a week—four days at Skywalker and three at the other studios.

Khansahib says he prefers to get as much of an intact performance as possible down on tape, but he notes that "it's never the same as if you are performing. When you perform, you're taking care that the audience should like it, but in the studio, you only have to please yourself."

Engineer Haynes notes that Khansahib and his associate producer, Tim White, had very specific ideas about how to mix the record: "They didn't want to go for what you might call a classical recording aesthetic. They wanted everything to be very up-front and very bright. The tanpuras are obviously the backbone of the track, and they like the tablas to be very loud, and the voice should be very loud, as well as the sarode. So you have the tanpuras in the back and the voice, sarode and tabla in the front; then the distance between those two spaces needs to be filled in with the harmonium, the cello, the sitar and the sarangi."

Haynes mixed the project on Skywalker's Neve VR with GML automation, to an Ampex ATR 100 half-inch 2-track at 30 ips. "The ultimate would have been to remix it through GML mixers," Haynes comments, "but it didn't work out that way." Haynes used a bit of Lexicon 480 reverb on some tracks, but the sound of the big room at Skywalker as captured by the room mics provided much of the desired ambience. The instrumental tracks are all complete performances; typically the musicians played two or three takes of each piece "and it was obvious which were the good takes," Mary Khan says.

Legacy was financed by Khansahib and put out on his own imprint, Alam Madina Music Productions (AMMP), distributed by Triloka Records. Proceeds from sales of the CD go to the Ali Akbar Khan Foundation's Baba Allauddin Institute, which is dedicated to archiving Khansahib's musical heritage. This CD is just the first in what Khansahib hopes will be a long series.

When I ask Khansahib whether age has diminished any of his skills as a player or musical interpreter, he smiles and replies, "No. Maturity comes with age, and as you get older you get better. Just to master one melody, one raga, takes anywhere from six to 12 years and there are thousands and thousands of melodies to learn. My father used to say, 'Only after 50, people should perform outside; before that it should be more learning and practice.'" He chuckles as he sees my raised eyebrow. "Me, I think you should be at least 25 years."

If he lives as long as his illustrious father, then Khansahib is just in the *middle* of his career. ■

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—FROM PAGE 191, FAITHFUL TO SCARLATTI

to capture. This music is not made to be heard in a dry studio, nor in a symphony hall. It is heard best in a small concert hall. Thus one of my goals was to have the recording present a believable perspective of a small group performing together in a beautiful-sounding, and appropriately sized, concert hall. I would like to end up with a seamless stereo image, with the players arranged naturally within it.

The performers are all leading exponents of the musical genre known variously as the early music, authentic instrument, and historically informed performance movement. A great deal of scholarship has been applied to understanding the way this early music would have been heard by its original audiences, including performance technique and the way the instruments are built, adjusted, tuned, etc. The implica-

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tion for the recordist is this: Since these people go to a lot of extra trouble to get their instruments to sound the way they do, I had better make sure they sound that way on the recording.

The ideal of literal re-creation of the sound of the performance is not something even worth discussing unless you can control the entire playback system, as well as the recording. Yet those of us who make recordings for the real world also want our recordings to embody more than just the notes played in the right order. We want to convey as much of the expressiveness of the musicians as we possibly can. Since the timbres of the instruments are a part of that musical expression, one of my goals for this recording was that it would, if not literally re-create the timbres, at least tell the truth about them in a wide variety of listening rooms. The two violinists, Elizabeth Blumenstock and Lisa Weiss, sound distinctly different. Not only do their instruments differ, but the tone, of course, begins with the musician's fingers, so it's no surprise that they don't sound identical. I would hope that the listener could easily hear the tone of each. When David Tayler switches from archlute to theorbo, it should sound like a theorbo—I assume everyone is intimately familiar with the sound of a theorbo. (For those of you who are not, the theorbo is a large, lute-like instrument with two necks, the upper configured with long bass strings for sustaining open tones.) Also, since I must confess some audiophile leanings, I hoped that the recording would just sound more realistic the better the playback system.

One other consideration high on my list was to record the sound of the singer particularly well. A soprano voice is not the easiest thing to capture, and I've heard many pieces of gear show their weaknesses when trying. I just hate it when a soprano sounds steely or screechy in her upper register. Luckily, Christine Brandes has a beautifully smooth, almost creamy, vocal sound. I just felt that I wanted to be on guard so that nothing about my recording technique would compromise her sound.

The producer and I agreed on the chapel of St. Vincent's School in San Rafael, California, across the Bay from San Francisco, as our recording site. We have both worked in this room a number of times, and know that it is capable of sounding quite beautiful. It is also capable of overpowering the music if you aren't careful. It has a ton of room sound, and careful mic technique is needed to get the right balance.

In addition to the specific considerations just mentioned, there is one consideration I always have in mind in my recording efforts: I want it to sound good. Pardon me if that sounds obtuse. I'm just saying that if I made a recording that achieved all those specific objectives but didn't make me forget I was listening to a recording, that didn't get out of the way and invite me deeply into the music, that didn't tickle some pleasure center within me, then it would not be a successful recording for me. And I've

made enough unsuccessful recordings to know one when I hear one.

So with all those different factors to balance, what mic technique shall we use? Of course we have in our engineer's tool kit a number of recognized stereo mic techniques: Blumlein, M-S, X-Y, ORTF, AB and more. We have also used the recognized techniques as starting points and improvised on them in the past.

In this case my desire to get a certain sound on the voice led me to consider a three-mic stereo technique. With the vocalist centered in front of the group, any two-mic coincident or near-coincident technique would have meant my vocal pickup would have been the sum of two mics' off-axis output. I wanted one mic, on axis, for the primary vocal pickup. This would also allow me to choose a microphone specifically for its compatibility with her voice. I didn't want to use a three-spaced-omni's approach, however, because it would have yielded too diffuse an image, and given problems with the balance of direct and hall pickup in this very reverberant room. I decided on something that is reminiscent of the Decca tree. (Purists, save your postage. I didn't say this is an exact Decca tree-just that I was thinking of that as a base for improvisation.) We would start with picking the center mic, and build it from there.

I brought a half-dozen mics to try in the center position. All were top-quality mics, well-respected by professional recordists worldwide. And as anyone experienced with microphones would expect, they all sounded different. We tried them all, and the one we agreed sounded the best for Christine Brandes' voice in this room was a Beyer ribbon mic, model M130. It had the smoothness we wanted, plus good resolution, and enough headroom to handle a soprano's peaks. Of course its low output meant I needed a good-sounding, high-gain, low-noise mic preamp, but that's another article.

The Beyer is a bidirectional mic (figure-8, in other words). This meant that its rear lobe would be picking up plenty of room sound, so I leaned toward a cardioid pattern for my two side mics. Remember, balance of direct and hall pickup was one of the areas I knew I'd have to be careful about if I didn't want the room to dominate the recording. So for pattern control, plus truthful timbre, high resolution and inviting sound quality overall, I chose a pair of Klaus-modified Neumann U87s, in cardioid mode. It just took some experimentation with placement until I heard the balance of the instruments we were looking for, the right amount of room, and a seamless stereo image. They wound up in a shallow triangle, with the side mics each about two feet off center, with the center mic about a foot ahead of the plane of the other two. All of the mics were at a height of about five feet off the floor, and a couple of feet away from the nearest musician. You might wonder whether two cardioid condenser mics and a bidirectional ribbon could blend into a unified sound. Well, I found positions for them so that they blended well enough to suit me—very well indeed, in my view. If I hadn't been able to get that blend, I would have kept trying other things until I did get it.

After that, we were left with a couple of reflections that seemed to poke out in slightly rude ways, so we set about damping them. Luckily there happened to be some medieval-looking banners on poles—just perfect for this kind of music—that we placed in strategic spots to kill the problem reflections, and we were ready to roll tape.

If this description makes it sound at all as though it would be your cup of tea, I highly recommend that you pick up the CD. The music is absolutely gorgeous. And if you do, then you can decide for yourself whether the recording technique does it justice. ■

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TAPE & DISC NEWS

SLIGHT DIP IN RIAA UNIT SHIPMENTS

Final figures for prerecorded music product shipped by RIAA member companies in 1995 showed a decline from 1994 of 0.9% in overall units shipped (net after returns) to 1.113 billion. However, the value of those shipments (at retail list price) rose 2.1% to $12.3 billion. Putting the best face on disappointing results, RIAA president Hilary Rosen described the industry as "holding its own" in an "increasingly competitive marketplace for entertainment goods." According to the trade group, RIAA member companies ship approximately 90% of all legitimate sound recordings in the United States.

Among individual formats, CD album shipments continued to grow, showing a 9.9% unit increase over 1994, while the volatile CD single market shot up 85%. A combined 745 million music CDs were shipped for the year. Vinyl LP/EP shipments increased as well, up 15.8% to 2.2 million. Vinyl single shipments, however, fell 12.5% to 10.2 million, while cassette singles fell the same percent to 70.7 million. The biggest drop was in full-length cassettes, which fell 21%. At 272 million units, cassette albums now hold about 25% of the prerecorded music market. Rounding out the figures, the music video category was up 12.5% to 12.6 million units.

DiscArt offers noncircular CDs that can be used for marketing/promotion.

MULTIMEDIA INDUSTRY RELEASES CD MATCH

The Interactive Multimedia Association, an industry trade group, has released a free software utility to aid consumers in matching their computer systems to available CD-ROM titles. The program, called CD Match, was developed in response to the high number of CD-ROM returns—said to range upward of 40% on the Windows side of the market—due to incompatibilities and technical difficulties experienced by consumers. CD Match will probe a user's system, then display a current configuration to aid in matching the minimum machine requirements of CD-ROMs. Versions of the utility for Windows, Macintosh and OS/2 systems can be downloaded from the IMA (http://www.ima.org/cdmatch) or Horizons Technology (http://www.horizons.com/cdmatch). A CD Match implementation kit for developers, publishers and retailers is also available.

In related news, industry-watchers at market research firm

BY PHILIP DE LANCIE

1995 YEAR-END STATISTICS

The Recording Industry Association of America's Manufacturers' Unit Shipments and Dollar Value *In millions, net after returns*

	1991	1992	1993	1994	% CHANGE 1993-1994	1995	% CHANGE 1994-1995
CD	333.3	407.5	495.4	662.1	33.6%	727.6	9.9%
	4,337.7	5,326.5	6,511.4	8,464.5	30.0%	9,401.7	11.1%
CD SINGLE	5.7	7.3	7.7	9.3	19.0%	17.2	85.0%
	35.1	45.1	45.8	56.1	22.5%	88.6	57.9%
CASSETTE	360.1	366.4	339.5	345.4	1.7%	272.6	-21.1%
	3,019.6	3,116.3	2,915.8	2,976.4	2.1%	2,303.6	22.6%
CASSETTE SINGLE	69.0	84.6	85.6	81.1	-5.1%	70.7	-12.8%
	230.4	298.8	298.5	274.9	-7.9%	236.3	-14.0%
LP/EP	4.8	2.3	1.2	1.9	58.3%	2.2	15.8%
	29.4	13.5	10.6	17.8	67.9%	25.1	41.0%
VINYL SINGLE	22.0	19.8	15.1	11.7	-22.5%	10.2	-12.8%
	63.9	66.4	51.2	47.2	-7.8%	46.7	-1.1%
MUSIC VIDEO	6.1	7.6	11.0	11.2	1.8%	12.6	12.5%
	118.1	157.4	213.3	231.1	8.3%	220.3	-4.7%
TOTAL UNITS	801.0	895.5	955.6	1,122.7	17.5%	1,113.1	-0.9%
TOTAL VALUE	7,834.2	9,024.0	10,046.6	12,068.0	20.1%	12,322.3	2.1%

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Digital audio has just taken a major step forward. Actually, make that a leap. At 44.1 or 48KHz sampling rates, the new Pioneer D-9601 is already amongst the best featured, highly engineered, and great sounding professional mastering DAT recorders that money can buy.

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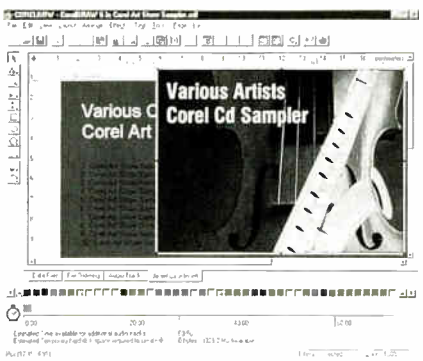
InfoTech report that the worldwide installed base of CD-ROM drives now exceeds 65 million, with 1995 sales of the devices jumping 140% over 1994 to 38.7 million units. The company also predicts that 1996 will see a surge in hybrid titles combining CD-ROMs and online technology. Providers of online entertainment-related material had best mind their copyright obligations, however; the RIAA has already issued a cease and desist letter to one Internet site (AudioNet Jukebox) for offering digital performances of copyrighted sound recordings without the authority of the copyright owners.

SPLICES

Studio Audio of Cambridge, England, announced the release of the Master II version of the SADiE Mastering System, with added expandability, more SCSI devices and the capability of remote operation at up to 30 meters...**Sonic Solutions** (Novato, CA) announced plans to deliver a workgroup-based DVD encoding and authoring system, called **DVD Creator**, in conjunction with **Daikin Industries** and **Toshiba Corporation**, both of Japan...**BASF Magnetics** (Bedford, MA) announced plans to supply custom calibration and alignment tapes...**Pacific Microsonics** (Berkeley, CA) has begun shipping the first production versions of its Model One HDCD Processor, a 2-channel HDCD encoder/decoder with A/D and D/A converters...A new mastering facility serving the Southeast, **Space Coast Mastering**, is set to open on Florida's Space Coast. The 2,300-square-foot facility is headed by former Atlantic Records engineer Dennis King...**Northeastern Digital Recording** (Southboro, MA) has added enhanced CD (Blue Book) authoring to its mastering services and has recently completed work on enhanced CD titles from Tom Hambridge and Groovechild...Hollywood's **LaserPacific Media Corporation** announced its entry into the encoding and authoring business for the forthcoming DVD format...**Time Capsule Mastering** in Long Beach, CA, has added mastering gear including Exabyte/DDP 8mm tape drives and an Apogee UV-1000...**Future Disc Systems** (Hollywood, CA) announced recently mastered projects including soundtracks for the movies *Heat* and *Waiting to Exhale*, as well as the latest from Iggy Pop...New York City's **Digital Domain** announced a new service, dubbed CD-Quik, for CD duplication with 24- to 48-hour turnaround time...San Francisco's **Rocket Lab** announced that Paul Stubblebine was the mastering engineer for John Lee Hooker's *Chill Out* album, a Grammy winner in the Best Traditional Blues category...**Trutone** (Hackensack, NJ) mastered work on two Grammy-nominated recordings: Eddie Palmieri's *Arete* and *Todo a su Tiempo* by Marc Anthony...**Bonfert Engineering** (Richmond, IN) introduced the System 480 bin-loop audio duplicating system, featuring a master with Saki playback heads, operating speeds of up to 480 ips, and slaves with four EQ/bias presets and optional Dolby HX...**Gramofonove Zavody**, a CD, cassette and vinyl record plant near Prague in the Czech Republic, has opened a U.S. sales office in Foster City, CA...**Gauss** (Sun Valley, CA) and **Concept Design** (Graham, NC)



Corel CD Creator 2

MediaForm MF-2500 CDR Autoloader

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Rank Video Services executives (L to R): Jim Daly, Pete Pacitti, Mary Ann Fialkowski, David Cuyler and Phil Clement celebrate the company's production of its one-billionth prerecorded video cassette.

have introduced faster optical loading systems for its digital bins. Using one 8x-speed CD-ROM drive for each side of a cassette program, the systems are capable of loading at 16x real time, while taking advantage of the stringent error detection/correction capabilities of the Yellow Book mode 1 format. Gauss also announced the introduction of the Model 2422 slave, which uses 12MHz bias for recording at ratios up to 160:1...**Cassette Productions Unlimited** (Asheville, NC) opened a regional sales office in Chicago...**Versadyne** (Campbell, CA) sold one 1000 bin-loop cassette duplicating system to Jose Luis Records in Santo Domingo, Dominican Republic, and another to KOE of Bogota, Colombia...**Electro Sound** of Sun Valley, CA, sold a Series 9000 high-speed cassette duplicating system to Elorg in Moscow, Russia...KABA duplicator RSRT in Overland Park, KS, purchased ferrite slave heads from **Saki Magnetics** (Calabasas, CA)...St. Paul, MN, video, audio and data duplicator **EMC Corporation** changed its name to **Digital Excellence Inc**...**Rank Video Services America** (Los Angeles, CA) announced the duplication of its one-billionth prerecorded video cassette...**Integral Vision** (Farmington Hills, MI) announced a new iNSPECt CE Mark visual inspection system for CD and DVD replication...**DiscArt** (Chestnut Ridge, NY) is offering CDs in custom, noncircular shapes for the promotional and advertising markets...**GE Plastics** announced the availability of Lexan oQ RDX, an improved grade of polycarbonate for CD replication...**Allied Digital Technologies** (Hauppauge, NY) is offering CD-R duplication for short runs...**MicroTech Conversion Systems** (Palo Alto, CA) has cut the price of a 16-drive ImageMaker CD-R duplication system to $60,950...**Microboards** (Chanhassen, MN) signed an agreement to be the exclusive distributor of Hohner Media's Red Roaster, a Red Book CD subcode editing and recording package designed for use on Windows PCs. The company has also lowered prices on its PlayWrite 2000 and 4000 CD-R recording systems... **MediaForm** of Exton, PA, released the MF-2500 CDR Autoloader, designed to convert a CD-R drive into a fully automated CD-recording system...**Corel** (Ottawa, Canada) announced CD Creator 2, a fully Windows 95-compliant CD-recording software package. ■

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COAST TO COAST

L.A. GRAPEVINE

by Maureen Droney

At Aire L.A. studios in Glendale owner and freelance engineer Craig Burbidge is moving on and moving up; he's made the decision to upgrade Studio B with the addition of a Euphonix CS2000M 4-96 console, scheduled to be up and running May 15. Burbidge has been two-hatted since 1988, when he purchased what was then Yamaha R&D Studios and turned it into Aire L.A. With recording and mixing credits that range from Natalie Cole, Vanessa Williams and Take 6 to Barry White and Steve Perry, he somehow manages to juggle studio ownership with a full-time independent engineering career. The bulk of his engineering work may be done at Aire L.A., but often you'll find him ensconced at some of his other favorite studios around town like Larrabee, Soundcastle and Encore.

When queried on how he decides where to work, Burbidge tells us that frequently his own Aire L.A. is booked by other projects and he can't get in. But he also states that his clients dictate the choice of stu-

—CONTINUED ON PAGE 208

Craig Burbidge in Studio A at Aire L.A.

PHOTO: MAUREEN DRONEY

NY METRO REPORT

by Dan Daley

Springtime in New York brings with it a number of significant facility upgrades, harbingers of a business that's renewing itself after a long winter. The most notable of these is the addition of a new Capricorn digital console at **Hit Factory**. That purchase (it was unknown at press time which studio the Capricorn would be installed in and which console it would re-

PHOTO: COREY STERN

At New York's Clinton Recording (L to R) organists Dr. Lonnie Smith and Joey DeFrancesca and drummer Idris Muhammad worked on Organic Grooves, *an LP highlighting the dynamics of the organ in jazz. Due out next month on the Hip Bop Essence label, the album was produced by Lenny White.*

place) comes in the wake of an 11-machine purchase of Studer A827 analog multitrack decks, which pegs Hit Factory's upgrade at $1 million-plus and counting; studio vice president Troy Germano said other major purchases are being currently considered.

Another major Manhattan upgrade is just being finished with **Right Track**'s remodeling of its Studio B to enhance both tracking and mixing in the room. That caps an upgrade that saw the facility add the largest SSL 9000 and Neve Capricorn (each 96 inputs) in the U.S.

Sound On Sound added two new significant

—CONTINUED ON PAGE 212

World Radio History

SESSIONS & STUDIO NEWS

SOUTHERN CALIFORNIA

Producer/engineer Malcolm Cecil recently put the finishing touches on a new jazz album, *Falling off the Roof*, for Atlantic. Co-produced by featured drummer Ginger Baker at The Complex in West L.A., the album includes guitarist Bill Frisell, bassist Charlie Haden and banjo player Bela Fleck...The Sugarplastic were in Alpha Studios in Burbank tracking and mixing a Geffen release with Colin Fairley engineering and Charles Nasser assisting...Country pop artist Gina Quartaro was in Canyon Studios (Laguna Beach) working on her new release for Award Records. Quartaro coproduced with Mark DiLorenzo, Mike Hatcher engineered and Rick Mandala assisted...Pete Woodruff mixed the newest Def Leppard project at The Enterprise in Burbank with assistant Matt Pakucko. Mike Dean was in, too, tracking and mixing the upcoming Geto Boyz release on one of the studio's two Neve Capricorns...In Studio A at Encore Studios in Burbank, engineer Tom Lord-Alge and assistant Mauricio Iragorri mixed Elephant Ride, a project produced by John Paul Jones for Sony's Work label. In Studio B, engineer Kevin Davis mixed Terance Quaites for Lava Records with assistants Joe "Voodoo" Warlick and Ian Blanch ...Producer Shawn Stockman and mix engineer Rob Chiarelli worked on an upcom-

—CONTINUED ON PAGE 213

PHOTO: ARMADO CARRASCO

Over the past couple of years alternative bands such as MC 900 Ft. Jesus, Filter, The Toadies and Hagfish have journeyed to Planet Dallas (Dallas, TX) to record on the studio's Sony/MCI 528B console and MCI JH-24 2-inch. The Reverend Horton Heat was in last year working on a song for the MCA Saturday Morning Cartoons album with producer Ralph Sall. Pictured (L to R) are drummer Scott Churilly, bassist Jimbo Wallace, the Reverend and Sall. Engineer Peter McCabe is in the back.

PHOTO: Paul Rifkin

The control room at San Diego recording/mastering facility Anza Records features a D&R LCRS console. The studio offers 32 tracks of ADAT, loads of outboard and mastering on Digidesign Pro Master 20. Recent projects include Caroline's Spine recording and mixing their third album and Marilee Hall recording her debut release.

Guitar virtuoso Tim Donohue (center) mixed his upcoming Idea Entertainment release in Room A at NRG Recording Services (North Hollywood, Calif.) with legendary producer Eddie Kramer (L) and assistant John Ewing Jr.

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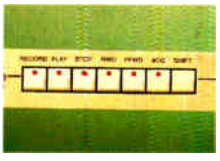

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explains, "which is one of the things our clients always compliment us on. But, once we built Studio C, Studio A's lounge wasn't as private as the other ones. It's very comfortable, with a kitchen and an open floor plan, but you had to walk through it to get to C. And, when you're working with bands a lot, like Guns N' Roses or Mr. Big, it's not that they are unfriendly, but they don't necessarily want to have dinner with everybody in the world. So, in talking with producer/engineers Ron Nevison (Heart, Damn Yankees) and Mike Clink (Guns N' Roses), two of our bigger clients, we asked what they'd like to see done. They both had the same ideas—to turn one of the larger iso booths into a private lounge, and to take the back of the studio where there was some space that was rarely used and create two additional iso booths.

"So (owner) Daryl Dragon, Mike, Ron, Carl, and our contractor Dave Guth drew up the plans and constructed the two new iso booths, which ended up enhancing the sound of the main room dramatically, because it shortened the room, but also made it much more live. That made Mike Clink very happy! And the iso booths made both Clink and Nevison happy. They had suggested wooden floors for the booths with removable baffles on the walls for tuning, and windows so that you can see into both the other iso booth and into the main room. Now there is total visual contact, and that works out great.

"The booth next to the control room was made into a lounge with couches and a television," Berman continues, "but we left it wired. So now we have five iso booths plus the lounge, which we can still use to make a sixth. This, in combination with the spacious main studio, and the individual headphone mixers that allow musicians to customize their headphone mixes without asking the engineer, makes artists very happy."

Control Room A, which has many contented clients, remains unchanged, with its Neve V Series 60-input board equipped with Flying Faders automation, two Studer A827's and custom TAD monitors. Outboardwise, says Berman, A is geared a bit more toward tracking then mixing, with API, Pultec and GML EQ, and dbx, UREI and LA-2A compressors.

Engineer Tom Size and producer Kevin Elson were the first clients booked in after construction to work on Mr. Big's *Hey Man*. Since the two previous Mr. Big records had been

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Control Room A at Rumbo Recorders in Canoga Park, Calif., with its Neve V Series 60-input board equipped with Flying Faders

made in A, they were very familiar with the room, and their opinion of the changes was important. "They really liked the additions," Berman says. "They thought the isos worked great for guitars, and they liked the way the drums came out with the main studio's new sound. They were very happy with what had gone down."

Other projects in A since the renovation include Paula Abdul with Berman himself engineering, Mike Clink producing Cartower and Plutonium Hat, and college faves Getting Red.

You can check out all of Rumbo's studios on the Internet. Chief tech Bartoles is also a Web page programmer, and he's designed a site that includes photographs and floor plans along with an outboard gear list. You can also e-mail him questions, and even book time (!) at http://pobox.com/~rumbo.

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—FROM PAGE 206, NEW YORK METRO

technological upgrades to its facility: a Sony 3348 digital 48-track deck and a 20-bit I/O Sony PCM 9000 2-track MO recorder, which is only the second such system at a New York recording studio. (Right Track has the other; mastering studios Sterling and Masterdisk each have one, as well.) "It was a combination of market demand and the need to have some technology in here that differentiates us from other studios," explains SOS owner Dave Amlin. "Those two factors are what really drives upgrades any way you look at it, usually. The demand for 48-track digital has been growing in New York steadily for some time now, and so has interest in mixing to a high-bit-rate digital format. What hasn't changed is that the rates still aren't keeping pace with the cost of these upgrades, here or anywhere else. But we do it because we have to. And because we love it."

Pie Studios survived a nasty fire in a paint factory next door back in January, saved from explosions by a thick cement wall and from water damage by a fireman's quick thinking—he used hoses as a levee to keep water from running into the facility. The studio installed a new Private Cue system and a vintage EMT 250 digital plate (formerly owned by Arif Mardin). In addition, the studio undertook the daunting task of replacing every cap in the studio's Neve 8078 console. "It was spring cleaning to some extent," said owner Perry Margouleff of the upgrades and enhancement. "But it's also a matter of having to stay on the course you set for the studio. This place is based on being all vintage: You have to keep looking for new vintage items, and you have to keep an entire studio of older equipment working like new."

These upgrades come on the heels of several others over the course of the last year, including new SSL 9000 J consoles at Right Track and Quad Recording. And Quad owner Lou Gonzales

World Radio History

says he's considering a second 9000. "Business is hot in New York right now, and this is the time that it makes sense for people to upgrade," he says. "The rates may not be changing, but you're getting more consistent work of a nature that pays closer to the rate you want to get. It's cyclical more than seasonal. But it just happens to coincide with springtime this time around."

Even as studios upgrade, they're also continually looking for new and unusual ways to augment revenue streams. One unique approach comes from **Music Palace** in Hempstead, L.I., where one of two studio partners, Scott Scaturro, has used his own video production company to create an unofficial SSL training video on the G Plus and its Ultimation system. Scaturro used Music Palace's own G Plus as the demonstration board for the $39, 90-minute video he produced late last year. (*Mix*'s Bookshelf division will carry the video.) "We have to train all the assistants on the console when they start to work here, and I realized that instead of doing it one at a time, I could make a video of the process," explains Scaturro. "From there, I figured there was a larger market for the video." Scaturro's company, Kameon Video, is currently developing a CD-ROM as a training aid for assistants on the entire gamut of tasks in assisting in an audio recording studio, and is also planning another SSL training tape, this one on the SSL 9000 J console. Scaturro said he plans to approach SSL in the making of the next video. ■

—FROM PAGE 207, SESSIONS & STUDIO NEWS

ing **Uncle Sam** project for Stone Creek Records at **Cherokee Studios** in Hollywood... Rock stars manqué **The Nuerotic Boy Outsiders** (featuring musical greats from Guns N' Roses and Duran Duran along with Sex Pistol Steve Jones) recorded their Maverick Records debut at **NRG Recording** (North Hollywood) with producer **Jerry Harrison**, engineer **Karl Derfler** and assistant **Wade Norton**...RCA/UK artist **60 Foot Dolls** were in Studio A at **Skip Saylor** (L.A.) mixing a forthcoming release with engineer **Lou Giordano** and assistant **Rod Michaels**...Recent activity at **Weir Brothers Recording** in North Hollywood included **Andrew Strong** recording for MCA International with producer **Mark Holden** and engineer **Tom Weir**, and blues/rock guitarist **Rick Brannon** recording his *Celestial Blues* album for Rip Research Records with producer/

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World Radio History

Criteria Recording president and CEO Joel Levy (L) stands with Studer rep Joe Bean behind the Miami studio's recently purchased Studer D827-MCH digital 48-track.

NORTHEAST

Butcher Brothers Joe and Phil Nicolo have been busy producing Roadrunner rap/rock act Dog Eat Dog at the Bros' Studio 4 Recording in Conshohocken, PA. The studio also recently added a full-time in-house technical services department in the persons of techs Jeremy Birnbaum and Chris D. Gately...Bob Power mixed the next releases for Tribe Called Quest and The Roots at Battery Studio in Manhattan...Red Hand recording artist Georgi Smith mixed and mastered his new release at Mega Trax in Merrick, NY, with producer Mike Siskind and engineer Jeff Shapiro...The Essence All Stars tracked their *Organic Grooves* LP (slated for a June release) at New York City's Clinton Recording. Lenny White produced...Upper Crust recorded engineer Dennis Mackay...Paramount Recording had 510 MCA's Suckerpunch in mixing their new album with producer Stoker and engineer Mike Melnick. Jughead's Revenge were also in recording and mixing their new Nitro Records release with producer Warren Fitzgerald and engineer Barry Conley... Chaka Khan, Gino Vanelli, Brenda Russell and Lori Perry were in Blue Moon Studio (Agoura Hills) working on vocals for a summer Olympics project. Vince Mendoza and Jimmy Haslip co-produced with producer engineer Joe Vanelli...Clint Black tracked vocals with engineer Kevin Beamish and assistant Dave Huron at Lighthouse Recorders in North Hollywood...

Rolling Stone Ron Wood leans over singer Bernard Fowler during sessions for new group Nickelbag at Mexico City's Estudio 19 (with engineer Pierre de Beauport at the board). Wood was among a number of luminaries who contributed to this funk-infused project, spearheaded by Fowler and guitarist Stevie Salas (pictured right rear). The album, 12 Hits and a Bump *(co-produced by Fowler and Salas with Bill Laswell), is out now on Iguana Records.*

SOUTHWEST

The Poppies and Superqueen have been recording on the Ampex 1-inch 8-track at Fat Tracks in Austin, TX. The studio will be upgrading to a Studer 2-inch 16-track later this year...DRM Productions' (Lewisville, TX) David Rosenblad recently completed a location recording of the Dallas Brass performing Tchaikovsky's *Nutcracker Suite* arranged for brass and percussion. Michael Vazquez assisted...MCA combo Sublime were in Arlyn Studios (Austin, TX) recording with producer Paul Leary and engineer Stuart Sullivan. At sister studio Pedernales, Jesse Dayton tracked with producer Randall Jamail and engineer Larry Greenhill for Justice Records...

World Radio History

their second album (out this fall on Upstart Records) at Boston's Zippah Recording with producer Brian Charles and engineer Pete Weiss...David Clayton Thomas worked on a self-produced solo project at BearTracks Recording in Suffern, NY, with engineer Douglas Oberkircher and assistant Kris Koerner...Producer Anthony Resta and Bob St. John wrapped up some mixes for Duran Duran's next EMI release at Sound Techniques in Boston. Melodic rockers Opium Den and vocalist Annette Kramer were also in tracking new material with engineer Dave K...CD3 remastered an upcoming release at Cotton Hill Studios (Albany, NY) with producers Chuck D'Aloia and Gene Garrone and engineer Ray Rettig...

NORTHWEST

Charlene Moore recorded her first solo project (a collection of gospel originals) at Center-Stage Productions in Oakland, CA. Moore co-produced with Harvey Hughes and David Grigsby...The Blue Room Studios (San Francisco) had rockers Fifty Lashes in recording their sophomore release for Dr. Dream Records. Local faves Flower SF were also in... David Sylvian worked on a new solo album for Virgin at Seattle's Soundhouse Recording. The sessions were engineered by Dave Kent with assistants Scott Crane and John Nevins...White Horse Studios (Portland, OR) recently completed a 120-hour "Language of Literature" audio library for McDougal Littell...

NORTH CENTRAL

Producer Michael Freeman and engineer Roger Heiss recorded Chubby Carrier's new Blind Pig Records album, *Who Stole the Hot Sauce*, at Tone Zone Studios in Chicago...Producer Brian Paulson was at Smart Studios (Madison, WI) with Alias recording artists The Archers of Loaf working on mixes for their forthcoming CD. Mark Haines assisted...At Flyte Tyme Productions in Minneapolis, Jimmy Jam, Jeff "Madjef" Taylor and the Sounds of Blackness (featuring Ann Nesby) worked on the song "Welcome to the World" for the Olympic opening ceremonies in Atlanta. Perspective Records R&B act Mint Condition were also in cutting live tracks with Taylor and mixing with engineer Steve Hodge...

SOUTHEAST

Marty Stuart tracked and overdubbed for MCA at Sound Emporium Recording in Nashville. Tony Brown and Justin

—CONTINUED ON PAGE 228

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Recent projects feature former Rolling Stones guitarist Mick Taylor, Sasha, Carlos Alomar, Lenny Pickett, Robin Clark, Steve Ferrone, T.M. Stevens, Vivian Cherry, and Tawatha Agee. The engineer is Nenad Gracanin and the producer is Sasha. Studios feature SSL 4064, G Series computer, Studer A827, Sony PCM 3324, Sony PCM 800s, state-of-the-art recording, mixdown and mastering. Highest possible quality is our main concern.

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A recording legacy since 1979, Mad Dog Studios offers a comfortable, private working environment in the heart of the Burbank media district, minutes away from freeways and the Burbank airport. A 24-track facility combines a phenomenal tracking room with state-of-the-art and vintage gear. Satellite TV and a restaurant-style lounge area. A full production facility, sharing property with a 3,000-sq.-ft. soundstage for recording, showcases, video or film shoots. Grammy Award-winning clients include Dwight Yoakam, Pete Anderson and Lucinda Williams.

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EastSide Sound has been satisfying clients for 24 years. Our tracking room boasts a vintage Neve with David Manley tube modifications and Flying Faders. Our mixing room houses the Harrison Series Ten B—the ultimate in automation. Both rooms include Studer and Sony tape decks, a wide selection of both vintage and modern mics and outboard gear, as well as computer workstations. Located in Manhattan, private and very comfortable. Call for further information.

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Designed by Chips Davis and Frank Hubach Associates, Soundhouse is a cozy, built-from-the-ground-up, analog and digital recording facility. Home to a vintage 40-input Trident 80B, a Studer A827 24-track and the finest in outboard gear. The live room features hardwood floors and an impressive microphone collection. We have Nintendo, cable television, a barbecue and all the comforts of home.

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Client-oriented mastering suite. Full 20-bit digital audio path with many flavors of down-conversion available. Many digital and analog music processors on site, featuring the dB Technologies AD122 A/D, TC Electronic M5000, vintage and modified Sontec Disk Mastering EQs, and GML EQ and dynamics processing. Mastering is Hafler Diablo powering Dynaudio M3 monitors through an in-house designed and constructed mastering console.

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Rockingchair Recording Studios

1711 Poplar Ave., Memphis, TN 38104
(901) 276-8542; Fax (901) 276-8546
e-mail: rknchair@vdaspk.com
http://www.vdaspk.com/rknchair

Rockingchair Recording Studios, located in the heart of midtown, adds to Memphis' rich musical heritage. Offering a relaxed and creative ambience, state-of-the-art equipment and an advanced staff, Rockingchair is the perfect retreat for today's recording artist. Our philosophy is simply this: An easygoing atmosphere allows for the best performance and maximum productivity. Established in 1989, the new facility went online December 1993 with two independent studios and an expanded equipment list.

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PatchWerk Recording Studio

995 McMillan Street, Atlanta, GA 30318
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PatchWerk Recording Studio is Atlanta's newest world-class production facility. We offer an ideal creative environment with first-class personal service, creating an unparalleled value. The beautiful 3000-sq.-ft. facility features an Otari Concept One (64-input/output) w/Virtual Dynamics and VCA faders, a Studer A827 recorder and Spectral Synthesis direct-to-disk digital recorder w/Prism audio interface. Recent clients include: Outkast, Monica, Xscape, Goodie Mob, Subway, Ras Kass, Organized Noize, Usher, Vooodu, Total, The Group Home, Meen Green. Contact Curtis Daniel.

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Recordings done at Hoffmann Studios have won Billboard's Best Album of the Year and World Music Album of the Year awards, NAIRD's Best Seasonal Release and now nominated for Best Spoken Word Album in 1996. 32-trk. digital or 24-trk. analog formats along with a 9-foot Steinway Concert Grand and a Petrof Grand Piano are available. Located about an hour north of San Francisco in the rolling coastal hills, we offer a pristine recording environment with a majestic view of the redwoods and pines.

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At Custom Taylored we provide the "missing link" between high-end project studios and full-featured commercial facilities. We offer full in-house services from master-quality demos to finished CD production at very affordable rates. The studio features a 32-trk. Studiomaster P7, (5) Alesis ADATs, and a huge collection of outboard gear and quality microphones. Recent clients include: Gravity, the Griff Hamlin Band, Urban Sprawl, CBS television, Mazda, and RealLife Beverages. Contact Keith Taylor for more info.

The Looking Glass Studios

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Located in the heart of Greenwich Village, The Looking Glass Studios offers a relaxing and efficient workspace, including a digital editing/premastering suite. Both studios feature comfortable control rooms with large sunny windows and a kitchen area and private lounge. Studio A is equipped with an SSL, a Neve 10x2 mixer w/1073 preamps, 48 tracks of analog and digital recording and 8 tracks of Pro Tools. With recently redesigned acoustics, it is an ideal room for either tracking or mixing.

O'Henry SOUND STUDIOS

O' Henry Sound Studio

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Renowned for world-class quality, audiophile equipment and professional staff. Studio A offers a tracking space large enough to record 60 musicians, while the smaller size of the tracking/overdub Studio B provides a more intimate setting. Both have oversized control rooms. A superb microphone collection is the perfect complement to either room. The Spanish hacienda-like structure provides a full selection of amenities.

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TASCAM
102 MKII / 103
Stereo Mixdown Cassette Decks

Best values for musicians, studio operators and production houses, the 102 MKII and the 103 consistently produce only the highest quality tape recorded output

They Feature:
- 60dB signal-to-noise ratio combines with wide frequency response for high-fidelity sound reproduction using any type of cassette tape
- Industry-standard Dolby B/C noise reduction and Dolby HX Pro sound technology extends high frequency performance up to 6dB and minimizes distortion
- Advanced bias -sensing electronics automatically chooses optimal recording settings for the type of tape you load in—Normal, Metal or CrO2
- Record/Mute autospacer automatically inserts 4 seconds of silence between songs or broadcast segments
- Multi-function display clearly indicates transport mode, tape counter position, tape type and level indicator
- Multi-counter with both tape counter and run-time modes
- Independent L and R stereo level controls and master record level control

Tascam 103 Advanced Features:
- 3-head system allows you to record on a tape and monitor it at the same time, without rewinding
- MPX filter button eliminates pilot and sub carrier broadcast tones that can interfere with Dolby noise reduction

202 MKIII
Dual Auto Reverse Cassette Deck

The 202 MKIII provides high-fidelity sound reproduction and a wide frequency response, as well as a host of features that help you dub, edit, record or playback onto/from one or two cassettes easily and efficiently
- Normal speed and high-speed dubbing
- Autospacer automatically inserts 4 seconds of silence between songs or broadcast segments for pro quality tapes
- Incorporates Dolby HX Pro sound technology to extend high frequency performance and minimize distortion on Normal, Metal and CrO2 tape
- Allows you to quickly and easily create a professional-sounding composite tape from several sources. Functions like Intro Check, Computerized Program Search, Blank Scan and One Program quickly find the beginning of tracks you want
- Twin two-head cassette decks in a durable rack-mount housing that can be used separately or in tandem during recording and playback for total flexibility
  - *Play* material on deck 1 while deck 2 records on one or both sides
  - *Record* simultaneously on both decks from an external master
  - *Play* back both sides of one or both decks in a continuous loop, up to five times
  - *Auto Reverse* automatically reverses tape direction during playback and record
  - *Repeat* rewinds tape and allows infinite looping during playback
  - *Timer* switch for unattended record/playback (timer required)

New! 302
Double Auto Reverse Cassette Deck

All the features of the 202 MKIII, the new 302 adds even more recording and playback flexibility. That's because the 302 is actually two fully independent cassette decks. Both decks have their own set of interface connectors, transport control keys and noise reducing functions
- Auto-reverse capability on both decks
- Individual/simultaneous record capability–both decks
- Independent RCA unbalanced in/out for each deck
- Cascade and Control "Q" let you link up to 10 additional machines for multiple dubbing or long playing record and playback applications

CD-601
Professional CD Player

Frame-accurate cueing precision, extremely high-fidelity and a small form factor make the CD-601 ideal for post-production applications where sound effects and music are "flown-in" from compact discs. The CD 601 integrates with most post-production equipment including mixers, video editors and computer studio controllers
- Balanced XLR and unbalanced RCA outputs
- Precision cueing control and Auto cue
- Linear motor-driven pick-ups eliminate dead air
- Optional RC 601 remote control adds additional features and conveniences
- Optional BU-2 RAM for instant start and seamless loops up to three minutes

marantz

PMD-101/201/221/222/430
Portable Professional Cassette Recorders

The world standard for field recording, the PMD line is also the value leader. They all feature RCA line input/outputs, 1/4-inch headphone jack, built-in speaker, pause control, audible cue and review, tape counter, full auto shut-off and low battery indicator

- All models except the PMD-430 have 1/2 speed playback/record capability. With 1/2 speed playback, musicians can slow down complicated passages for analysis. And when played back at 1/2 speed, the pitch is lowered by exactly one octave, so the notes are still musically correct—ideal for figuring out complicated solos or picking patterns
- By recording at 1/2 speed, a three hour meeting can be recorded on a single tape. A built-in microphone and automatic level control make operation simple, and built-in speaker makes transcription convenient
- 1/2 speed recording is equally ideal for churches: because 90 minutes can be recorded on a single side of tape—no interrupting your recording to flip the tape over. Line inputs make it easy to use and connect to your existing sound system
- Three standard "D" cell batteries provide up to 7-1/2 hours of operation and the optional RB430 rechargeable battery delivers up to 5-1/2 hours

	PMD-101	PMD-201	PMD-221	PMD-222	PMD-430
General					
Stereo/Mono	Mono	Mono	Mono	Mono	Stereo
Heads	2	2	3	3	3
Inputs/Outputs					
Mic Input	1/4-inch	Miniplug	Miniplug	Mini/XLR	1/4-inch
Condenser Mic	Built-In	Built-In	Built-In	Built-In	—
Remote Jack	—	Yes	Yes	Yes	—
Modular Tel. Jack	—	Yes	Yes	Yes	—
External Speaker Jack	—	Yes	Yes	Yes	—
Record Controls					
VU Meters	—	1	1	1	2 (Illuminated)
2-Speed Recording	Yes	Yes	Yes	Yes	—
Dolby B NR	—	—	—	—	Yes
dbx NR	—	—	—	—	Yes
Mic Attenuation	—	0 -10dB -20dB	0 -10dB -20dB	0 -10dB 20dB	0 -15dB -30dB
Ambient Noise Cont.	—	Yes	Yes	Yes	—
MPX Filter	—	—	—	—	Yes
Manual Level Control	—	Yes	Yes	Yes	—
Limiter	—	Yes	Yes	Yes	Yes
ALC	Yes	Yes	Yes	Yes	—
Peak Indicator	—	—	Yes	Yes	—
Playback Controls					
Pitch Control	±20%	±20%	±20%	±20%	±6%
Bias Fine Adj.	—	—	—	—	Yes
Tone Control	Yes	Yes	Yes	Yes	—
Half-Speed Playback	Yes	Yes	Yes	Yes	—
Memory Rewind	—	—	Yes	Yes	Yes

Telex
ACC2000/4000 Series Cassette Duplicators

Designed for high performance and high production, Telex's ACC Series (ACC2000/ACC4000) and (ACC2000 XL/ACC4000 XL) of expandable duplicators also offer easy maintenance and unsurpassed ease of use. The ACC2000 is a two -channel monaural duplicator, the ACC4000 is a four-channel stereo duplicator. Each produces 3 copies from a cassette master at 16 times normal speed and each can expand up to 27 copy positions (with additional copy modules). With the extra copy modules, you can duplicate up to 27 copies of a C-60 original in less than two minutes. And they copy both sides at once. The XL Series feature "Extended Life" cassette heads for increased performance and wear characteristics. They also offer improvements in wow and flutter, frequency response, signal-to-ratio and bias. Additionally, the ACC4000 XL allows for either chrome or ferric cassette duplication. XL- models are available in stereo (ACC4000 XL) or mono (ACC2000 XL) versions.

Fingertip Operation
- Individual rotary audio level controls allow for an increase or decrease of audio levels as the master translates to the copies.
- Peak reading LED indicators allow quick and accurate monitoring of audio fluctuations.
- Side A or A/B select button let you set up for duplication of either 1 side or both sides of a cassette at once.
- Stop all tapes instantly, at any point during the copy or rewind cycle.
- Short tape indicators alert you if a tape stops before the original does, identifying incomplete copies caused by jam or short.
- Automatic or manual selection of rewind and copy operation:
  –Rewinds tapes to the beginning or end automatically (AUTO mode) or manually –In AUTO mode the copy button activates the entire rewind/copy/rewind sequence. In manual it starts copying immediately.

Easy Maintenance:
- Slanted work surface and unique "heads-up" cassette platform allow less oxide build up on the heads and makes cassette loading and unloading much easier.
- Each cassette position has a three point tape guidance system that eliminates skew problems. Plus, when a tape is inserted, each cassette position is activated to prevent unnecessary wear and tear on the tape head mechanism.
- Audio and bias, along with head adjustments, are made easily from the top of the unit and a switch on the back engages the head and pinch roller for convenient cleaning.

ACC2000 Mono MasterModule:
- 1/2 track,two-channel monaural duplicator produces 3 copies from a cassette master at 30ips (16X normal speed)
- Expands up to 27 copy positions by adding ACC2000 copy modules (four positions each)
- Erase heads in the copy positions automatically erase existing audio as new material is being recorded
- Track select short tape indicators automannual operation
- Includes removable power cord and protective dust cover

ACC2000 XL Mono Master Module:
- Same features as ACC2000, *plus*– Extended Life cassette heads

ACC4000 Stereo Master Module:
- 1/4 track, four-channel stereo duplicator. Same features as ACC2000 Mono Master Module

ACC4000 XL Stereo Master Module:
- All features as ACC4000, *plus*– Extended Life cassette heads. Can be configured for chrome or ferric cassette duplication

ACC2000 Mono Copy Module:
- 1/2 track, two-channel monaural copy module
- Each module has four copy positions with erase heads and controls for side select
- LED displays indicate end-of -tape status for each pocket
- Includes ribbon cables for connection to ACC2000 master and other copy modules
- Includes removable power cord and protective dust cover

ACC2000 XL Mono Copy Module.
- Same features as ACC2000 Copy Module *plus*–Extended Life cassette heads. Connects to ACC2000 XL Master Module

ACC4000 Stereo Copy Module:
- 1/4 track four-channel copy module. Has all the features of the ACC2000 Copy Module

ACC4000 XL Stereo Copy Module:
- Same as the ACC4000Copy Module, *plus*–Extended Life heads. Configurable for chrome or ferric cassette duplication

Copyette EH Series Duplicators

The popular Copyette series produces high quality, low cost cassettes in large quantities at nearly 16 times normal speed. This means you can reproduce both sides of a C-60 tape in less than two minutes. Available in two versions, the Copyettes are capable of duplicating either one cassette or three at a time. In addition each are available in both mono and stereo models. They couldn't be easier to use. You simply insert the cassettes, press the START switch and they do the rest. They rewind all tapes to the beginning, copy, then rewind to the beginning again before stopping. The whole process can be stopped at any time by pressing the CYCLE button. Side Select feature allows you to set them up to copy one side of a tape or both sides at once.

Stereo Copyette 1•2•1

Weighing only 8 lbs. (3.6 kg), this unit has a durable, impact resistant housing and includes a removable power cord, carrying handle and protective cover. It also has an optical, non-reflective end-of -tape sensing system that provides gentle tape handling. A mono version is also available.

Stereo Copyette 1•2•3

This duplicator copies both sides of three cassettes at once, yet it's as small as the 1•2•1. It weighs only 12 pounds (5.4 kg) and includes a hard cover to protect the unit while not in use. It uses all DC Servo motors for the ultimate in reliability. A mono

TASCAM
112 MKII
Stereo Cassette Deck

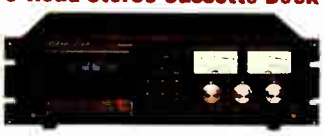
The classic "no frills" production workhorse, the 112 MK II is a head, cost effective deck for musicians and production studios. Extremely rugged and reliable, the 112 MK II is ideal for production mastering and mixdown. It also features a parallel port for external control an and optional balanced connector kit means is flexible enough to integrate into any production studio
- Utilizes Dolby B or C noise reduction with Dolby HX Pro
- Automatically selects proper bias type, so you get optimal recording & playback response with Normal, Metal or CrO2 tap
- Gear independent input dials let you dial in stereo VU calibrati with one dial. You can also adjust for channel specific calibratio
- Offers two Autolocator buttons and a MEMO IN control. These controls allow you to select two points on any tape for one bu ton forward/reverse to wherever the action is. Additionally R" (return to zero) quickly spools the tape back to 0000 on the tape counter
- Rear-mounted RCA input/output jacks for easy connection to high-quality sources
- Optional LA-112 connector provides additional balanced or unbalanced XLR inputs and outputs. Installation is simple and requires no special tools
- 25-pin D sub connector (parallel port) on the back, links the deck to the optional RC-134 remote control unit or for fader start from any mixer that use the same protocol

112R MKII
Bi-Directional
Stereo Cassette Deck

The 112R MKII is a sonically uncompromising, auto reversing and continuous play cassette deck. It offers the finest independent head auto-reverse design at this price level, plus it has ext dubbing and editing features that make it ideal for long program recording

All the features of the 112 MK II *plus*—
- Three-head transport with separate high-performance record and playback heads. Manufactured from resilient Cobalt Amorphous materials, the independently-operating heads combine with precision FG servo direct-drive capsta motors to provide the highest standards of reproduction quality and performance
- Frequency response is 25 Hz to kHz with less than 1% total harmonic distortion
- Equipped with Hysteresis Tension Servo Control (HTSC) the 112R MKIIvirtually eliminates wow and flutter. HTSC is an advanced servo control system that maintains consistent back tension on the tape all through the reel, combatting inconsistencies brought on by extreme temperatures and humidity
- Super Acculign Rotating Head System allows recording or playback tape direction to be changed with one button. A single-screw azimuth adjustment makes it easy to maintain the head alignment after many hours of continuous use
- For unattended record/playback of material that is longer than one side of a tape, there are two features that spare you from constantly attending to the deck.
  —Auto Reverse mode plays or records in both directions before stopping, switching sides on the fly.
  —Continuous Reverse mode allows you to loop the tape during playback up to 5 times, or record in both directions, without pausing to flip the tape and re-engage the record mechanism. Both features are accessible from the front panel, with one-button selection

122R MKIII
3-Head Stereo Cassette Deck



The standard for production and broadcast facilities, the 122 MKIII features smooth faultless tape handling mechanisms, a three head transport with high-performance Cobalt Amorphous record/playback heads and precision servo direct-drive capstan motors

All the features of the 112R MK II (no reverse of course) *plus*–
- XLR balanced and unbalanced RCA inputs and outputs are selectable with the flip of a back-panel switch. There are 1/4-inch inputs on the front panel for simple and direct plug-in of line-level gear
- MPX filter button eliminates polot and sub carrier broadcast tones that can interfere with Dolby noise reduction
- Bias and level fine tuning for each channel. These tuners can be used in conjunction with the one-touch 400 Hz or 10 kHz oscillator adjustment signals to get proper VU calibration before or during each recording session
- Record/mute autospacer automatically inserts 4 sec. of silence between songs or broadcast segments for pro quality tapes

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BEHRINGER

MDX 1200 Autocom

- Attack and release times with Intelligent Program Detection, prevents common adjustment errors
- Newly-developed powerful noise gate.
- Switchable soft knee/hard knee characteristics for varied sound pressure levels
- Bright, illuminated LEDs show gain reduction

MDX 2100 Composer

- Integrated auto/manual compressor, expander & peak limiter
- Compresses "musically" in dynamic range without any audible "pumping" or "breathing"
- Attack & release times are controlled automatically or manually.
- Interactive Gain Control (IGC) combines a clipper and peak limiter for distortion-free limitation on signal peaks
- Servo-balanced inputs and outputs are switchable between +4dB and -10dB

ALESIS

3630 Compressor

The 3630 provides two full-featured professional compressor/limiters in one rack space. Ideal for any application from studio recording and mixing to live sound reinforcement and broadcast.

- Dual mono or linkable true stereo operation.
- Choose between RMS and peak compression styles as well as hard knee /soft knee characteristics.
- Dual 12-segment LEDs display gain reduction and input/output levels.
- Each channel's built-in noise gate has an adjustable threshold and close rate to ensure clean, transparent performance
- Variable attack and release times and a sidechain function for "ducking" in broadcast applications.

t.c.electronic

Wizard M2000

Studio Effects Processor

The M2000 features a "Dual Engine" architecture that permits multiple effects and six different routing modes. There are 250 factory programs including reverb, pitch delay, delay, chorus, flang, phase, ambience, EQ, de-essing, compression, limiting, expansion, gating and stereo enhancement. The M2000 also features 20-bit analog conversion, AES/EBU and S/PDIF digital inputs/outputs, "Wizard" help menus, 16-bit dithering tools, Tap and MIDI tempo modes and single page parameter editing

- The array of enhanced pitch shift (up to 8 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
- Tempo Tap function lets you match effects to the beat. Tempo can be adjusted in beats-per-minute and sub-divided any way you like--even in triplets. The tempo can also be read from MIDI.
- Preset "Gilding" (morphing) function ensures seamless transition between effects. Very useful in live and mixing situations.

Symetrix

601

Digital Voice Processor

- Accepts mic or line level analog signals, converts them to 18 bit-digital and then performs 24-bit digital domain signal processing.
- Processing includes fully parametric/shelving EQ, notch/dynamic filtering, de-essing, delay, chorus, gating, expansion, compression, AGC and DC removal.
- Combination of 128 factory presets and 128 non-volatile user programs
- Has XLR-balanced mic and line inputs, XLR-balanced stereo output. Digital 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.

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FOSTEX

XR-5/XR-7 Multitrackers

XR-5 Features:

- High-speed (3-3/4 ips) four-track (2-tracks simultaneously) recorder with built-in Dolby noise reduction (can be turned off)
- Pitch controller varies the tape speed within a range of ±12%
- Punch in/out function makes corrections and phrase insertions when necessary, can be done easily with optional footswitch
- Four inputs accommodate two microphones in channels one and two. Has convenient insert points for connecting a compressor/limiter and other devices for the mic channels
- Each channel is equipped with two-point high/low shelving equalizers to help shape the sound, and an AUX send function for processing ambient system effects.
- Trim function lets you switch High/Mid/Low input levels for channels one and two
- Alternate Mix mode lets you independently select the signal from the input jack or the tape playback. Prefader effect send inline monitor & other functions are also possible using this mode
- Post foldback (monitor) send function routes the foldback signal to the AUX send. When the foldback is activated you can actually mixdown at the same time you add reverb to a tape
- MIDI/TAPE multi-mix mode supports MIDI synchronization. Together with the Alternate Mix mode the XR-5 can simultaneously mix all MIDI sound source output with tape playback sound and effect output while monitoring!

The XR-7 has all the features of the XR-5 *plus*—

- 6 inputs, plus the ability to record four tracks simultaneously
- Dolby C noise reduction plus dual speed recording
- During recording, Channels 5 and 6 are the primary inputs for microphones and acoustic instruments. They have trim controls and mid-sweep EQ. During mixdown, these channels act as the main stereo L/R bus
- Auto rehearsal mode lets you concentrate on the music instead of the machine

TASCAM

PORTA 03 MKII Ministudio

The easiest way to get into multitrack recording, the PORTA 03 is an extremely economical 4-track recorder that lets you overdub as well as mixdown to standard cassettes

- 4-track recorder with integrated two channel mixer
- Two 1/4-inch MIC/LINE inputs with trim control
- Extended dynamic range with Dolby B noise reduction
- 3-digit tape counter keeps track where you are on the tape
- Master level control for the entire mix, and the level sent to LINE OUT for stereo mixdown
- Track selector indicates which of the 4 tracks you're recording to
- SAFE selection keeps you from inadvertently recording over tracks you've recorded earlier
- Headphone jack for comfortable monitoring
- RCA output jacks for mixdown to cassette

PORTA 07 Ministudio

The PORTA 07 packs high-end features into a compact and economical package. Achieves great sound with high speed tape transport, high-low EQ and DBX noise reduction

- 4-track recorder with integrated four channel mixer
- Two 1/4-inch LINE inputs and two 1/4-inch MIC/LINE inputs with trim control
- Separate high and low EQ for each track provides 10dB of boost or cut
- dbx noise reduction for improved signal-to-noise ratio
- Punch-in/out manually or with optional RC-30 footswitch
- Effects send with stereo return can be applied in varying amounts to all four channels
- "Bounce or "ping pong" a submix of multiple mono or stereo tracks onto a single empty track, leaving the original submix tracks free to overdub new material onto. You can even add a "live" track to the submix while you're bouncing down, to squeeze in yet another track.

424 MKII Portastudio

The 424 is premium Portastudio that takes multitrack recording to the next level. Features superior audio quality, balanced XLR inputs, enhanced equalization and a big-studio style AUX section

All the features of the PORTA 07 *plus*—

- 4-track recorder with 8-input mixer (4 mono MIC/LINE inputs with 1/4-inch and balanced XLR jacks and 2 stereo inputs with 1/4" jacks.)
- Separate 3-band EQ section for each of the four mono channels with 10dB of boost or cut and sweepable midrange
- Auto Punch in/out with rehearsal, plus a Repeat switch lets you set up a tape loop that goes over the same area of a tape while you practice your punch-in/out and overdub moves—without committing a single note to tape
- Two independent dedicated AUX sends let you use more effects or use one as tape cue during tracking
- Dual-speeds, logic-controlled tape transport system improves tape handling and sound quality. Select 3-3/4 inch per second HIGH speed for the best possible recording quality or NORMAL 1-7/8 ips speed
- Monitor output makes it easy to connect an external monitor amplifier without repatching—at mixdown
- Tape DIRECT OUTS are provided for integration with external mixers.

MIDI Musicians Take Note—If you've got MIDI keyboards, drum machines and sound modules in your set up, you can exploit the power of "virtual tracking" with either the PORTA 07 or 424/464/488 Portastudio. You can use a MIDI synchronizer like the Tascam MTS-30 MIDI-Tape Synchronizer to record (stripe) a code onto track 4 (track 8 with the 488). Just select SYNC mode on the DBX switch and record the tone to tape. After striping the tape with FSK or Song Position Pointer information, all your MIDI instruments will faithfully follow the tape during playback and recording, even if you slow or speed the tape using the PITCH controls. The big benefit is that your MIDI tracks (called virtual tracks) don't actually have to be recorded until final mixdown, giving you lots more unused tracks to record on.

464 Portastudio

The functionality of a pro recording studio in a small, lightweight package, the 464 Portastudio is a "full-featured eight input, four-track cassette recorder complete with a 12x2 internal mixer and dual buss design that lets you create separate recording and cue mixes

All the features of the 424 MK II *plus*—

- 4-track recorder with 12-input mixer (4 mono MIC/LINE with 1/4-inch and balanced XLR jacks, 4 stereo 1/4" jack pairs
- Channels 1-4 offer High and Low shelving EQs and a sweepable Mid EQ. Tracks 5-6 and 6-7 have shelving EQ only, while 9-10, 11-12 are best used with input that has its own internal EQ.

488 MKII Portastudio

When 4 tracks are just not enough, then you need the perfect creative tool—the 488 MKII Portastudio. The most cost-effective 8-track recorder on the market, the 488 not only offers additional capacity but versatile capability and intuitive operation for easy capturing & manipulation of your ideas. Whether recording acoustic or electronic instruments or vocals, the 4-8 offers maximum creative freedom to produce your best work. With all the functionality of a professional studio, the 488 may be the ultimate demo recording machine.

All the features of the 464 MK II *plus*—

- Includes phantom power for use with high-quality condenser microphones
- Built-in mixer features low-noise circuitry, with 12 inputs and 2 group busses. There is a separate input for your stereo master recorder
- Each of the 8 main input channels includes individual 3-band equalizers. You get Hi and Low shelving EQs, plus a semi-parametric sweepable midrange EQ.
- Unique multi-mix mode with the capability of handling up to 20 inputs at mixdown.
- The only 8-track cassette that offers a servo controlled tape transport complete with electronic braking. Equipped with a high-performance Hysteresis Tension Servo Controlled (HTSC) tape transport, the 488 delivers better sound than the best 8-track reel-to-reel machines
- HTSC maintains precise and consistent tape tension from the beginning until the end of the tape. It actually dynamically adjusts the back tension on the tape as it moves from one end to the other, allowing precise locating capability

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 "chuffing" 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 produce—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 40Hz to 18kHz
- Covered in a non-slip rubber finish, the Monitor Two comes in a mirror imaged pair for mixing accuracy

TANNOY

PBM Series II

Reference Monitors

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

PBM 5 II

- Custom 5" injection-molded bass driver with a nitrile rubber surround for extended linearity and accurate low frequency reproduction. They are better damped for reduced distortion and exhibit more naturally open and detailed midrange
- Woofer blends seamlessly with the 1" polymide soft dome ferro-fluid cooled tweeter providing extended bandwidth for extremely precise sonically-balanced monitoring
- Designed for nearfield use, the PBM 5 II cabinets are produced from high density medite for minimal resonance and features an anti-diffraction radiused front baffle design

PBM 6.5 II

- Transportable and extremely powerful, the PBM 6.5 II is the ideal monitor for almost any project production environment
- 6.5" low frequency driver and 3/4" tweeter are fed by a completely redesigned hardwired hand selected crossover providing uncompromised detail, precise spectral resolution and flat response
- Fully radiused and ported cabinet design reduces resonance and diffraction while providing deep linear extended bass

PBM 8 II

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

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CARVER
CA-400/CA-900
Stereo Power Amplifiers

Designed from the ground up for fixed installation applications, the CA-400 and CA-900 are manufactured under the most stringent quality control procedures and are backed up with a full five year warranty covering all parts and labor

- 3-position barrier strip screw terminal inputs can be used with balanced or unbalanced lines
- Independent CH 1 & CH 2 level controls with 11 detented positions
- Dual mono mode for operating both channels with a single mono input
- Bridged mono mode for combining the power of both channels into a single higher powered channel
- Internally configurable for parallel mono mode, for single channel low impedance operation
- Internal jumpers to bypass Left and Right Level Controls
- Internal connection points for add-on accessories like the optional Balanced Transformer Kit
- Independent CH 1 and CH 2 speaker relays will instantaneously disconnect if fault conditions such as over temperature, short circuit or D C offset is detected
- Power Ready, Signal Present and Clip/Protect indicators

CA-400 features 130W per channel into 8 ohms
200W per channel into 4 ohms

CA-900 features 325W per channel into 8 ohms,
450W per channel into 4 ohms

Stewart
Power Amplifiers
PA-1000
PA-1400
PA-1800

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

PA-1000 weighs 9 lbs. is 15" deep and occupies one standard rack space. Delivers 1000 watts into 4Ω when bridged to mono

PA-1400 weighs 16 lbs. is 15" deep and takes 2 standard rack spaces. Delivers 1400 watts into 4Ω when bridged to mono

PA-1800 weighs 17 lbs., is 17" deep and takes two rack spaces. Delivers 1800 watts into 4Ω when bridged to mono

BGW
Performance Series Amplifiers

Performance Series 1
300 Watt Power Amplifier

- Measuring only 3.5 inches high and weighing 26 pounds, the Series 1 delivers more than 150 watts per channel
- Its welded steel chassis is unbelievably strong while a custom heat sink extension provides exceptional thermal capacity
- An internal fan provides quiet background noise levels for critical monitoring applications and when pushed hard the cooling system insures continuous cool operation even in the most demanding situations
- Active balanced inputs with both XLR and 1/4" phone jacks
- Supplied with quality 5-way binding posts for highly reliable speaker connection
- Front panel handles are reversible for either rack mount installation or easy handling
- LEDs are provided for signal presence and clip indication. The detented gain controls have large knobs for easy front panel adjustments

Performance Series 2
600-Watt Power Amplifier

- Same as above except the Series 2 weighs 32 pounds and delivers more than 300 watts per channel

Performance Series 4
1200-Watt Power Amplifier

- Same as above except the Series 4 weighs 53 pounds and delivers more than 600 watts per channel
- Has a switch selectable clipping eliminator that prevents damage to the speakers

SAMSON® MIXPAD 9
Ultra-Compact 9-Channel Audio Mixer

A remarkably compact 9-channel mixer, the MIXPAD 9 offers professional audio performance and a wide range of user-intensive features. It boasts low noise and distortion specifications, includes wide-range gain trim controls for both mic and line inputs and provides exceptionally low group delay over the full frequency bandwidth for a more transparent, open sound. It also has a very high slew rate—usually found only on larger, more expensive mixing consoles—allowing it to react very quickly to transients and maintain a crisp, articulate sound. It offers phantom power (48v) for use with condenser microphones and an in-line power supply eliminates magnetically-induced hum

- 3 mic/line inputs and 3 stereo channels (total 9 inputs)
- 2 auxiliary sends for effects and two Stereo returns
- Independent 2-band shelved EQ, pan control for mono channels and balance control for stereo channels
- Adjustable mic input trims allow use with a wide variety of mics
- Phantom powered XLR mic input connectors
- Peak LEDs for left and right main outputs
- Extremely durable, extruded aluminum chassis

MACKIE.
MICRO SERIES 1202-VLZ
12-Channel Ultra-Compact Mic/Line Mixer

Usually the performance and durability of smaller mixers drops in direct proportion to their price. Fortunately, Mackie's fanatical approach to pro sound engineering has resulted in the Micro Series 1202-VLZ, an affordable small mixer with studio specifications and rugged construction. It delivers no-compromise, non-stop, 24-hour-a-day professional duty in permanent PA applications, TV and radio stations, broadcast studios and editing suites—where nothing must ever go wrong.

- Working S/N ratio of 90dB, distortion below 0.025% across the entire audio spectrum and +28 dB balanced line drivers
- 4 mono channels with discrete, balanced balanced mic/line inputs and 4 stereo channels (12 inputs total)
- Line inputs and outputs work with any line level, from instrument level, to semi-pro -10dB, to professional +4dB.
- Switchable phantom-powered (48v) inputs for condenser mics
- Every input channel has a gain control, gain pot, low EQ at 80 Hz, high EQ at 12.5 kHz and two aux sends with 20dB gain
- Master section includes two stereo returns, headphone level control and metering
- Sealed rotary pots resist and other contaminants

NEW!

MS1402-VLZ
14 x 2 Compact Mic/Line Mixer

Mackie's fanatical engineers have done it again. Balanced inputs and outputs, 3-band EQ, AFL/PFL and deluxe tape monitor/Control Room feature. Nice long 60mm faders, six studio-quality mic preamps and extra Alt 3-4 stereo bus—in less than 1.3 square feet of space.

- Studio grade mic preamps (chs. 1-6) with high headroom, low noise and phantom power. Also incorporate low cut filters to cut mic handling thumps, pops and wind noise. Lets you safely use low shelving EQ on vocals
- Trim controls (ch. 1-6) with ultra wide range (+10 to -40dB) handle everything from hot digital multitrack feeds to whispering lead singers and older, low output keyboards
- Pan control with constant loudness and high L/R attenuation so you can pan hard left or right without bleed-through
- Two aux sends per channel with 15dB extra gain above Unity
- 60mm log-taper faders are accurate along their whole length of travel and employ a new long-wearing contact material for longer fader life & upes resistance to dust, smoke etc
- Control room/phone matrix adds incredible tape monitoring, mixdown and live sound versatility.
- Mute switch routes channel output to extra ALT 3-4 stereo bus. Use it for feeding multitrack recorder channels, creating a sub-group via control room/phones matrix, monitoring a signal before bringing it into the main mix or creating a "mix minus"
- Solid steel chassis instead of aluminum or plastic

The new MS-1202, 1402 and 1604 all include VLZ (Very Low Impedance) circuitry at critical signal path points. Developed for Mackie's acclaimed 8•Bus console series, VLZ effectively reduces thermal noise and minimizes crosstalk by raising current and decreasing resistance.

NEW!

CR-1604 VLZ
16-Channel Mic-Line Mixer

The hands-down choice for major touring groups, studio session players, as well as broadcast and sound contracting. The new CR-1604 VLZ features everything you would expect from a larger console, and then some! 24 usable line inputs with special headroom/ ultra-low noise Unityplus circuitry, seven AUX sends, 3-band EQ, constant power pan controls, 10-segment LED output metering and discrete front end phantom-powered mic inputs.

- Lowest noise and highest headroom (90 dB working S/N and 108 dB dynamic range). Many drummers consider it the only mixer capable of handling the attack and transients of acoustic and electronic drums
- Genuine studio-grade phantom powered, balanced input mic preamps on channels 1-6. All CR-1604 VLZ (and optional XLR1D for ten more) discrete input mic preamp stages incorporate four conjugate-pair, large-emitter geometry transistors. So, whether recording nature sound effects or heavy metal, miking flutes or kick drums, you get the quietest, cleanest results possible
- True 4-bus design with channel assigns to 1-2, 3-4 or main L-R
- 3-band EQ with mid-frequency sweep and low cut switch
- AFL/PFL solo and mute switches with overload and signal present indicators
- Rear panel features include insert points and 1/4-inch XLR connectors on every channel, as well as RCA tape inputs/outputs
- New, standard size channel trim pots are found at the top of each channel
- Rotary input/output "pod" allowing three different positions for set-up

TASCAM
M2600 MKII Series
16/24/32-Channel 8-Bus Mixers

LOW NOISE CIRCUITRY

- Combining completely redesigned low noise circuitry with Absolute Sound Transparency™ the M-2600 delivers high-quality, extremely clean sound. No matter how many times your signal goes through the M-2600, it won't be colored or altered. The signal remains as close to the original as possible. The only coloring you hear is what you add with creative EQ and your outboard signal processing gear
- Double reinforced grounding system eliminates any hum. World-class power supply provides higher voltage output for better headroom and higher S/N ratio

PREMIUM QUALITY MIC PRE-AMPS

- The M-2600's mic pre-amps yield an extremely low noise floor, enormous headroom and an extremely flat frequency response. It also increases gain control to an amazing 51dB. Plus, you get phantom power on each channel.
- Accepts balanced or unbalanced 1/4" inputs and low-impedance XLR jacks. Better still, the TRIM controls operate over a 51dB input range. For the hottest incoming signals, all it takes is a press of the -20 dB PAD button atop each channel strip to bring any signal down to manageable levels. Plug in anything: keyboards, guitars, basses, active or passive microphones, samplers and more.

THE BEST AUX SECTION IN THE BUSINESS

Versatile AUX section has 8 sends total, 2 in stereo. Send signal in stereo or mono, pre-or post-fader. Available all at once. Return signal through any of 6 stereo paths.

FLEXIBLE EQ SECTION

Bi-directional split EQ means you can use either or both EQ sections in the Monitor or Channel path, or defeat the effect altogether with one bypass button. Other comparably priced mixers will lock the shelving mix into the Monitor path only, limiting your EQ application.

ADVANCED SIGNAL ROUTING OPTIONS

Direct channel input switching. Assign to one of eight busses, direct to tape or disk, or to the master stereo bus. Because the group and direct-out jacks are one and the same, you can select either without repatching.

ERGONOMIC DESIGN

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

Panasonic
SV-3800/SV-4100
Professional DAT Recorders

Designed for professional applications, the SV-3800/SV-4100 have highly accurate and reliable transport systems with search speeds up to 400X normal and 20-bit D/A converters to satisfy the highest professional expectations both in terms of sound and functionality.

SV-3800 Features:

- Recording via analog inputs offers sampling rates of 44.1 or 48kHz. When recording through digital inputs, it automatically clocks to incoming frequencies of 32/44.1 or 48kHz
- XLR-balanced digital inputs/outputs plus consumer format coaxial and optical inputs/outputs. XLR-balanced analog stereo inputs/outputs. Output level is selectable between +4db and -10db. The input level is +4db
- Built-in shuttle wheel has two variable speed ranges: 3 to 15x in Play mode and 1/2 to 3x normal speed in Pause mode
- High speed transport enables searching up to 250x normal speed. Search up to 400x normal speed is possible once the tape has been scanned in Play, FF or REV mode. This ensures access to any point on a two-hour DAT in under 30 seconds.
- Ramped record mute and unmute with three seconds fade-in and five seconds fade-out provides automatic level changes at the start and end of a recording
- Comprehensive display includes program numbers, absolute time, program time, remaining time and Table of Contents.

SV-4100 Has all the features of the SV-3800 Plus—:
Offers enhanced performance required for professional production, broadcast and live-sound systems. Features such as instant start, external sync capability and enhanced system diagnostics make the SV-4100 the DAT quality standard.

FOSTEX
D-5
Digital Master Recorder

With professional features and a consumer price tag, the D-5 satisfies a lot of requirements. It records or playsback four hours of music, includes optical and digital input/output, and TOC functions that are as easy to use as a CD player. It's also equipped with basic pro features such as ID editing function, GPI and XLR connectors and 300X speed locate and search functions.

- Playback/record audio with 32/44.1/48 kHz sampling in SP (standard play) mode. Equipped with LP (long play) mode, it can play/record at 32 kHz up to 4 hrs. on a 120 minute cassette
- Analog interface includes switchable (+4dB/-10dB) balanced and unbalanced XLR inputs and outputs
- AES/EBU digital interface (XLR) for professional use and optical (S/PDIF) input/output for consumer/semi-pro connections
- 5-pin GPI input connector allows Play, Stop & S-ID search to be implemented through commands from an external source
- Records CD-Q code sync ID, enabling precise music start up. When performing digital signal transfer from CD through it's optical input, the D5 precisely records S-IDs according to the track number and index information of the CD-Q code. So even if there is a break in the middle of a song or there isn't a non-recorded section between two songs, you can locate to the S-ID location (eg. beginning of song) precisely.

D-10
Digital Master Recorder

- Switchable 44.1 and 48kHz sampling frequencies
- Analog interface includes switchable XLR-balanced (+4dB) and unbalanced RCA (-10dB) inputs and outputs
- Equipped with and XLR-balanced AES/EBU digital interface and optical (S/PDIF) input/output conforming to IEC consumer
- Built-in 8MB RAM (4 MB x 2) offers instant start as well as scrubbing at 1m/second accuracy
- Advanced jog/shuttle for precision cueing and monitoring.
- Auto Cue provides automatic locating to the exact start of audio modulation during ID search and tape loading
- Universal GPI input/output enables easy and fast assemble editing based on A-time between a pair of D-10s
- Switchable 2-position reference level: +12dB/+20dB
- Start and Skip IDs as well as up to 799 P-NOs can be recorded and played back.
- 10-digit key-pad lets you store and recall 100 cue points
- Continuous or peak reading level meters can display available headroom with an accuracy of ±0.1dB
- Reads and displays A-time or Pro R-time; also provides PCM monitoring
- Optional 8333 interface card adds timecode and RS-422 (X 2) functionality to the D-10:
  Reads an external timecode and records on the sub-code area
  –Reproduces and outputs the timecode from sub-code area
  –Switchable RS-422 and ESbus protocols. Using the ESbus, up to 16 D-10s can be daisy chained

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B&H
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TASCAM
DA-P1 Portable DAT Recorder

- Rotary two head design and two direct drive motors for the best transport in its class
- XLR-balanced mic/line inputs (with phantom power) accept signal levels from -60dB to +4dB
- Analog line inputs & outputs (unbalanced) plus S/PDIF (RCA) digital inputs and outputs enable direct digital transfers
- Uses next generation A/D & D/A converters for amazing quality
- Supports 32/44.1/48kHz sample rates & SCMS-free recording
- Included in its design is a MIC limiter and 20dB pad to achieve the best possible sound without outside disturbances
- TRS jack & level control to monitor sound with any headphones
- Built tough, the DA-P1 is housed in a solid, well-constructed hard case. It includes a shoulder belt, AC adapter & 1 battery

SONY
TCD-D8
DAT Walkman Player/Recorder

- Long Play (LP) mode allows 4 hours of record/playback of 12-bit audio on a single DAT cassette
- Equipped with digital coaxial and optical input connector. Also has analog Mic and Line inputs
- High-Speed Automatic Music Sensor search function finds & plays tracks at 4x forward or back up to 99 tracks, all at 100x normal speed
- Digital Volume Limiter System increases listening comfort & sound quality by automatically adjusting for sudden level changes
- Two-speed cue-review lets you hear sound while player is in fast-wind modes: up to 3x or 25x normal speed
- LCD display with backlit windows clearly shows recording level, track number, operating status and a-segment battery indicator, even in low ambient light conditions
- Optional RM-D3K System Adapter Kit for complete digital interface. It has input/output connectors for both the optical cable & the coaxial cable. Also includes a wireless remote control

TCD-D10 PRO II
Portable DAT Recorder

- Has balanced XLR input (switchable mic (-60dB) or line (+4dB) inputs. A 12-pin digital connector provides interfacing with AES/EBU digital signals of 32/44.1/48.0 kHz sampling rates
- Comprehensive self-diagnostics function constantly monitors the rotation of the head drum, capstan and reels. The tape transport mode and load/unload time are continuously checked as well
- 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 start IDs is 100X normal speed
- 20-segment digital peak level meters include overload indicators. Closely tracks input signal for accurate level indications
- During playback, the date and time of recording is displayed
- Has a record-level limiter with a fast attack time of 300ms. Mic attenuator prevents distortion by suppressing signal level 20 dB
- Immediate playback is possible through a built-in speaker
- Supplied wired remote controller also accepts a mic holder. Two mic stand screw adapters are also supplied
- Supplied NP-22H rechargeable battery provides 1.5 hours of operation. Optional NPA-D1H battery adapter enables 1 hour on AA batt. Supplied ACP-88 AC adapter operates on 100-240v 50/60 Hz

HHB
PORTADAT
PDR1000/PDR1000TC
Professional Portable DAT Recorders

- Direct drive transport with 4 heads for confidence monitoring
- Balanced XLR mic and line analog inputs and RCA analog line outputs. Digital inputs and outputs include -wire S/PDIF consumer (RCA) and AES/EBU-balanced XLR
- Left/Right channel mic input attenuation selects (0dB/-30dB)
- 48v phantom power, built-in limiter & internal monitor speaker
- Illuminated LCD display shows clock and sound-level peak level metering, margin display, battery status, ID number, tape source status and machine status
- Supplied Nickel Metal Hydride rechargeable battery powers the PDR1000 for two hours. The battery has no "memory effect" and is charged in two hours with the supplied AC Adapter/charger

PDR1000TC Additional Features:
In addition to all the features of the PDR1000 recorder, the PDR1000TC is equipped to record, generate and reference to time code in all existing international standards
- All standard SMPTE/EBU time codes are supported, including 24, 25, 29.97 (drop frame and non-drop frame) and 30 fps
- External synchronization to video field sync and word sync

Roland® DM-800
Digital Audio Workstation

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

POWERFUL EDITING
- Time compression/pitch compression
- Completely non-destructive cutting, erasing, copying
- Very fast zooming for music or ambience editing
- Scrub preview and preview to from and thru
- Six levels of waveform zoom
- Optional RS-422 interface (D10-800D) for 9 pin control from video editor

FLEXIBLE I/O STRUCTURE
- Full digital patch bay
- Stereo AUX send/buss
- Two stereo AUX returns
- Direct channel cuts
- Digital stereo input and two digital stereo outputs
- Four balanced analog inputs with gain controls and four balanced analog outputs with trim for +4 levels

FULL AUTOMATION
- Dynamic real-time automation of level, pan, 2-band EQ including frequency select, boost and cut
- Microscopic editing of automation data
- Phase level editing of level, crossfade and fade in/out

TRIGGER FEATURES:
- Trigger mode to play any combination of 8 tracks for vocal fly ins or sound effects placements
- Advanced trigger mode for live operation with preset or dial up cue of phrases to be played one after another

MIDI FEATURES:
- MIDI machine control
- Internal tempo map
- Accurate editing by bars and beats, sub-beats
- MIDI clock and song position pointer output
- 8 MIDI triggers for instant phrase playback
- MIDI trigger of record and punch in/out
- Tempo maps from external sequences, MIDI or tap input

ACCURATE SYNCHRONIZATION
- Frame accurate sync to any time code
- Locks to MTC
- Generates and reads all types of SMPTE including 24, 25, 29.97 (Drop/non-drop) and 30 frames per second
- Incoming SMPTE reshaped to output jack

RECORDING OPTIONS
- Records to standard SCSI hard drives
- Up to 24 hours recording time possible
- Uses Magneto Optical or Syquest drives for fast project changeovers
- Optional internal 2.5" Drives for portable operation

PROJECT CATALOGING
- Up to 150 projects on line at once
- Easy cataloging of sound effects and projects
- Easy transfer of sounds from one project to another
- File compatible with DM-80

HIGH QUALITY SOUND
- Sampling rates of 48/44.1/32 kHz
- 18-Bit A/D and D/A with 128 and 8 times oversampling
- 24-bit internal processing

VIDEO OUT
- Composite, S-video, digital RGB output
- All track overview with infinite level of project zoom
- Views of phrase and waveform editing
- Very accurate level mMeters
- Track status and time location

ALESIS adat xt
8-Track Digital Audio Recorder

An incredibly affordable tool, the new ADAT-XT sets the standard in modular digital multitrack recording. With new features & enhanced capabilities, the ADAT-XT 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:
- Incorporates ultra-high fidelity 18-bit 128X oversampling A/D converters which provide better-than-CD audio quality
- For outputs, the D/A converters provide 20-bit 8x oversampling performance for a flatter frequency spectrum, improved phase response and much less low amplitude distortion
- Frequency response is 20 Hz to 20kHz +0.5dB. S/N ratio is greater than 92dB, crosstalk between channels is better than -90dB @ 1kHz

Flexible Inputs and Outputs:
- Servo-balanced 56-pin ELCD connector operates at +4dB for interfacing with consoles with +4 dB balanced/unbalanced inputs/outputs
- Also includes unbalanced -10dB inputs/outputs (phono connectors)
- Has an electronic patch bay built-in so 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 combined with the ADAT Synchronization Interface make it completely compatible with any ADAT-format recorder or other devices that use Alesis proprietary digital protocol

Digital Editor:
- 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
- Use two or more ADAT-XTs and the Tape Offset feature lets you copy and paste not only from track to track, but from location to location. Tape Offset assimilates the elements of a project with a minimum of repetitive over cutting. It changes the relative tape position of a slave XT to its master, so you can "fly" audio to different locations on each tape
- 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 pushes the beat). In recordings with multiple microphones, you can fine-tune-align each track, precisely compensating for the spacing between mics with accuracy to 0.0001 seconds

Intelligent Transport:
- Rewinds and fast-forwards up to 4X 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

Onboard Autolocator with Auto Record:
- Onboard 10-point autolocate system provides quick access to multiple tape locations. Four specialized locate points make your recording sessions quicker and easier
- Auto Play automatically enters Play the moment any autolocation point is reached. 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
- Rehearse Mode allows you to enter or exit record modes without actually laying tracks to tape
- To record on the fly, you can ever use the individual Record Enable buttons to punch in and out of tracks
- Includes remote control with transport and locate functions, offers a footswitch jack for hands free punch-in

Optional Accessories:
- BRC Master Remote Control lets you command up to 128 tracks from a single location with 460 nameable locate points. SMPTE & MIDI synchronization & extensive digital editing power
- AI-1 Digital Interface offers sample rate and digital format conversion between the ADAT-XT'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-XT

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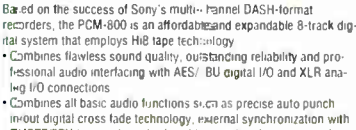
Digital Multi-Track Recorders
TASCAM

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 2 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 (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. The frequency response is flat from 20Hz to 20KHz while the dynamic range exceeds 92dB
- Execute seamless Punch-ins and Punch-outs. This feature offers programmable digital crossfades, as well as the ability to insert new material accurately into tight spots. You can even delay individual tracks, whether you want to generate special effects or compensate for poor timing

FOSTEX RD-8

Based on the S-VHS format, the RD-8 is designed for the home project or professional recording studio. Features include up to 40 minutes of recording time on a single tape, noiseless punch-in/out, selectable sampling frequencies of 44.1 and 48kHz and pitch and track delay controls. Systems are expandable from 8 to 128 tracks and there are a wide variety of options available.
- Full transport control is available via the RS-422 port, providing full control right from your video bay. The RD-8 records at either 44.1 or 48KHz and will perform Pull-Up and Pull-Down functions for film/video transfers. The Track Slip feature helps maintain perfect sound-to-picture sync and the 8-Channel Optical Digital Interface keeps you in the digital domain
- The S-VHS transport in the RD-8 was selected because of its proven reliability, rugged construction and superb tape handling capabilities. 8 tracks on S-VHS tape allow much wider track widths than is possible on other digital tape formats
- With its LCD and 10-digit display panel, the RD-8 is remarkably easy to control. You can readily access 100 locate points, and cross-fade time is fully controllable in machine to machine editing. Table of Contents data can be recorded on tape
- 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

SONY
PCM-800



Based on the success of Sony's multi-channel DASH-format recorders, the PCM-800 is an affordable and expandable 8-track digital system that employs Hi8 tape technology
- Combines flawless sound quality, outstanding reliability and professional audio interfacing with AES/EBU digital I/O and XLR analog I/O connections
- Combines all basic audio functions such as precise auto punch in/out, digital cross fade technology, external synchronization with SMPTE/EBU time code and selectable sampling frequencies of 44.1 and 48kHz
- Also features a shuttle dial for precise tape control, variable speed playback of 6% in 0.1% increments and a flat frequency response from 20Hz to 20kHz
- Up to 16 PCM-800's can be operated in perfect sync with optional RCC-S1 sync cables, providing up to 128 channels of digital audio recording and reproduction
- Optional DABK-801 Sync Board provides SMPTE/EBU time code generation and chase synchronization. It can be locked to the incoming time code with subframe accurate offset, which is ideal for audio-follow-video applications
- The DABK-801 also provides complete video synchronization to external video reference signal
- Optional RM-D800 provides comprehensive remote control over all functions of the PCM-800. The RM-D800 can control up to six units for up to 48 channels of digital audio.

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World Radio History

—FROM PAGE 76, KEITH BARR

ample. It costs so much to develop a foundry to produce circuits—a billion dollars is a little beyond our budget right now! But the more we purchase from foundries, the more designs we get involved with and the more we know about the process. So if a semiconductor division can become involved in making parts for a commercial marketplace, and become more knowledgeable as a design group with the available techniques, we'll be able to contribute more to the audio side. Which, after all, is relatively small compared to the semiconductor industry.

It's often said that no other company but Yamaha could have made the 02R for the price they're offering it, because the company has its own IC foundry.

I suppose that may have been true a few years ago, but it will not be the case in five years. Many companies can produce integrated circuits, some with greater efficiency than others, but I want Alesis to be the prominent company in the audio industry in terms of IC development. I want our capability to be the very best among all audio related companies.

I can give you a notion of what is about to come down the line, if not now, then at least in five years. Once you get past all the automated faders, fancy display and the interface, the actual cost of the silicon that processes the signals to do multichannel EQ, dynamics, compression/expansion—with a great degree of control over every variable—is trivial. We're talking $4 to process 64 inputs, with full compression and gating, RMS detection, 4- to 6-band EQ on every channel.

But the cost of developing a $4 IC that does all that is extremely high.

It's a hell of a lot less than designing a multichannel board with metal work, circuit cards and ribbon cables.

I couldn't have made that statement ten years ago. Technology has changed so remarkably; it's going to have a tremendous impact on the recording studio of the future.

What will cost even more money is developing a suitable user interface.

Well, yes, it's the new interface and the great display that will cost the money. That's my point. If the user could tolerate a single motorized fader and maybe a monitor facility that plugged into his TV, you could play with some software burned in an EPROM to guide you through all the different variables of this virtual mixer. The silicon to do that amount of processing is only a few dollars. All the cost of a digital mixer is in the goodies on the front panel. The IC that's actually doing all the work has tremendous value, and almost no cost.

Is there a point at which flexibility vs. applicability coincides? You can build an ASIC that lets you map, let's say, a 12-into-4 console. But if you want this to be versatile enough to handle maybe 24 channels of multichannel mixing, will that also be possible in that same $4 circuit? Won't that custom IC be designed to offer a narrow band of functionality?

You've put your finger on a very important part of the design process for a digital system: expandability vs. cost. Where do you draw the limits? Where do you put up the barriers on the design to contain it, and what price will you pay later on when you try to apply it to other possible products? That set of trade-offs is fundamental on the outside of any design project.

When you intervene in the design process to manipulate devices at the transistor level, whole new levels of cost and activity can be achieved.

On one hand, if you limit it, you simplify the project; on the other hand, if you leave all the possibilities open, then you're spending all your time making sure that your efforts in the development of the chip allow for that future expandability. And that's real time-consuming.

So you tread a middle path?

Today, a lot of people are working toward general-purpose architectures that could be applicable to a wide range of functions without trying to identify what all of those future possibilities would be. Every time something new comes out, there's a whole new set of possibilities you never knew of.

But an assignable mixer can be virtually anything we might imagine. Do you have designers at Alesis who are particularly good at envisioning alternate ways of creating such an interface?

We like to think so. We're also very interested in electromechanical devices—sounds dumb, doesn't it, kind of steam-driven? We make a laser-trimmed equalizer. We took great pride in producing the device that does the laser trimming, working with optics, mechanics and software to discover new ways of doing things that aren't well-known.

The "doing of it" is as important to you as any end result?

It's fundamental. Hopefully we'll be bringing some electromechanical concepts from our labs to that user interface, to make whatever entries we put forward in a digital mixer arena.

Do you tend to look at industries outside of ours, to maybe see what other people are developing in terms of head-up displays, for example, or ways of presenting information?

Generally, we come from the other direction. Instead of looking at very expensive experimental or military macro-concepts, we're much more interested in production techniques for producing unusual bits of circuitry on a surface of resistive material, a semiconductor process or assembly technique. We see how we can arrange them to bring something of value, as opposed to looking at larger, high-tech, experimental, expensive contraptions.

When you're looking at the possibilities of what you will need to build, do you consider alternate ways of achieving the function?

I have found that by shutting out the world and trying to develop something in the vacuum, the results can be very beneficial. Every time I look at how other people do things, my brain is adversely influenced; somehow I can't shake my thinking from those examples I've been exposed to. Only by shutting them out and clearing the slate can I come up with something new and different.

I'm sure that when Edison came up with the lightbulb, there were a lot of people working hard on a new and better gas lamp. ■

Mel Lambert currently heads up Media &Marketing, a consulting service for pro audio firms and facilities.

World Radio History

Dreamhire

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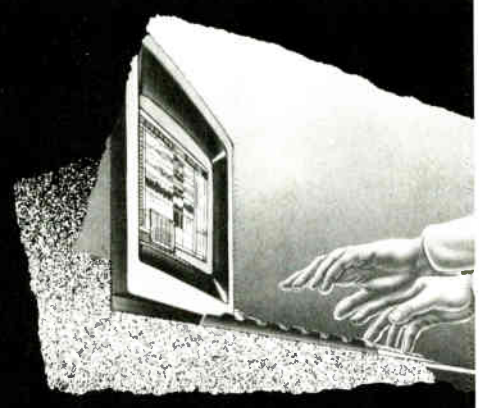

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"se habla español"

—FROM PAGE 20, I'M RUBBER, YOU'RE GLUE

now hear the freeway inside my home at four in the morning, and the only work that they have done so far is fell some trees.

Most houses get an "acoustic wall" when the state noisifies its highways, but not us. You see, we have spent too much money on our houses, so there are not enough of them per running feet of freeway to qualify, though the state admits that the noise level is far beyond the allowed maximum. Nice. We have been fighting this for more than a year.

And this, of course, brings us directly to cars. Cars use much more gas than they need to, pollute more than they have to, go much slower and run much hotter than needed, all because of *mufflers*! Mufflers are totally stupid things that every race car in the world does nicely without. Every performance modification that can be done to an engine yields a radical additional improvement if you drop the muffler. Mufflers create back pressure, which dramatically interferes with the natural breathing of an internal combustion engine and causes serious decreases in both performance and gas mileage!

Computer-Assisted Active Noise Cancellation is the answer (and no, I don't have a product like this on the way).

Oops, I had better talk about studios; this is *Mix*, after all. I already touched on this. We want our mixes to come straight at us, hit out ears, move on and *not come back for a rerun*. We don't want low-frequency energy collecting in the dark corners, brooding and breeding powerful but evasive specters (unless you are Phil) that eventually, after ten milliseconds or so, spring their maniacal acoustic attacks on us.

PART THE SEA

What do these things have in common? Well, until now, these and all other noise problems have been dealt with using stone- and wood-age technology. Every one of these problems is being handled *mechanically*; using some structure to reflect, break up, trap or ab-

World Radio History

sorb the offending acoustic energy; they convert it to heat. Amusing, laughable, sad. Soft, fuzzy stuff for high frequencies, and big, heavy, complex, expensive stuff for lows. Since the dawn of time! What do you think those giant 150-pound tapestries on ancient castle walls are for, anyway?

Meanwhile the "rubber and glue" response is handed down from generation to generation by our children, and we keep missing the point. Well, miss no more. Yet again, computers have come to the rescue and dragged us all, screaming and kicking, out of the acoustic dark ages. And that children's saying is the model.

Active noise cancellation can't be much more than a cool set of Bose or Sennheiser earphones without a healthy computer getting involved. And as nice as these cans are (and they are), they are not the real answer for the larger problems detailed above. Computer-Assisted Active Noise Cancellation is the answer (and no, I don't have a product like this on the way).

Okay, back to cars. Throw out the entire muffler. Let the car exhaust system be straight, total free-flowing, and stick a little box on the end, still with no restrictions. Put a couple of high-temperature metal diaphragm drivers in the box, a power amp, a microphone in the exhaust system at the very front of the box, and a computer to trim it all up properly and re-inject a perfect polarity-reversed acoustic copy of the exhaust noise. What do you get? An ultra-high-performance system, dramatic increase in both horsepower *and* gas mileage, smoother running, no more hot summer vapor locks, and *no noise*! Actually, it turns out that by canceling the pressure fronts of the exhaust pulses within the exhaust system itself, you can tune it to deliver *more* horsepower, over a much broader range, than even short straight racing pipes can deliver. And you can change the tuning, performance curves, and even the sound, with a push of a button. Feel like a Ferrari today? Push the Ferrari button. Feel like a Caddy? Stay home.

The studio application is self-evident. Instead of all that trapping, all that bent wood, sand-filled walls, floating floors, diffusion clouds and other stuff, you install an active noise-cancellation system. A few hidden mics, a computer and a few drivers in the corners and rear walls. A new control panel on the console allows you to continuously trim the room with the turn of a knob, from live to dead. Or change the room to match other recording environments: other studios you have liked in the past, live venues, outside, anything! This is the future of dealing with noise pollution.

And my freeway problem? When we all first sat around and thought of every theoretical solution, active noise-cancellation arrays came up but were, of course, not feasible at the time. For a problem of this magnitude, they still are, but with faster and faster computers, the day will come when it *is* realistic to attack broad outdoor noise pollution in this way. I just wish it would get to that point next Tuesday.

Noise pollution simply isn't going to stop. Oh, contrail. More planes will fly over your pool, more traffic will drive around your pool, more people will play and scream in your neighbor's pool. Pizza parlors will still generate uncomfortable Saturday-night acoustic levels. Trains and planes will still generate mind-numbing drones. But we will soon be able to *undo* it before it gets to our poor, beat-up old ears. Just think: The next time you say something really stupid, you can actually take it back if you are really, really fast. ■

SSC is strongly in favor of the Silence of the Land, and is even building a noise-cancellation exhaust system for his Harley.

M-1

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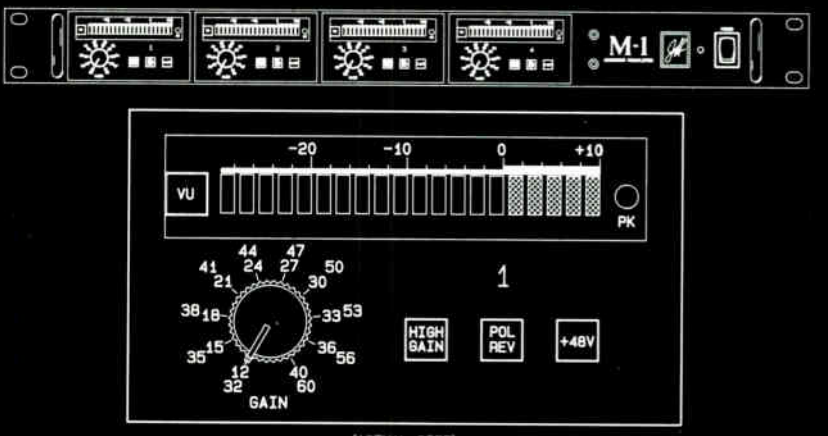

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Boxing Gandhis recorded their new album for Atlantic at Weir Brothers Recording in North Hollywood, Calif. Bandmember David Darling (L) produced, and Tom Weir engineered.

—FROM PAGE 215, SESSIONS & STUDIO NEWS

Niebank produced, and Niebank, **Ken Hutton** and **Carl Meadows** enginered. **Catt Gravitt** was also in the studio, tracking for the Almo Sounds label with producer **Garth Fundis** and engineers **Dave Sinko** and Meadows...**Motorcaster** tracked for Interscope in Studio C at Ardent (Memphis, TN) with producer/engineer **David Bianco** and assistant **Erik Flettrich**...At Miami's **Criteria Recording Studios**, **Aerosmith** began cutting live tracks for their next Columbia LP. Producer **Glen Ballard** was at the reins with engineers **Chris Fogel**, **Francis Buckley** and staffer **Keith Rose**. Also, the studio recently purchased a **Studer D827-MCH** digital 48-track...Fort Lauderdale-based **Artisan Recorders'** Mobile Red was onsite at the Biltmore Hotel in Coral Gables, FL, recording **Jon Secada** performing with members of the **University of Miami Jazz Vocal Ensemble**. **Eric Schilling** engineered the 40-track digital recording with assistance from Artisan's **Peter Yianilos**...

STUDIO NEWS

Premiere Los Angeles facility **The Village Recorder** recently installed a **Neve VRP72** with an 8-bus surround sound film mix module. Other new equipment includes two **Lexicon 480Ls**, **Eventide H4000** and **H3500** processors, and an **Intelix Studio Psychologist** headphone mixing system...**Saturn Sound** (Los Angeles) installed a **Euphonix CS2000** in its recently remodeled studio. **Sony Music Studios** in New York also installed a **CS2000** in its new post-production suite...**Makin' Music Studio** recently opened on Music Row in Nashville. Equipped with a **Mackie 32x8** and four **Tascam DA-88s**, the studio offers demo and master recording and in-house production...**K.K. Proffitt** announced that Music City MIDI (Nashville) opened a new divison, **The Proffitt Center**, which offers digital audio editing, archiving, post, multimedia audio production services, sound design and original music scoring for games and presentations. .New studio **2dogs Digital Audio** in Davenport, IA, opened with the state's first **Studer Dyaxis II** with Multidesk. Other initial purchases included a **TC Electronic M5000** and **Genelec** monitors ..**Baron and Baron Productions** opened a new, enlarged facility in New York City, boasting a bigger music room replete with vintage synths and current MIDI gear. Two digital edit suites feature the first **Studer Dyaxis Post:Trio** in NYC...**Immortal Productions** moved (to 308 S. Locust St., Canal Fulton, OH 44614; phone 330/854-8000, fax 330/854-1862) and added new services and gear including a **Pro Tools** system. ■

World Radio History

—FROM PAGE 183, YES, MASTER

subject. Among all of the esoteric analog-to-digital 0VU matching arguments, the truth is simply: as loud as possible. There is no point wasting resolution and S/N ratio to keep your DAT at -12 or -18 dB, particularly for CD-R/CD. Headroom is a consideration, but with many programs there may not be more than 3 dB of headroom, anyway. Watch the meters. We are trying to avoid having a CD that plays back at a level that's too soft. The popular music market is especially competitive, and anything you can do to be heard more than your neighbor is going to have an impact on the success of the project. In CD prep, the levels may be adjusted, if you specify, but that doesn't make up for lost information/resolution in the mixing stage.

Tones on DAT are almost useless. The level issue is irrelevant, but tones may indicate some phase or balance problems. Very often, it is unfixable at the mastering stage but can help diagnose problems in the original studio.

Ironically, what's more important than tones on DAT tapes is the practice of putting a minute or two of digital silence on the head of your DAT tape before your program material begins. This accomplishes two things: 1) It puts a protective area in front of the audio data. Sometimes a dirty or misadjusted DAT deck will munch or damage the tape, and when this occurs, it's most likely when the tape is first placed into a DAT transport for playback. 2) Tape dropouts most frequently occur at the head of the tape, where the tape is physically stressed by loading and unloading operations and any dirt in the transport can be picked up by the first few seconds of tape, so this is not a good place for your music to be. With these things in mind, if your music starts at the 00:01:00 or 00:02:00-minute mark, you have an additional cushion of safety to keep your precious audio creations sounding their best.

IN GOOD TIME

It is incredible to me that timings are so often omitted. In such a time-oriented business, they are essential. Often a client will estimate a timing that deviates by minutes from the truth, when we need it accurate to the second! For cassette, it is essential to have accurate side times, making, if possible, the A-side longer than the B-side.

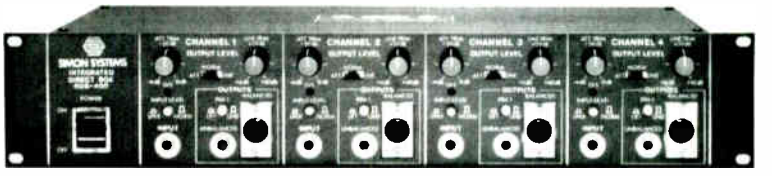
When reading DAT A-Time, accurate readings are very important. Program lengths should be taken from the very first sound to the very last sound, including any possible background noises or reverb decay. (This may require raising your monitor level to catch the final wisps of decaying signal without truncating anything.) Accurate PNO placing helps with this process. When I see DAT documentation indicating program #1 starting at 00:00, I know it's one to check. It is impossible to start DAT programs at the exact beginning of a tape, and as I mentioned earlier, this practice is inadvisable.

In the interests of efficiency, and being aware of full hub/empty hub torque variance, which will confuse a pinch-wheel timer (studio engineers are used to doing it one way only), some mastering engineers will make an initial visual assessment of A B-side splits by winding to even-pack on the two reels, then choosing an appropriate and logical split from there. This applies really only to spoken-word masters. I once had a project that had tape of varying thicknesses edited in the program, (something like 996 and 967 mixed), and this caused ten minutes of error on the B-side! It was fixed, but it caused some initial anxiety!

BACK UP

Occasionally a backup copy must be used. Make sure that it is exactly the

SIMPLY THE BEST!



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MIX

same as the original and has all of the same attributes as discussed above. In the rare instance that an analog cassette has to be used as a master, please remove the record-enable tabs. This is a good habit to develop for all tapes, including DAT.

YES, MASTER...

I know that in the heat of completing a mix and getting the project off by courier in time, these details may seem nothing more than an annoyance. The main thing is that they avoid the ambiguity that can occur later, with its associated costs and delays. It also avoids the potential embarrassment of having to explain to your client why it took two hours to master a 30-minute program because of something you omitted, or did not know...

This is presented as insight and food for thought based on my experience. Due to many varying factors, it would be good practice to contact the intended duplication facility for precise details of how they require masters to be prepared. ■

Nyk Fry has had a varied and international career as a studio engineer, session musician and composer. Originally from Surrey, England, Fry is now a mastering engineer for Sound Concepts (Vineyard, Utah), a duplication and fulfillment facility.

TOO SCARED TO ASK?

In case you are one of the many who have vowed never to read an instruction manual, here is the key information you'll need to help a mastering engineer in the preparation of DATs, with a summary of the most common features of DAT subcode:

• **A-TIME** is automatically encoded as you record, provided that you have rewound completely if it's a new tape. If you are "picking up" in the middle of a tape, start recording from the end of the last track, making sure that there is recorded and displayed A-Time on the tape.

It is always a good practice to record, say, ten seconds of extra silence with A-Time after the end of the final track to allow easier pickup later. A-Time is, of course, not to be confused with SMPTE or other sync codes.

• **IDs** can be placed either automatically or manually and either from record or from playback. From playback, enter Start ID mode and press ID Write at the desired point. If you are in Auto mode, the ID will not write until signal at -60 dB or above is detected; otherwise, the ID will be written where you put it. If you get it wrong or change your mind, just go a little past the offending point and press ID Erase; the machine will reverse to the last ID and erase it. Some practice watching the displayed A-Time (which is now so usefully encoded) will allow you to get impressively accurate.

Many machines now have ID shuttle features for relocating IDs. During record, the features are similar, but experimentation to get familiar with your particular DAT machine is very important. Every machine is slightly different, even within the same model and even if you have had the machine calibrated.

• **RENUMBER.** If you record out of sequence, the machine may put anonymous IDs or a succession of #1 PNOs on your tape. Sometimes the DAT will get a little confused during frantic mix/erase/mix sessions, even if you do not record out of sequence. By Renumbering, you can ensure that the correct PNOs are present for mastering. There are various modes of Renumber on different machines, so check that you do not activate a routine that could prove disastrous, such as Shift-Renumber.

• **END MARK** is perhaps the most ignored, although useful, DAT function. To mark the end of your program, find the last second of silence after the last signal, then pause. Insert the End Mark, usually from Record Pause mode. The machine will then write the End Mark, which is removable.

—*Nyk Fry*

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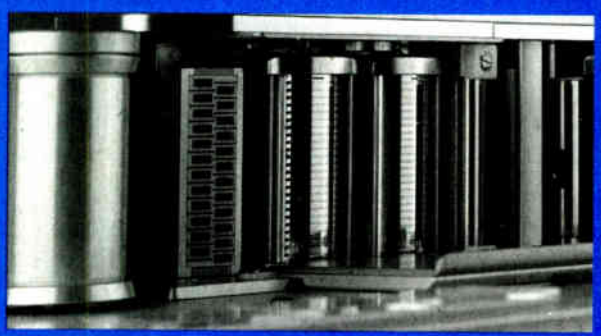

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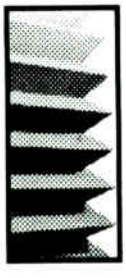

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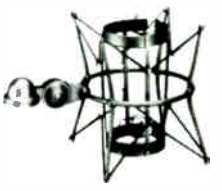

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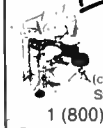

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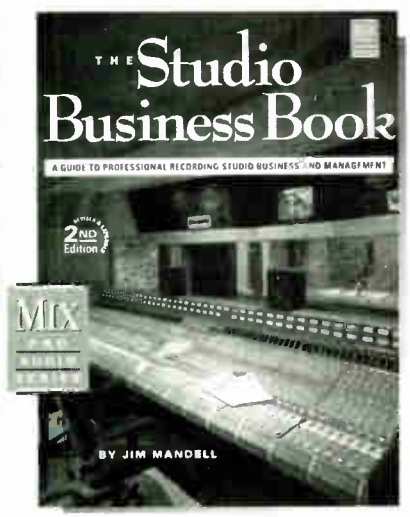

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FEEDBACK

CADAC ON BROADWAY

As one of Broadway's leading sound companies, ProMix was glad to see the attention theatrical sound reinforcement received in Eric Rudolph's article, "The State of the Art in Broadway Sound" (February, 1996). The consoles and automation systems mentioned in the article are all fine pieces of equipment with valuable features. The article did, however, leave the wrong impression about the cost of Cadac consoles, their features and their role on Broadway.

Broadway is cost-conscious, yet Cadac's J-type console is a standard choice on Broadway. It is reasonable in price as well as more fully featured than many of the consoles mentioned in the article. Clearly, the reason the Cadac is on "nine out of ten" Broadway shows, as the article states, is because it delivers such high quality sound for an affordable price.

The $300,000 price mentioned in the article could only be for Cadac's top-of-the-line board, the Concert, a spectacular board that is not usually marketed for Broadway use. Its price is admittedly steep for Broadway—and it is rather overqualified for a standard musical. For special events and for permanent installations where multiple, heavily cued shows must be at the engineer's fingertips at a moment's notice, it can't be matched.

As to design and features, some confusion may lie in the fact that Cadacs are in a sense custom-designed. Each designer may specify the particular modules and faders to be put in the frame for any given show. Peter Fitzgerald is quoted as saying that even the latest Cadacs are limited to VCA automation. This is not the case. Motor faders have been available since January of 1989. Nor is the Uptown system's ability to release motor faders from automatic control when touched unique. Rather, it is a standard feature of all such systems, including Cadac's. Fitzgerald also says "cues are set three minutes apart, which is a standard format for musicals." Many shows have cues at much tighter intervals. The Cadac easily accommodates this as it is capable of recalling cues at ½-second intervals. Additionally, the claim that the Midas XL3 with Uptown automates "every single thing" is misleading. While Uptown automation is impressive, it cannot perform many of the functions a fully automated J-type can. In addition to standard automation features and motorized faders, for instance, Cadacs can automate VCA and group assignments, which the Uptown cannot.

The Cadac J-type has an enviable history on Broadway, performing night after night, year after year with quality and clarity. User feedback on Cadac boards has been uniformly enthusiastic. The Cadac J-type, rather than the Crest console cited in the article, has been specified for Tony Meola's system for *The King and I*.

As ProMix represents Cadac in the United States, I wanted to clarify some of these issues—and also to herald the arrival of Cadac's F-type console due out this spring. The F-type will further ensure Cadac's place on Broadway.

Lewis Mead
President, ProMix Inc.
Mt. Vernon, N.Y.

SAGE ADVICE AND A FEW CORRECTIONS

I really enjoyed Jay Gallagher's interview with Cosimo Matassa in the March 1996 issue. Cosimo's comment "Studios don't make records. People make records," should be written on the walls of control rooms and music/pro audio stores everywhere. Too often, we forget that racks of outboard gear, either new or vintage, will not save a bad song or mediocre arrangement. The music must be there first.

The unnamed man in Chicago that Cosimo referred to by his accomplishments (first to use reverb theatrically, on The Harmonicats' "Peg O' My Heart") was Milton T. "Bill" Putnam. Bill was the founder of both United and Western studios (now Ocean Way) in Hollywood, and Universal Audio, which later became UREI. Larry Blakely wrote an excellent multipart article on Bill Putnam that appeared in *Mix* in 1983.

Paul McManus
San Diego, Calif.

THE FEW, THE PROUD, THE MD SUPPORTERS

This is in response to Stephen St.Croix's "Fast Lane" column in the April '95 issue, at the end of which he criticizes MiniDisc. I use MD recorders in my studio, and as far as I'm concerned, they sound just as good as CDs.

I challenge St.Croix to copy a CD to MD and tell me he can "hear" a difference! Either the man has Superman-type hearing, or as we suspect, he's listening with gadgets and meters rather than with his ears. I'll be the first to admit that the MD technology has not caught on, but I do know of several radio stations and duplication houses that use MiniDisc.

Dave Williams
ironpoet@prodigy.com

ANOTHER SATISFIED... ER, DISSATISFIED CUSTOMER

I'm all for you touching on moral issues such as porn on AOL and the effects that our productions have on society. Music, TV and movies are probably the biggest influences in American culture. I also enjoy reading Stephen St.Croix. I always look forward to reading his articles.

There's a problem, though. It seems that you people in the entertainment establishment feel obligated to push the limits of good taste by publishing profanity. I just canceled my subscription to *Keyboard*, and it occurred to me that you're not much better. I don't want to cancel my subscription to *Mix*, but I don't like being inconsistent. Well, I didn't plan on canceling, but go ahead and cancel my subscription.

James Versyp
El Cajon, Calif.

WORRIED WATCHDOG

George Petersen's comments concerning multitrack technology ("From the Editor," March '96) drive home an all too important point. Who do we blame now for things not being perfect? We can no longer use technology as a scapegoat. That leaves only two things—money and skill. In theory, if you have enough of one, you don't need the other. Thankfully this is only a theory and not

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a reality. With virtually unlimited tracking and processing technology, it should be painfully clear that talent and skill are now more paramount than ever.

This is true not only of the artists and their performance, but also of the various support personnel involved in the audio industry. Not too many years ago the market was plagued by inexpensive equipment of questionable quality. We were all complaining about the level of mediocrity that had gotten into the business. That vermin has not gone away. They are still out there, underbidding projects and undermining the general integrity of the industry.

But now they are taking out loans and getting leases on quality gear. Unfortunately, you cannot lease talent or skill. And hiring it comes with a price tag. A few companies have figured that out and are beginning to turn their businesses and images around. But those who have not are holding the rest of the industry hostage. Consequently, management companies are expecting to be able to take a major tour on the road and get the audio bid at well under $10,000 a week. How is a company supposed to subsidize $2 million in audio equipment with this fee structure? If they are able to, they will probably do so at the expense of the road crew. So you end up with lots of gear that nobody can take advantage of.

Of course that creates a niche for the freelance engineers to come in and supposedly save the day. But what kind of strain does that put on the freelancer? Now they must spend a generous portion of their time teaching the crew how to set up the gear and make it work in addition to their other duties? Is this fair? No. Are they going to be compensated for this? Doubtful. They more often than not will do so out of a commitment to their craft and trade.

This is true not just of touring, but all aspects of our industry—recording studios that charge employees to work for them and call themselves "schools"; corporate and theater audio who consider the audio to be an ancillary function; local electronic repair shops that consider themselves audio design and installation companies; and finally, bar bands that break up and decide to rent their gear out.

It is our responsibility maintain a level of professionalism and integrity throughout our industry. It is for our own protection. And the best place to start is by making absolutely certain that we put this technology only in the hands of the most qualified people.

Paul J. Duryee
freelance sound engineer
76061.615@compuserve.com

THE API AT BLUE WAVE

With reference to your article on p. 194 of the January '96 issue, entitled "Little Wolf Band," I'd like to point our an error in the information provided. The type of console stated (MCI) as being used in Jim Wilson's earlier sessions at Blue Wave Studios is incorrect. It should be noted that Blue Wave has and has always had its great vintage API console in our Studio A. Many recording artists have used that same API console and continue to come back to Blue Wave Studios because of it. I wouldn't want them or anyone else to think otherwise.

Diane Harris, Studio Manager
Blue Wave Productions Ltd.
Vancouver, B.C., Canada

Send Feedback to Mix, *6400 Hollis St. #12, Emeryville, CA 94608; fax (510) 653-5142; or 74673.3672@compuserve.com*

—FROM PAGE 188, BRUCE BROMBERG

everybody tells you that. But Dale's first record was cut out at Congress House [Austin] where there's some kind of offshoot of an Amek, and at Willie's they have an Otari tape machine; not everybody has Studers. But I'm not hung up on that. I'm a songwriter/producer, not an engineer/producer. I know just enough about that stuff to know not to fool with it.

Because most of the stuff you work on is roots-based, do you use any particular vintage gear, like microphones?

Some of the studios I use have vintage microphones. Don't ask me what they are, because I don't have any idea, but they do have some good ones out at Pedernales; of course, Village has real good stuff. Leon Haywood, at his place, he's got an AKG C24 he traded a Mercedes for once, so I know it's a good one [laughs]. It worked. It was on the Robert Cray hits.

I've had hang-ups with people technically on guitar sounds, but I've recorded some really good guitar players—Joe Louis Walker, Robert Cray, Dave Alvin—and the really good guitar players plug in, dial up their amp where they want it, and the sound is there. It's pretty basic. Which is not to say you can't improve things, but good players sound good, and I'm more concerned with the performance and the song.

And that's my production philosophy: looking for people who can write songs and sing. We used to do a lot of blues, and I think that what's been lost a lot in the blues is it's gotten to be more about notes per minute than about singing. Look at any great old blues cat: Bobby Bland, John Lee Hooker, Muddy Waters, Lightnin' Hopkins, and in their way, they're all great singers. People don't have to have a beautiful voice. Bob Dylan doesn't have a beautiful voice, but when he's good, he's good. It's about communication and getting it over and, you know, feeling.

People don't have to have a beautiful voice to be great singers. It's about communication and getting it over, and feeling.

When I interviewed Dave Alvin, I asked him why he refers to HighTone as "the politically correct HighTone records label..."

Well, that's really not accurate. You know, we have the Reverend Billy Wirtz. So, so much for our political correctness [laughs]. Although in reality, Billy is a caring, loving person.

Well, he said it had more to do with the creative freedom you give your artists.

Well, as producers, we know what it's like to be told who to put on your records and what to record, and that's not what we're about. It's not that we never suggest things, but we let people be themselves. We try to sign acts we think have something, and obviously we like people who write songs. It's about people. I hate to use the word "vision," but they have some sense of what they are and what they do. That's what has worked for us, as opposed to people who just want to be famous. ■

Barbara Schultz is Mix*'s copy editor.*

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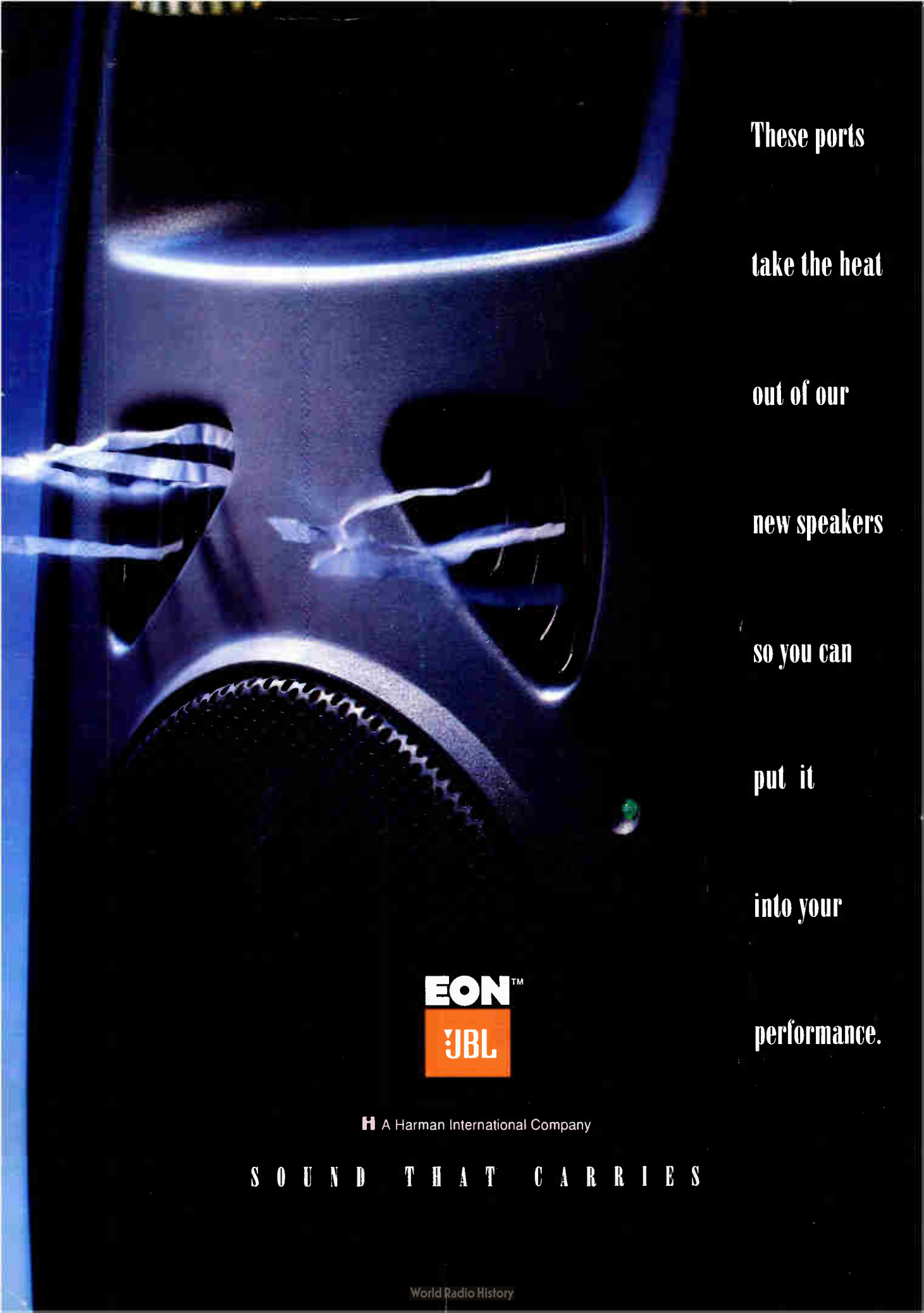

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