

CSNY's "American Dream" • Producer Paul Fox • The DAT Story Continues

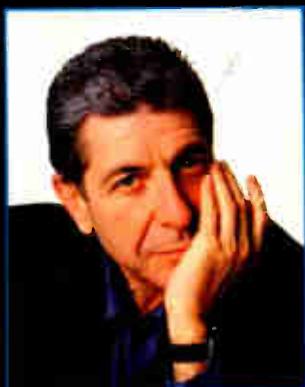
U.S. \$4.95 CANADA \$5.95 MARCH 1989

MIX

Whitney Houston's Home Studio

Choosing a Vocal Recording Mic

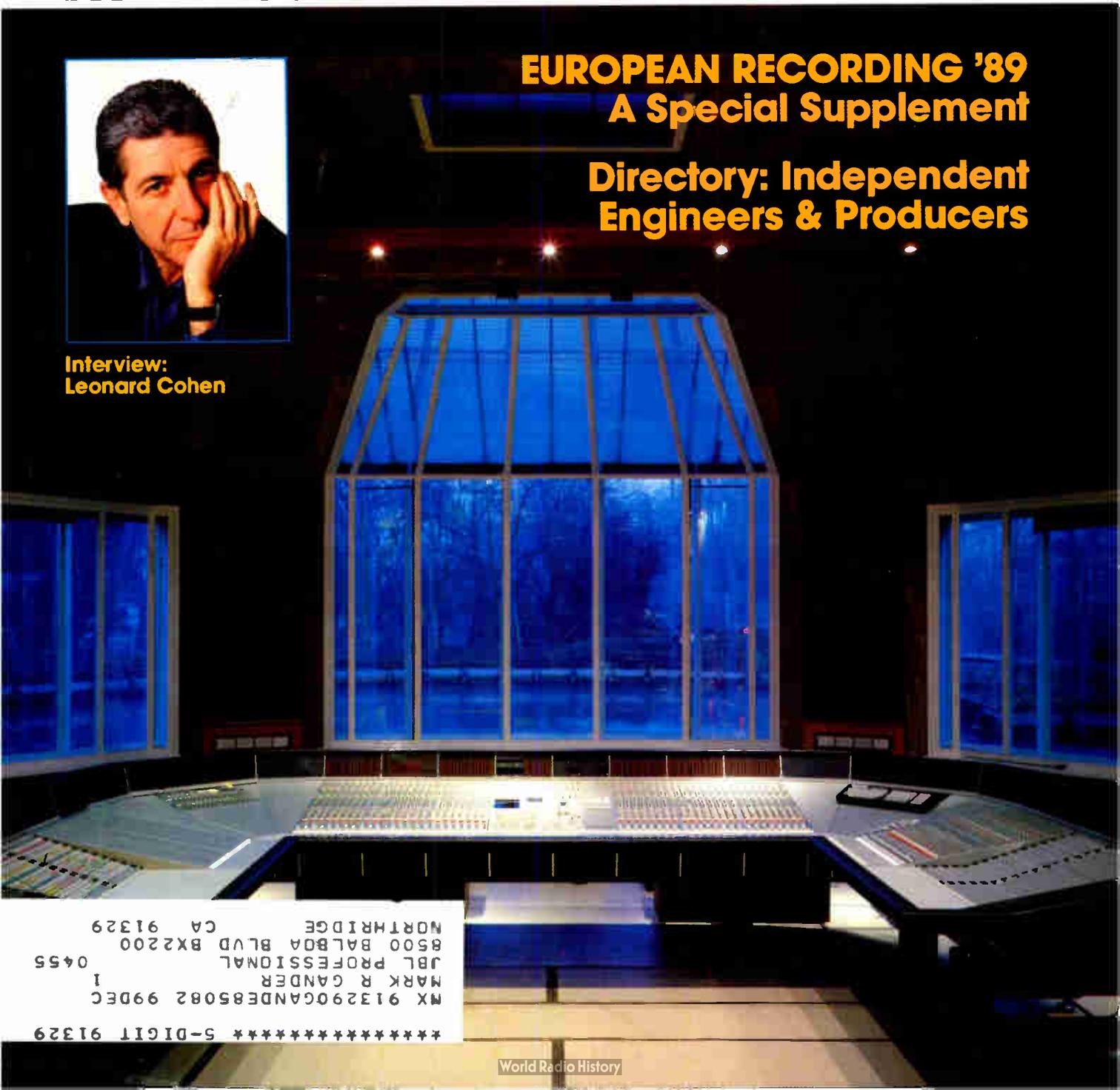
THE RECORDING INDUSTRY MAGAZINE



Interview:
Leonard Cohen

EUROPEAN RECORDING '89 A Special Supplement

Directory: Independent Engineers & Producers



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DE4003 Digital Audio Electronic Editor

What makes the Studer D820X DASH Format Digital Audio Recorder different from all other digital recorders? Listen and hear the difference...

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MIX

MARCH 1989

THE RECORDING INDUSTRY MAGAZINE

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FROM THE EDITOR

Founded 1977 by
David M. Schwartz and Penny Riker Jacob



Cover: Phase 2, the largest of three control rooms at Peter Gabriel's Real World Studios, looks out onto the By Brook River in the Wiltshire, England, countryside. The U-shaped console was custom built by SSL, and is being heavily modified by in-house engineers. Photo: Simon Doling.

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Early this month, the Euro-

pean Audio Engineering Society convenes in Hamburg, West Germany. Though it's not as frenetic as its U.S. sister show, we can expect quite a bit of action this year, as we move toward that magical and mysterious barrier of 1992.

As many of you know, 1992 is when the countries of Western Europe are scheduled to drop their trade barriers with each other and adopt a common currency. Whether this dovetails into place or gets rejected like an unfriendly organ transplant, there certainly will be a reexamination of trade routes and barriers in the region.

Will this bring about more competition? Will it open the international door wider for our U.S. industries? The answer to both questions is yes. Any movement toward international cooperation is grease on the skids of technological advancement. While there will be more people competing, the opportunities will also grow.

Not totally by coincidence, you will find in this issue our first directory of recording facilities in Europe. In our move to provide a more international perspective on our industries, we encountered the kinds of elements that show the formidable task at hand in establishing a common trade denominator in Europe. Such matters as month-long, countrywide postal strikes make language barriers seem like trivial issues. So if you notice omissions or inaccuracies herein, please let us know. In a way, we're starting over again with these listings.

More news on the *HyperMedia* front. We got such an enthusiastic response from the special supplement we put out last year that we have another in the works. Coming in June, the *HyperMedia* Product Guide will cover the equipment and technology used in interactive multimedia production. If the first *HyperMedia* hit close to home, don't miss this one. Some *Mix* readers, depending on their business codes, will receive this supplement free. To be sure to receive your copy, drop us a note and we'll put you on the list.

Keep reading,

A handwritten signature in black ink, appearing to read 'DM Schwartz'.

David M. Schwartz
Editor-in-Chief

Sony sets a new



Introducing the first 48-track digital recorder. The Sony PCM-3348.

It's 48 tracks on half-inch tape. On one machine featuring oversampled AD/DA converters and digital filters. Plus 12 newly developed LSIs, increasing reliability while reducing power consumption to 1.2 kW. All with complete half-inch compatibility—in the space of the industry standard DASH 24-channel recorder.

It works with the tape you've got. Not only can you play any 24-channel DASH tape on the PCM-3348, but you can also add an additional 24 channels to your recording—while maintaining absolute integrity of the original channels.

And the machine is just as compatible as its tape. Because of its built-in synchronizer, connecting the PCM-3348 to Sony's PCM-3324 is simple. So is connecting it to the PCM-3324A—Sony's new 24-channel DASH recorder, which shares much of the remarkable technology we've put into the PCM-3348.

It works like no other machine. Because it's built like no other machine. The PCM-3348 features a newly developed transport that gently shuttles 14"



Second Generation 24-Channel Multitrack PCM-3324A

track record.



48 reels of tape with unprecedented speed. Two channels of selectable AES/EBU or SDIF-2 digital inputs/outputs are assignable to any of the 48 tracks. An internal 20 seconds of 16 bit memory can be reinserted back onto tape either manually or by external trigger. Vari-speed control of $\pm 12.5\%$. And a revolutionary digital/analog output that can be advanced up to 250 words.

But the features don't stop there. With the supplied RM-3348 Remote Controller, you also get variable cross-fade control. Two track real-time ping pong. And a host of variable track modes—all stored in a battery-backed memory unit.

It works like a Sony. Best of all, you get two features that come with every Sony product: reliability and record-breaking sound quality. From the undisputed Leader In Digital Audio.™

To experience the ultimate in digital technology available today, contact your Sony Professional Audio Representative. Or call us at 1-800-635-SONY.

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PROFESSIONAL AUDIO

CURRENT

DAT DISCUSSIONS IN LONDON

Representatives of leading European and Japanese consumer electronic companies and representatives of the International Federation of Phonogram and Videogram Producers (IFPI), including members of the Recording Industry Association of America, met in London on November 30, 1988, to discuss DAT concerns.

One issue on the table was the technical protection systems for DAT that had been worked out by the DAT technical panel of the European Japanese Business Round Table. It was agreed that a joint working group should be established to exchange views on technical protection and related issues.

Any recommendations made by the group are to take full account of copyright issues and the need to confer with legislative authorities.

The meeting was held under the joint chairmanship of Sutezo Hata, senior managing director of Hitachi, and Nesuhi Ertegun, president of IFPI.

ADVANCED TV TESTS BEGIN

American consumers are one step closer to obtaining a new and acceptable standard for advanced television (ATV) transmission as a result of tests now under way at the Advanced Television Test Center in Alexandria, Virginia. On December 7, a six-month, over-the-air propagation test began in Washington, DC, to analyze ATV service possibilities in various broadcast frequencies.

Joel Chaseman, chairman and CEO of Post Newsweek Stations, Inc. and chairman of the Test Center, has extended an open invitation to all TV distribution media to join in the tests. Cable Television Laboratories, Inc. is currently working with the Test Center on one phase of the plan: viewer evalua-

tion. "We have been particularly eager to include cable in the Test Center activities," Chaseman says, "since we will be testing all systems for cable carriage suitability, and since the American consumer will be far better served by a single HDTV technology for both media."

Already a Test Center advisory committee has approved a plan for a "Radio Frequency Test Bed," the proposed heart of a new laboratory to be built in the nation's capital, using \$3.5 million donated by members of the broadcaster's coalition.

The members of the Test Center are Capital Cities/ABC, CBS Inc., NBC Inc., Public Broadcasting Service, Association of Independent Television Stations (INTV), Association of Maximum Service Telecasters (MST) and the National Association of Broadcasters (NAB). For more information on the Test Center's activities, contact Peter Fannon at (703) 739-3850.

SMPTE EXPLORES FIBER OPTICS

The need to keep its membership informed on applications of fiber optic transmission technology—especially as it concerns analog HDTV, high-speed digital and high-resolution graphics signal requirements—has prompted SMPTE's Committee on New Television Technology to form a study group.

C. Robert Paulson of Artel Communications Group, chairman of the study group, says the effort will focus on four major areas: existing applications of fiber optic technology in long distance, metropolitan-area and local-area transmission networks; identification and summarization of standards-setting activities in other professional industry associations and societies; standards and practices for circuit and equipment interconnection; and, existing and potential applica-

tions in television production, post-production, electronic news gathering and electronic field production back haul, distribution and broadcasting operations.

Participation in the group is open to experts in the television, communications and computer industries; SMPTE membership is not required. Anyone interested in joining, call Barry Detwiler at SMPTE headquarters, (914) 761-1100, or Bob Paulson at (508) 562-2100.

DALLAS PRODUCTION FACILITIES ORGANIZE

In an effort to promote the city of Dallas, Texas, as a leader in the production/post-production industry, representatives of numerous local production facilities held the first of an ongoing series of roundtable discussions.

Diane Barnard, vice president/general manager of Dallas-based Tele-Image, called the meeting to increase dialog between Dallas facilities in a notoriously competitive industry. She says, "I feel that our previous lack of communication has led to a lack of recognition of the industry. Whether we participate in a national organization like ITS (International Teleproduction Society), or in informal meetings among ourselves, we have to start marketing ourselves and letting people know what's here in Dallas."

A recent market analysis commissioned by the North Dallas Chamber of Commerce shows \$186 million spent in the Dallas area for production/post-production work in 1987, to go along with an estimated 6,000 jobs. ■

Correction

In our January Northwest U.S. Directories, the phone number for CD Studios, San Francisco, should read: (415) 285-3348.

Artists' expectations, engineering limitations, and other myths of digital recording.

Digital. The word itself conjures up visions of a totally perfect recording process where anything is possible.

Nothing could be further from the truth.

For example, if you treat your digital tape as we've shown below you'll likely end up with exactly what you'd expect. Useless tape.

And how about *sound*; that nebulous, very subjective quality that is, for each one of us, the *raison d'être*?

After all, even though we build what we believe

to be the world's finest digital machine, the new 32-track DTR-900B, some audio engineers would stack our analog multi-track machines up against it in terms of sound quality any day.

So why did we build the digital DTR-900, and then follow it up with significant new features and improvements in the second generation DTR-900B? And why do we believe it

may be the single most important purchase you will ever make in your business? Simple. It will solve problems for you that no other system can solve.

It can cut hours from session times. And it can make your life as a professional magnitudes easier and more rewarding. Here's how.

Just imagine a session where after only a few takes you can send the talent home. You got their best when they were fresh, and now you can do *your* best when you're fresh, and cre-

ative. You use the DTR-900B's session controller to *electronically* assemble the final master from the tracks with no—that's *zero*—sound degradation. (As one studio owner put it, "Often a record becomes what analog makes it—not so with digital.") And no matter how intense the mix-down, the PD format with its powerful Reed-Solomon error correction scheme means you could lose up

to 8 tracks of data and still record and play all 32 channels! So, if you were to lay a cigarette down... no, no, just kidding!

But there's a down side to digital, too. For one thing, there's no friendly tape noise to cover up mistakes, or to add that mysterious "something" to the mix. And the initial cost for a digital machine can be *scary*.

So what's the final mix, or the bottom line, if you prefer? The cost is high, and even though the Otari DTR-900B is a powerful client draw, it's important to consider your return on investment.

But then, a great sounding record is hard to put a price on, isn't it?

It's your decision, but we can help. After all, Otari can offer you the best in digital, *and* the best in analog. Call Otari at (800) 338-6077 X900, for more information. (And if you own a DTR-900, ask us about how the new features on the "B" can be added to your machine.)



The DTR-900B's new Locator/Remote features improved hardware and software that make the machine faster and easier to operate.



The world standard Professional Digital (PD) format employs Reed-Solomon coding, mechanical dispersion, and cyclical redundancy in a virtually foolproof error correction scheme for data loss recovery.

OTARI

Circle #001 on Reader Service Card



INDUSTRY NOTES

Colin Pringle has joined **Solid State Logic** as head of marketing and will work out of its Oxford headquarters . . . **Audio Animation** has moved its corporate headquarters and manufacturing facilities to 210 W. Magnolia Ave., Knoxville, TN 37917, (615) 544-0458 . . . Philadelphia-based **Sigma Alpha Entertainment Group** (SAEG) is developing a record division as part of its five-year plan to transform SAEG from a multistudio facility into a major record and publishing company . . . **Penny Russell** and **Gardner Ruffin** have started **Marketec**, a manufacturers' rep firm selling professional video and audio products on the West Coast . . . **Kent W. Sheldon** has been named national sales manager of **Klipsch & Associates** . . . **John Carey**, marketing manager for **Otari Corporation**, has taken on sales management responsibilities following the resignation of David Roudebush, until a successor is found . . . **Will Lewis** has joined **Symetrix** in the newly created position of director of sales and marketing . . . Announcements from **Agfa Corporation**: **Helge H. Wehmeier** has been appointed president and CEO, and elected to the board of directors and executive committee, of **Bayer USA**, an Agfa subsidiary; **Bernard L. Freeman** has been named national customer service manager; and the company announced the appointment of two Agfa magnetic tape distributors in Nashville—**Studio Supply Company** and **Pro Audio Shoppe** . . . **Ted Pine** has been promoted to marketing communications manager at **New England Digital** . . . News from **Neve**: the **Full Sail Center for the Recording Arts** in Altamonte Springs, FL, is Neve's official training center. Full Sail is now the only school in the world to offer specialized training on Neve products. Also, Neve has set up an office in the famous Music Row at 1221 16th Ave. South, Nashville, TN 37212, (615) 329-9584, FAX: (615) 329-1473; and eastern regional sales manager, **Phil Wagner**, has been named "Salesman of the Year" . . . **WaveFrame Corporation** has moved to 2511 55th St., Boulder, CO 80301, (303) 447-1572, FAX: (303) 447-2351. Other WaveFrame news in-

cludes the appointment of San Francisco's **Audio Images Corporation** as representative for its AudioFrame digital audio workstation in Northern California, Oregon and Washington, with **Amptown Electroacoustic GmbH** (Germany), **Wave Trade** (Sweden) and **New Musik** (Denmark) taking the reins in Europe. Recent appointments include **Craig Damon** as customer service manager and **Cathy Curley** as field service coordinator . . . **Korg USA** has announced the appointments of **Patrick Mazie** as national sales manager, **Lawrence DeMarco** as product development manager and **Robert Tyo** as product support specialist . . . **Gaynell Rogers**, formerly marketing and publicity director for San Francisco's Russian Hill Recording, has moved her public relations firm, **Gaynell Rogers & Associates**, to 1683 Novato Blvd., Novato, CA 94947, (415) 898-6840, FAX: (415) 898-3647 . . . **Dr. Per V. Bruel**, co-founder and director of **Bruel & Kjaer**, was presented with the Audio Engineering Society's Silver Medal Award, for contributions to and continued refinement of mics used for acoustical measurements . . . **ATM Audio** has moved to 17104 S. Figueroa St., Gardena, CA 90248, (213) 538-2004 . . . **Bose Professional Products** has two new rep firms: **Silver Peak Marketing**, of Wheat Ridge, CO, covering the Rocky Mountain area and **Joseph P. Mazzeo Assoc., Inc.**, covering upstate New York . . . **Tammy Dalbec** has been named marketing manager for **Nakamichi America** . . . **Gustavo Ezcurra** has joined **Harris Corporation**'s broadcast division . . . **Livewire Audio** has moved to 105 Beaumont Ct., Tinton Falls, NJ 07724, (201) 389-2197 . . . **Chris Coan** has been appointed chief engineer and principal Synclavier operator at **Digital ADR & Cine-Post, Inc.** in Orlando, FL . . . **Charles Gushwa** has joined **Pro Co Sound** as chief operating officer and director of marketing . . . **Sanyo Electric Co.** has its first North American office, **Sanyo North American Corporation**, in Manhattan, with a branch in California. It will oversee Sanyo's marketing and management functions in the U.S., Canada and Mexico. ■

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MIDI
IN

If you have one of these the MRC will get more out of it.

The MRC MIDI Remote Controller is everything you'd expect from the engineers who developed *Dynamic MIDI*® our much-admired (and still unequaled) system of real-time digital effects control. Connect it to the LXP-1 Multi-Effects Processing Module, the PCM 70 Digital Effects Processor, a DX7 or anything MIDI. And release hidden creative capacity you never expected.

Maximizing the LXP-1 Multi-Effects Processing Module

When you plug it into the LXP-1, the MRC gives you instant access to more parameters, more control and more setups. It goes beyond the front panel Decay and Delay controls to open up "hidden" parameters in each LXP-1 program. You can control all parameters (up to eight of them) in real time and store your favorite setups in the MRC's memory.

FM patch edits without programming

Connect the MRC to a DX7, DX711, TX802, or TX816 and you'll see something totally new on its two-line LCD display: *analog-style patch editing* for six-operator FM synths. Call up a preset, then change Brightness, Waveshape and Emphasis with the MRC faders. Build ADSR Amplitude and Timbre envelopes. Now you can customize your own FM sounds. And you don't have to spend hours programming. There's even a set of performance controllers for tone generators and live work.

Expanding the PCM 70

Only a very few digital processors can respond to parameter changes in real time — the PCM 70 is one of them. The MRC exploits its uncommon abilities to the fullest over MIDI. Call up any program and the MRC lets you control twelve essential parameters: in real time, of course.

You can tailor the sound to the track quickly and store the results in the MRC, without ever leaving your working/listening position.

Total MIDI Control

If you own MIDI keyboards, rack expanders, effects or a MIDI sequencer, the MRC will command all the performance they have to offer. Define each of the MRC's four faders and four switches as *any* MIDI controller — Pitch or Mod Wheels, Aftertouch, Breath, whatever. Plug in an ordinary footswitch or volume pedal and the MRC will turn it into whatever MIDI controller you want. You can keep last year's equipment in your system. And add next year's — the MRC adapts to anything that speaks MIDI.

The revolutionary MRC MIDI Remote Controller from Lexicon. Discover control that gets the full potential from your MIDI system, at your Lexicon dealer.

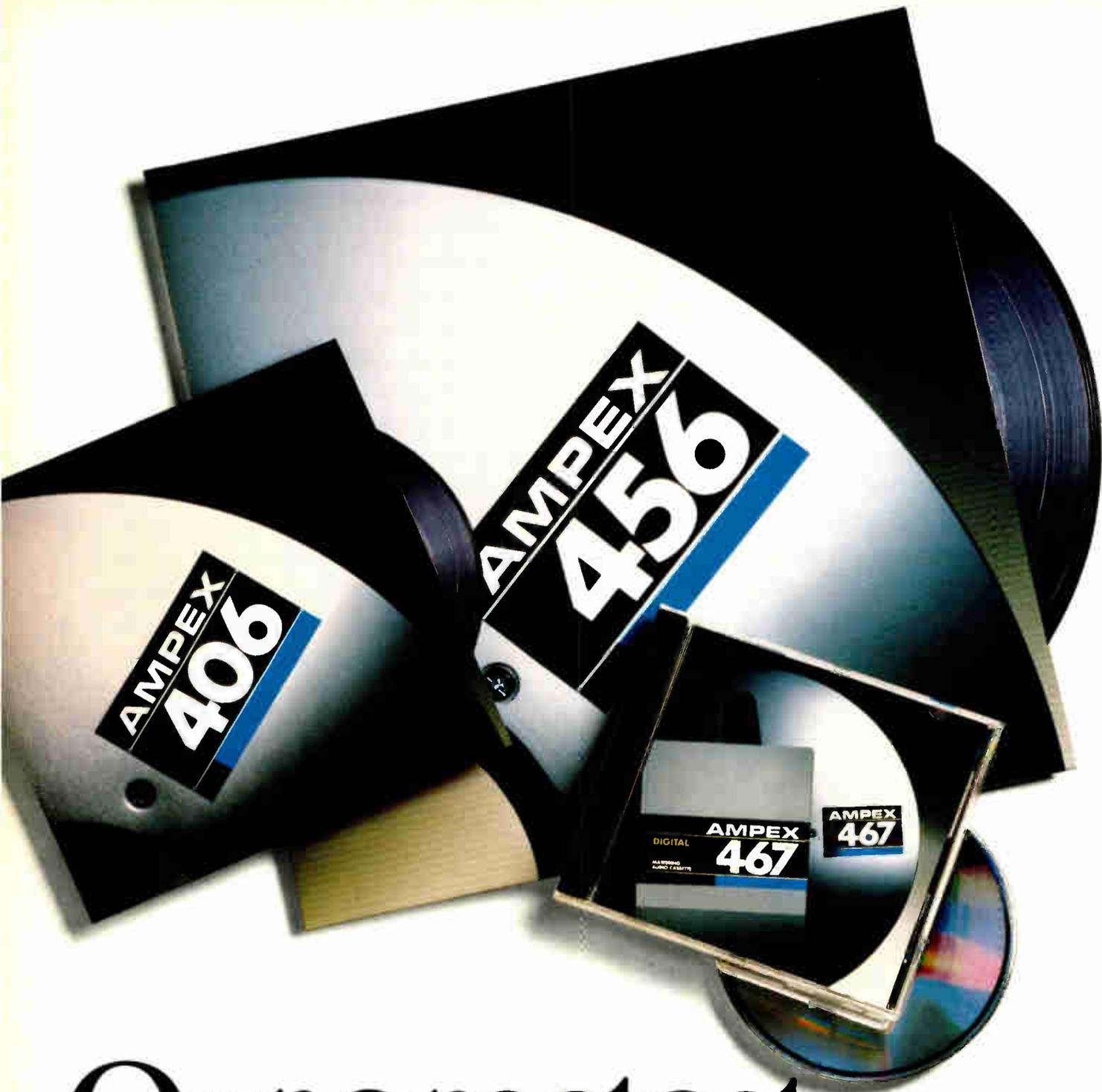
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SESSIONS AND STUDIO NEWS

SOUTHEAST

Atlanta's **Soundscape Studios** recently played host to Sky Records' **Max Abel**. His new album, *Somebody Spent Their Whole Life There*, was mixed by **Rick Brown**, with assistance from **Edd Miller**. . . . At **Memphis Sound Productions**, **Jack Holder** has been busy producing the bands **Human Radio** and **Reance**, and mixing material by QMI Music artists **Taz**. . . . Recent activity at **New River Studios** in Fort Lauderdale, FL, included a project for the U.S. Air Force. Music for a documentary film and recruitment advertising was composed and produced by **Tom Hartman**, and recorded by engineer **Paul Kaminsky**, with assistance from **Larry Janus**. . . . At Atlanta's **Cheshire Sound Studios**, **Peabo Bryson** continued work on his album for Capitol Records. Co-producing with Bryson was **Dean Gant**. **Thom Kidd** ran the SSL, with **Tom Pee** assisting. . . . Nashville's **Music Mill** reports that artist **Clark Williams** was in cutting tracks with producer **Larry Butler** and engineers **Billy Sherrill** and **Paul Goldberg**. . . . **The Bennett House Studios** in Franklin, TN, recently saw producer **Bob Montgomery** working with CBS artist **Vern Gosdin** on a new album project. **Shawn McClean** backed up engineer **Gene Eichelberger**. . . . A recent album project at Nashville's **Soundshop** with **David Holt** and producer **Steven Heller** included such notables as **Chet Atkins**, **Duane Eddy**, **Doc Watson** and **Jerry Douglas**. **Bil Vorn Dick** engineered the sessions. . . . **Guadalcanal Diary** recently recorded and mixed their new album for Elektra Records at **Reflection Sound Studios** in Charlotte, NC. **Don Dixon** produced and **Mark Williams** engineered. . . . At **Criteria Recording Studios** in Miami, **Uno Mundo** was in overdubbing and mixing an upcoming release for Island Records. Production was handled by **Miami Sound Machine** veterans **Joe Galdo**, **Larry Dermer** and

Rafael Vigil. **Eric Schilling** was at the console. . . . Jazz keyboardist **Gary Motley** was in at **Polymusic Recording Studios** in Birmingham, AL, to record his debut album with engineer **Michael Panepento**. . . .

NORTHEAST

Elektra Records' **Beat Noir** was in Studio B at **Greene Street Recording** in New York to finish up a new LP. **George Daily** produced the sessions, with **Rod Hui** handling the engineering duties. . . . **Sheffield Audio-Video**'s remote truck recently recorded a Washington, DC, performance of the National Symphony with **Rafael Fruhbeck de Burgos** conducting. The program is tentatively scheduled for PBS later this year. . . . CBS recording artist **Marcus Lewis** is continuing work on his album with producer **Dan Serafini** at **Normandy Sound** in Warren, RI. Engineer **Tom Soares** is recording the tracks with assistant **Jamie Locke**. . . . Back in NYC, producer **Lavaba Mallison** was cutting tracks for **Kool Moe Dee**'s new single, "Let's Dance," at **MPC Productions/Sound Design**, with **Radcliffe Issacs** engineering. . . . **Power Play Studios** in Long Island City saw Atlantic Records recording artists **Black Riot** working on their new LP. **Nory Cotto** engineered with assistant **Jim "Brady" Cangialosi**. . . . **Drive, She Said** recorded their debut LP at **Calliope Productions** in New York, with **Chris Julian** at the console. . . . Warner Bros. artist **Marc Anthony** was working on tracks for an upcoming album at **D&D Recording** in New York. **Arto Linsey** and **Peter Scherer** produced the tracks with engineer **Mike Rogers**. . . . Atlantic Records jazz artist **Danny Gottlieb** was mixing his second album for that label at **39th Street Music** in NYC. **Doug Hall** was producing, with **Chip Jenkins** at the board and **Ed Douglas** assisting. . . . Yet another New York studio, **Chung**

King, reports that engineer/producer **Jay Henry** was working with **Emanuel Rahiem** on final mixes for a debut album on Capitol. . . . Producer **Mallory Earl** has been busy at **Kamen Nightline Studios** in NYC putting the finishing touches on a live jazz double LP featuring **Chuck and Gap Mangione**, **Steve Gadd**, **Joe Romano** and **Frank Palermo**. . . . Zanzibar recording artist **Bunky Gooch** was recently at **Gamut Studios** in Pittsburgh to record his first single, "Zip It," with producer **Scott Warner**. . . . Producer **John Luongo** was in NYC's **Electric Lady Studios** to mix singles for **Huey Lewis & the News**, **Hall & Oates** and **Van Halen**. All sessions were engineered by **Gary Hellman** and assisted by **Bridget Daly**. . . . Producer **Jack Douglas** returned to **Island Media Services** in West Babylon, NY, to lay down tracks on their Synclavier for the remix of **Aerosmith**'s single, "Chip Away at the Stone." **Henry Haid** was at the controls. . . . At **Recordamatt** in West Islip, Long Island, jazz guitarist **Pat Martino** was in with producer **Paul Bagin** to record an album for Muse Records. . . . **Don Was**, **Jon Lind** and **Phil Galdston** were at **Sigma Sound** in NYC cutting tracks by **The Temptations** for the new John Candy film, *Harry Crumb*. **Stephen Benben** was engineering. . . .

NORTH CENTRAL

Chicago rockers **Tattoo** recently finished mixing their album with **George Luif** at **Star Trax Recording Studio** in Orland Park, IL, for Metal Blade/Enigma Records. . . . Among the recent projects at **Solid Sound Recording Studios** in Hoffman Estates, IL, was the recording and mixing of the soundtrack for the major motion picture *Chill Factor*, written and produced by **John Ross**. The sessions were engineered by **John Towner**. . . . Producer **Victor Romeo** was in at Chicago's **Tone Zone Recording** to lay tracks with **Div**

Q.T. Engineering was **Roy Montroy**... At **Pearl Sound Studios** in Canton, MI, **Kevin Saunderson** and **Ben Grosse** recently completed mixes for **Paula Abdul** and **Apollonia**. **Mark Childress** and **Scott Kinzie** assisted on both projects... Contemporary Christian artist **Sue Drenth** came to **Brown & Brown Music Productions** in Portage, MI, to mix her new album... **Chris Parry** (manager of **The Cure**) has been recording 12-inch singles of Chicago-based artists **Sacred Heart** and **Destry** for his label, **Desire Records**. **Vince Lawrence** produced the sessions with co-producer and engineer **Steve Spapperi**...

NORTHWEST

At **Triad Studios** in Redmond, WA, **Tom Hall** and **Lary Nefzger** co-produced **Heir Apparent's** new release for **Metal Blade/A&M**... **Steve Boyce** was working with **Primo Kim** on a new album project at **Ironwood Studio** in Seattle... **Starlight Sound** in Richmond, CA, is the site of an album project for **Peaceville** recording artists **Autopsy**, with **John Marshall** handling production and engineering chores... In Santa Rosa, CA, recent activity at **The Banquet Sound Studios** includ-

ed sessions with newly signed **Island Records** glam rock band **Vain**. Engineering duties were handled by **Denis Hulett**...

SOUTHWEST

Lesson Seven finished mixing "Radiation" for **Oak Lawn Records** at **Planet Dallas** in Dallas, TX. **Patrick Keel** produced and **Rick Rooney** engineered on the project... **Virgin Records** artist **Delaney Bramlett** was working on his new release at **Arlyn Studios** in Austin, TX... In Roanoke, TX, gospel-country singer **T.J. Smith** finished his debut album with producer **Rex Lake** at **Lake Sound Studio**... **Bart Barton**, producer and head of independent label **Canyon Creek Records**, was recently in at **Goodnight Dallas** to mix several country releases with engineer **Ruben Ayala**...

SOUTHERN CALIFORNIA

The Jacksons (**Jermaine, Jackie, Randy** and **Tito**) were in at **Larrabee Sound** in Los Angeles to work on their latest album for **CBS** with producers **Gene Grif-**

fen and **Teddy Riley**. **Dennis Mitchell** was engineer and **Peter Arata** assisted on the project... Composer/arranger **John David Hiler** was at **Hit City West** in L.A. to record the soundtrack for a new film entitled **Out on Bail**. **Brian Shuster** produced for **BSB Films**, and **Kevin O'Connor** engineered the dates... **Motown Records** artist **Mazerati** recorded tracks at **Skip Saylor Recording** in L.A. with producer **Bernadette Cooper** and engineer **Scot Skidmore**. The project was mixed at Hollywood's **Galaxy Sound Studios**... Still with **Skip Saylor**, **Nikki** was in the studios mixing and producing **Phil Bannano's** debut album for **Geffen Records**. **Brian Malouf** was at the board, assisted by **Pat MacDougall**... **Van Dyke Parks** returned to **Pacifique Recording Studios** in North Hollywood to work on his latest project for **Warner Bros**. **Peter Lewis** was behind the board... **David Ganson** of **Scritti Politti** fame was at **Summa Music Group's** facility to produce artist **Tony LeMans** for **Paisley Park Records**. **Ray Bardini** engineered, with **Ryan Dorn** assisting... Composer **Parmer Fuller** went to **Genetic Music** in North Hollywood to track choral vocals for the score of the upcoming film **Speak of the Devil**. **Richard Rosing** engineered the sessions... Engineer **Roger Nichols** was in at **Kren Studios** in Hollywood, with producer **Tim Weston** and assistant engineer **Russell Bracher**, to mix tracks for the **Paulo Ramos Band**... Producers **Gary McLaughlin** and **Yves Dessca** were in Burbank's **Red Zone Studios** recording vocals for **Valerie Cannon's** debut album on **CBS**... Comedian **Sandra Bernhard** and producer **Joe Chiccarelli** were in at **Secret Sound** in L.A. mixing tracks for **Bernhard's** upcoming album on **Enigma Records**. **Marc DeCisto** was at the board, assisted by **Daren Chadwick**... **Bobby Brown** visited **Elumba Recording Studios** in L.A. for overdubs and remixing on his fourth single release from the **MCA** album **Don't Be Cruel**. **John Gass** engineered, with assistance from **Donnell Sullivan**... **21 Windows** recently completed an album project at **South Coast Recording Studio** in Santa Ana, CA. The sessions were engineered by **Jim Dottson** and produced by **John Brodersen** and **21 Windows**... Back in North Hollywood, **Devonshire Studios** saw **Tom Petty** overdubbing and mixing his solo release with co-producer **Tom Cambell**. Engineer **Don Smith** was assisted by **Steve Heinke** and **Scott Gordon**... Metal band **Sherok** was in at **Preferred Sound** in Woodland Hills, CA, to

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—CONTINUED ON PAGE 14



*Bryston Model
2B-LP PRO XLR*

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BRYSTON design philosophy incorporates three general concepts.

1. Musical accuracy
2. Long term reliability
3. Product integrity

MUSICAL ACCURACY

Musical accuracy is reflected throughout all Bryston power amplifiers and includes the necessity for wide-band transient accuracy, open loop linearity ahead of closed loop specifications, and power supply design as an integral part of the overall sonic and electrical performance of a power amplifier.

We have found that a simple carbon film resistor can contribute more static distortion to a signal than the entire remainder of the amplifiers circuitry combined. We discovered that some parameters of transistors must be controlled as much as 1000 times more closely before their contribution to audible distortion is rendered negligible.

We discovered that under certain actual conditions of speaker loading, amplifiers were incapable of yielding high-power transients without distortion.

Each of the various steps or stages in every Bryston amplifier, from the input section to the output section, without exception, are designed to optimize the musical experience.

STANDARDS OF RELIABILITY

WE consider this criterion to be exceedingly important. We have applied techniques and materials in our everyday construction of electronic equipment more typically utilized in the military and aerospace industries.

All components used in Bryston power amplifiers are specified for continuous duty at maximum power, with typical safety margins of 250%.

The power transistors used in all Bryston amplifiers are 100% tested for safe operating area, both before and after installation in the circuit. They are then taken to a "burn-in" table when they are given a capacitor load, a square-wave input signal, and set at slightly under clipping for a period of 100 hours. During this time, the input signal is cycled three hours on to one hour off, to exert additional thermal stress.

Following the burn-in period, the amplifiers are monitored for DC bias stability for approximately another full day. At this point, they are returned to the test bench for another complete checkout of all operating parameters and functions, at which time a test sheet is made, and included in the packing with the unit.

As may be seen, Bryston takes very seriously the correct functioning and long term reliability of its products.

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BRYSTON contends that the term 'best' should apply to the honesty, pride and courage with which we conduct our business, as well as to the performance of our products.

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—FROM PAGE 12, SESSIONS

record an EP with **Mick Marrs** producing. **Matthew Spindel** was at the board with **Scott Campbell** assisting. . .

STUDIO NEWS

Installation of the first large Studer studio recording console in the U.S. has been completed at **Lighthouse Studio** in North Hollywood. The custom-built, 62-input Studer 905 board with GML moving fader automation was immediately used to mix the new **Stephen Bishop** album. The studio also purchased two Studer A820 multitrack recorders to accommodate double 24-track mixdowns. . . **Sunset Productions** in New York City has also installed a new Studer A820 recorder, giving the studio 48-track recording capability, as well as video lockup. . . Yet another facility adding a Studer A820 was **Arlyn Studios**, in Austin, TX. Other additions include a 2,000-sq.ft. cutting room . . . **Real to Reel Recording Studio** in Stockbridge, GA, has upgraded to 24 tracks with the addition of a new Trident 24 Series console and an Ampex MM1200 recorder. A variety of additional outboard equipment has also been added to the

enlarged and renovated control room. . . **Ameraycan Studios** in North Hollywood has refurbished its Studio A with a 56-input SSL 4000 G Series console with Total Recall to complement its Mitsubishi 32-track digital recorder. . . Trident consoles have recently been installed in two Scottsdale, AZ, facilities: **Chaton Recording** has taken delivery of a 32-channel Trident 80C with Digital Creations moving fader automation, and **Castle Productions** has purchased a Trident 24 Patchbay console for jingle production, video post-production and music scoring. . . Neve V Series consoles have recently been installed in a number of East Coast studios, including **The Hit Factory**, **Sound One**, **The Sandbox** and **Rock Video International**. . . Across the border in Toronto, **Comfort Sound's** mobile studio recently was equipped with a second Ampex MM1200 24-track tape machine and a Sola AC power isolator. The dual multitrack system now allows continuous recording without breaks for reel changes. . . **DRC Studio** in Springfield, IL, has acquired an E-mu Systems E-III digital sampler with over 200 megabytes of sounds on hard disk. . . Miami's **Limelite Studios** has taken delivery of the first Alpha Audio Boss/2 audio

editing system to be installed in the U.S. . . **Steve Lawson Productions** recently became the first Seattle studio to purchase a Post Pro digital audio workstation from New England Digital. . . In other news from Seattle, **Ironwood Studio** recently reopened its Studio B with an automated Harrison MR-3 console and a redesigned monitoring system. . . Neve has named **Full Sail Center for the Recording Arts** in Altamonte Springs, FL, as its official training center. As part of the agreement, Full Sail was scheduled to take delivery in February on a new 60-input Neve V Series console with Flying Faders automation. . . Construction has been completed on an accompanying video post-production suite at the 24-track recording facilities of **Susquehanna Sound** in Northumberland, PA. The new facility spans over 5,000 square feet. . . Big changes are taking place at **Waves Sound Recorders** in Hollywood, with the installation of the New England Digital Post Pro and a remodeling of Studio A, which now includes a Sony MXP-3000 console with disk-based automation. . . **ABC-TV** recently completed the installation of a second Soundmaster Integrated Audio Editing System in its Hollywood facility.

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Circle #154 on Reader Service Card

World Radio History

SAMPLE THE POWER OF THE ROLAND S-50

REC 11 SAMPLING 15
12 W.SCOPE 16
13 17
14 18
READY

Rim Shot

AUTO
1 Wave Bank A
2 Frequency 70
3 Time 0.4
4 Orig. Key C#2
5 Threshold 20
6 Pre-Trigger 10ms

Remaining Time A-0.0
B-0.0

Level

PREPARE TO SAMPLE SCREEN

EDIT 11 PATCH PRM 15 PITCH MOD
12 SPLIT 16 ENVELOPE
13 TONE PRM 17 TONE MAP
14 LOOP 18

46 SyBell B-0.8 COMMAND

1 Loop Mode FWD 114
2 Start 018845 L.Leng 000218
3 Loop 018263 W.Leng 024576
4 End 0
5 Loop Tune 0 L.Edit Point

EDIT LOOP SCREEN

PLAY P1 Drums/Flute P5 FLBass/SBell
P2 SBass/Xulo P6 Strings
P3 Piano P7 Poly Synthe
P4 IC-misc P8 Synth Bell

R.B A TX-CH 1 Voice Mode 1

RX-CH A-[8] B-[4] C-[2] D [2]
Patch 3 10 1 2
Level 127 127 127 127

MULTI-TIMBRAL PLAY SCREEN

EDIT 11 PATCH PRM 15 PITCH MOD
12 SPLIT 16 ENVELOPE
13 TONE PRM 17 TONE MAP
14 LOOP 18

12 Snare ++ 11 ++ COMMAND

1 Level Curve 2
2 Key-Rate 60
3 Vel-Rate 0

0 1 2 3 4 5

VELOCITY CURVE FOR ENVELOPE

EDIT 11 PATCH PRM 15 PITCH MOD
12 SPLIT 16 ENVELOPE
13 TONE PRM 17 TONE MAP
14 LOOP 18

11 Kick A-0.4 COMMAND
SUS 7 END 8

Point	1	2	3	4	5	6	7	8
Rate	67	52	29	13	40	76	23	74
Level	110	34	46	38	94	34	58	0

EIGHT-STAGE ENVELOPE EDIT

EDIT 11 PATCH PRM 15 PITCH MOD
12 SPLIT 16 ENVELOPE
13 TONE PRM 17 TONE MAP
14 LOOP 18

Orig. Key

1	2	3	4
2	D#3	F#3	G#4
3	C#2	A#3	D#4
4	C#3	G#3	D#4
5	A#2	F#3	D#4
6	C#2	F#3	D#5
7	C#3	A#4	C#5
8	E#3	G#4	D#5
9	G#3	F#4	F#5

TONE MAP GROUP EDIT

EDIT 21 DELETE 25 COMBINE
22 TRUNCATE 26 D.FILTER
23 COPY 27 WAVE DRAW
24 MIX 28 DSP.WAVE

21 Crash A-1.2

Remaining Time A-0.0
B-0.0

Wave Bank A

WAVE BANK DISPLAY

EDIT 21 DELETE 25 COMBINE
22 TRUNCATE 26 D.FILTER
23 COPY 27 WAVE DRAW
24 MIX 28 DSP.WAVE

-SBass-L

1 Window Adrs 000000 J.LOOP OFF
2 Cursor Adrs 000000 COPY
3 Cursor Data -0001 CLR WINDOW
CLR ALL

WAVE DRAW SCREEN

EDIT 21 DELETE 25 COMBINE
22 TRUNCATE 26 D.FILTER
23 COPY 27 WAVE DRAW
24 MIX 28 DSP.WAVE

Tom-L

1 Start 000000 ENWSITE
2 End 022388
3 Shift 000000

Presc ENTER

TRUNCATE WAVE DATA

Song 1 [Proto-type] 18%

Song 1 Name..Foot First

Measure... 18 KB channel. 2
Tempo... 120 KB octave. 0
Pattern... 22 Meas... 1 Cw

CH	P	LVL	OUT	Velocity meter
3	3	127	E 81	
4	4	127	E 43	
1	4	127	E 21	
2	2	127	E 21	

Chain play...OFF
KB display...P2 [ALL]

SYS-503 SONG PLAY

Pattern write [Proto-type] 15%

Song 1 Pattern... 22 Gate... real
Size... 4 Quantize... 16
Metronome... on KB channel. 3
Tempo... 139 KB octave. 0
Meas... 2 Cw

SYS-503 PATTERN WRITE

MIDI 1 info. [Proto-type] 15%

11 Svt.tak 15 Patch name
12 Metronome 16 Tone name
13 17
14 18

Sync clock ON
Transmit ON
Receive ON

* Recording switch *

- Poly after touch OFF
- Control change OFF
- Program change ON
- Channel after touch OFF
- Pitch bend ON

SYS-503 MIDI AND INFO SCREEN

THE SAMPLER THAT DOES MORE TODAY



World Radio History

THE SAMPLER THAT DOES MORE TOMORROW

The Benefits of Open Architecture

There's no question, digital sampling is one of the most rapidly developing technologies in music today. So when you buy a sampler today, you don't want it to be made obsolete by some new development tomorrow. That's why there's one line of samplers that not only provides top quality today, but allows for future developments tomorrow. Naturally, they're from Roland, the company who always has one eye on the future.

Roland samplers are based around a "clean computer" design of open architecture. This means that the main performance data

of Roland samplers is resident in software — software that can be updated with new

features and performance just by loading a new disk. Neat trick? That's exactly what our customers think. They've already benefitted from one software update, giving their samplers loads of new features. And more updates will follow.

Professional Performance Sampling

But before we get too far into the future, let's talk about today. The Roland S-50 Digital Sampling Keyboard and S-550 Digital Sampler Module deliver the professional-quality sound and extensive editing capabilities found only in instruments costing many times as much, all thanks to Roland's breakthroughs in proprietary VLSI Sampling technology. The S-50 offers a wave oscillator, amplifier, LFO, and an eight-stage envelope generator for each of its sixteen voices. Although the S-50's features list is far too extensive to be listed here, among its chief attributes are a 512k word of Wave Memory and 16-bit processing, sampling time up to 14.4 seconds at 30kHz, multi-timbral capabilities, and four polyphonic voice outputs.

The S-550 provides all of the S-50's performance with the addition of a 1.5M Byte memory (for up to 64 tone memories and 16 patch memory banks), and expands upon the S-50 by providing eight polyphonic voice outputs.

Quality Sound in the Roland Bank

But we think the best way to judge a sampler is with your ears. That's where the Roland Samplers really shine. Play any Roland Sampler and you'll hear a warm and full sound, with a better bandwidth and greater headroom that especially shows up in dynamic instrument samples. You'll experience an evenness of sound across the entire keyboard without the problems other samplers have of obvious split points. And you'll never run out of sounds, because the purchase of a Roland Sampler gives you access to the Roland Sound Bank — a continuously growing library of great sound samples. Plus, the S-50 is

already enjoying one of the fastest-growing bases of third party software support.

Quality In Means Quality Out

When it comes to user interface, Roland Samplers are simply unrivalled. Both the S-50 and S-550 allow the connection of a video monitor to greatly facilitate sampling process and use such new features as Wave Draw. The S-550 even allows the flexibility of mouse-style input by connecting the new DT-100 Digitizing Tablet. This kind of interface makes the experience of sampling sounds as fun as it is productive.

Today's Updates

The new 2.0 Software Update (available to all owners for a small handling charge) can now add in loads of new features — including twice as many tones, Automatic Loop Search, combined Wave Data, Polyphonic Multi-timbral performance, and much more. Not just new sounds, entirely new performance. Another new software program — the SYS-503 Director-S — can turn the S-50 or S-550 into a sixteen-channel MIDI sequencer, playing its own sounds as well as those of other MIDI instruments.

Put all this together and you can see why Roland Samplers are the choice of so many top pros. And why shouldn't they be? Because if Roland Samplers do this much today, imagine what they'll do tomorrow.

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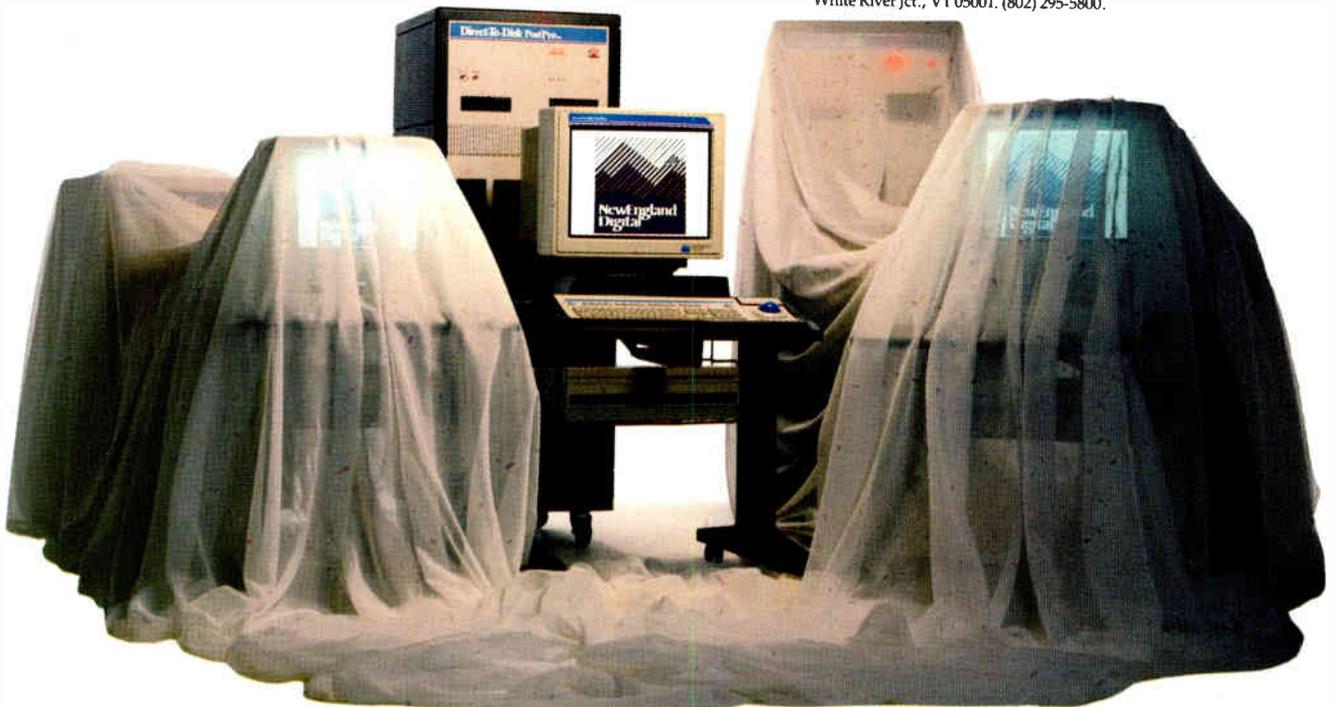
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The PostPro is an 8-input/8-track Direct-to-Disk® recorder whose random-access technology brings a whole new level of efficiency and flexibility to the post-production process.

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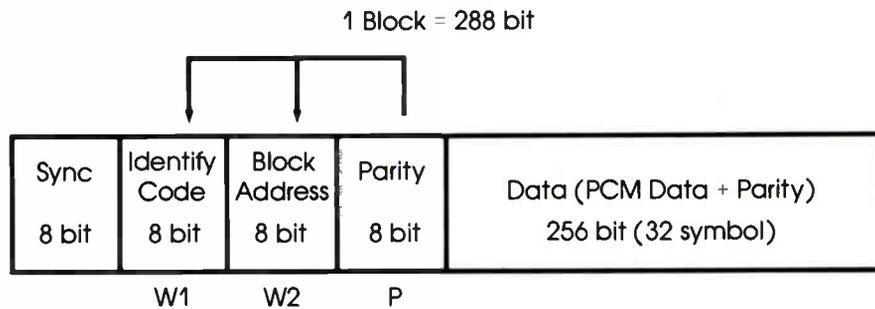
by Ken C. Pohlmann

DAT TECHNOLOGY

TRACKING DOWN THE BITS & BYTES

PART 3
Clearly, there is evidence of an insidious plot here. It seems irrefutable that the tricky devils of the recording industry have pulled off one of the greatest scams of the century. It all started five years ago when the compact disc debuted: the recording industry felt hurt and left out, because consumers

Then, sneaky bastards that they are, members of the recording industry started buying up DAT for themselves. Today there are more DAT machines in studios than in homes (excluding the homes of recording engineers). They pulled it off. But what a close call—it might have been like this: the best way to distinguish a professional



Parity : $P = W1 + W2 (+ : \text{MOD } 2)$

Block Address : Block Address for PCM Data Block
The MSB is identify bit for Subcode Block or PCM Data Block



Figure 1: Block Format

suddenly had an audio toy even neater than all theirs. When DAT, yet another keen consumer plaything, was announced, the recording industry lost no time. Through their mouth-pieces the record labels, they bad-mouthed DAT, pointing out how horrible it would be for consumers to have this recording capability. DAT withered under the blast and lost momentum.

recording from a home recording is by the tape hiss on the studio version.

Last month, we examined some of the electrical elements of the DAT format, as well as some of the aspects of its helical scan tape track. Let's continue that discussion with a closer look at the tape track. As we'll see, the incredible complexity of this part of the system deserves a second look.

The width of each track is 13.591

microns (about one-tenth the thickness of a human hair), and the length of each track is 23.501 millimeters. Each bit of data occupies only 0.67 microns, with an overall recording data density of 114 megabits per square inch. With a sampling rate of 48 kHz and 16-bit quantization, the audio data rate is 1.536 megabits per second. However, error-correction encoding adds extra information amounting to 37.5% of the original, increasing the data rate to about 2.46 megabits per second. Finally, subcode raises the overall data rate to 2.77 megabits per second.

The tape format has been designed

(following eight-to-ten modulation, this is increased to 360 channel bits). Four 8-bit bytes are used for sync and addressing. The sync word is repeated throughout the track in case a dropout disrupts sync. The ID code logs sampling rate, number of audio channels and copy inhibit. The block address code byte specifies whether the data block contains audio or subcode data; the first bit sets this. In the case of audio, the remaining seven bits store the audio block address. For subcode, the least significant four bits store the subcode block address. The parity byte is the exclusive—or sum—of the ID and block address bytes, and is used to error-correct them.

Audio data accounts for 256 bits.

different data areas, as shown in Fig. 2. Inter-block gap (IBG) signals of 1.56 MHz are used to ensure full overwriting of old tracks and prevent interference between data areas. When new data is written over old data, some areas are rewritten in accordance with the IBG positioning. In addition, the subcode areas are separated from the main PCM data areas, allowing independent recording of subcode. Because it has an independent preamble and sync pattern, subcode recorded independent of audio may be successfully locked during playback.

To assist tape tracking, and hence maintain a quality playback signal free of errors, a sophisticated tracking correction system is employed. Part of each data track contains two bursts of an ATF tracking signal (known both as automatic track finding and area divided track following signal). Its job is to control the capstan to ensure correct tracking. ATF recorded on adjacent tracks is used. One head, for example, can follow an A track, using pilot bursts recorded on adjacent B tracks. Likewise the B head follows B tracks, using A track ATF.

As shown in Fig. 3, ATF uses a pilot (f1), sync signal 1 (f2) at 522.67 kHz for A tracks, sync signal 2 (f3) at 784.00 kHz for B tracks, and erase signal (f4). As each track is read, ATF of adjacent tracks is detected according to timing from either the f2 or f3 sync signals. The pilot signal occurs early in an A track and late in a B track. Moreover, the ATF pattern repeats over four tracks with changes in the time of the sync signals to prevent the heads from following an incorrect track. The head overscans the track width to read a small part of the pilot signals (f1) on the adjacent tracks. The pilot signals on adjacent tracks do not occur simultaneously with respect to the following head, thus they are delayed for comparison.

The intensity of the adjacent pilot signals is compared using analog means to generate a tracking-error signal. The RF signal from the tape is amplified and fed to a lowpass filter to extract the pilot signals from the current and adjacent tracks. These signals are envelope-detected and applied to two sample-and-hold circuits to obtain the ATF error signal. Through this error signal, a servo system seeks to equalize the levels of the adjacent pilot signals by causing the tracking-

TRACK FORMAT

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
---	---	---	---	---	---	---	---	---	----	----	----	----	----	----	----

	SIGNAL	ANGLE* (deg)	Number of BLOCKS	PERIOD* (μs)	
1	MARGIN	1/2 fch	5.051	11	420.9
2	PLL (SUB)	1/2 fch	0.918	2	76.5
3	SUB-1		3.673	8	306.1
4	POST AMBLE	1/2 fch	0.459	1	38.3
5	IBG	1/6 fch	1.378	3	114.8
6	ATF		2.296	5	191.3
7	IBG	1/6 fch	1.378	3	114.8
8	PLL (PCM)	1/2 fch	0.918	2	76.5
9	PCM		58.776	128	4898.0
10	IBG	1/6 fch	1.378	3	114.8
11	ATF		2.296	5	191.3
12	IBG	1/6 fch	1.378	3	114.8
13	PLL (SUB)	1/2 fch	0.918	2	76.5
14	SUB-2		3.673	8	306.1
15	POST AMBLE	1/2 fch	0.459	1	38.3
16	MARGIN	1/2 fch	5.051	11	420.9
TOTAL			90	196	7500

Recording density.....61.0 kBPI fch.....9.408 MHz

*Calculated under the condition that 30 φ, 90° wrap angle, 2000 rpm cylinder is used.

Figure 2: Track Signal Assignment

so that data needed for control purposes, such as subcode, can be read during high-speed search. The accuracy of the search is assured by specifying an address within the block format. The primary types of data recorded on each track are PCM audio, subcode and ATF (automatic track finding) patterns.

Each data (or sync) block contains a sync byte, an ID code byte, a block address code byte, a parity byte and 32 data bytes, as shown in Fig. 1. In total, there are 288 bits per data block

Each recorded track consists of 128 of these blocks, for a total of 4,096 symbols. A preamble is recorded at the beginning of the track, and a postamble at the end; these 7-bit addresses label the track. The preamble also assists phase locking of the track. In addition, the recorded subcode area accounts for eight data blocks. Of these, 1,184 symbols are used for error correction, and 2,912 symbols are devoted to data storage. Other track areas are used for subcode.

Each track is further divided into

Before

After



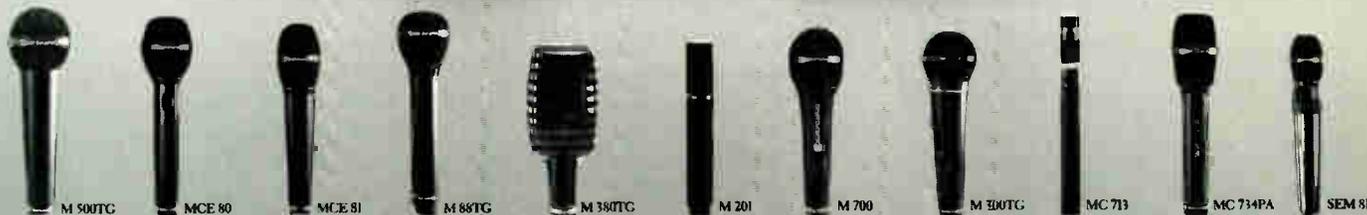
Before a microphone can qualify as a great road mic, it has to be a great mic, period. Above all, it must deliver the natural sound of voices and instruments accurately.

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More importantly, it's even harder to *hear* the difference. But that's something you'll have to prove to yourself. Fortunately, every time you put a TourGroup microphone to the test, you can take advantage of unparalleled Beyer sound.

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correction servo system to adjust tape-to-head positioning accordingly.

To accomplish this, linear tape speed is varied so that the head is properly centered on the diagonally aligned track. Unlike analog systems, where a circuit varying tape speed would be a very bad idea, DAT's output data buffer removes all time variations from the signal. The wider tracks on prerecorded tapes automatically cause the linear tape speed to increase; the operation of the servo correction system is not altered.

The pilot signal uses a low-frequency (130 kHz) burst that is not affected by the head's azimuth setting, which allows the signal to be detected from both adjacent tracks. On the other hand, this low frequency is difficult to erase; after overwriting, remnants of the previous pilot signal could affect ATF, limiting tracking performance. The head and its recording current must be designed to overcome this. The ATF area is divided into two parts in the track format and moved inward along the track so small amounts of track curvature do not yield tracking errors. Furthermore, automatic gain control in the servo system compensates for changes in playback gain due to head variations. Compatibility is easily achieved. The tracking control head (CTL) used in video recorders is not needed.

As in the compact disc, subcode data is used primarily for program timing and selection numbering. The

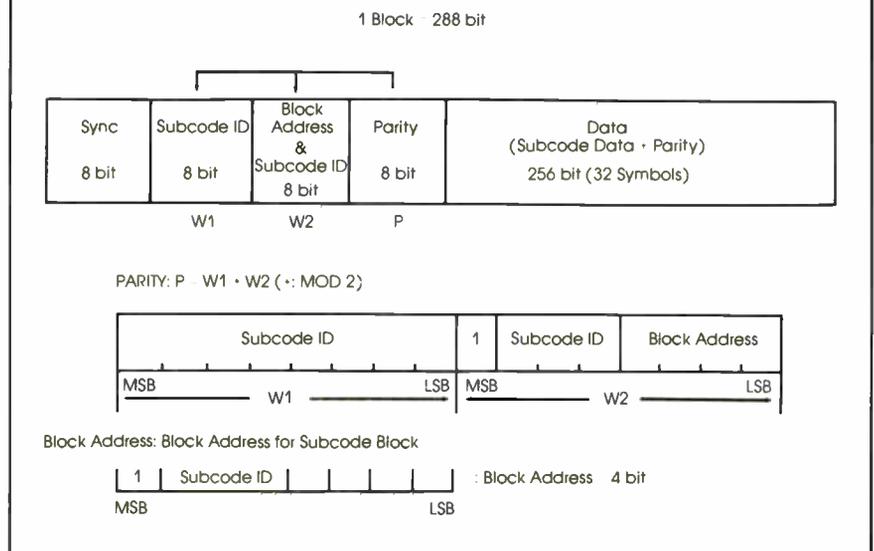
subcode capacity is 273.1 kilobits per second, or about 4.5 times that of the CD's 60 kilobits per second. Subcode data is written to two locations in the track to provide greater resistance to dropouts. The subcode data format, as shown in Fig. 4, adheres to the audio PCM format.

Other ID areas are contained in the

ing the audio data. Unfortunately, subcode does not have the capacity for SMPTE time code. Other solutions are being researched to provide that feature in future DAT recorders.

Next month we'll continue our in-depth look at DAT technology with a discussion of the modulation and error-correction schemes it employs.

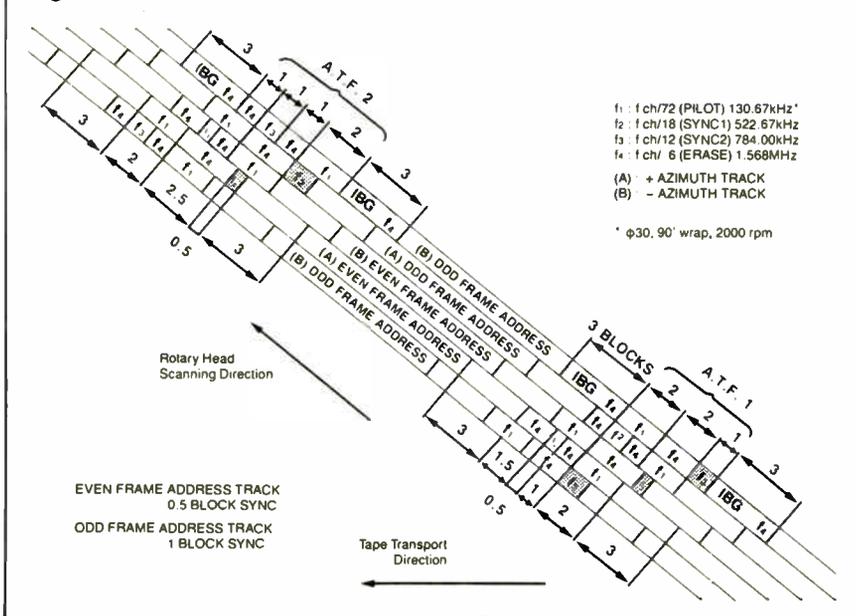
Figure 4: Subcode Data Format



PCM data areas. This data is used to record information on preemphasis, sampling frequency, quantization level, tape speed, copy inhibit, channel number, etc. Subcode may be written independently from audio data. For example, you could erase previously written subcode information and write new information without disturb-

Finally, if you've read through this article, I'll bet you have an interest in the technical aspects of digital audio. Thus it's fitting that I use this forum to alert you to the AES International Conference on Digital Audio, to be held in Toronto, May 14-17. This conference will devote three-and-a-half days to nonstop digital audio, with topics ranging from DAT to workstations, from DASH to optical disk. The presenters will be movers and shakers in digital audio, representing the companies leading the way. As a special feature, there will be considerable information on digital signal processing; DSP appears to be the next step in the digital revolution and we want everybody up to speed. It doesn't make any difference whether you're an old pro or a new student of audio, this AES conference will increase your digital audio IQ. I'll see you there. Contact the Audio Engineering Society for more information: AES, 60 E. 42nd Street, New York City, NY 10165, tel. (212) 661-8528.

Figure 3: ATF Track Pattern



This material is adapted from the forthcoming second edition of Ken Pohlmann's Principles of Digital Audio, available from Mix Books&elf.

by Stephen St. Croix

IT'S A SMALL WORLD AFTER ALL...

Every now and then I end up in Disneyland. If I'm lucky, it's just at the edge of the warm season, at 11:00 or so on a Thursday. Comfortable and virtually empty. If I happen to take children along, it is probable I will end up on the Small World ride. This always produces long-term mental damage in me. I've been known to be caught singing the hook from the silly little song they play on the ride for up to eight weeks afterwards. Unpleasant for all around me, I assure you.

Since this has happened at least five times (that's 40 weeks total singing time), I'm now thoroughly indoctrinated. I guess it is a small world after all.

Speed made it shrink, of course. Speed in travel and speed in communication. I live in Maryland, for example, but work in L.A. I've made the coast-to-coast trip more than 20 times in this past year alone. Later this week I will be trading in my frequent

flyer miles for a brand new 737 of my very own.

I live in Maryland because it is the perfect place for me to handle one of Marshall Electronic's businesses—the importation of European technology to America. Notice that this actually fits in with the theme of this issue.

It is this business that keeps me in touch with exactly how small this world is (and is not). I find myself dealing with the European concepts of developing technology, the Japanese concepts of marketing it and the American concepts of interfering with both.

Generally speaking, America is no longer a viable manufacturing economy. We have lost the edge. Long ago it became almost impossible to find watches, cameras, video and even televisions (that you would want) that carried the slogan "Made in America."

We are even rapidly losing our grip on computer technology. We do de-

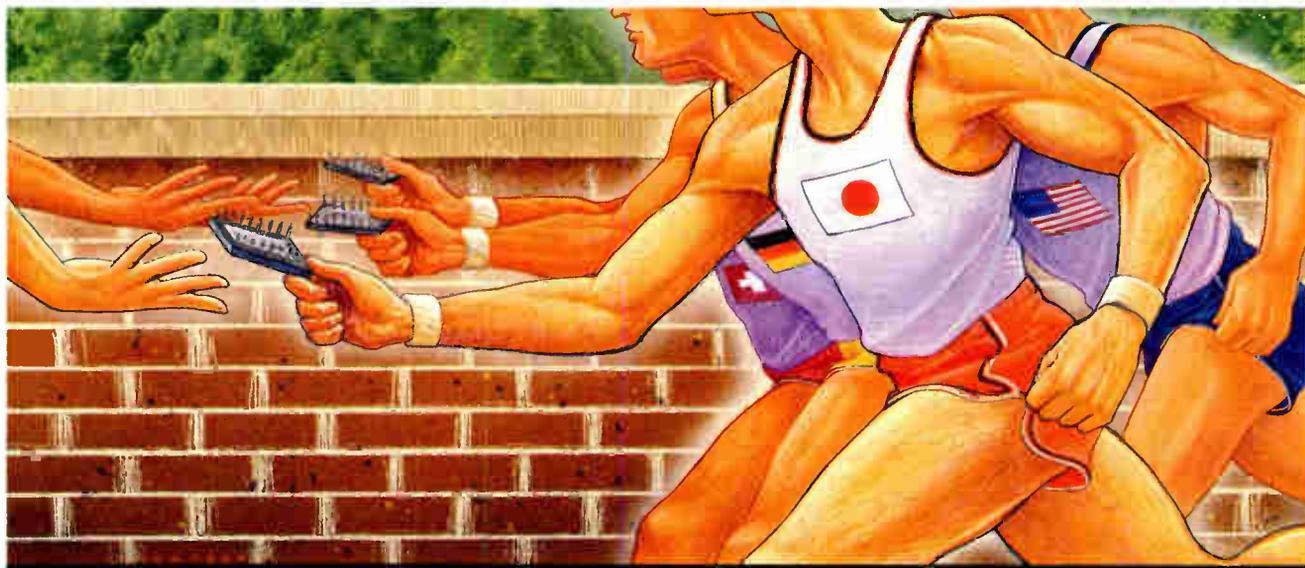


ILLUSTRATION: JIM PEARSON

sign great engines; that is, the actual computing chips. We design them, and the Japanese just wait and improve them. Nice system. For them.

Say, have you tried to pick up any memory lately? A good friend came knocking on my door about a month ago, late at night, all excited and shaking. He was wired from his first "Psst—hey buddy..." street purchase. He had just picked up 4 megs of RAM for his Mac II from a guy he met in a bar. He paid two times the rate that the manufacturer's 11-month-old catalog showed. These chips were not stolen. He was proud of himself because he did not pay *four* times the original price.

I can just see some dingy apartment in lower Costa Mesa, California: two guys are stooped over a kitchen table covered with 1,400 120-nano-second SIMMs. One is pouring in more SIMMs from a box that says "200 ns,"



while the other is stirring the pile with a wooden spoon. He smiles and says that he figures he can't cut the good stuff more than 30% with the slow stuff, or they'll start losing the regulars.

Yes, it's true that the Japanese decided to dump memory on us (sell under actual cost in order to force competition out of the market). We, the people, retaliated by purchasing vast quantities of memory, and generally having a pretty good time. Our government retaliated with pricing laws. That backfired by killing the incentive for the Japanese to make more chips, while we weren't capable of winding up fast enough here to meet the demand. To further lock us out, many of the houses decided to skip this garbage all together and start work on the *next* generation of larger memory chips, and not even make the ones that we need now. Prices in America skyrocketed.

Even Apple, an American company, *raised* the prices of their computers by 30%, claiming it was needed because of the unavailability (read "prices") of memory. Meanwhile, oth-

er houses all over the world stopped making these chips and turned their assembly lines to other formats that were not affected by the Yen-Mem Wars. So finally, fewer and fewer of the chips that we really needed were available, at any price. Nice. These silly games and impressive mistakes alone have helped to stop the flow of technology.

HERE WE GO

Please keep in mind as you read the following that I own and operate a 40-track, direct-to-disk recording studio, and I consume massive quantities of the equipment that I discuss here.

1: JAPAN-TECH

The Japanese offer more bang for the buck than anybody else, mainly in features. Today's typical Japanese rack-mount DSP machine probably has every feature that you have ever thought of, along with analog I/O, ten kinds of digital I/O and three different colors of light I/O. It retails for 22 bucks, in spite of the current value of the American dollar. And it sounds like... AHA! *That's* how it's done for \$22.

While there are notable American exceptions, such as Alesis, ART and Ensoniq, the Japanese tend to walk away with the little MI stuff, the monster digital multitracks and, of course, anything that has a *picture* of a spinning head in it (or spinning reels, or anything that makes a picture, for that matter). For some reason the Japanese also seem to be able to design and import *very* impressive analog tape recorders for both the hyper-pro and semi-pro markets.

Let's see now. I'll go out and find five top-of-the-line Japanese CD players and five top-of-the-line Japanese DAT machines. You go out and find five non-Japanese versions that actually function. The person who gets home first wins.

But that is consumer. We will have to wait and see how the real "pro" DATs come out.

The Japanese have never made a good analog filter, and all non-over-sampled digital gear has at least two very serious analog filters in the signal path for each channel. And then there are such things as reverb algorithms, determining if 24 bits is enough for a given 16-bit effect, or any of the other subjective decisions that are really part of every DSP algo-

rithm. Where are the products with design decisions made on the actual *sound*?

In my view, the Japanese get it right, but never really *right*. They get it right on paper, but our ears aren't so easily convinced. Specs and sound just aren't the same thing. A -90dB noise floor of white noise is fine, but a -90dB floor of grit and whistles just doesn't get it, though the specs may claim that it does.

I'm not talking about Japanese quality—they lead in almost every technology. I'm talking about sound. Not converters (they are almost always some form of American-designed Burr-Brown), but filters, DSP algorithms, resolution. This has always been the case where "decisions of sound" were made, (though they do get better every year). The day may come when they catch up, but then again, it may not.

2: GOOD OLD U.S. OF A-TECH

The story of the United States of America is very interesting (and very short) when it comes to the subject of rack-mount DSP technology for pro audio. We simply aren't the leaders anymore. The pitiful few American companies currently producing high-quality rack DSP are no longer technically competitive. Feature lists are okay, but control implementation is usually archaic. To make things even worse, actual audio quality (noise, distortion, etc.) lags far behind what is available from Europe.

At least there is little question that the best digital editor/recorder/workstations will be coming from the U.S., and soon, if present trends continue. But I'm not talking about vaporware here, even if it is vapor from a cooking product that will be ready in weeks. These comparisons are only of devices that exist today with a paid user base exceeding 25 units.

Some of the pro *analog* stuff from America is so good it's scary. Apogee filters and Meyer Sound components are good examples of this. Apple, Digidesign and Eventide are some of the American companies with digital products that should make us proud. But are all of these American-designed products actually *made* here?

Some little stuff, like the products from Alesis and ART that offer digital reverb for the price of good sushi, are also impressive. The rest of the world

—CONTINUED ON PAGE 162

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by Mel Lambert

THE COMING MEDIA EXPLOSION

Over the past several years, the nature of our industry has changed radically. Fueled by the major diversifications we have been witnessing throughout the entertainment and communications media, the types of audio production tasks being undertaken at sound recording and post facilities have been mutating in some highly intriguing ways.

Those of us stretching the topography of the new communications envelope are developing new ways of visualizing the future of audio production and related industries. No longer can we engineers, producers, system designers and facility owners remain on the outside looking in. As the U.S., like most developed countries in the Western Hemisphere, changes from a manufacturer- to a service-based economy, we need to make sure we are ready to fulfill the needs of this new client base.

Fundamental to understanding the future of the audio industries is the concept of *integration*. Just as we are coming to terms with the first tentative essays in the art of music and audio workstation design, we also must remain cognitive of the potential complementary applications for these high-power devices. Without the right sort of eyes, these new tools will remain

simply two-dimensional extensions, albeit faster and more fun to use variants of the analog technologies we currently use in the studio or on the road. What is going to separate the adults from the kids will be the ability to develop the myriad companion tasks that these new, razor-edged digital tools will allow us to undertake.

In a nutshell, the future lies in integrating sufficient functionality within our recording and production hardware to handle, for example, frame-accurate sound manipulation for video and film, audio for computer animation and industrial graphics, plus audio for CD-V and related fledgling media.

Digital audio and music workstations are based on a highly democratic technology, one for which the cost/performance ratio is much greater than that of similar analog-

based systems. Think about it: real-time signal processing in the digital domain simply outstrips analog devices by several orders of magnitude. As more and more creative producers and artists look to extend their creativity with integrated visuals and synchronized sonic elements, our current digital workstations will have to supply more and more processing horsepower to keep up.

All of us need to become familiar with the new vocabulary of media integration so we can assimilate the disparate needs of our clients.

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JUXTAPOSITIONS

Imagine this scene in the production studio of just a year or two away: a producer wants to develop some new sonic textures for an extended CD-V videodisc mix. The band is off promoting the new album (you also helped finish the computer-generated projection visuals and companion click track/MIDI bit stream before the entourage left for the Asian leg of a four-month world tour), so no help there. Instead, a couple of late-hour days at a digital visual effects/Paint-box house have resulted in 20 minutes of charged visuals, which now can be cut to the extended sound mix. Or maybe the producer wants to try it the other way around, with audio edited to picture, or possibly a combination of the two.

Your hard disk-based workstation can accommodate at least eight independent stereo "track" pairs against conventional time code, with real time EQ, dynamics control and high-precision editing. So it takes just a couple of minutes with the Macintosh or NeXT Cube front-end controller/VDU to assign and checkerboard the already-loaded material across the output ports. Also on the Mac/Cube screen, pull-down windows display the preentered video hit points and annotations, with mouse-driven icons to assign both music bars/beats and absolute time code designation to the cues. From the song's tempo (automatically analyzed by the software, in case the MIDI sequencer data isn't readily available), we can begin to break down the music into sections and assign loop points and extension points.

At the same time, a companion high-definition video monitor displays the visuals, along with cue flashes, so we can zero in on field-accurate synchronization and editing to picture. As the audio/video CD-V mix develops, we can dial up signal processing algorithms from our reverb library, room simulations, cross-linked delays and flanges, EQ, filter shapes and dynamics, and tag their start and end points (plus dynamic transitions) to relevant time code locations. All the fader, real-time EQ, effects sends and other fader, switch and push-button settings are memorized by the master computer and saved to the nonvolatile storage media of your choice.

Many of us wouldn't feel entirely

It's Not Just A Phase We're Going Through.

The tremendous success of the Tannoy PBM series of reference monitors is by no means coincidental. Since the introduction of the world renowned NFM-8 nearfield monitor, much time and effort has been spent on discerning the needs of the mixing engineer and the applied requirements of "playback monitors". The PBM Line exemplifies this commitment to excellence in reference studio monitoring. These compact loudspeakers sport robust poly cone mid-bass transducers utilizing efficient long-throw, high power voice coils. The low frequencies are carefully controlled by optimally tuned ports located on the rear of the loudspeakers. Hi frequencies

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specially designed to minimize unwanted cabinet resonance, and high frequency reflection. In summarizing, we have left the best feature of all for last "price versus performance."

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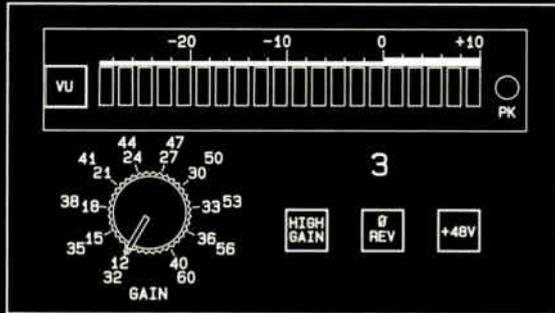
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comfortable handling sessions this complex every day of the session week. Or, for those of us who earn a crust manipulating sound for non-record label clients, consider the assembly of new dialog and music elements for an audio/video marketing presentation reedited to include additional Chyron graphics for emphasis, which need music hits to underscore their importance to the sales team. Or how about being involved with the production of a DAT master tape that contains new sound samples for a leading keyboard/workstation, which needs to be edited, accurately timed and formatted properly with an FSK-based pre- and post-amble handshake to simplify the error-free transfer to floppy disk?

You might ask yourself about some of the unknowns involved with such media integration. What *are* the building blocks that video, audio and media producers and artists will want over the next six months? The answer is: everything! Creativity knows no boundaries. Audio creationists and facility owners must develop a blueprint for the studio environment and hardware capabilities of 19-minutes-into-the-future.

High on the wish list for anyone planning to gather the building blocks of a high-power, flexible audio processing system should be the ability to: follow time code; import EDLs and abbreviated MIDI data; communicate at high speed with gigabytes of erasable optical storage; and exchange information with computer-based graphics systems.

Flexibility is the definitive key to survival, both for individuals and facilities. All of us need to become familiar with the new vocabulary of media integration so we can assimilate the disparate needs of clients who come to us not only because they need assistance with audio production, but because they need us to serve as the catalyst for expanding their visual and aural palettes.

Mel Lambert has been intimately involved with professional audio on both sides of the Atlantic for the past decade, and is currently president of Media&Marketing, a consultancy service for the pro audio industry.



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EUROPEAN RECORDING '89

PHOTO: MARCEL SIEGENTHALER



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Photo: Picar Tonstudio in Stein am Rhein, Switzerland, uses a Studer 905 mixing console and Studer A820 24-track, 6-track and 1/4-inch recorders. The 24-track machine is fitted with a TLS4000 synchronizer, and the studio is also equipped with a wide variety of acoustic and electronic instruments, including a Yamaha grand piano, Kurzweil 250 and numerous Macintosh-driven synthesizers and drum boxes.

NEWS

FROM AROUND THE WORLD

BRITISH RECORDING SCHOOL EXPANDS

The Manchester School of Sound Recording has completed construction of a 24-track recording studio in a recently purchased rehearsal studio complex near Stockport. Established in 1984, the studio serves as an important training ground for prospective engineers, as well as musicians and home-recordists who require a more comprehensive understanding of modern recording techniques.

The school has also expanded its curriculum to include courses and weekend specials on basic multitrack recording, advanced multitrack tech-

niques and sampling, and CMI programming workshops. For further information and a prospectus, contact the School of Sound Recording at 10 Tariff St., Manchester, M1 2FF England or telephone (061) 228-1830.

ARX ANNOUNCES NEW PRODUCTS

The Victoria, Australia-based Audio Research & Technology Pty. Ltd., manufacturer of loudspeakers and power amplifiers, has released a 31-band equalizer for sound reinforcement and studio applications. The unit takes up two rack spaces and features 300mm slider controls, balanced inputs and outputs and low-noise circuitry.

ARX director Colin Park says, "The EQ31 is the result of an extensive R&D program over the last two years and answers a question many of our clients and distributors have been asking: 'Why don't you build an EQ?'"

The company has also announced availability of its SS150VC power amplifier, an ultra-compact unit ideal for broadcast/monitoring applications. Output power is 50 watts per channel at 8 ohms, 75 watts per channel at 4 ohms.

AUSTRALIAN MUSIC INDUSTRY DIRECTORY DEBUTS AT MIDEM

The second edition of the 120-page Australian Music Industry Directory,



WEST 3 RECORDING STUDIOS

Located in West London, West 3 Recording Studios has been producing demos, singles, albums, film soundtracks, jingles and industry training productions since its establishment in 1982. The control room was rebuilt in 1986 by Professional

Audio Ltd. to provide a relaxed and efficient working environment for programming and sequencing.

The studio's 55 ft. x 24 ft. recording area is one of the largest in the city. A distinct live-to-dead-end split means that basic rock tracks can be recorded live and subsequently used as masters because of the excellent separation.

The control room features a Harrison MR-4 console with Audio Kinetics MasterMix automation and new Court Signature soft-domed SM60 Series monitors powered by FM Acoustics amplifiers. Also available is a good selection of near-field monitors and an extensive range of outboard effects and processors. ■



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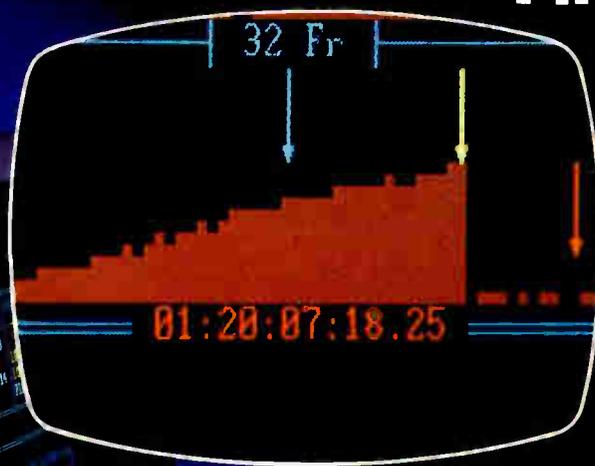
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which contains extensive listings of everything from artists to venues, debuted at the MIDEM music trade show in Cannes, France, January 21.

Two thousand copies of the 12,500 run were airfreighted and trucked to MIDEM in time for the prestigious international conference. Another 1,000 copies are going to the International Music & Media Conference in Amsterdam in late April. The remainder are going out free to Australian music industry entities, key media and music industry contacts overseas and a backlog of overseas requests for the sold-out first edition.

The directory was distributed through the New Music Seminar stand at MIDEM and by representatives of the directory—Kate Russell and publisher Phil Tripp—who were in attendance. According to Tripp, "It fits in well with the cover of the directory, which depicts the labels of over 75 Australian independent record companies. Indies are the lifeblood of our industry, and the ones who nurture the home-grown talent."

Contained in the directory are comprehensive listings of more than 100 record companies, 75 publishers, hundreds of artists and their manager/booking agent details, concert promoters, record pressing and tape duplication facilities, studios, legal and accounting specialists, a thorough detailing of music trade and consumer media including radio and video clip programs, as well as major venues and urban live music clubs. Overseas copies are available by air mail for \$10 (U.S.), including postage and handling.

For further information contact Phil Tripp at (02) 212 6677 or FAX (02) 211 5938.

HILTON SOUND ADDS SONY, MITSUBISHI DIGITAL RECORDERS

Hilton Sound, the London- and Paris-based pro audio equipment rental company, has enhanced its fleet of digital recorders with the recent purchase of two Sony PCM 3348 and two Mitsubishi X-880 machines.

Hilton Sound founder and chairman Andy Hilton remarks, "We've built our reputation and success by taking a leading role in offering the widest selection of the newest and finest equipment available with a backup service to match. With the market for digital recording growing rapidly throughout

Europe, we expect both machines to have a significant impact."

FILM, VIDEO AND SOUND CONFERENCE SET FOR JULY

This summer's 11th International BKSTS Conference and Exhibition promises to be a major event for the television, film and audio-visual production industry. To be held at Olympia, England, July 17-21, the event will focus on the latest innovations and developments for the production of high-quality images and sound. The exhibition has been expanded to include more television and video equipment, and organizers report that reserved space has already exceeded the total size of the 1987 event.

FM ACOUSTICS ACQUIRES PRECISION CABLE TECHNOLOGY

FM Acoustics of Switzerland, manufacturers of precision power amplifiers and linear-phase electronic crossovers, has recently acquired Precision Cable Technology of Switzerland. Precision Cable Technology is the supplier of Forcelines, low-loss precision transfer cables, which are now being installed in the world's leading concert halls, recording studios, theaters and a variety of other demanding applications.

The acquisition came about as a result of Precision Cable Technology's increased sales and the need for increased production capacity and a wider distribution network. The company now operates under the FM Acoustics Ltd. brand name. For more information contact FM Acoustics Ltd., Tiefenhofst. 17, CH-8820 Waedenswil, Switzerland.

FOCUSRITE MODULES IN LIVE RECORDING AT LONDON'S NEW MARQUEE CLUB

The relocation of the Marquee Club from London's Wardour Street to Charing Cross Road had threatened to put an end to that venue's long tradition of live recording, since no space is available for a mobile studio at the new location. The problem was solved by substituting 14 Focusrite modules for a mixing console.

Engineers Barry Farmer and Paul Riley, along with Eden Studios' Mike Dignam, were given the job of making a multitrack recording of blues guitarist Jeff Healey's gig at the club. Working in a very cramped corridor they used the modules to feed the signals

coming from the stage directly to the multitrack machine.

The Focusrite ISA 110 input signal amplifiers were used to feed drums, vocals and bass directly to the recorder, while two ISA 130 dynamics processor modules were used on lead and backing vocal tracks to provide compression. Farmer commented after completing the mix at Eden Studios two days later, "The Focusrite modules were ideal because of their transparent sound quality and generous overload margins—necessary when recording such dynamic program material. They were small enough to fit into the very tight space we had available, too."

INTERNATIONAL STUDIO NEWS

Two Japanese studios have recently completed installation of Soundtracs consoles at their facilities. An Eric 32x24 board is being used at **Studio Z'd** in Tokyo for overdubbing, and Tokyo's **One World Recording** is also fitted with an Eric 32x24 desk to be used for commercial recording. . . It took just three days for **George Benson** and a 40-piece orchestra to record his new album at **CTS Studios** in Middlesex, England. **Bob Farnham** handled the arrangements for the live sessions, with help from producer/engineer **Al Schmidt** and CTS engineer **Steve Price**. The tracks were recorded on a Mitsubishi X-880 digital recorder, and will be mixed at Benson's private studio in Hawaii. . . **Studio Marko**, one of the oldest and most respected music recording and post-production facilities in Canada, has recently taken delivery of the first three Lynx Keyboard Control Units in that country. ■

MIX ADDS INTERNATIONAL DIRECTORIES

This issue of *Mix* contains our first-ever International Directory of Recording Facilities & Services for the United Kingdom and Western Europe. *Mix* will also publish a second International Directory for the Far East/Pacific Rim (Australia, Japan, etc.) in the July issue. If you want to list your business in these new International Directories, you may request detailed listing information and questionnaires by writing to *Mix* at 6400 Hollis St. #12, Emeryville, CA 94608, or via FAX at (415) 653-5142.

MAKING MICROPHONES



"We can make him bigger, stronger, faster. We have the technology."

—from the opening of
The Six Million Dollar Man

German engineering, especially mechanical engineering, has always been revered for its precision and devotion to quality. Besides looking at sales figures for Mercedes-Benz and BMW, recognition of the importance of Germany in science can be seen in the fact that some university electrical engineering degrees require the study of German to facilitate examination of important German technical treatises in their original language. This respect is even manifested in the culture of the general public: whether saving the world or threatening it, genius German scientists have long been a staple of B-grade science fiction movies in this country.

The audio industry is by no means an exception to this. Although manufacturers of top-shelf audio equipment and brilliant recording engineers are found the world over, certain German products have become synonymous with uncompromised quality, and the title of *Tonmeister* is accepted as representing the highest degree of refinement and training in a sound engineer. Of particular note is the uncommonly high concentration of knowledge in the areas of acoustics and microphone design and use. Germany and its environs (i.e., AKG in Austria) have tradi-



by Larry Oppenheimer

tionally dominated the field of precision, high-end recording microphones. Perhaps the best and most well-known example is Georg Neumann, GmbH.

Georg Neumann founded his company in 1928 following the breakup of a successful collaboration with Eugen Reisz, a professor at the Technical University in Ernst Reuter Platz, Berlin. Working without the benefit of an extensive academic background, Neumann was Reisz's mechanical engineer during Reisz's seminal explorations in transducer technology. These experiments resulted in the landmark transverse current carbon microphone that came to be known as "the Reisz microphone."

But Mr. Neumann wanted to investigate other areas of transducers, especially building microphones on the principle of capacitive transduction, which, at that point, existed only in the laboratory. Neumann and Reisz parted ways, with Reisz bestowing onto his assistant the fabulous sum (for those times) of 20,000 marks, presumably as compensation for his contributions to Reisz's investigations. With this capital Neumann formed his own factory to manufacture microphones for professional use, which, at the time, mostly meant radio broadcasting. The first commercially available condenser microphones ("condenser" being an early term for "capacitor") were Neumann's CMV1, 2 and 3.

Being more of an engineer than a

A VISIT TO GEORG NEUMANN, GMBH

September 15, 1938: Arriving for a meeting with Adolf Hitler, British Prime Minister Neville Chamberlain makes a live radio address into a Neumann CMV3 "Bottle" microphone. Pictured below are two different versions of the CMV3.



marketing genius, Neumann's microphones were, for many years, sold under the names of larger companies, especially Siemens and Telefunken. This was especially true in the area of export, because Neumann had no distribution arm. Although Telefunken never had its own microphone production facility, thousands of Telefunken microphones manufactured by Neumann are still coveted possessions in the recording industry.

The CMV3, however, reached great popularity while bearing the Neumann name. The cylindrical shape of the microphone's body led to its nickname, "the Bottle." Several capsules with different directional characteristics were made to fit onto the Bottle, which became ubiquitous in Europe during the '30s. The CMV3 is often seen in photographs of the 1936 Olympic Games held in Berlin. The Neumann Bottle remained a fixture in the industry with virtually no design changes until the end of World War II, which gave plenty of time for copies from other manufacturers to appear.

But Neumann's interest in transducers went beyond microphones, leading him to also become involved in disc cutting technology. Around 1930, Neumann made his first trip to the UK to set up a disc recording company, which eventually evolved into Decca. Magnetic recording—to tape or wire—had not yet been invented, and cutting wax discs was the only means of recording sound. Thus, for the 1936 Olympics, Hitler ordered Neumann to make as many disc cutting machines

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as there were foreign journalists! To this day, disc cutting machines remain Neumann's second major product line, although the company's concerns have moved from cutting into wax to Direct Metal Mastering lathes for both records and CDs.

Needless to say, Neumann was strongly affected by World War II. He continued to manufacture microphones throughout the war period, but by the end, Berlin was so heavily bombed (and people forbidden to work in factories unrelated to the war effort) that he was forced to search elsewhere for a place to continue working. Neumann finally found a spot just north of the Bavarian border. In the first year after the end of the war, this was the only factory making Neumann microphones, and it continued to manufacture under the Neumann name for ten years. Finally, it became too difficult to manage this factory, which is located in what became East Germany, and they stopped using the Neumann name, although microphones still come from the plant.

During the period when it was impossible to work in Berlin, Mr. Neumann was offered a good job at a laboratory in Paris. He accepted and, in the course of his work there, invented the gas-tight nickel-cadmium accumulator. This breakthrough meant that these batteries could be manufactured in very small packages, which begat the ni-cad batteries we know today. This invention had even more impact than any of his transducer products.

When conditions improved in Berlin, Neumann returned to Germany, first to Heilbronn, where Audio Export (Neumann's worldwide export agent) is today, and then to Berlin again, where his former employees had started up production and were beseeching him to come back.

In 1947, the same year as his invention of the gas-tight ni-cad battery, Neumann made another breakthrough that had a far-reaching impact on recording. This was the release of the first switchable pattern condenser, the U47. Using two diaphragms with a shared backplate between them, it was possible to vary the pickup pattern of the capsule merely by switching the electrical polarization of the diaphragms with respect to the backplate. There were two variations of the U47: one switched between cardioid and omni, the other between cardioid

and bidirectional. The versatility and fidelity of the U47 made it popular enough to unseat RCA's ribbon mics as the undisputed kings of the studio.

The U47 and its successor, the U48 (the model numbers indicated the year of the microphone's release, until 1967 when Neumann discontinued tube mics), both used a steel tube (or "valve," as they are known in Europe) made by Telefunken and called the VF14, which was carefully selected to meet specifications for application in a movable microphone. The VF14 can still be found, but the quantities are so low as to make selection infeasible; hence, it is nearly impossible to repair or restore these microphones to their original specifications. At one point Neumann attempted to redesign the microphone with a Nuvistor (an RCA device that predated the transistor), but this, too, has long been out of production.

The U47 brought worldwide recognition to Neumann, but in 1949 he took things one step further by obtaining a patent on a system of continuously varying (or switching) the pickup pattern of a double-diaphragm condenser mic from a remote location by altering the phase and/or amplitude of the polarizing voltage for one of the diaphragms, while the other remains fixed. The M49, which used this system, spawned a host of imitators, and this system is still in use (although two separate capsules mounted back-to-back often replace the dual-diaphragm, shared-backplate capsule).

The next big breakthrough was not in the laboratory. Around 1951 Georg Neumann encountered Stephen Temmer, a former member of the Vienna Boys Choir who had escaped Austria before the Nazi invasion. Temmer was most impressed with Neumann's products and set about feverishly promoting and importing them to the United States. Temmer's enthusiastic proselytizing soon brought much greater response than the tepid efforts that a large corporation like Telefunken could justify expending on such specialized products. Temmer's Gotham Audio quickly became synonymous with Neumann in the United States, and Gotham continues today as Neumann's exclusive import agent for the U.S., although Temmer himself recently retired.

Temmer's influence on Neumann's product designs over the years—both microphones and, to a greater extent,

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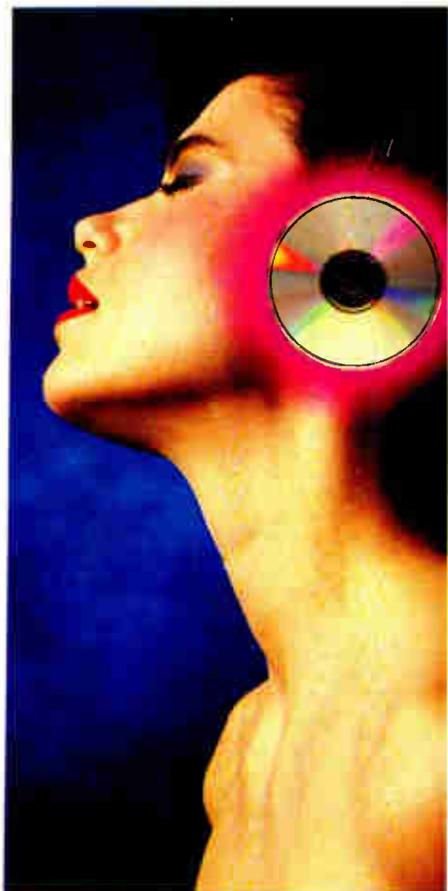
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disc cutters (which were not manufactured during the war)—was immense, as was the impact on Neumann's worldwide sales that resulted from Temmer's operations in the U.S.

The '50s saw the rise of television production as a major market for mics, but TV demanded smaller, less obtrusive profiles than the U47 style. The KM53 and 54 were produced with this purpose in mind (in 1953 and 1954, of course). These models were only 21mm in diameter and used a smaller Telefunken tube, the AC701. Stereo recording and reproduction also became popular in the '50s, so in 1956 Neumann brought out the SM2, the world's first stereo microphone.

The '60s proved to be another period of extensive growth for Neumann. Solid state electronics (i.e., transistors) became easily available and started to mature. This offered a number of advantages—lower power consumption, less heat generation, smaller size—that are even more critical in microphones than in many other applications. Unfortunately, the transistors made in the early '60s did not have a sufficiently high input impedance to buffer the very high impedance of a condenser microphone capsule. Transistorized microphones would have to wait. In fact, many industries were skeptical about using the early transistors (which were germanium) in any critical application; it was thought that they could not consistently meet specifications for a piece of professional equipment. Neumann disagreed.

Around 1963, Neumann began manufacturing mixing consoles, the first made with transistors. After Neumann's example, Rupert Neve and others began building transistorized mixing consoles. The competition forced Neumann to reevaluate its aims in the console business. Although the original market had been the recording industry, the proliferation of console makers in this area caused Neumann to concentrate more on the European radio broadcasting market. Production of standard consoles was halted; from this point on, every Neumann mixing console would be custom. A little known fact is that Neumann continues to manufacture mixing consoles (even a prototyped digital console), although it is not a major pursuit.

Neumann consoles are extremely expensive, however, so the company is selective about its customers. "It only makes sense for people in Europe, because we need the customer

close to us to exchange ideas," explains Neumann sales manager Dirk Rowehl. "We need a strong and well-trained sound engineer for us to make a console to his needs. There are few who need such consoles, and we are only making about one per month."

The more significant development for the recording industry was the introduction of the Field Effect Transistor (FET). FETs were significantly different from silicon or germanium transistors, most importantly (for Neumann), having a much higher input impedance. Finally, a microphone could be built with solid state electronics that would not load the capsule output.

The world's first transistorized mic, the U87, was unveiled in 1967. The U87 was a switchable pattern condenser that contained a single transistor in the amplifier section. Like the U47, the U87 took the recording world by storm and spawned a host of variations from other manufacturers. As a general-purpose critical recording mic, the U87 stood alone. Some engineers (i.e., this writer) were even heard to say that the U87 ought to have a large "S" emblem on its case and come with a red cape, similarly marked. (It is probably fortunate that this option never became available.) The U87 remains the workhorse of the industry, so much so that Neumann updated the design in 1986 rather than discontinue the model. "People were so familiar with the U87 that we had to offer the old capsule with all of its old defects, and upgraded circuitry," muses Rowehl. "We hope that the sound of the U87 and U87a are similar; only our customers can say if they are."

The success of the U87 led the Neumann team to redesign entire mic lines to use FET amplifiers instead of tubes, becoming the FET 80 series of microphones manufactured today. The KM mic series, originally designed for television, was updated as a line of capsules that interchanged onto a housing containing the FET amplifier circuitry. In the FET 80 incarnation, the KM83 is an omnidirectional capsule and the KM84 and 85 are both cardioid, the difference being a low-frequency roll-off in the 85.

Semiconductor technology moved very swiftly, and by the time the U87 saw its tenth birthday, transistors had matured to the point that the Neumann engineers thought the U87 electronics could be significantly improved. The U89, introduced in 1978,

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contains 11 transistors in its amplifier circuitry, yet is slightly smaller than the U87. Given Neumann's predilection for sound clarity, a change from a single transistor to 11 transistors seems fairly radical. Couldn't the sound be affected by passing through this many semiconductors? Rowehl is both open enough to admit the issue and confident enough to dismiss it: "This is worth a discussion—how many stages you use for an amplifier—but the U89 is doing a good job and is not doing any harm to the signal, and in the new TLM microphones there are even integrated circuits, but we got a worldwide patent for our amplifier design. This amplifier handles 127 dB of dynamic range, with which no digital system can be compared."

The TLM170, released in 1983, is another step forward; TLM stands for TransformerLess Microphone. The elimination of an output transformer, combined with the patented amplifier, yields a microphone with lower noise and source impedance, yet able to withstand higher maximum SPL before distortion than virtually anything else in Neumann's line. The amplifier electronics are what Neumann calls a "hybrid" (sometimes called a "discrete op-amp"), that is, a potted module that contains selected FETs

and laser-trimmed resistors. The acceptance of the TLM170 has been so fast that it has already overtaken the U87 in sales. The newest use of the TLM technology is in the KM100 series, a TLM version of the old KM series, which was released a few months ago.

Neumann has once again been responding to new demands from the broadcast and film industries, too. Around the same time as the release of the TLM170, Neumann created the KMR81 and 82 shotgun microphones. It took Neumann's customarily long development period to overcome the problems of ENG/EFM, as Rowehl details: "We needed some time to get something that we feel is a little bit better than what is on the market, mainly in terms of off-axis coloration. It's relatively difficult to build an interference tube that does not cause a change in frequency response of off axis sound. The Neumann microphones that you use for post-production purposes marry well to the shotgun; they have the same sound and there is no difficulty mixing them." The most recent addition to the shotgun series is the RSM190, an M-S stereo shotgun employing TLM electronics.

Microphone design differs from digital signal processing, for example, in a significant way: microphones and

Neumann's Old World Excellence

"No brag, just fact."

—Walter Brennan as Grandpa on
The Real McCoys

Dirk Rowehl does not fit the stereotype of the sales manager. Outgoing yet not gregarious, confident yet not aggressive, and knowledgeable about the technical nature of his company's products beyond most salespeople, Rowehl does not "hustle" people with time-worn sales techniques, because there is neither the need nor desire to do so. Neumann is an Old World company with Old World values. Rowehl's pride in his own work shows as he discusses the company's philosophies and how they are translated into microphones.

Mix: Neumann's method of making microphones seems to keep tight control over every aspect.

How much of the work is done in the Berlin factory?

Rowehl: The entire microphone manufacturing process is done here, from the housing tubes to the packing, along with developing and testing the prototypes. Capsules are manufactured by a very special crew working in a clean-room environment. We are very proud of them. We do not organize production into many horizontal steps, but whoever makes a capsule will do it from the very first step until the end, do some testing in between, make some decisions about whether to proceed or not, and how to proceed, until handing over the finished capsule. This is always done individually with each capsule, and it is all done manually.

Sometimes production is actually stopped because somebody thinks something can be improved, and they forget about delivering the quantity of microphones they should. The same happens to con-

—CONTINUED ON PAGE 161

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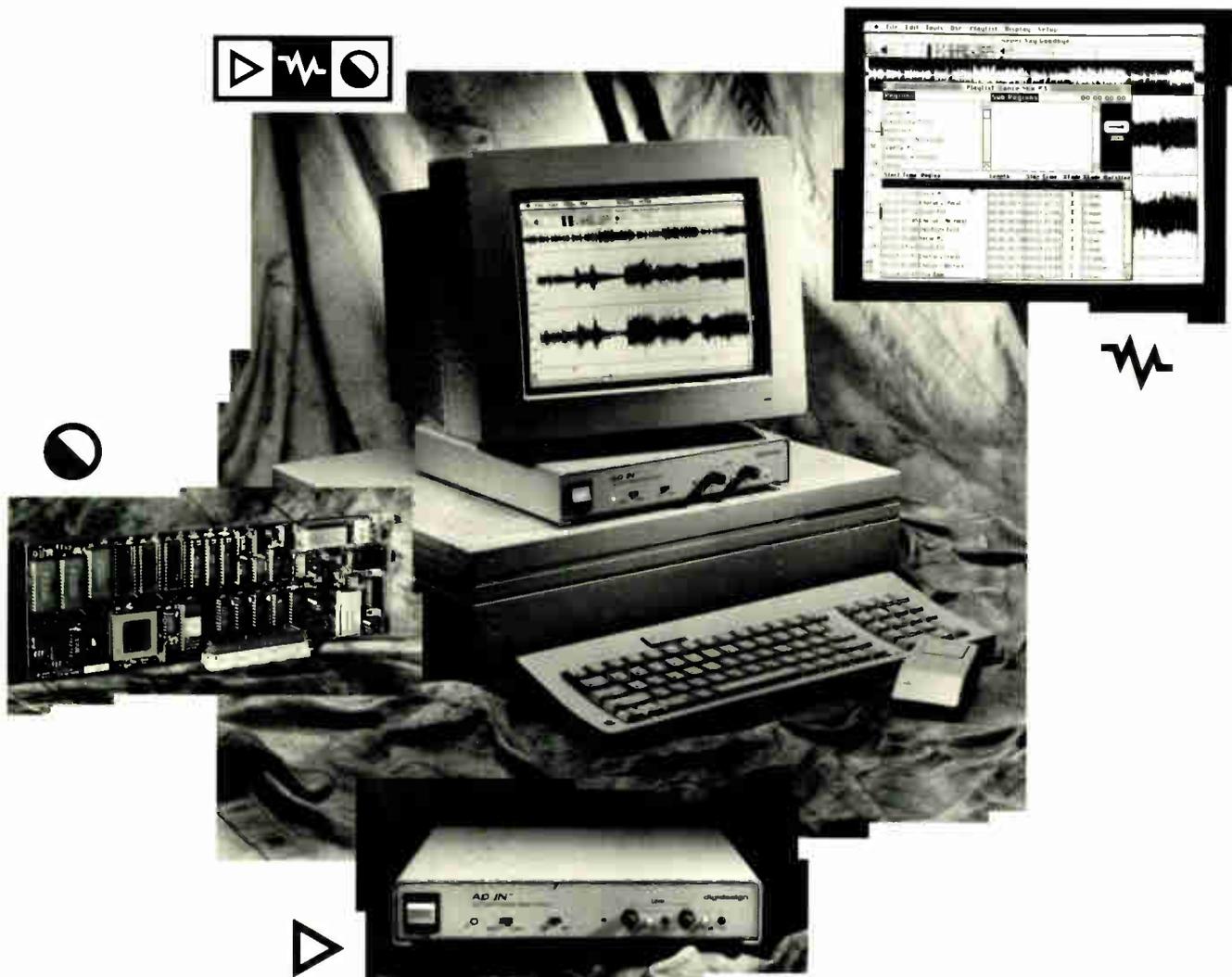
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loudspeakers are the only parts of the modern audio signal chain that actually deal with sound instead of an electronic signal. Thus, the primary design considerations are problems of physics and mechanics, which are typically less subject to change than computer hardware and software techniques. Although new microphone technologies do crop up occasionally, advances in microphones more often entail refinement, precision and craftsmanship. Given the long and illustrious

history of Georg Neumann, GmbH, it is likely that we will continue to turn our eyes—and lend our ears—to Germany for the next steps. ■

Larry "the O" Oppenheimer is a musician, sound engineer/editor and consultant in the areas of music and audio technologies. His company, Toys in the Attic, is based in San Francisco, where he maintains an affiliation with Russian Hill Recording.



A U69 microphone under test in an anechoic chamber. The test speaker was built by Neumann also.

The Fine Art of Microphone Manufacture

How is a Neumann microphone made? Sales manager Dirk Rowehl and capsule design engineer Hans Nehring endeavored to shed some light on this. (Stephan Peus, Neumann's head of microphone design, was in the U.S., training and getting direct feedback from users when this interview took place.) Over the course of the interview, Nehring peered curiously at the \$50 Radio Shack PZM microphone being used to record it. After a brief exchange, the microphone was purchased from this writer on the spot so that Nehring could have a closer look at his leisure.

"The most critical part of the manufacturing process is the cap-

sule," begins Rowehl. "We look into new capsule designs frequently and in parallel. For instance, if we are looking for some different form of cardioid characteristic, it will take a considerable amount of time, a lot of experience and a lot of experiments to find a suitable one. Since there are many capsules being developed in parallel, it is impossible to say how long the development of a capsule design takes, but it may take five or six years to find a working design."

A Neumann mic capsule starts with a thin sheet of a polyester material, like Mylar, for the diaphragm. Other materials, including Teflon, have been considered, but found unusable. "The main reason," says Rowehl, "is that we need the thickness of the polyester film to be three-and-a-half microns or

—CONTINUED ON PAGE 46

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—FROM PAGE 45, FINE ART

six microns [for small- or large-diaphragm capsules, respectively], but Teflon is not available that thin. Also, the characteristics of Teflon vary too much with temperature, and the weight per square unit is too high. These parameters affect the acoustical behavior enormously. But for the backplate of an electret condenser capsule, you need a material with an isolation coefficient as high as Teflon's. This is why an electret condenser microphone cannot be as good as a regular condenser microphone." (The added thickness and weight affect the high-frequency response.)

The sheet is placed in a vacuum chamber and a layer of gold—so thin that it can be seen through under a light—is sprayed onto the middle of it. This foil is placed onto a mounting ring, fixed and tensioned, then the excess is trimmed away. Every stage of the process must be performed to very narrow tolerances. The diaphragm (or diaphragms if there is a shared backplate) and backplate are then mounted together. Since the spacing and parallelism are also critical, extremely thin shims manufactured by Neumann for this purpose are inserted. Each of these shims is only one micron in thickness; "Sixty of these rings make the thickness of one hair," Rowehl states.

Once mounted mechanically, the capsule goes to a tube known as a Kundtsches Rohr for acoustical testing. Although the capsule has been tested all along for electrical properties, the Kundtsches Rohr is the first acoustical testing, and there are several Kundtsches Rohrs of different sizes that are used to test different areas of the capsule's response.

After emerging from the Kundtsches Rohr, the completed capsule must be connected electrically. "The leads connecting the capsule to the amplifier circuitry must be very carefully protected against humidity," according to Rowehl. "This is what is called the 'high-impedance section' and, to maintain long-term stability, its characteristics should not alter with environmental changes. The isolation between the leads and the circuitry [i.e., the load impedance seen by

the capsule] is on the order of a teraohm, 10^{12} ohms. So, if moisture collects, it has a [significant] influence on this and can cause hum or noise in the amplifier." Consequently, the leads are made of copper, coated with Teflon, and then lacquered. Since the forming and attachment of the leads has to be done by hand, gloves are often worn to prevent the salt and moisture of sweat from contaminating the leads.

With leads attached, the assembly goes to the final step where the amplifier section and the capsule are put together. The amplifier section is assembled and tested separately, in a different shop.

Finally, the finished microphone goes through a series of evaluations, including computer-assisted testing in an anechoic chamber, to assure that specifications are met. At the end of the whole process, performance is certified by the final quality control tester, who listens to each and every microphone with his or her own voice to make a subjective judgment of consistency from one mic to the next. The importance of this last step is highly emphasized at Neumann; failure to meet approval at this stage dooms a microphone to another round of testing and, possibly, reworking. This vital position was filled by the same man for over four decades until his retirement late last year. At the time of this writer's visit, he was devotedly training his replacement, a woman about 30 years his junior.

At last, the mic is carefully packed and sent off to make some sound engineer happy. The creation of a Neumann microphone is laborious and exacting. "That's basically the manufacturing process," concludes Rowehl, "but, believe me, it's all handmade, there is no mass production. The capsule is going to its end and a new capsule starts."

—Larry Oppenheimer

Thanks to Dirk Rowehl and Hans Nehrung of Neumann (Berlin), Juergen Wahl of Gotham Audio (Los Angeles), and special thanks to Volker Siegmann of Audio Export (Heilbronn) for making this article possible.

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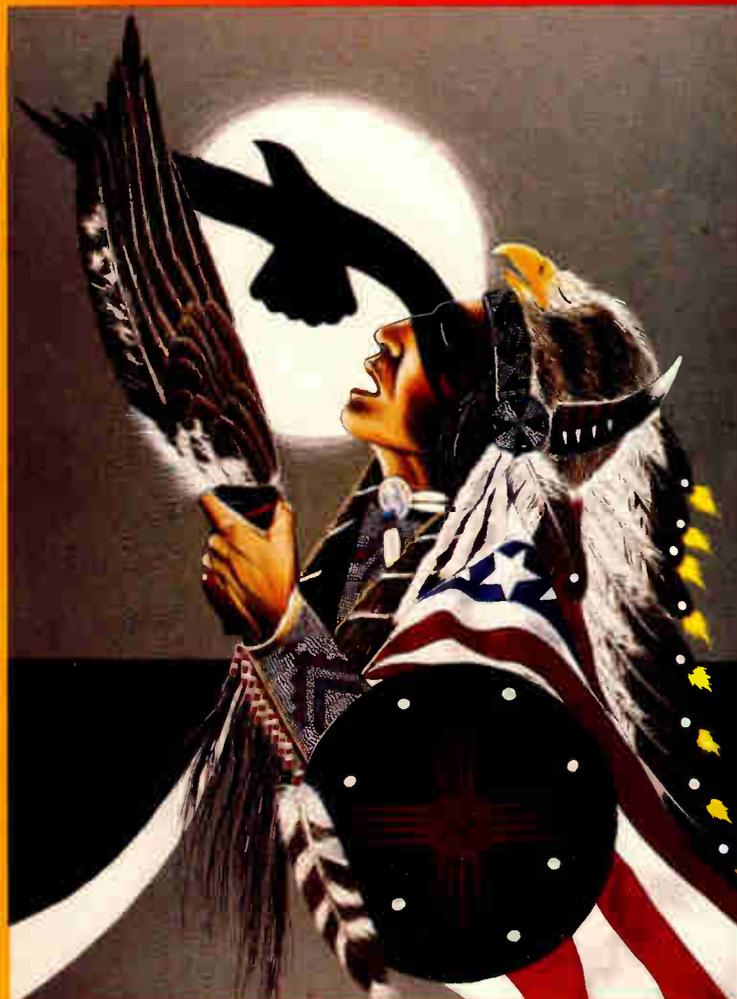
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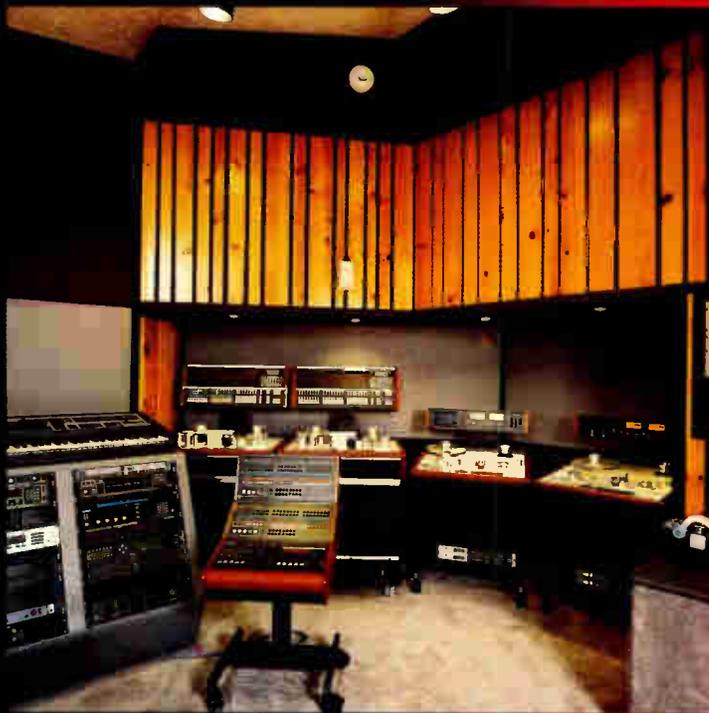
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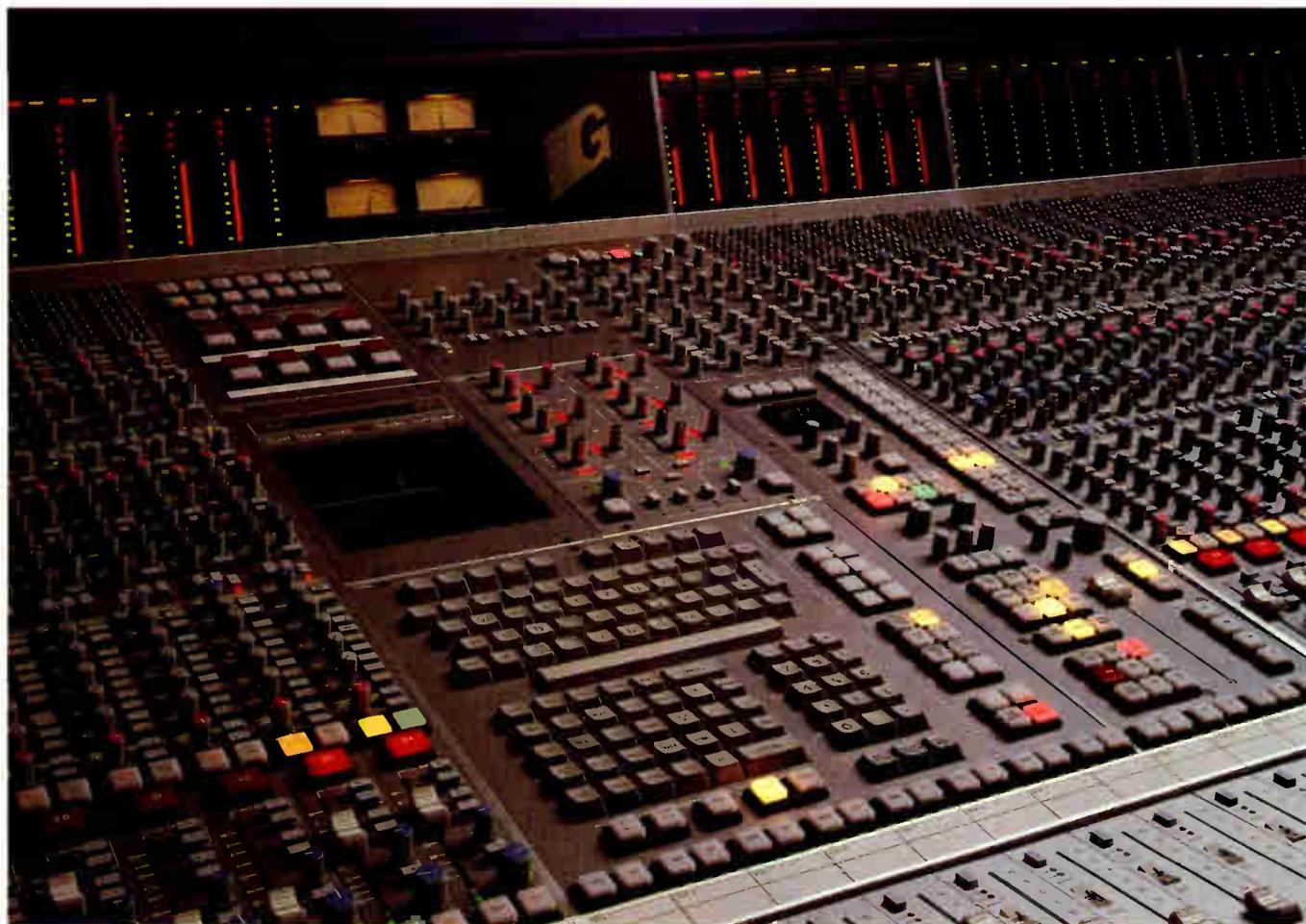
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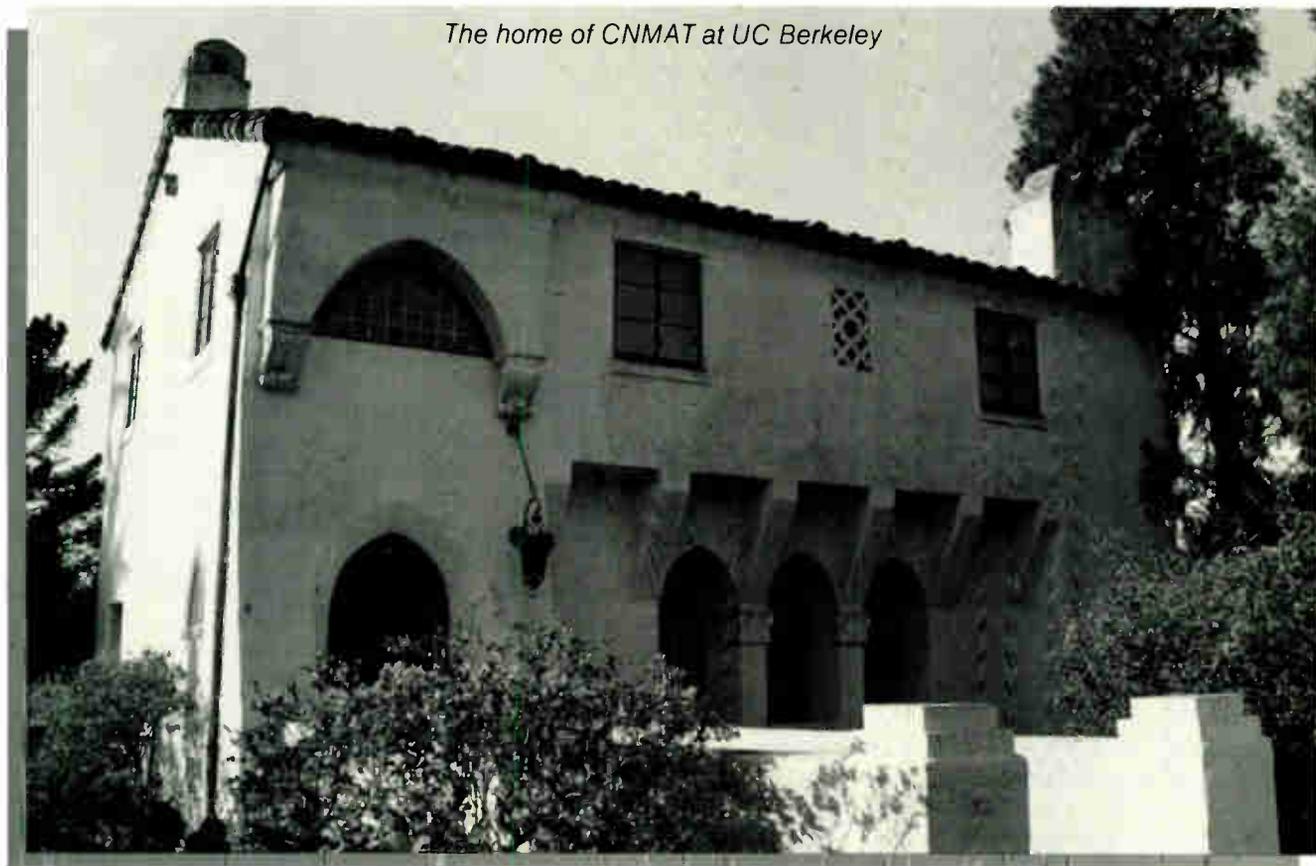


PHOTO: LINDA JACOBSON

SOUNDS OF SCIENCE

Dreams do come true.

The head of the music department at the University of California at Berkeley once told professor Richard Felciano to imagine a creative environment that would fulfill his wildest dreams. So he did. Three years of planning have passed and 1989 will see his fantasy become reality. This fall, activity at the Center for New Music & Audio Technologies (CNMAT, pronounced "senmat") will get wholly underway, establishing it as a globally conscious research institute fully equipped to explore the science of sound and music.

"At this point in history, the artist and the scientist have a kind of natural symbiosis, almost an obligation to inform each other," says the professor. Felciano and his colleague David

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by Linda Jacobson

Wessel sit in the large, acoustically live space that is CNMAT's first floor in its new home on the hilly north edge of the Berkeley campus. "That's what I want to get going here. I'd like to see many scientific projects with some kind of artistic component or parallel being developed by people with real artistic chops. If it works right, that necessitates the scientist and artist working together.

"This cross-fertilization," smiles Felciano, "will push each of them into areas where they otherwise wouldn't have gone." And who knows what could emerge from such travels? CNMAT is patterned (somewhat) after two famous, pioneering audio facilities: the Parisian Institut pour Recherche et Coordination Acoustique/Musique (IRCAM) directed by Pierre



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Computer music pioneers David Wessel (L) and Richard Felciano head up CNMAT at UC Berkeley.

Boulez; and the Center for Computer Research in Music and Acoustics (CCRMA, pronounced "karma") directed by John Chowning at Stanford University in Palo Alto, Calif.

UC Berkeley approved the purchase of an elegant, Spanish-style villa for CNMAT last year, to be called Genevieve McEnerney Hall (after its patron). The building is well known to those who travel in new music circles: its address is 1750 Arch Street, headquarters of the progressive, artsy 1750 Arch Records and Arch Ensemble in the '70s. It most recently served as a private residence, but there's still the shell of a small recording studio and control room in the basement. Tie-lines run throughout the three floors. Reconstruction was underway at press-time, and soon CNMAT will contain performance space, seminar rooms, offices, workshops, research labs and a kitchen. The property also includes lush, rolling lawns, great for outdoor performances.

Those who pass through CNMAT's gateway will come from all parts of the campus. Felciano intends this place to be thoroughly interdisciplinary, linking audio-related activities

occurring in the studies of perceptual psychology, linguistics, psychoacoustics, mechanical engineering, architecture, music and computer science.

Felciano will be CNMAT's general and artistic director. As an acclaimed composer since the early '60s, he has received grants from the French, Italian and German governments, as well as from various national foundations. John Wawrzynek, CNMAT's assistant professor of computer science, most recently was working with Carver Mead (Cal Tech-Pasadena) designing VLSI-based computer chips for sound synthesis. David Wessel, research and technical director, moved back to his native America after eight years in France as an IRCAM director.

Wessel is another computer music maven well known in the field. Back when he was putting together the CNMAT proposal, Felciano telephoned Wessel at IRCAM, where Felciano spent a year in '82 studying sound at the microacoustic level. He asked if Wessel knew anyone who might be interested in helping him run CNMAT. "I never dreamed his answer would be: 'You know, the way you described it, I think I might be interested.' I

CNMAT will link audio-related activities occurring in the studies of psychology, linguistics, mechanical engineering, architecture, music and computer science.

almost fainted!" Felciano says.

A graduate of Stanford University, Wessel was a Michigan State professor on sabbatical when he first visited Paris in 1976, back when IRCAM was being built. He stayed two years. Then, in 1979, he was asked to stay on permanently. In 1980, Boulez asked Wessel to head a group that would acquaint composers with computers. "Our job was to bridge the science/technology and artistic sides of IRCAM," Wessel says, "so I was very inclined toward [Felciano's] view that we must link artistic and scientific developments so they mutually stimulate each other."

CNMAT's work is intended for both scientific and "lay" beneficiaries. Musicians, for instance, will be able to make compositional and performance use out of CNMAT's discoveries. Architectural students will study sound reflection and spatial location to help them build better buildings. Linguists will examine the spoken word and sound symbolism, learning about various manifestations of communication. And ethnomusicology researchers will explore non-written musical traditions to help us better understand other cultures.

These projects will primarily involve sound scientists in the design and development of computer hardware and software. One goal is to develop new VLSI chips for synthesis, then integrate those chips into an existing microcomputer system. (At presstime, the leading candidate is the sleek NeXT computer developed by Steve Jobs.) "John Wawrzynek and his students are developing a powerful synthesis engine of extremely high audio quality that outdoes, by a large extent, what can be done with current signal processing technologies the audio world is getting hooked on, namely the Motorola 56000 and 96000 chips," says Wessel, referring to the new sound-producing chips used in such systems as WaveFrame's Audio-Frame and Digidesign's Sound Accelerator computer card.

CNMAT's researchers hope to avoid traditional means of audio control, intending all audio to be digital. So, Wessel says, "We're also interested in developing chips to solve communications protocol problems [that exist when] passing audio around [between digital systems using differing 'standards']." CNMAT's recording studio will not hold the typical long mixing console, multitrack audio record-

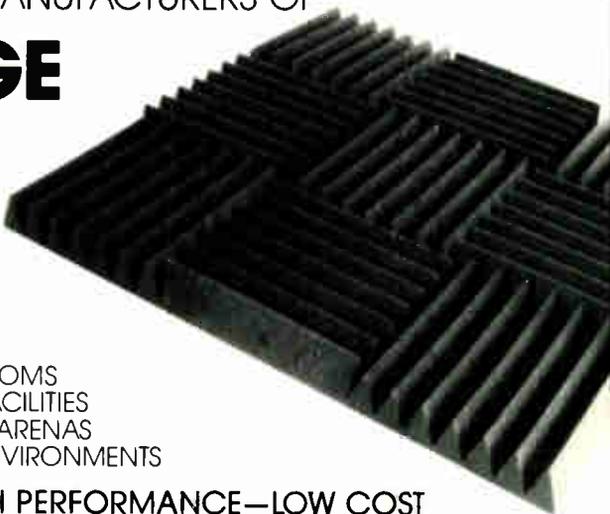
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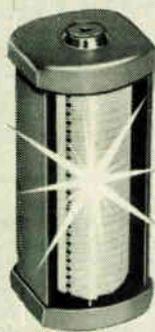
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A steady stream of scholars will cross a continent and an ocean to study and earn degree credits. The international consortium already exists.

er and associated gear. Instead it will be built around a disk-based, multi-track, graphically oriented audio workstation. Wessel isn't committed to any current digital audio workstation, but emphasizes the need for an "open [architecture] and large-capacity system." Felciano enthusiastically adds, "We have an exciting opportunity here, because we don't have to bring along a lot of the past."

Indeed, Felciano and Wessel consider it a priority to avoid forcing new technology to fit into the mold of old technology: "When you build a synthesizer, you have a wonderful instrument that can make all kinds of sounds," comments Felciano. "But you stick a button on it that says 'clarinet.' The problem is to make things that sound believable, not artificial, in terms of the real world."

Other plans for CNMAT's studio include super high-quality loudspeakers for electronic performance. Wessel points out, "Some of the problems inherent in sound reproduction can be solved by the use of signal processing chips in the electronics. When it comes to the joining together of digital signal processing techniques and loudspeaker technologies, we want to be there."

Wessel would also like to see CNMAT involved in developing new kinds of controllers for synthesized sound. "The mouth controller is a very research-y area as soon as you get away from the saxophone model," he says, wondering if people are "ready" for an "abstract, non-wind instrument-oriented controller. But we'd like to explore these things. And we're in the position to do so," alluding to the treasures available at UC Berkeley.

UC Berkeley is world-renowned for its high-caliber faculty, students and facilities. Its strong commitment to hearing research and devotion to perceptual psychology are practically legendary in academic circles. Its computer science department is profoundly

involved in database work ("They envision an online, digital music library—large amounts of musical data, printable as well as playable, in a form that's easy to edit and manipulate," Wessel says). Its music department is deeply committed to musical scholarship, an area that Wessel feels could greatly benefit from the use of these new technologies ("We think music is ripe for hypermedia").

CNMAT will join with CCRMA and IRCAM to form a powerful triumvirate. A steady stream of scholars will cross a continent and an ocean to study and earn degree credits. The international consortium already exists, says Wessel. "Right now we're linked to IRCAM via electronic mail. And they're interested in getting involved in the NeXT system; it's likely our collaborators at both IRCAM and Stanford will use the same machine, because it's important for the community to use the same basic software development environment."

Wessel joins in, "There are just natural and complementary elements to the relationship of Berkeley/Stanford, as two world-class universities, with IRCAM, which is a wonderful place but doesn't have an institute of applied mathematics, for example."

"And a Nobel laureate right across the street," offers Felciano. "In all modesty, Berkeley may have more Nobel laureates than any other institution in the world. And most of them are in the sciences. These resources are not available at IRCAM every day. On the other hand, IRCAM is one of the most exciting places in the world, and it represents a rich crossroads of ideas. That gives us a European connection, and a major one at that."

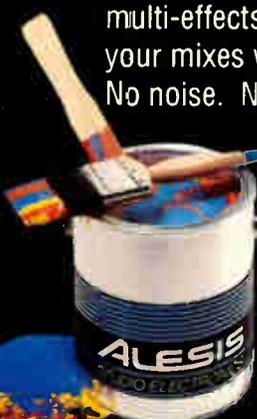
"Our goal is to coordinate research projects," concludes Wessel, "so we can maximize our potential and build on what each of us works on. We all want to be as good as possible, and we also don't want to be working on exactly the same widget. But we will be able to do that, too." ■

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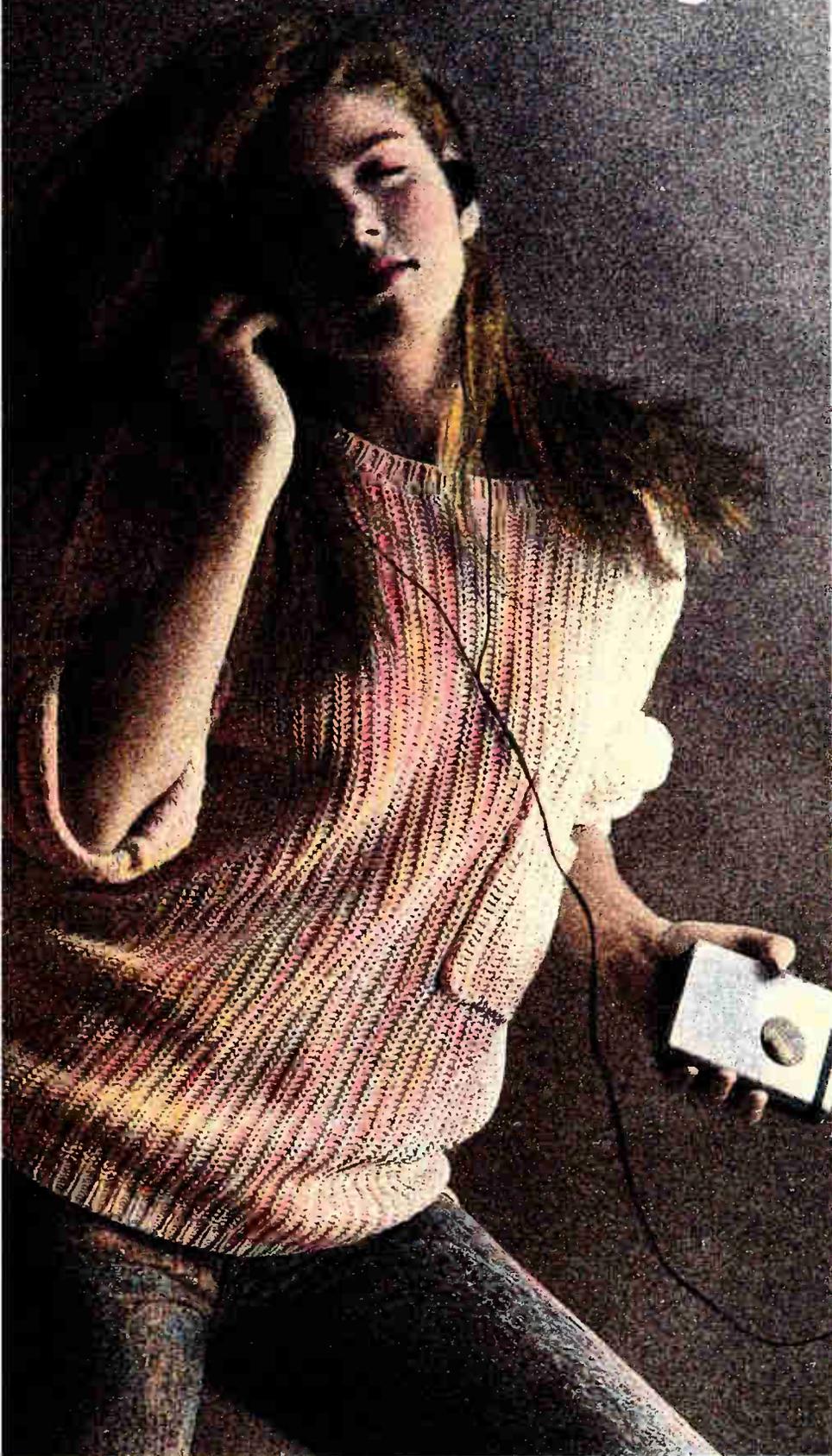
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ILLUSTRATION: CHARLIE POWELL

Since the "withholding tax" debacle nearly two years ago, American recording artists have been avoiding British studios because they're worried about suffering additional taxation on the earnings from UK-made recordings. The fact is, that tax doesn't exist. Richard Elen tells the full story:

We in the British recording industry made a huge fuss a couple of years ago. We heard that the British government was planning to introduce a "withholding tax" aimed at foreign artists who record in Britain. Such artists would lose a proportion of their UK earnings from recordings originally made in the United Kingdom. Several UK industry bodies launched major, high-profile campaigns against the tax. Most important for us was the campaign mounted by the Association of Professional Recording Studios (APRS), the British equivalent of SPARS. The APRS spent several times the amount of its annual overseas marketing budget in drawing up a long list of reasons why the withholding tax was a bad idea, and in presenting the argument to the government.

You probably heard all about the threat at that time. The trouble is, you didn't hear about the results. It's easy to see why: apart from anything else, the APRS spent so much money fight-

ing the government that there simply wasn't any left to promote the campaign's results abroad. Quite frankly, we'd all forgotten about it... until now. Because, you see, we won. We won! The government backed down, and there is *no* withholding tax on recordings made by foreign artists in the UK. Make a note of that fact. If you would like to record in Britain, there is nothing new on the tax front to stop you. Honest. Take professional advice if you don't believe me.

In our consulting for American companies, we found a certain amount of reluctance among British studios to promote themselves to the American market. Not because the weakness of the U.S. dollar tends to make studios in Britain a little more expensive—they're still competitive with many in the United States—but because British studios have found that too many American acts think they'll be penalized if they record here. There's little they can do about that piece of misinformation. But the fact is there's no problem.

Let's take a moment to look at the facts. From April 30, 1987, any payments to entertainers not resident in the UK would have income tax deducted at the standard rate. That includes payments for personal appearances, live broadcasts, merchandising income and the like. So if you were a U.S. resident who came to the UK to make a personal appearance to pro-

APRS
HELPS
DEFEAT
PROPOSED
UK
LEVY

BY RICHARD ELEN

mote an album, you'd have basic-rate UK tax deducted from your fee for the appearance. But this "withholding tax" *does not apply* to royalties from recordings or to advances recouped from royalties.

Note that well. Recordings are outside the jurisdiction of our 1986 Finance Act, and they are outside the terms of the law that introduced the withholding tax. Any taxation that exists on recording royalties goes back way before that and is handled by reciprocal taxation agreements, of which U.S. record and artist management companies are fully aware. Basically, these reciprocal agreements en-

sure that you aren't taxed twice: other countries in the UK have deals with Britain that say if you are taxed here for something, you won't be taxed there for the same thing—you get hit only once. The only situation that could cause you trouble is if you have all your business affairs handled from some tax haven that hasn't signed reciprocal taxation agreements with us—and your professional advisers should have taken all that into account. If they didn't, you might want to have a few words with them.

When it comes to royalties earned in the UK, American residents can choose to pay the tax at home or in

Britain, thanks to those reciprocal agreements. Just be sure that a "foreign entertainer's tax deduction certificate" has been obtained, so if you receive UK royalties, the organization paying you won't have to deduct UK tax. This is as it has been for years; it's a well-known procedure and has nothing to do with the present tax scare.

Again, the important thing to remember is that there is no withholding tax applied to sound recordings made in the UK. There is no tax on the actual recording costs. (I really can't imagine how there could have been one; nobody *here* suggested it.) And there is no way that your total royalties could suffer a withholding tax if the recording was made in the UK.

Here's a quick checklist of important points for those of you who will record in Britain, assuming you have the standard reciprocal taxation certificate:

- You will not be taxed on money paid to the studio.
- You will not be taxed on money spent on equipment rental.
- You will not have UK tax deducted from royalties earned outside Britain.
- Your recoupable advances will not be taxed.
- You will not be taxed in the UK on royalties received from UK sales, if you have the aforementioned certificate (in which case you can choose to pay U.S. tax instead).

Naturally, if you are going to record or perform in a foreign country (including Britain), you'll want to receive professional advice that applies to your unique circumstances. But the one thing you don't have to worry about is losing money through a withholding tax because you recorded here. In fact, given the quality of British studios, you're likely to make money rather than lose it. The rumor-mongers are wrong, and that's all there is to it. Come here and find out for yourself.

(Thanks to Neville Farmer, editor of *Studio* magazine, for his help in putting this material together, and to Gary Cooper for the original inspiration.) ■

Richard Elen is an independent recording engineer and producer, and former editor of Studio Sound magazine. He is also a partner in Creative Technology Associates, a consulting company based in Somerset, England.

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UNITED KINGDOM Recording Studios

[24+] **AMAZON STUDIOS LTD.**, I.S.D. Stoppage Ln., Simonswood; Liverpool, L33 4YA England; 051-548-2000; FAX: 051-548-0120. Owner: J.J. Lewis. Studio Manager: Geoff Higgins. Mixing Consoles: SSL 400DE, Neve U3. Audio Recorders: (2) Otari MTR-90 24-track, Studer 2-track. Cassette Recorders/Duplicators: Nakamichi cassette deck. Noise Reduction Equipment: Dolby A NR Echo, Reverb & Delay Systems: Lexicon 224XL, Lexicon 480L, Lexicon PCM70, AMS RMX 16, 15-80S. Other Outboard Equipment: UREI comp/limiter, A&D comp/limiter, Drawmer comp/limiter, Drawmer gate. Microphones: Neumann, AKG, Shure, Beyer, STC, Electro-Voice. Monitor Amplifiers: BGW, Quesed, Quad. Monitor Speakers: Westlake, Quesed, AR18. Yamaha NS-10, Auratone. Musical Instruments: Steinway concert grand piano, Yamaha grand, Hammond C-3. Other MIDI Equipment: Atari 1040ST, Steinberg, Master Tracks, etc. SRC AT Video Equipment: Barco Phillips video monitor. Other: (3) studios, Neve tracking room, SSL mix room, demo room and accommodations.

[24+] **THE BEAT FACTORY**; also *REMOTE RECORDING*; 1 Christopher Pl., Chilton St.; London, NW1 1JF England; 01-388-7826. Owner: Graeme Holdaway. Studio Manager: Maryke Bergkamp. Rates: \$80/hr. Color brochure and showreel available. Specialization & Credits: Whether you need the latest in music technology or the more traditional "live" elements of recording, Central London studio The Beat Factory has the facilities you require. The studio is fully equipped for recording the simplest voice-over or the most complex 24-track setup, including pre-production, programming, overdubs and laying live tracks, as well as computerized mixdown. The Beat Factory has attracted a variety of clients, building its reputation through the professionalism of its experienced staff, and by creating a comfortable environment where people perform at their best. Equipment includes a Soundcraft TS 12.52-channel console with EQuator automation, Soundcraft Saturn multitrack, MCI and Sony PCM-701 mastering, AMS, Lexicon reverb, outboard equipment by Bel, Drawmer, Gatex, Yamaha, Aphex, etc. Programming on Atari 1040ST with various software packages; MIDI hardware includes D-50, DX7, S900 sampler, TX802, TX81Z, Oberheim, RX-11, Octapads.

[24+] **BERWICK STREET STUDIOS**; 8 Berwick St.; London, W1V 3RG England; 01-734-5750; 01-287-0630; FAX: 01-494-1229. Owner: R. Gammons, H. Gammons. Studio Manager: David Hedley Jones. Mixing Consoles: AMR DDA 24. Audio Recorders: Mitsubishi X-850 32-track digital 1", Otari MX-80 24-track 2", Studer A810 2-track 1/4" w/Dolby SR Synchronization Systems: Roland SBX-80 SMPTE/MIDI synchronizer Echo, Reverb & Delay Systems: Lexicon 224XL w/LARC, Lexicon PCM70, Yamaha REV7, Yamaha SPX90II, EMT 240 Gold Foil plate reverb, AMS 15-80 delayline/harmonizer dual 1 6, AMS 220 phaser/flanger, (2) Bel BDE2400 26-second full-bandwidth MIDI delay/sampler, Alesis Aural Exciter Type B stereo, (5) Drawmer 201 stereo noise gate, Drawmer 221 compressor, Neve stereo valve compressor, (2) UREI 1176N, MIDVerb II, Axxeman guitar input processor, Klark-Teknik stereo graphic equalizer. Microphones: All popular mics by Neumann, AKG, Shure, ATC. Monitor Speakers: (2) Jade II w/subwoofers and Carver amp. Musical Instruments: Kurzweil 1000-PX, Yamaha DX7 w/Syco memory expander, Yamaha TX816, Roland D-50, Prophet-5 MIDI, Akai S900 sampler w/200+ disk library. Other MIDI Equipment: Roland MC-500 sequencer, Atari 1040ST computer w/color monitor and all major software: C-Lab Notator, Pro-24 III, DrT's D-50 ed., S900 Soundworks, DrT's DX7 ed., DrT's Sequencer. Video Equipment: (2) Sony Profeel 20" video monitor. Other: Sony DTC-1000 DAT, Technics SDL2 turntable, Marantz CD273. Specialization & Credits: Berwick Street Studios was completely refurbished in July 1988. It is rapidly becoming established as London's most "modern" studio with all the facilities required by today's producer/programmer/engineer and composer. 32 keyboard timelines make the studio ideally configured for the production of modern dance and pop music, whether for record companies or soundtracks for video/film. Offering either 32-track digital or 24-track analog at highly competitive rates. The studio has a full 24-way MIDI bus, Dolby SR and video synchronization facilities. The equipment list is so extensive it was described by one magazine as "worthy of a hire company." With an art-deco kitchen and rest area, the location and aspect of the studio make it easy to entertain clients away from the main control area in comfort. Already used by an extraordinary number of top record, film, video and TV companies since its opening, clients have so far

included Saatchi's, Channel Four, RCA A&M, Eartha Kitt, The Bronski's, Duncan Heath Associates, David Dundas and many more.

[24+] **BRITANNIA ROW STUDIOS**; 35 Britannia Row, Islington; London, N1 8QH England; 01-226-3377; 01-354-2290. Owner: Nick Mason. Studio Manager: Kate Koumi. Mixing Consoles: SSL 4056E G Series 56-input, Total Recall Focusrite EQ. Audio Recorders: Otari MTR-90 24-track, Studer A820 24-track 2 1/4" 1/4" Cassette Recorders/Duplicators: Sony PCM-701, Sony SL-C9. Noise Reduction Equipment: Dolby SR 48 channels. Synchronization Systems: TimeLine Lynx synchronizer Echo, Reverb & Delay Systems: AMS RMX 16, DMX 15-80, DMX 15-80S, (2) Lexicon PCM70, 224XL, Yamaha REV7, Yamaha SPX90, EMT Quad Plate, Publison America DHM89, Klark-Teknik DN70, Klark-Teknik DN71, Eventide 1745, TC Electronic 2290, SBX-80. Other Outboard Equipment: dbx 160, dbx 162, UREI 1176, Neve 32254, BSS DPR-402. Universal Audio valve compressor Aphex Aural Exciter, dbx BoomBox, Eventide 910, Publison America DHM-89 Drawmer DS-201. ElectroSpace spanner/Srate Gate. Microphones: Sony C-48, Sony C-35P, Sony C-36P. Neumann U47 FET, Neumann U87, Neumann U67 valve, AKG C-12 valve, AKG C-414ULS, AKG D-202, AKG D-12, AKG C-567E, AKG D-224E, Beyer M130, Sennheiser MD-421, Electro-Voice RE20, Shure SM57, Shure SM58, Shure SM85, Resto-sound ribbon. Monitor Amplifiers: Westlake HRIV, Yamaha NS-10, AR18. Westlake BBSM-4. Musical Instruments: Steinway grand piano.

[24+] **COMFORTS PLACE STUDIO**; Tandridge Ln., Lingfield; Surrey, RH7 6LW England; 0342-893046. Owner: Andy Hill. Studio Manager: Sandie Reid. Mixing Consoles: SSL 4056E w/Total Recall, 48 mono and 8 stereo channels. Audio Recorders: Studer A800 24-track, Sony 3324 digital multitrack, Sony 1610 digital stereo mastering w/Editor DAE 1100, Sony PCM-701 digital mastering, Studer A810 2-track 1/4" analog. Cassette Recorders/Duplicators: (2) Awa F990 cassette recorder. Synchronization Systems: SSL synchronizer system w/Adams-Smith 2600 Echo, Reverb & Delay Systems: Lexicon 224XL, Yamaha REV-1, AMS RMX 16 EMT stereo echo plate, Korg DRV-3000, (2) Yamaha SPX90, (2) AMS DMX16-80S w/harmonizer, Publison America DHM-89B2 DDL. Other Outboard Equipment: (2) Drawmer dual noise gate, (2) UREI 1176 peak limiter, (2) dbx 160X compressor/limiter, (2) EAR 822Q valve equalizer. Microphones: (3) Neumann U87 (3) AKG 451, (2) AKG 414EB, (2) Neumann U47. Monitor Speakers: Westlake, (2) Yamaha NS-10. Musical Instruments: Wave PPG 2.2, Yamaha DX7, E-mu Emulator II, Kurzweil. Other MIDI Equipment: SRC synchronizer, Quark MIDI switcher. Specialization & Credits: Set in six acres of idyllic countryside, surrounded by golf courses and horse riding, yet less than 20 minutes from Gatwick Airport and 50 minutes to London. Recreation consists of floodlit tennis court, swimming pool, pool table and games area. Accommodations comprised of six double bedrooms with satellite TV in all rooms and meals served in the dining room. Recent artists have included Go West, Paul Carrack Proclaimers, The The, Eric Clapton, Sisters of Mercy, Matt Bianco, The Painted Word, Public Image Ltd, TM Network, Blow Monkeys, Yuki Saitoh and Linda McCartney.

[24+] **DO NOT ERASE PRODUCTIONS LTD.**; Unit 18B - 101 Farm Ln., Fulham; London, SW6 1QJ England; 01-381-6298. Owner: Steve Levine. Studio Manager: Robert Hill. Mixing Consoles: AMR DDA 24 w/Optimix automation. Audio Recorders: (2) Sony PCM-3324 digital audio recorder. Cassette Recorders/Duplicators: Nakamichi MR-1, Awa Synchronization Systems: (2) RM 3310 Echo, Reverb & Delay Systems: Quantec, Eventide, AMS. Yamaha. Sony. Other Outboard Equipment: Drawmer, Valley People and more. Microphones: Sanken, AKG, Shure, Sony Schoeps. Monitor Amplifiers: FM Acoustics, BGW. Monitor Speakers: BBSM-12, BBSM-6. Westlake Audio. Musical Instruments: Roland, Yamaha, Simmons and more. Other MIDI Equipment: Sycologic MIDI Matrix Video Equipment: Sony BVU-5800, Sony Profeel, Adams-Smith Zeta-3.

[24+] **THE ELEPHANT RECORDING STUDIO**; also *REMOTE RECORDING*; Basement N, Metropolitan Wharf, Wapping Wall; London, E1 9SS England; 01-481-8615; FAX: 01-481-8615. Owner: Graham T. Sharpe. Studio Manager: Graham T. Sharpe. Engineers: Nick Robbins. Dimensions: Studio 1,500 sq ft, control room 550 sq ft. Mixing Consoles: Studer A80 MkIV, Rainbird Symphony 40-channel w/32 track routing. Audio Recorders: Sony PCM-701, Sony SL-C9. Studer B62 2-track, Revox A77. Cassette Recorders/Duplicators: Alpine cassette deck, Echo, Reverb & Delay Systems: Quantec Room Simulator, Yamaha REV-1, EMT plate valve stereo, MXR 01A digital reverb system, Alesis Microverb, Yamaha

R1000 digital reverb, GBS spring reverb, Bel BD240 digital delay sampler, MXR and Powertran digital delay Roland Chorus and Space Echo, Klark-Teknik DN34 analog time processor, Klark-Teknik DN36 analog time processor, MXR harmonizer, Roland Dimension D. Other Outboard Equipment: UREI 1176, dbx 160 comp/limiter, Drawmer 1960 valve comp/limiter, compellor, (2) Tubetech valve equalizer (Pultec type), (2) Klark-Teknik DN322 16-band stereo graphic, Symetrix noise reduction unit, Symetrix expander/equalizer/de-esser, Drawmer noise gate, Alesis microgate. Microphones: Neumann, PZM, AKG, Milab, Sennheiser, Shure, Electro-Voice, Beyer, Neumann and AKG valves. Monitor Amplifiers: (2) Crown DC-300A (4) Quad 303. Monitor Speakers: JBL 4350, Yamaha NS-10, Visonik David 6000, Sony SSG1. Musical Instruments: Bechstein grand piano, Welmar upright piano w/Jangle bar option, Ludwig kit, Zildjian and Paiste cymbals, percussion, MXR drum machine, Casio drum machine, Korg Poly synth, Washburn bass, Roland GR-300 guitar synth, Hammond organ w/Leslie cabinet, Casio CZ-1000, Clavinet, Roland JC-120, Vox AC-15, Vox AC-30 combo, Vox AC-30 top, Dan Armstrong 30-watt graphic amp, JBL 2 x 15 cab, 4 x 12 cab. Other MIDI Equipment: Atari 1040ST, Steinberg Pro-24, Yamaha MSS-1 SMPTE/MIDI synchronizer, Akai S612 MIDI sampler w/full disk library, Bel BD240 (12 sec.) Other: Toshiba CD player. Rates: Daily rate including hire of Mitsubishi X-850 32-track, £750. Daily rate including hire of Dolby SR system 24-track, £525. Standard rate 24-track £38 per hour. Discounts on cash and block bookings.

[24+] **MAYFAIR RECORDING STUDIOS**; 11A Sharpleshall St.; London, NW1 8YN England; 01-586-7746; FAX: 01-586-9721. Owner: Kate and John Hudson. Studio Manager: Kate Hudson. Specialization & Credits: Studio One 48-channel SSL 6048 with Total Recall, Barographs. Control room 42 sq meters, studio 56 sq meters live and dead area plus isolation room. Studio Two 72-channel SSL 6072E with G Series computer and new EQ. Control room 40 sq meters, studio 75 sq meters. Large main area marble flooring with three other separation areas. Digital multitracks are Sony 3324, all analog machines are Studer, full Dolby, Adams-Smith sync, up to five machines sync-to-video. Mastering to Sony digital, Studer analog. Monitoring Studio One, UREI 813B with subwoofers. Studio Two, UREI 813B plus a selection of small speakers in both studios. Bosendorfer 7' grand piano with MIDI. Large range of outboard gear and microphones. Video 5850 edit and 5630 triple standard U-matics can be locked to audio for post-production. Luxury accommodations for up to eight people. Clients include Tina Turner, a-ha, Status Quo, Climie Fisher, Tears for Fears, Fine Star, etc.



MOLES STUDIO
Bath, UK

[24+] **MOLES STUDIO**; also *REMOTE RECORDING*; 14 George St., Bath, BA1 2EN UK; 0225-333448. Owner: Philip Andrews. Mixing Consoles: AMR DDA 24 60 x 24 x 24. Audio Recorders: Otari MTR-90II, Otari MTR-12II, Sony F1 system. Cassette Recorders/Duplicators: (3) Yamaha KX500 Echo, Reverb & Delay Systems: Yamaha REV-1, AMS RMX 16, Lexicon 200, Klark-Teknik DN780, Lexicon PCM70, Yamaha REV5, Roland SRV-2000, (2) Bel BDE2400, TC Electronic 2290, AMS DMX 15-80, Eventide H3000, Eventide H949. Other Outboard Equipment: (10) Kepex 2, (10) Drawmer, BSS DPR 502, (2) Teletronix LA-2A, (2) UREI 1176LN, (2) UREI

—CONTINUED ON NEXT PAGE

Recording & Production Facilities

UNITED KINGDOM

—CONTINUED FROM PREVIOUS PAGE

LA-4, (2) dbx 160, Drawmer 1960, (2) dbx 160X, Orban 642B Microphones: Neumann, AKG, E-V, Sennheiser, Beyer, Shure Musical Instruments; Akai S900 w/Soundworks Editor, Yamaha TX802, Roland D-550, LinnDrum Specialization & Credits: Moles Studio is situated in the heart of Georgian Bath only 1½ hours from London and one hour from Heathrow. One of the very few automated DDA/Otari-equipped studios outside the capital, Moles Studio offers a technical environment and creative space suitable for both track laying and mixing. The 23 x 16 daylight control room is designed with a programming and playing area, with full MIDI/SMPT interface and 32-channel link to the Moles Club downstairs. Playing areas include an isolation booth and 1,200 sq ft live room. Notable outboard includes Quantec QRS, Yamaha REV-1, Lexicon 200 and PCM70, two Teletronix LA-2As, ten Kexep II and a lot more. For mixing we have recently installed a state-of-the-art Optifile II automation system to give total control over fader and cut commands and with notation files, all backed to a 32MB HD. Recent projects include work for Virgin, EMI, London, Polydor, Phonogram.

[24+] THE MUSIC STATION: Unit 17A, 101 Farm Ln., London, SW6 1QJ England; 01-385-5200; 01-381-5215. Owner: Nick Woolfson. Studio Manager: Melanie Wallis. Mixing Consoles: Neve custom 36 mic input, 60 line input, 52 channels of MasterMix automation. Audio Recorders: Studer A820 24-track, (2) Ampex ATR-100 2-track ½" and ¼". Cassette Recorders/Duplicators: (2) Aiwa F990 Noise Reduction Equipment; (24) Crystal ECD noise filter. Synchronization Systems: (2) TimeLine Lynx synchronizer. Echo, Reverb & Delay Systems: AMS RMX 16, AMS 15-80, Yamaha REV-1, Yamaha REV5, Yamaha SPX90II, Lexicon PCM70, Lexicon PCM60, Bel BD80, TC Electronic 2290, Ibanez SDR-1000, Roland SDE-3000. Other Outboard Equipment: (8) Drawmer DS-201 noise gate, Neve 2254/A compressor, BSS DRP402 compressor, dbx 160 compressor, UREI 1176 compressor, Drawmer LX-20 compressor, (4) Quad Eight parametric EQ, (2) TC Electronic 2240 parametric EQ, (2) Aphex Type C Aural Exciter. Microphones: Neumann, Sanken, Bruel & Kjaer, Beyer, Sennheiser, AKG, Shure, Electro-Voice, STC, PZM. Monitor Amplifiers: Hill, Yamaha, Studer, Quad Eight, ATC crossover. Monitor Speakers: Quested 212, Yamaha NS-10 studio, Acoustic Research AR-18LS. Musical Instruments: Kurzweil 250, Bechstein 6'8" grand piano, Roland D-50, Yamaha CS80, Alessi HR-16, Roland D-110, Akai S900. Other MIDI Equipment: Friendchip SRC, Quark MIDI Link, Bokse SM-9, Macintosh Plus w/Opcode and MasterTracks. Video Equipment: Sony Profeel color monitor. Specialization & Credits: The Music Station opened in February 1987, the concept being to marry the best of old and new technology. This was achieved by equipping the studios with a highly modified old Neve console, Studer A820 multitrack, Ampex ATR-100 ½" and ¼" mastering machines and free-standing Quested monitors. The Neve console is fully automated using a MasterMix system and has been adapted to suit the technological advances of the 1980s. The control room is large, with full MIDI facilities for keyboards and computers, and the spacious studio rooms are ideal for live recording. There are two lounges and a kitchen/dining room with full "Cordon Bleu" catering inclusive in the price. A relaxed atmosphere goes a long way toward easing the pressures of long- or short-term recording. To this aim, the staff at Music Station is easygoing, helpful and considerate toward clients. Since opening, the client list includes Fine Young Cannibals, Voice of the Beehive, The Fall, Pop Will Eat Itself, Crazyhead, Frazier Chorus and more.

[24+] OFFBEAT MUSIC; also REMOTE RECORDING; Hammersmith Studios, 55A Yeldham Rd., Hammersmith; London, W6 8JF England; 01-846-9754; 01-741-8304. Owner: Andrew Dascalopoulos, John Selby. Studio Manager: Keith Bourdice.

[24+] POWERPLANT MUSIC AND RECORDING; 169-171 High Rd., Willesden; London, NW10 2SE England; 01-451-3727; FAX: 01-451-4600. Owner: Robin Millar. Studio Manager: Colin Fairley. Mixing Consoles: Neve 8048 custom w/ GML automation (78 inputs on mixdown), Harrison MR-348 channels w/MasterMix automation, Harrison Series 24 36 channels. Audio Recorders: Otari MTR-90 MkII 24-track TMC, Mitsubishi X-80 2-track digital, Studer A80 2-track ½" and ¼", (3) Sony PCM-701 digital mastering, Sony PCM-2500 DAT digital, (2) Studer A80 24-track, Studer A820 2-track ½", Studer A80 MkII ¼", Studer B67 2-track ¼", Studer A800 24-track. Noise Reduction Equipment: Dolby rack M Series, Telcom, SR, A, (2) Drawmer gate, Valley Audio gate, BSS gate. Synchronization Systems: (2) TimeLine Lynx module. Echo, Reverb & Delay Systems: AMS, 480L, Roland reverb, Yamaha reverb, EMT reverb, UREI compressor, dbx compressor, Fairchild compressor, Orban compressor, Pye compressor, Drawmer compressor, Summit Audio compressor, AMS delay, Bel delay, Eventide H949 Harmonizer, Yamaha delay, Autopans spanner, Aphex Aural Exciter. Other Outboard Equipment: Pultec EQ, Neve, Focusrite, API. Microphones: Neumann 47, Neumann 49, Neumann 87, Neumann 87, Beyer, Schoeps, AKG, Sennheiser, Shure, STC. Monitor Amplifiers:

Yamaha, Studer, Audix. Monitor Speakers: Quested 1 x 15", 2 x 12" (softdome mid-range and tweeter), (2) UREI 813B, Yamaha NS-10, AR18, Auratone, Vsonik. Musical Instruments: (2) Steinway grand piano w/MIDImod, (2) Hammond C-3, Roland D-50, Yamaha DX7, guitars, Korg DDD-1, Yamaha RX5. Other MIDI Equipment: Steinberg Pro-24 V3 w/SMP24, Akai S900 sampler, MPC-60 sampler, Bel sampler, AMS sampler. Specialization & Credits: High-quality, popular rock, AOR and dance. Complete albums recorded and mixed include Sade *Diamond Life* and *Promise*, Terence Trent D'Arby *The Hardline*. According to... When in Rome, Black Comedy and *Wonderful Life*, Big Country *The Seer*, Fine Young Cannibals *FYC*. Three beautiful, brilliantly equipped studios full of atmosphere and style, plus a full bar and restaurant service. Flagship is the famous studio 2, "The Jade Room," featuring the world's most comprehensive custom NEVE based on the chassis of the huge classic 8048. 145 units of outboard from Pultec, Fairchild, API, Focusrite and dozens of classic items. Mixing by the GML moving faders onto Mitsubishi or DAT digital or ½". Any multitracks from Mitsubishi X-850 to 48-track analog available plus SR Telecom, etc. The two powerful workhorses of Powerplant, studios 1 and 3, feature Harrison, Studer, UREI and every extra at a great price.



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Dorking, Surrey, UK

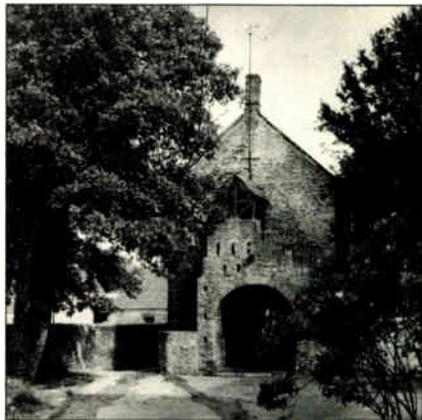
[24+] RIDGE FARM STUDIO LTD.; Rusper Rd., Capel; Dorking, Surrey, RH5 5HG UK; 0306-711202. Owner: Frank Andrews. Studio Manager: Ann Needham, bookings and administration. Mixing Consoles: SSL 4048 G Series, 12-channel G Series EQ, 36-channel E Series EQ. Audio Recorders: (2) Studer A800 MkII 24-track, (2) Ampex ATR-100 ½" and ¼" stereo. Cassette Recorders/Duplicators: (2) Sony DTC-2500 DAT, Sony DTC-1000 DAT. Noise Reduction Equipment: Dolby SR 48 channels. Synchronization Systems: (2) TimeLine Lynx module, Friendchip SRC. Echo, Reverb & Delay Systems: Lexicon 224XL digital reverb, Yamaha REV-1 digital reverb, AMS RMX 16 digital reverb, (2) EMT 240 echo plate, EMT 140 echo plate, Quantec QRS Room Simulator, Lexicon Prime Time digital delay, Bel BD80 digital delay, DeltaLab Effectron II digital delay, AMS DMX 15-80S digital delay/harmonizer (0.4 + 3.2 seconds). Other Outboard Equipment: Focusrite 2-channel EQ, Eventide H949 Harmonizer, AMS DM-20 phaser/flanger, MXR flanger/doubler, Audio & Design Panscan autopanner, (2) UREI 1176 compressor/limiter, (2) dbx 160X compressor/limiter, (2) Drawmer dual noise gate, (2) Brooke-Siren DPR-402 dynamics processor, (2) Yamaha SPX-90 effects processor. Microphones: (56) microphones including valve mics. Monitor Amplifiers: Yamaha, Quad Eight, American Monitor Speakers; Quested Q-215 (main monitors), Tannoy, JBL, Yamaha NS-10, Sentry, Vsonik, Lockwood, Auratone. Musical Instruments: Yamaha C7 11'4" grand piano. Other MIDI Equipment: Akai S900 sampler. Specialization & Credits: Atmosphere. 17th-century buildings on 12 acres of grounds, great creative atmosphere. Entertainment, new leisure complex with heated pool, gym and tennis court (sauna and jacuzzi planned for 1989). Friendly, helpful staff we really know how to look after you. Food: the best! (Ask anyone.) Credits: clients in 1988 included Status Quo, That Petrol Emotion, Cactus World News, and producers Peter Collins, Gary Langan, Simon Hanhart, Andy Wallace and Pip Williams. We also added to our collection of silver, gold and platinum discs with awards for recordings by The Cutting Crew, All About Eve, The Primitives, and a double platinum for Wet Wet Wet's album *Popped In Souled Out*.

[24+] SCOTTY'S SOUND STUDIO; Newtown St., Kilsyth; Glasgow, G65 0JX Scotland; 0236-823291; 0236-825843 (evenings). Owner: Mr. WB. Garden. Studio Manager: Mr. WB. Garden. Mixing Consoles: Soundcraft TS 12, Yamaha DMP7. Audio Recorders: Soundcraft Saturn 24-track, Studer A80 2-track, Sony DAT-1000. Cassette Recorders/Duplicators: Akai, Technics. Synchronization Systems: Fostex 3040 Echo, Reverb & Delay Systems: Quantec Room Simulator, Yamaha, Bel, TC 2290. Other Outboard Equipment: Drawmer gate, Rebis gate, Aphex Compellor, Aphex C, DN27 graphic EQ,

A&D comp/limiter. Microphones: Neumann, AKG, Calrec. Monitor Amplifiers: (2) BGW 760, Quad Eight. Monitor Speakers: Westlake BBSM-12, Klark-Teknik Jade II, Auratone. Musical Instruments: Roland D-50, Roland D-110. Other MIDI Equipment: Atari, Steinberg, Akai S900.

[24+] SOUND STAGE MUSIC; Kerchesters, Waterhouse Ln.; Kingswood, Surrey, KT20 6HT UK; 0737-832837; FAX: 0737-833812. Owner: Sydney Dale. Studio Manager: Ian G. Dale. Dimensions: Live room 20 x 18, control room 20 x 18, copying suite 14 x 12. Mixing Consoles: Soundcraft 2400, Cadac custom. Audio Recorders: Otari MTR-90, (2) Studer B67. Cassette Recorders/Duplicators: (2) Aiwa F990 Noise Reduction Equipment; (26) Dolby SR, (2) Dolby A, (2) Symetrix, (2) Aphex Aural Exciter. Synchronization Systems: Adams-Smith Zeta-3, (2) Apple Macintosh SE, Atari 1040, all music programs Echo, Reverb & Delay Systems: AMS digital delay, AMS digital reverb, (9) Drawmer noise gate, (9) Drawmer DL-221. Other Outboard Equipment: Cyclicogic 16 MIDI controller. Microphones: AKG, Sennheiser, Beyer, Audio-Technica, Calrec, Electro-Voice. Monitor Amplifiers: Quad Eight. Monitor Speakers: Tannoy SRM-15S, Tannoy Little Gull. Musical Instruments: E-mu Emulator II, Oberheim Matrix-12, Prophet-VS, Ensoniq ESQ-1, Juno-106, Linn 9000, Korg 8000, concert grand piano. Other MIDI Equipment: Oberheim DPX-1, Bokse SM-9, Roland MT-32, Roland D-110 sound modules. Video Equipment: Sony PCM-701, Sony U-matic 1630, (3) JVC 22" monitor, Adams-Smith video synchronizer. Other: Audio Kinetics MasterMix. Specialization & Credits: Sound Stage Music is the production arm of Amphonic Music Ltd. Amphonic Music Ltd. is responsible for all publishing and publishing of copyrights within the main catalog, which consists of approximately 3,000 titles. These copyrights are to be found on either the Sound Stage records and CDs, the Capitol production library CDs or Koka Media records and CDs. The majority of Sound Stage CDs are produced and digitally mastered in their own 24-track studios. Sound Stage also synchronizes and records music especially for films and video. For more information about these services, contact Ian Dale or Jane Holloway.

[24+] WESTLAND STUDIOS LTD.; 5-6 Lombard St. E.; Dublin 2, Ireland; 0001-774229; 0001-793364. Owner: T. Costello. B. Molloy. Studio Manager: Deirdre Costello. Mixing Consoles: Solid State Logic 4048. Audio Recorders: Studer A800 24-track, Studer A820 stereo, Sony F1, Sony DTC-1000 DAT. Cassette Recorders/Duplicators: (2) Studer B710. Noise Reduction Equipment: Dolby XP-24. Echo, Reverb & Delay Systems: Lexicon 224XL, Lexicon 200, AMS RMX 16, AMS 15-80S, Yamaha REV5, Yamaha SPX90, dbx 9000 rack, dbx 165A overeasy compressor/limiter, Klark-Teknik DN360 graphic equalizer. Microphones: (6) Neumann U87, (2) Neumann TLM170, Neumann U89, Neumann U47, (6) AKG 451EB, (4) AKG 414EB PLS, AKG D-12, (6) Beyer M88, (2) Crown PZM-30GP, E-V RE20, (2) Sony C-48, (4) Shure SM57, (2) Shure SM58, Sanken C-41. Monitor Amplifiers: (2) HH Electronic V800 monitor amp. Monitor Speakers: JBL Eastlake monitor.



THE WOOL HALL STUDIOS
Somerset, UK

[24+] THE WOOL HALL STUDIOS; Castle Corner, Beckington, Nr. Bath; Somerset, BA3 6TA UK; 0373-830731. Studio Manager: Pete Dolan. Mixing Consoles: SSL 6000 Series 56 channels, Total Recall, G Series computer. Audio Recorders: (2) Otari MTR-90, Mitsubishi X-850 32-track digital, (2) Otari MTR-12, Sony PCM-2500 A/B Pro-RX-DAT. Noise Reduction Equipment: (24) Dolby A xP24, (48) Dolby SR xP24, (2) Dolby 361 frame w/SR of A. Synchronization Systems: (2) TimeLine Lynx Echo, Reverb & Delay Systems: Lexicon 480L w/LARC and SME, Lexicon 224XL w/LARC, Yamaha REV5, AMS RMX 16, EMT 140 stereo valve plate, Fairchild stereo valve compressor, TC Electronic TC 2290 w/20 secs, Lexicon PCM42, Cyclocosonic Panner FS1, (2) Yamaha SPX90, (2) AMS 15-80 dual lock 2 x 3 x 2 MIDI, (2) Neve dual comp/limiter, (4) Drawmer dual gate, (4) dbx 160 compressor, dbx 165 compressor, (4) UREI 1176 compressor, UREI LA-4 compressor, Pultec

EOP-1A, (2) IIT EQ, (2) Focusrite mic/line EQ, Hinton MIDI EQ and VCA, (2) Neve 1077 mic/line amp/EQ Monitor Amplifiers; FM Acoustic 801 Monitor Speakers; (2) UREI 813A, (2) Westlake BBSM-10 Specialization & Credits: Recent clients at The Wool Hall include Morrissey, Tears for Fears, Squeeze, Sisters of Mercy, Lloyd Cole, Propaganda, Van Morrison, Howard Jones and Psychedelic Furs, of which most have been back several times over. Much more than a residential studio, The Wool Hall is a home away from home. A beautifully renovated, 6-bedroom, 16th-century farmhouse adjoins the studio for total privacy. Full-time domestic staff offers top-quality cuisine and informal, friendly service. An assistant engineer and maintenance engineer are on hand 24 hours. Outside working time a courtesy car for client use. Shooting, riding, fishing, hot air ballooning, all easily arranged locally. Plus nearby Cannon's Country Club swimming, tennis, Nautilus multigym, squash and golf. The Keyboard Club a pre-production, pre-tour preparation, composing, music-to-picture facility recently has been set up in its own building adjacent to the main studio. This facility is available separately or as an optional extra to the main client.

[8] **JAMES YORKE LTD.**; also *REMOTE RECORDING*; Yorke House, Corpus St.; Cheltenham, Glos., GL52 6XH UK; 0242-584222. Owner: Peter Fanshawe. Studio Manager: Jim Wilmer.

[24+] **ZIPPER MOBILE RECORDING STUDIO**; only *REMOTE RECORDING*; 272 Cricklewood Ln.; London, NW2 2PU England; 01-450-4130. Studio Manager: J. Zipper.

UNITED KINGDOM Schools

GLASSHOUSE TRAINING DIVISION, GLASSHOUSE PRODUCTIONS LTD.; Unit 19, Perry St.; Coventry, CV1 3BY England; 0203-223892; FAX: 0203-630017. Chief Administrator: Amos Anderson. Program: Glasshouse Training Division provides management consultancy and training with the music and entertainment industry. Following the feasibility study commissioned by the company in the Midlands region, the training division is offering courses to the following target audience: musicians, music agents, music management and others employed in the music industry. This program will also benefit potential businessmen, those seeking employment in the music industry and those thinking of starting their business in the music industry or related professions. The course pro-

grams are designed on a modular basis with each module self-contained. Each module will have a mixture of both formal lectures as well as discussion groups and workshops. The subjects offered are as follows: a Music Industry Course (13 modules), b Business Administration Course (8 modules), c Technical/Studio Engineering Course (8 modules). Basic cost per module—£750.00 + V.A.T. discount for block bookings and accommodation arrangements, etc. Competitive prices available upon request. For further details contact the Training Officer, Training Division, Glasshouse Productions Ltd., Upper York St., Coventry CV1 3GQ.

UNITED KINGDOM Independent Engineers & Producers

DAVE ANDERSON, *Engineer*, POWERPLANT MANAGEMENT, 169-171 High Rd., Willesden; London, NW10 2SE England; 01-451-3727; FAX: 01-451-4600. **Credits & Services:** Dave Anderson's engineering on the new Randy Crawford LP is the fifth album association with producer Robin Millar. Assisting for Big Country *The Seer* and Colin James Hay *Looking for Jack* led to recording Tyrone Berkeley's album *To Touch You* and second Black album *Comedy As a Powerplant engineer/mixer*, he has hit singles from 2 Men a Drum Machine and a Trumpet "Tired of Being Pushed Around". Wee Papa Girl Rappers "Heat It Up," Heartbeat "Tears from Heaven" and million-selling Black LP *Wonderful Life* to his credit. A broad experience through jazz (Courtney Pine, Chevalier Brothers) soul funk and dance (Boy George Black Britain, Hugh Harris), film soundtracks (*Secret Policeman's Third Ball*, AAA 1986 Concert in the Park, Everything But the Girl *Apron Strings*), plus above pop/rock work including the new Fine Young Cannibals album *The Raw and the Cooked* makes Dave a master of all trades.

PETE BROWN, *Engineer & Producer*, POWERPLANT MANAGEMENT, 169-171 High Rd., Willesden; London, NW10 2SE England; 01-451-3727; FAX: 01-451-4600. **Credits & Services:** Son of famous British '60s musician Joe Brown, Pete, a musician himself, started his career at London's Powerplant Studios in 1982 and with this solid grounding progressed rapidly into production. His latest album production for his sister Sam Brown, has enjoyed huge success in Europe. Credits as producer include Sam Brown *Stop LP*, Soup Dragons *This Is Our Art LP*, Mighty Lemon Drops *Out of Hand*. As engineer Courtney Pine "Children of the Ghetto", Black 13 *Not Afraid*, Tyrone Berkeley *To Touch You LP* mix, Basia *Time & Tide LP*

(tracks) Cool Notes "Into The Motion", Working Week "Working Nights", David Grant LP tracks, Chevalier Brothers LP, *Crossroads* TV theme, Fission "Millar Rap", Nick Lowe *Picker and Prouter Than Previous LP* (tracks), plus Five Star, Howard Jones, Gene Loves Jezebel, Total Contrast, Shev & The Brakes, Swing Out Sister, Strangers & Brothers, Boothill Foot-tappers, Two People, Wayne Hernandez, Yello.

M. LASCELLES, G. GURD, *Producer*, DE-MIX PRODUCTIONS LTD., 7 Croxley Rd.; London, W9 3HH England; 01-960-1115. **Credits & Services:** Producer Martin Lascelles, Geoff Gurd. Wrote and produced "Love Is a House" by Force MDs. Also produced tracks for Freddie McGregor and Nick Kamen.

PHIL LEGG, *Engineer & Producer*, POWERPLANT MANAGEMENT, 169-171 High Rd., Willesden; London, NW10 2SE England; 01-451-3727; FAX: 01-451-4600. **Credits & Services:** Musician, engineer and ex-studio owner Phil Legg is now acknowledged as one of Britain's major new producers. Production credits: Pasadena's *To Whom It May Concern LP* (tracks), Dorothy Sweetest *Pain LP* Engineering credits: Terence Trent D'Arby *The Hardline According To... LP* including "If You Let Me Stay" (remix), "Wishing Well" (mix), "Sign Your Name," "Dance Little Sister," live video soundtrack, Heaven 17 *Teddy Bear, Duke & Psycho LP* (mix), Boy George *Tense Nervous Headache* (tracks), Bros "When Will I Be Famous" club mix, Brother Beyond *Get Even LP* (tracks), Nick Lowe *Pinker and Prouter Than Previous LP* (tracks), Erasure *Wonderland LP*, "Chains of Love" and "A Little Respect" (12" mixes), Crackers *International EP* (mix), S-Xpress "Hey Music Lover" (mix), Age of Chance "Big Bad Noise" (mix). Plus Black Curiosity Killed the Cat, Sique Sique Sputnik, Wayne Hernandez Jimmy Ruffin, UTFO, Gwen Guthrie, David Joseph, Danny Dee, Shriekback, Christians.

MIKE PELA, *Engineer & Producer*, POWERPLANT MANAGEMENT, 169-171 High Rd., Willesden; London, NW10 2SE England; 01-451-3727; FAX: 01-451-4600. **Credits & Services:** One of the genuine British studios, Mike's star rose in the '70s engineering at the massive CTS studios. He worked on hundreds of major recordings, notably engineering two E.L.O. LPs, solo LPs from Keith Emerson/Carl Palmer/Roy Wood plus Tommy film soundtrack. From 1979-1981, Mike worked as chief engineer with The Who's Pete Townshend as well as Alice Cooper and Stephen Stills. 1982 brought Mike to Powerplant. He has worked closely with producer Robin Millar on nine major albums including Sade *Diamond Life and Promise*.
—CONTINUED ON NEXT PAGE

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MAY

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Materials Due: March 15

JUNE

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Equipment Spotlight: Main Loudspeaker Systems.

Special Feature/Forum: Remote Engineers—Comparing Venues. Those who have been there talk about their favorite locations and what they like about certain arenas.

Bonus Distribution: NAMM Music & Sound Expo, Chicago, June 17-20.

Ad Closing: April 7

Materials Due: April 14

MIX THE RECORDING INDUSTRY MAGAZINE

Recording & Production Facilities

UK / EUROPE

—CONTINUED FROM PREVIOUS PAGE

His own co-productions encompass Sade *Stronger Than Pride*, Boy George *Tense Nervous Headache*, Fine Young Cannibals albums, and *Tin Men* film soundtrack productions with tracks from Brother Beyond *Get Even*, hit mixes for Erasure "Sometimes," The Christians "Ideal World" and Black Comedy LP *Want more?* Try Nick Lowe, Tom Robinson, Everything But the Girl, Kane Gang, Jo Boxers, Double, Blow Monkeys, Ward Brothers

SIMON PHILLIPS, *Producer*, The White House, Bures, Suffolk, CO8 5DD UK; (0787) 227770.

SIMON VINESTOCK, *Engineer*, 88 Hillfield Rd., W. Hampstead, London, NW6 1QA England; 01-794-6544. **Credits & Services:** Credits include Mission U.K. (album mixes) *God's Own Medicine*, Cutting Crew (single remix) "I Just Died in Your Arms," Wire Train (album) *10 Women*, The Flaming Musolinis (album) *Charmed Life*, The Mighty Lemon Drops (album) *World Without End*, Robert Plant (single remix) "Heaven Knows," Legal Reins (album)

UNITED KINGDOM Designers & Suppliers

EXECUTIVE AUDIO LTD.; SES, 159 Park Rd., Kingston-upon-Thames, Surrey, KT2 6BQ England; 01-541-0180; 01-541-5789.

HILTON SOUND PLC.; ER, 10 Steedman St.; London, SE17 3AP England; 01-708-0483.

THE SOUND PRACTICE, AC; The Studio, Spring St., Rugby, Warwickshire, CV21 3HH England; 0788-541133. **Services/Specialization:** Policy and Resources—this is a commercially independent practice established in 1977 offering consultancy services in general acoustics, noise control and audio engineering. The practice is conducted from modern office premises at the heart of Britain's rail and motorway network where in-house drawing office and full technical facilities are

provided. No hardware commodities are merchandised. Activity—although specializing in the leisure and entertainment industries, extensive experience can be demonstrated in most areas of general acoustics and noise control and in the design of sophisticated large-scale sound systems. The services provided range from initial survey and investigation, leading to firm design or remedial proposals, preparation of tendering specifications, supervision of contractors' works and commissioning. Advice and technical support can be provided in cases of noise control and product defect litigation, and a confidential product design and testing service is available to professional audio equipment and systems manufacturers.

UNITED KINGDOM Video Production

RAEZOR STUDIO; VPF, 25, Frogmore, London, SW18 1JA England; 01-870-4036. Owner: Ian Wilkinson. Studio Manager: Ian Wilkinson.

RUSHES; VPF, 66 Old Compton St.; London, W1V 5PA England; 01-437-8676. Studio Manager: Karen Sitson.

EUROPEAN Recording Studios

[24+] **DINEMEC SOUND SWITZERLAND S.A.**; also *RE-MOTE RECORDING*; 17 Blvd. Helvetique, Case Postale 585; Geneva 3, 1211 Switzerland; 022-356320. Owner: Paul Sutin. Studio Manager: Jacky Sanders. **Mixing Consoles:** Soundcraft 1600, Yamaha DMP7 digital mixer. **Audio Recorders:** MCI 24-track, Otari MTR-12 w/time-code track, Revox PR99, Sony PCM-501, 9600 U-matic. **Cassette Recorders/Duplicators:** Technics Pro I, dbx. **Noise Reduction Equipment:** Raelul Scamp 4 comp and 4 NG. **Synchronization Systems:** Fostex 4050, Fostex 4030, Fostex 4035, Yamaha MSS SMPTE-MIDI sync. **Echo, Reverb & Delay Systems:** Lexicon Prime Time II, Klark Teknik 2 x 30 EQ, Aphex Compellor, Aphex Aural Exciter, Eventide Harmonizer, TC Electronic 2290, Yamaha REV5, Yamaha SPX90, Roland SRV-2000, DigiTech DSP128, UREI compressor dual peak limiter. **Microphones:** Neumann U47, Neumann U89, AKG 414B, AKG C-535EB. **Monitor Amplifiers:** Haller, Quad Eight. **Monitor Speakers:** Tannoy Little Red, Yamaha NS-10. **Musical Instruments:** Yamaha full-pad drum kit, Roland Octapad, Roland D-50, Roland D-110, Korg M-1, Stein-



DINEMEC SOUND SWITZERLAND S.A.
Geneva 3, Switzerland

way & Sons concert grand B. Kurzweil 250. **Video Equipment:** Sony Trinitron PVM 2130 monitor, Sony Video 8 camera. **Specialization & Credits:** Dinemec was set up in Geneva a year ago to fill a gap in existing sound and music studio services. They are a dynamic team with a wealth of top-level experience in the U.S. and across Europe. With a major investment in new technology and state-of-the-art computerized systems, Dinemec offers a unique, highly adaptable and affordable service. Although the company devotes much of its studio time to soundtrack and advertising work, it prides itself on work with top international musicians on prestigious recording projects. Dinemec has recorded tracks for the RCA album of Brazilian artist Maria Bethania, which went to Number One in that country, and an international group has approached them to mix their *Live at Montreux* album. The famous U.S. folk singer Glenn Yarbrough also flew into Geneva recently from California, with his L.A. session musicians to spend ten weeks with Dinemec working on his latest album. Currently, Dinemec is working with Steve Howe of the UK super-group Yes. Dinemec also has its own record label—Real Music—for the production and distribution of new age artist for the U.S. and European markets.

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[24+] **HEARTBEAT**; also **REMOTE RECORDING**; Erlöserkirchstr. 16; Köln 91 (Cologne), 5000 W. Germany; 0221-866081. Owner: Paul Grau. Studio Manager: Henk Hakker. Mixing Consoles: ADT 5-MT w/AMC computer 32 in-line, 8 wildfader, 4 returns. Audio Recorders: Telefunken AEG M15A 24/32-track, (2) Telefunken AEG M10A 2-track w/ADT Electronics, Telefunken AEG M5 2-track, Sony PCM-2500 DAT Cassette Recorders/Duplicators: (3) Kenwood, Aiwa Noise Reduction Equipment: (4) Dolby A/SR for 2-tracks. Echo, Reverb & Delay Systems: Lexicon 480L, Lexicon PCM70, (2) Lexicon PCM60, Quantec QRS, EMT reverb plate stereo, Roland delay, Korg delay, DeltaLab delay, Drawmer gate, Rebus gate, D&R gate, UREI compressor, Fairchild compressor, dbx compressor, D&R compressor, Eventide Harmonizer 910, Roland flanger, Roland phase shift, EMT de-esser, MXR graphic EQ. Microphones: Neumann, Beyer, AKG, Shure, Sennheiser, Electro Voice. Monitor Speakers: Tannoy, Yamaha NS-10M, Spondor SA-1, Auratone. Musical Instruments: Schimmel piano, Pearl drum set, Martin acoustic guitar, (2) Ovation guitar, Fairlight III, Roland D-50, E-mu SP-12 drum machine. Other MIDI Equipment: Atari 1040ST w/Steinberg Pro-24, Roland SBX-90 synchronizer.

[24+] **LUNAPARK STUDIOS**; Mehringdamm 32-34; Berlin 61, 1000 W. Germany; 030-2518035. Owner: B. Goessling, H. Schierbaum. Studio Manager: Bernd Goessling. Mixing Consoles: AMR DDA 24 80 channels for mixdown, Optilite automation. Audio Recorders: Sony PCM-3324 24-track digital, Otari MTR-90 24-track analog, Otari MTR-12 2-track master machine, Sony F1 digital master, Sony U-matic PCM-701 digital master, Sony PCM-2500 DAT master machine. Noise Reduction Equipment: Dolby SR 24-track Synchronization Systems: Adams-Smith Zeta-3 synchronizer. Echo, Reverb & Delay Systems: Lexicon PCM70 digital reverb, Lexicon PCM-60 digital reverb, Yamaha REV5 digital reverb, Korg DRV-3000 digital reverb, (2) Lexicon LXP-1, TC Electronic digital delay, Yamaha digital delay, Roland digital delay. Other Outboard Equipment: (6) Drawmer dual noise gate, (3) BSS compressor, Drawmer compressor, Tubeteck compressor, (2) EMT noise filter, Aphex Aural Exciter. Microphones: Neumann, AKG, Beyer, Sennheiser, Schoeps. Shure. Monitor Amplifiers: SA amplifier for monitoring, Monitor Speakers: (2) JBL 4435 main, (4) Yamaha NS-10 near-field. Musical Instruments: (2) E-mu Emax SE sampler, (2) Yamaha DX7, Yamaha TX416, Roland D-50, Roland Jupiter-8, Roland MKS-70, Roland MKS-80, Sequential Circuits Prophet-VS, Akai MPC-60 drum machine, (2) Korg M-1, Korg DW-8000, (2) Atari 1040ST w/Creator and Notator software. Other MIDI Equipment: MIDI Matrix computer 32 x 32 patchable.

[24+] **MARCADET STUDIOS**; 52 Avenue du President Wilson; Plaine St. Denis, Paris, 93210 France; 4809-1866. Owner: Georges Blumenfeld. Studio Manager: Georges Blumenfeld.

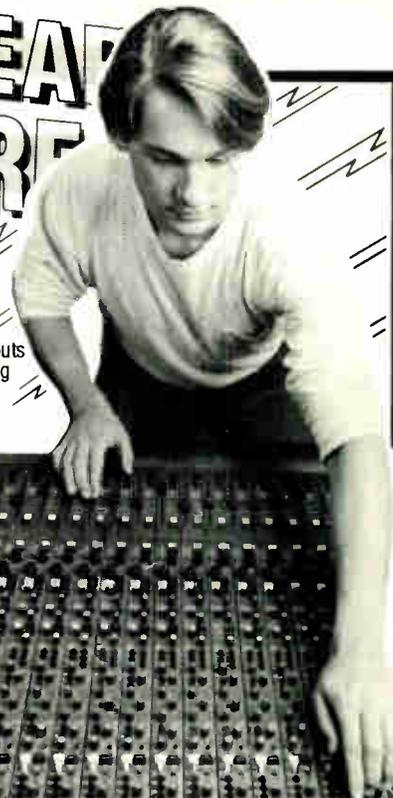
[24+] **PLANTA SONICA—ESTUDIOS DE GRABACION**; also **REMOTE RECORDING**; Travesia de Vigo 20, Int. Local 3; Vigo, 36206 Spain; 86-252822. Owner: Sonnor SCL. Studio Manager: Sergio Castro.

[24+] **RAINBOW STUDIO A/S**; also **REMOTE RECORDING**; Christies GT 5; Oslo 5, N-0557 Norway; 02-370290. Owner: Limited Company. Studio Manager: Jan Erik Kongshaug.

[24+] **STUDIO EMME**; also **REMOTE RECORDING**; Via P. Mascagni 45/47; Calenzano-Firenze, 50041 Italy; 055-8873298; 055-8874451; FAX: 055-8879062. Owner: Marzio Benelli. Studio Manager: Benedict Frassinelli. Mixing Consoles: Soundcraft TS 24, Artek Angela. Audio Recorders: Mitsubishi X-850 32-track, Tascam ATR-24 Cassette Recorders/Duplicators: Aiwa, Sony DAT (DAT-2500), Tascam 122. Noise Reduction Equipment: Dyn-R for analog system. Synchronization Systems: Fostex, Tascam, Roland SBX-80 Echo, Reverb & Delay Systems: Lexicon 480, Lexicon PCM70, Roland SRV-2000, DEP-5, SDR-3000, Yamaha SPX9011, Yamaha REV7, Publison de-esser, Infernal machine, AMS 1500, Alesis, DeltaLab DL-2, others by request. Other Outboard Equipment: Drawmer comp/expander, Drawmer noise gate, Aphex Aural Exciter, Aphex Compellor, dbx 165, Valley People GateX, Klark-Teknik DN60 spectral analyzer. Microphones: Schoeps, AKG, Neumann, Shure, Sennheiser. Crown. Monitor Amplifiers: Telefunken ME-1 2-track, Sony F1, SAE Genelec. Monitor Speakers: Yamaha NS-10M, Genelec 1025A, Auratone, JBL 4430. Musical Instruments: LinnDrum 9000, Akai S900, Roland D-550, Roland JX-8P, Roland DDR-30 w/pads, 727, Yamaha TX7, 6/12-string guitars, Toyo Coda piano, Fender Jazz bass '68, G&L 6-string electric. Other MIDI Equipment: Macintosh Plus w/Performer and Professional Composer, Atari w/Steinberger Pro-24. Video Equipment: Sony VTR, Hiachi monitor, Fostex video synchronizer, Tascam video synchronizer.

[24+] **STUDIO GUILLAUME TELL**; 20 Ave. de la Belle Gabrielle; Suresnes; Paris, 92150 France; 1-4204-0505. Owner: R. Guillotel. Studio Manager: R. Guillotel. Mixing Consoles: SSL 4064/56 G Series, SSL 4056/52 G Series computer. Audio Recorders: (2) Sony 3324, Mitsubishi X-850, (3) Studer A820 1/2" 1/4" TC 1/4" DASH, (3) Otari MTR-12 1/2" 1/4", Mitsubishi X-86, 3M DMS-81 32/4-track digital w/Editor, Sony JH-24 24-track, (2) Sony DAT. Synchronization Systems: QLock w/SSL interface, (2) Adams-Smith Zeta-3, Echo, Reverb & —CONTINUED ON NEXT PAGE

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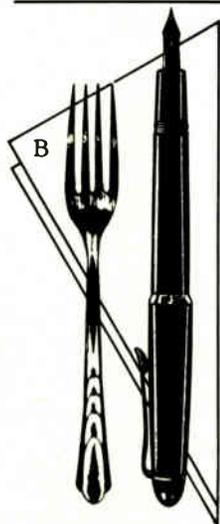
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by Mr. Bonzai

LEONARD COHEN

HAUTE DOG

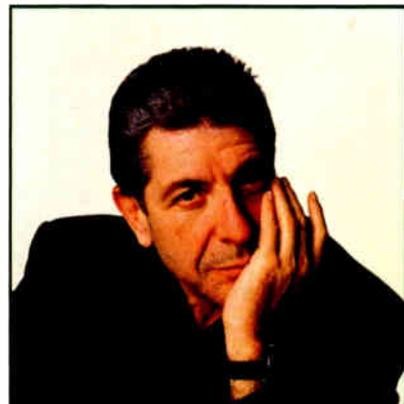


Let's set the record straight about Leonard Cohen. Most folks seem to think of him as a dark, brooding, morose fellow. Actually, he's a very funny guy. True, it isn't the light humor of Sam Kinison or Don Rickles, but if you're willing to follow him down Dante's staircase you'll find chuckles that echo through the nuthouses and whorehouses of antiquity.

How many characters like Leonard Cohen exist? He's a songwriter, a poet, a novelist, a painter and a sharp dresser, too. Onstage, backed by a superb group of musicians and sultry siren, Cohen hangs loose in *film noir* duds and sings his hard-boiled narratives,

ed us at the door and led us to his sunny kitchen nook, where he set out fine china and silver for our haute dog cuisine.

He first published his poetry in 1956 while an undergrad. Each of his two novels, *Beautiful Losers* and *The Favorite Game*, have sold more than 800,000 copies worldwide. His songs have been sung by such diverse artists as Judy Collins, Neil Diamond, Diana Ross, Joan Baez, Rita Coolidge, Jennifer Warnes and Joe Cocker. He was signed to Columbia in '67 by John Hammond and has recorded nine albums since, including *Songs of Love & Hate*, *Recent Songs* and last year's



sketching underworld scenes with shady undertones and witty asides, always exploring the unseen heart and soul.

I'd heard that Cohen likes cheap hangouts and junk food, so on our way to his home, Mrs. Bonzai and I stopped to pick up some greasy wieners (Pink's famous chili dogs) and a jug of chianti. Leonard, his customary 5 o'clock shadow in evidence, greet-

ed us at the door and led us to his sunny kitchen nook, where he set out fine china and silver for our haute dog cuisine. He first published his poetry in 1956 while an undergrad. Each of his two novels, *Beautiful Losers* and *The Favorite Game*, have sold more than 800,000 copies worldwide. His songs have been sung by such diverse artists as Judy Collins, Neil Diamond, Diana Ross, Joan Baez, Rita Coolidge, Jennifer Warnes and Joe Cocker. He was signed to Columbia in '67 by John Hammond and has recorded nine albums since, including *Songs of Love & Hate*, *Recent Songs* and last year's

Bonzai: We've been immersing ourselves in two of your records, *Greatest*

PHOTOS PAUL RODAL

Hits and *I'm Your Man*. There's quite a difference between the two. The instrumentation on this new album is so vivid—it fits the songs well and really opens up the imagery.

Cohen: Yes, it's curious. I had no strategy—never have—about those things. But it is very different.

Bonzai: Did you personally choose all the musicians?

Cohen: Yes. I played a lot of the stuff, except the very accomplished synthesizer work, drums, sax and guitar on some cuts.

Bonzai: Who is Anjani, the backup vocalist?

Cohen: She's a wonderful Hawaiian-American singer who lives just down the street. She is very beautiful and a very talented writer herself. John Lisauer, an old musical colleague of mine, introduced me to Anjani when we were putting together the group in 1984, for the tour that went with *Various Positions*. She sings with me on "First We Take Manhattan," "Ain't No Cure For Love," "Jazz Police" and "I'm Your Man." Jennifer Warnes is the backup singer on "Everybody Knows," "Take This Waltz," "I Can't Forget" and "Tower of Song." Three French women are also on "Take This Waltz," which I tracked in Paris, and Jennifer did the overdubs here in Los Angeles.

Bonzai: Your voice on the new record is dramatically different in pitch from your previous records. Why is your voice so much deeper?

Cohen: My life changed. Everything changed in it. I don't remember much of the past. I had some kind of amnesia and I don't remember too much.

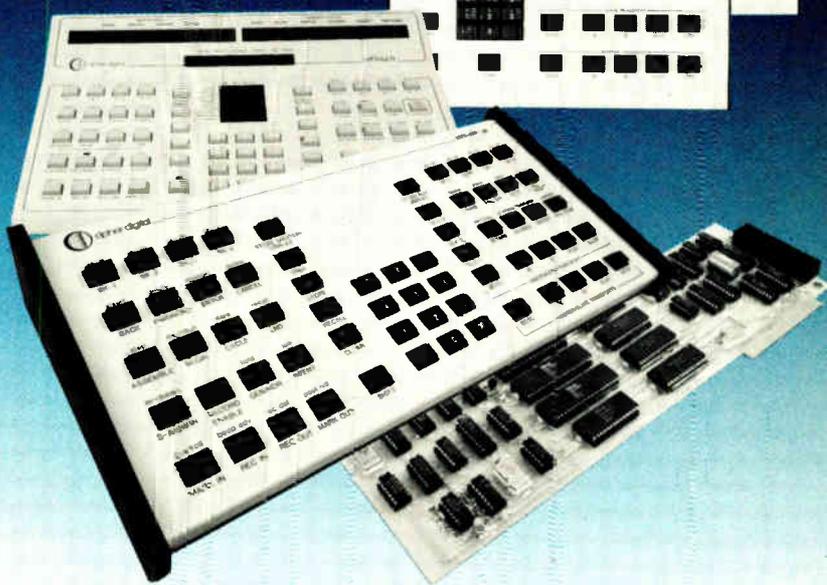
I am now going through my books of verse to compile an anthology for my Canadian publishers. I can hardly recognize the work, the positions—everything has changed radically, including my voice and my approach. I don't have a clear idea of what happened; actually, I don't have a great interest.

It's hard to even develop a position on it. In fact, you don't really feel like looking back from any perspective. There's something peaceful about it, though.

Bonzai: Do you find that you like working with certain engineers, cer-

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tain equipment?

Cohen: I've never minded who the engineer was, but I especially like working with Leann Unger.

I feel that microphones and engineers are very important, and the presence of Leann in the studio is something that I'd try to arrange even if she weren't an engineer. There's something hospitable about her presence that makes you want to sing. First of all, you fall in love with her and it makes you want to sing to her. I don't like to have anybody in the studio but Leann, because everybody else falls in love with her, too. If I can get my tracks down, then I can sing to her. I know her husband will understand this.

There are microphones that are more or less sensitive to the kinds of sounds that I can produce. Engineers know about those things. But there is also some other kind of process at work. They speak about certain actors being friendly to the camera. Once you start to hear the playbacks, you can accommodate yourself to the microphone that's available, and also, the microphone begins to accommodate itself to you. Things are continually changing.

Bonzai: Do you have a magical relationship with your musical tools?

Cohen: I think it is the opposite of magical. Magical is the word we give to relationships that we can't understand. I'm not very interested in the occult, especially the sensibility that goes with it and the kinds of things that people who are interested in the occult ask to be forgiven for. I'm not interested in that pursuit, but I do know that inanimate objects, especially when they have working parts, and depend on things like sound and light, are susceptible to the influence of the people who are working with them.

Bonzai: Do you have a personal studio where you feel most comfortable?

Cohen: Every studio can work, in the same way that we are speaking of these instruments. There are some places, of course, that will be forbidding, but I think we can work in almost any studio, under almost any conditions. Those become part of the agenda, things that you merely take into consideration when you're doing it. There are probably far more sensitive people that need a very special kind of environment to work in. But I

find I can work almost anywhere, with almost any kind of instruments.

I especially love the tracks I used on "I'm Your Man." I took them off toy keyboards. They're supposed to be sounds that are unavailable to our deep appreciation, but I don't think it's true. You can pass those sounds through conventional recording equipment and they can come out quite solemn and quite deep. I love technology, but in a very indiscriminating way. Almost everything can be used to make records.

Bonzai: Where do you live?

Cohen: I live between a number of places. I spend some time here. I spend a lot of time in Montreal, and I spend time in Paris.

Bonzai: Why is Montreal special to you?

Cohen: I think it's just that I was born there. I don't know if I ever would have gone to Montreal otherwise. Maybe I would have heard about it, but I haven't heard about it anywhere else—that it is beautiful, and good. I love Montreal because I know it so well, and probably because of its particular religious/political disposition, which makes it a very intense and holy city.

Bonzai: Who is the most amazing artist that you've worked with?

Cohen: The greatest musician that I ever worked with was Raffi Hakopian, an Armenian violinist who came here in the '70s. I met him in 1979 and he toured with me in '79-'80. He plays on an album of mine called *Recent Songs* and on "Take This Waltz" from the new album. He just went back to the Soviet Union.

Bonzai: For good?

Cohen: Yes. I think he lied to get out of the Soviet Union. He was married to a Jewish woman and he said he was Jewish. They let him out, and then I think they found out that he lied and they wouldn't let his wife join him, and they wouldn't let him back. He lived his life in America as an immigrant. He never learned to speak English. He lived with the Russians in Los Angeles, and later in New York. He was very homesick, and finally he was permitted to return.

I am continually impressed with the capacity of people to survive and go on. I am touched by people in all walks of life—how they manage to accommodate themselves to extremely antagonistic circumstances.

Bonzai: If we could invite one per-

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son to join us here today, from anywhere in the world, any place in history, is there anybody you would like to meet and talk to?

Cohen: I don't like to disturb people, or stir the dust of graves, or summon people from their ordinary days.

Bonzai: If you could choose the music for your own funeral, what would you like played?

Cohen: Well, you know, I don't like music very much, like most musicians. So, maybe they could pass on that. By that time—which could be any time from now on—the musical saturation has become so thorough that this might be one of the few spots where there is no music. I would appreciate that.

Bonzai: Can you think of your most completely satisfying performance—where it was, when it was, why the situation was perfect and why it worked?

Cohen: One of the happiest and most heartfelt moments was in my last tour, at a concert in Seville. The audience began waving white handkerchiefs and chanting, "Torero." I don't know if we were any good that night, but somehow the hospitality of the audi-

ence was such that they awarded me the highest designation of the heart. So, that remains the most touching moment.

Bonzai: You speak Spanish, don't you?

Cohen: No, I speak a little French, and I can read some of my favorite Spanish poets in bilingual translation.

Bonzai: Lorca was an inspiration for one of your songs.

Cohen: I like Federico Garcia Lorca very much. I like the man, and I like his work.

Bonzai: Are there other poets you admire or who have influenced you?

Cohen: There's so much excellent work. Every time I turn on the radio, I hear something good. Every time I pick up a magazine, I read some writing that is distinguished. My pace and viewpoint is being influenced continually by things I come across.

You recapitulate the whole movement of your own culture. Occasionally we are touched by certain elaborate language, like the language we associate with the Elizabethan period, with the King James translation of the Bible, or Shakespeare. In certain moments you are influenced by very simple things. The instructions on a cere-

al package have a magnificent clarity. You're touched by the writing in *National Geographic*—it represents a certain kind of accomplishment.

Occasionally you move into another phase where you are touched by the writing of demented people or mental patients. I get a lot of letters from those kinds of writers. You begin to see it as the most accurate kind of reflection of your own reality, the landscape you're operating on. There are many kinds of expression that I'm sensitive to.

Bonzai: Do you think you've made any enemies through the years?

Cohen: [Pauses thoughtfully] Probably not enough.

Bonzai: On the music industry side of things, do you know any useful business advice that might benefit people entering the business?

Cohen: Well, I remember when I went down to New York with the intention of establishing myself in the music business. I was not a boy. I was in my early 30s and my mother said to me, "Leonard, be careful—those people aren't like us." I was very resentful of my mother suggesting that she could tell me anything about things.



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But you know, she was right. They aren't like us. So, that's a good thing to remember.

Whatever you think it's going to be, it's not going to be like that. However crooked you might have heard it is, it's going to be a lot more crooked than that.

Bonzai: Don't you think that's always been true in the arts?

Cohen: Yes, there has always been a business element that has to be dealt with. It's good. That's why movies are the most interesting art form today. They involve the most money, and anybody that can master the form knows a lot about human life. That's

self in another time as a musician, an artist?

Cohen: You're a rich man. You have questions that involve a great sense of psychic abundance. You're very lucky. I never think of things like that. That's very luxurious, and I don't say this in any pejorative sense. Quite seriously, that type of speculation I connect with a scope and abundance that I don't have.

Bonzai: Any animals that you identify with, that you feel a kinship with?

Cohen: I like dogs very much. Sometimes I miss my dog. I like animal movies on television—I love the close-ups of animals on those documentaries. I think it's such a privilege to be able to see the flicker of conscious-

Anne would come down the stairs of the little parish church and people would be brought to her. She had a silver crucifix, and she would cross them and tell them to stand up or walk toward her. And sometimes they would drop their crutches and walk toward her, and the crowd would surge in and pick up the crutches and break them and throw them into the air. Sometimes a person would collapse. She didn't seem to be attached to the outcome of blessings. She merely gave the blessing.

Afternoon after afternoon I witnessed miracles. Some would say there are certain kinds of hysteria that this particular kind of treatment addresses well. That's okay. Whatever the thing is, I saw these cures. She was eventually called away and encouraged to stop performing this kind of practice. Those were miracles that I saw very clearly.

Bonzai: I remember in Montreal, there was a place we called the crutch museum—hundreds of crutches on the walls.

Cohen: Oh yes, the Oratory of St. Joseph. Frere Andre was the founder.

Bonzai: Didn't they have his heart in a jar, and it was stolen and held for ransom? They had trouble raising the money, and then they found that the actual heart wasn't there, because a film team had brought lights in once and it cooked his heart and they had to replace it. So, a counterfeit heart was stolen.

Cohen: I didn't hear about the grisly ending to your story, but I remember it was kidnapped and returned. I was just at the Oratory about three weeks ago. The heart is there. I don't know what state of cooking, of cuisine, it's in. But it's there; it's secure now.

Bonzai: Colorful place, Montreal. Are you Jewish?

Cohen: Yes.

Bonzai: There are a lot of Jesus references in your work, though. Why is that?

Cohen: Why would anybody want to avoid Jesus?

Bonzai: There's a line in one of your more famous songs—"Jesus was a sailor when he walked upon the water"—I find to be very humorous. Does anybody ever laugh when you're performing it?

Cohen: [Laughs] I don't know. Maybe everybody's laughing. Maybe that's why they like me to perform it.

Bonzai: How does it feel to be a hero?



Leonard Cohen at his home in Los Angeles

why poetry is the least interesting art form today, because you don't have to enter the world to write it. There is no demand, so poetry is no longer a significant expression for most people. It's very important that people understand business.

Bonzai: When you were in your formative years, were there any musicians that influenced you?

Cohen: I was more affected by the places connected with the music than the actual musicians. The whole night when the music was played was generally more important than the music.

Bonzai: Do you believe in reincarnation?

Cohen: I have no interest in my opinions. I have opinions from time to time, but I hate to be in this position of defending an opinion.

Bonzai: How about imagining your-

ness in a bird's eye.

Bonzai: Have you ever witnessed a miracle?

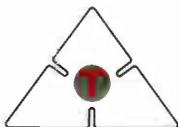
Cohen: I've witnessed many miracles, some very conventional. I was a counselor at a camp in the Laurentians in the early '50s. In the town of St. Margaret, Quebec, there was a nun by the name of Sister Anne who began curing people, locally. Within two or three weeks there were private ambulances from as far away as Texas in the streets of St. Margaret, which had maybe 5,000 people. People were sleeping on the streets and in the public squares. There were cripples, crutches, wheelchairs. There were hundreds of people in the public square singing all day, and the chief of police walking up and down with his baton singing along.

There was a line waiting and Sister

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Cohen: That's one of those, "Have you stopped beating your wife?" questions. [Chuckles] The presumption that one is a hero. Those designations don't really speak to me.

Bonzai: I leave it up to you whether you are, or to imagine what it's like to be one.

Cohen: I've met some real heroes of war, seen them in action. And I've met some heroes of the path, who have conquered, have overthrown themselves.

Bonzai: Freedom from public aspirations or statements of accomplish-

ment or biographies. How does that relate to the urge to create, to be an artist, to perform? How do you continue to work with the knowledge that perhaps it's meaningless, or that there is no real value in recognition? What is the motivation, with that consciousness in mind?

Cohen: I think the motivation is to be free from those questions. If we didn't have work, we would be thinking about those questions. Why are we working? What is the meaning of our work? What is the significance of our lives? Then we would be in hell. Doubt is hell. We have work so that we can move from hell into some-

thing that is not hell. It doesn't really matter what one's work is. Nobody has to award work significance from an exterior position. You don't have to make an object of work. As soon as you make an object of work, then of course, you can look at it like something outside of yourself and something which has a value—which work is better, which work is worse, which work is significant and which is not significant. But when you're one with your work, you're free.

Bonzai: I was in a studio the other day and heard a new Waylon Jennings cut. I thought, boy, Waylon could really do a number on one of your songs.

Cohen: I like him. Please tell him to sing some of my songs.

Bonzai: Some of your fame has come from your songs being done by other people. Are there any other artists you would enjoy hearing interpret your work?

Cohen: My critical faculty goes into immediate suspension when anybody sings my songs. I'm prepared to love it all, and I do. I've never heard a cover version of any of my songs that I didn't like.

Bonzai: You're vocal delivery is close to *speaking* the song. The French call it *diseur*. Do you feel a part of that tradition?

Cohen: I don't resist it, but I think the tradition is a lot wider than that. In the wider sense it's called folk music. I know that has a bad sound these days, although it's coming back and is a little more respectable now. There was a time when to be described as a folk musician was the last thing you'd want.

Bonzai: Sort of like the stink of poetry.

Cohen: Yeah. I've used that phrase, incidentally. The stink of poetry. I like it.

But urban folk music—somehow the musical values are very sophisticated, not primitive as it's usually taken to be. Very sophisticated and very, very minimal, but the emphasis is on the voice and the *experience* in the voice.

Bonzai: How long does love last?

Cohen: Well, it lasts just like all the songs say. It lasts forever. ■

Mr. Bonzai, a 15-year veteran of the music industry, is former manager of a major Southern California recording studio, and author of Studio Life: The Other Side of the Tracks (Mix Publications).

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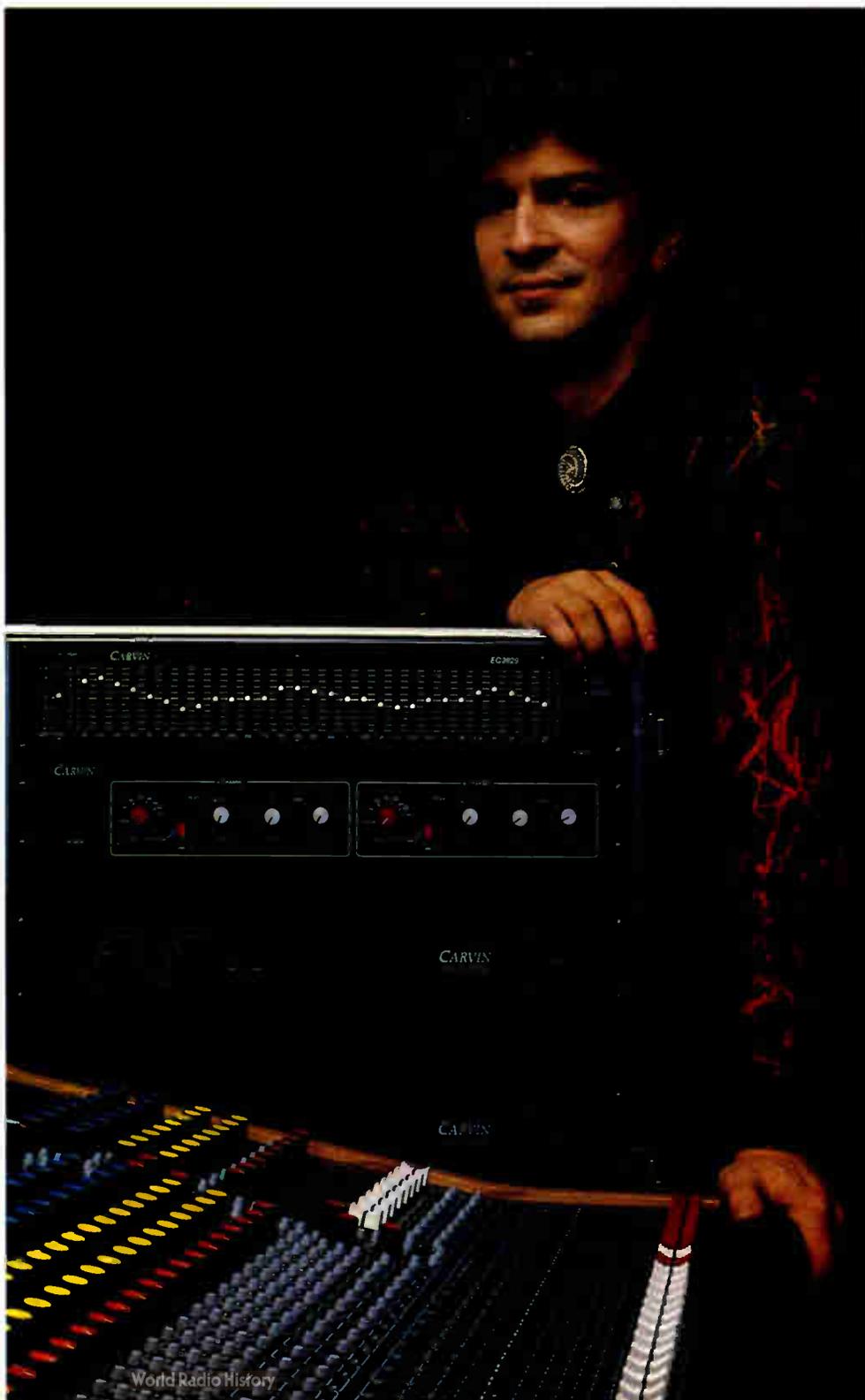
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NEW PRODUCTS

Klipsch KP-600 Loudspeaker Series ▶

Klipsch & Associates, the audiophile company in Hope, Arkansas, has addressed sound reinforcement concerns with its KP-600 series of modular speakers. Designed for quick, easy flying and stacking in any configuration, the system allows custom tailoring of polar response. Bandwidth is well-extended and fidelity rivals home entertainment systems, according to Klipsch. The basic 5-way system contains three identically proportioned, trapezoidal cabinets (LF, HF and SW) and weighs under 525 lbs. Features include self locating indexed stacking, carrying handles and grille cloth panels (metal-reinforced in subwoofer cabinet); the KP-600 "A" system adds recessed flying hardware with internal reinforcement. Options include cabinet wheels, modular flybar, flybar coupler and web straps with termination hardware. All cabinets can be purchased individually.

Circle #118 on Reader Service Card



Telcom c4 AC-27 Comander Card

From West Germany comes this new audio noise reduction card designed and built by ANT to plug right into Sony's BVH-2000/2500 1-inch videotape recorders. The AC-27 replaces the Sony AU-27 board (requiring no modification), incorporating the Telcom c4 compander system into both audio channels. It improves dynamic range (by 24 dB) and crosstalk



performance to a level said to be comparable to 16-bit digital, and corrects frequency response errors with head hump effects.

Circle #119 on Reader Service Card

Neumann KM100 Series

A small-diameter, active capsule (21mm) and hybrid, transformerless electronics are the benchmarks of the new, modular KM100 condenser mic series from Neumann (distributed by Gotham Audio, NYC). The capsule connects directly to the output stage, forming an axially addressed mic under four inches long, or connects to the output stage via a thin cable up to 150 feet long (with plenty of RFI rejection). The first four interchangeable capsules are: AK 30 omni; AK 40 cardioid; AK 45 cardioid with low frequency roll-off; and AK 50 hypercardioid. Many accessories are available.

Circle #120 on Reader Service Card

▲ AKG C-426B "Comb"

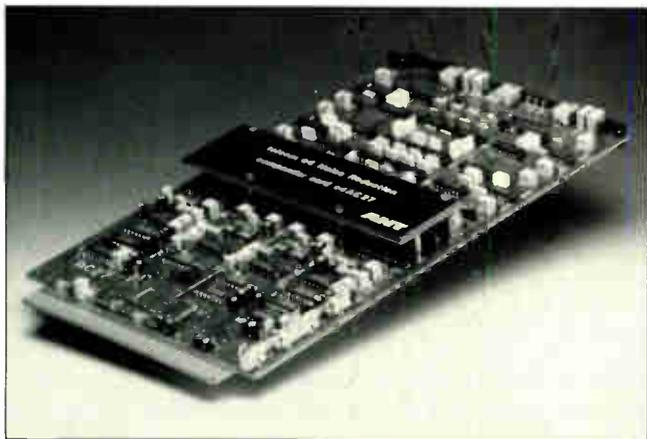
AKG has introduced the stereo C-426B comb, an upgrade for the C-422 combination condenser mic. The head now contains two twin-diaphragm condenser capsules, one set atop the other, for a total 25mm diameter. Two LEDs on the mic's all-metal body show the position of each capsule system, and three patterns plus six intermediate steps are attainable for each capsule system. An elastic suspension protects both capsules from handling noise. The mic also enables quick, easy switching from M-S to X-Y setups. It incorporates bass-cut circuitry (12dB/octave at 75 Hz) with preattenuation switchable to -10 dB.

Circle #121 on Reader Service Card

Peavey 380N N-Dym Microphone

The transducer engineers at Peavey (Meridian, Miss.) have combined neodymium-magnet and titanium technology to create the PVM 380N dynamic microphone, preventing the high SPL input "break-up" problems previously experienced when using large-sized, thin-polymer diaphragms (thinner than a human hair). According to the manufacturers, the resulting microphone is louder and cleaner, boasting superior performance and fidelity.

Circle #122 on Reader Service Card



**Sanken CU-44X ▲
Microphone**

Specially designed for digital audio recording, the new CU-44X is the first transformerless, unidirectional microphone in a new series featuring a unique dual-capsule condenser design. Developed by the Japanese company Sanken, the CU-44X has a cardioid pattern, a flat, wide frequency response with 132dB dynamic range, handles 145 dB max SPL and features inaudible self-noise. The 100V P-44X phantom supply can feed two CU-44Xs. Sanken mics are distributed in the U.S. by Audio Intervisual Design (Los Angeles).

Circle #123 on Reader Service Card

**AMS Software
Upgrade**

Advanced Music Systems (AMS) of England, maker of the AudioFile workstation, has enhanced its system software. The new Version 8 reflects significant user input and accelerated, simplified operation. New features include: vari-speed through the digital port; digital outputs available in all pages; faster lockup; digital de-emphasis; DC offset removal; ADR; record punch-in/out; time code-in cut and splice; SMPTE (drop frame) output; and more. New optional hardware upgrades include: 2x oversampled ADC with Apogee filters; R-DAT backup; full 701 I/O; and ProDigi interface. U.S. headquarters for AMS are in Seattle.

Circle #124 on Reader Service Card

**Symetrix SX200
Half-Rack Series**

The first three entries in Symetrix's half-rack signal processor line are the SX201 parametric EQ/preamp, SX202 dual mic preamp and SX204 headphone amp. The Seattle-based company has equipped its compact, low-noise products with high-headroom, balanced inputs, wide dynamic range and low-Z, high-current, balanced and unbalanced output line drivers. The EQ/preamp boasts +15dB boost and -30dB notch filter capability and retails for \$239. The dual mic preamp features variable gain, 15dB pad, 48V phantom powering and L, R and L+R outputs (\$219), while the 1-in, 4-out headphone amp handles high- and low-Z phones. Symetrix also offers a rack-mounting pan that holds up to two SX units.

Circle #125 on Reader Service Card

**Australian Monitor
AM1200 Quad
Power Amp ▶**

Here's an alternative to using two stereo 600W amps: the AM1200 Quad

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MOSFET power amp from Australian Monitor (distributed by Grafton Sound in Marina Del Rey, Calif.). The 4-channel unit is configured as two bridgeable pairs; thus, the unit can work as four mono amps, a tri-amped unit or a stereo unit. It delivers 600 watts into a bridged 8-ohm load. Features are: active balanced inputs; buffered, detented, 21-position attenuators; "bridged" indicators on front and back panels; separate indicators for status, fault and thermal shutdown; massive toroidal transformer; individual, dual high-current DC supplies to each amp pair; dual 2-speed fans; two-year warranty; and much more.

Circle #126 on Reader Service Card

▲ Dolby 363 SR

Dolby SR and A-type noise reduction circuits are now both available in one switchable, 2-channel, single-space, rack-mount unit. The independently controlled channels have record/playback change-over capability, and they can be switched between record and playback from the front panel, a tape recorder or remote control device. Other features include: setup button with LED calibration displays; auto-compare; electronically balanced, independent level adjustments; check-tape switch; individual channel bypass buttons; and transformerless input and output circuits.

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765-3410. . . **Technical Audio Devices' TL-1601b** 15-inch bass driver (\$450) handles 500W input levels (at 28-1k Hz), achieves 97.5 dB 1W/1M and features heavy-duty binding posts. Find out more from (213) 816-0415. . . **Micro Music Solutions' Music Mate** PC software (\$199) tracks critical song data such as copyright info, lyrics, style, royalties, rates,

licenses, etc. Order it (or a \$10 demo disk) by calling (818) 763-8978. . . **Wave-Frame's UDI-4 Universal Digital Interface Module** (\$8,950) allows the AudioFrame to directly receive and send digital audio info from digital sources with different sample rates and formats. Find out more by calling (303) 447-1572. . .

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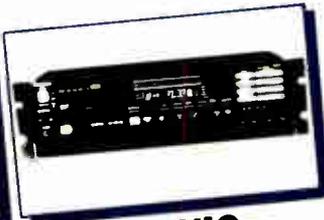
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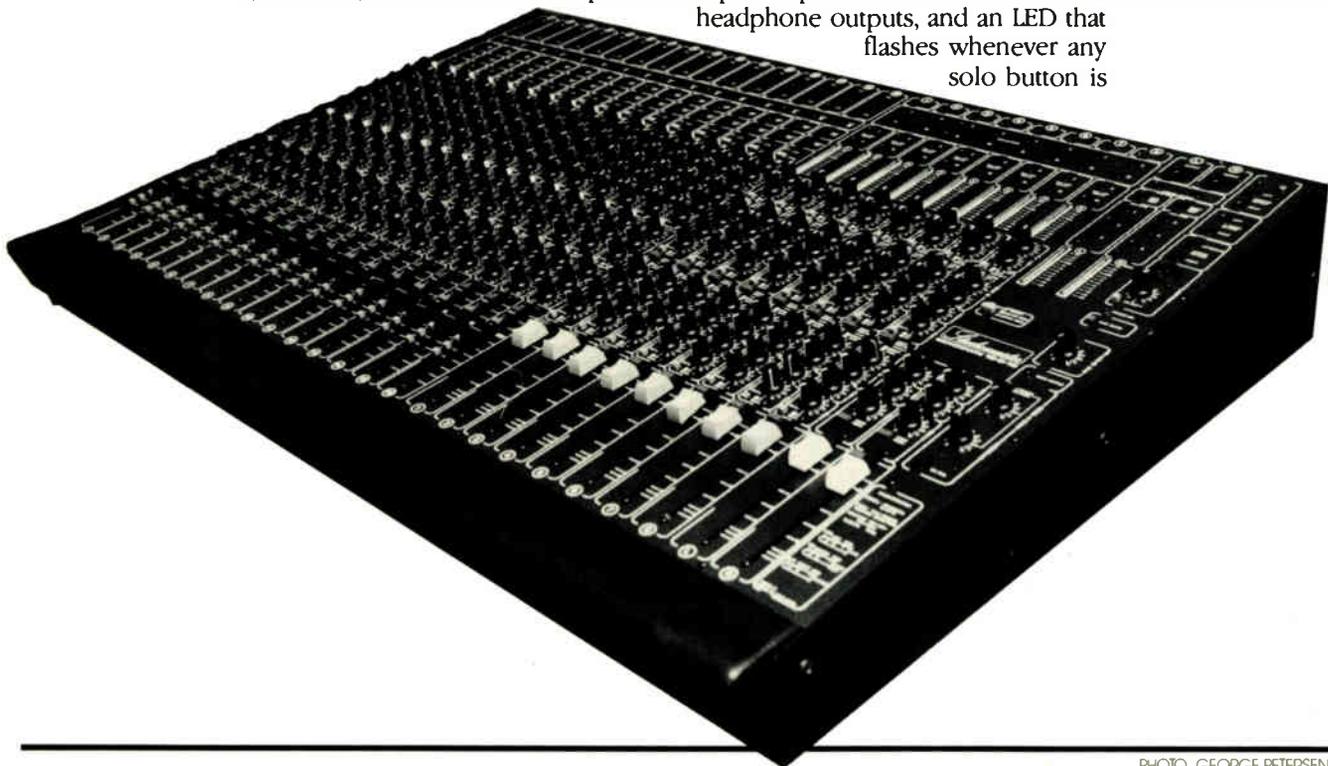
S TUDIOMASTER MIXDOWN 16-8-16 CONSOLE

If there's one thing that's changed about the needs of the small studio over the years, it's inputs, inputs and more inputs. With even a modest MIDI production setup and/or a small-format, 8- or 16-track recorder, one soon comes to accept the fact that the ordinary 12- or 16-channel board isn't adequate anymore. With the introduction of the Mixdown 16-8-16, Studiomaster has addressed this market with a compact, versatile console filled with pro features yet priced at an affordable \$4,975.

As its name implies, the board has 16 input channels, eight subgroups and 16 auxiliary line/tape inputs, along with a stereo return pair—for a grand total of 34 available inputs on remix. Each of the 16 main input channels has switchable mic/line (balanced) and unbalanced tape in-

puts, phantom power, 3-band semi-parametric EQ, six aux sends and a 100mm fader. Other standard items for each channel are: send/return and direct-out jacks; channel mute and solo switches, each accompanied by an LED indicator, with the "solo" LED doubling as clipping indicator; and the usual bus assignment switches to route the signal to the main output faders or the eight subgroups.

The console's group and output section is laid out in the same straightforward, logical fashion as the input section. Everything is easy to find and located where you'd expect things to be. One nice trait I immediately noticed is the board's lack of concentric controls, those ergonomic roadblocks found in many other console designs. Other features in this section include a talkback mic input (routed to the post-fader, aux 6 bus), 1kHz oscillator, separate pots for control room and headphone outputs, and an LED that flashes whenever any solo button is



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AUDITIONS

selected. The latter is particularly useful, since none of the 20 individual solo switches in the group and output section have LED indicators.

Operationally, I was impressed with the board's performance. While a few quirks did arise, they were minor; for instance, the EQ in/out switches are engaged when the EQ is "out," and left in the outer position when the EQ is "in." And the input faders are calibrated in an arbitrary 0-to-10 scale, whereas the meters, subgroups and output faders are marked in decibels. Also, the gain trim on each input is positioned very close to the high-frequency EQ knob—on more than one occasion I turned the gain control while trying to make an EQ change. Fortunately, that was the only problem I had with the EQ section, which is comprised of an HF shelving control at 12 kHz, and sweepable MF and LF controls, all offering 16 dB of boost or cut (more than sufficient for most routine studio operations).

Eight 12-segment, LED bar-graph meters are provided and can be switched to monitor levels of the 16 tape returns (in two banks of eight) or the aux line inputs, depending on what's selected. Similar meters are employed for the stereo outputs, with the right meter doing double duty as a solo meter whenever that function is enabled. I was pleased with the VU ballistics of these fast-acting, two-color LED meters and felt quite confident with their use.

Other than the AC power receptacle on the rear panel, the board's connections are made on easily accessible, top panel, ¼-inch jacks, with the exception of the XLR mic inputs, talk-back and main outs. The Mixdown's power supply is internal—no fussing around with an external supply—and operates on 100, 120, 220 or 240 volts. Equally versatile are internal PCB jumpers allowing the console's -10dBV level tape inputs and outputs to be reset at pro +4dBm levels. Similar jumpers let the user select balanced or unbalanced +4dBm levels to the XLR outputs. The ¼-inch main outputs are always at -10 dBV.

The Mixdown's manual goes beyond mere documentation, providing a complete tutorial of the entire recording process, and covers the efficient use of the console at each step—something that is sure to be appre-

ciated by novice users. No schematics are included. The text provides several nice touches, such as a section for logging in a session's console settings on bound-in, reusable, laminated marker sheets that can be used with dry marker pens (or photocopied for permanent reference). Also appreciated is the fact that the manual shows a layout of the input channel or master section on each page pertaining to that operation. There's no need to search for the graphics that accompany each description.

Eventually, many studios need to expand the number of available inputs on a console, and Studiomaster offers optional expander "blocks" (priced at \$835), each having four additional inputs. Up to six of these expanders can be retrofitted, for a maximum of 40 input channels (58 in remix) on one Mixdown.

Frankly, I was surprised by the excellent audio quality offered by a console in this price range. Even with all the faders and subs turned up full, I could barely discern any hiss or noise in the control room. When such performance specs are combined with a flexible design accommodating both MIDI and multitrack users, the result is the Studiomaster Mixdown 16-8-16, a console that meets the needs of the small studio operation, both today and in the years to come.

Studiomaster Inc., 1340-G Dynamics Street, Anaheim, CA 92806, (714) 524-2227.

ELECTRO-VOICE RE45N/D SHOTGUN MICROPHONE

Shotgun microphones are nothing new. Neither are dynamic shotgun mics—in fact, a pair of E-V 642 dynamic shotgun mics have served me well over the past 15 years. What is new is Electro-Voice's application of a neodymium alloy magnet in the dynamic shotgun microphone, the result of which is E-V model RE45N/D, offering lighter weight and improved sensitivity over previous dynamic shotgun designs.

The manufacturer describes the RE45N/D as a "Cardiline" mic, as it combines the characteristics of cardioid and distributed front opening designs. It acts much like a cardioid at lower frequencies, becoming more directional at higher frequencies. Since a dynamic (moving-coil) transducer is employed, no phantom or battery power is required, and due to

the absence of onboard electronics or preamps, the mic's self-noise specs are nearly unmeasurable.

Physically, the RE45N/D is designed with handheld applications in mind. A "Warm Grip" rubber handle slips over the XLR cable connector and mic barrel, thus reducing handling noise and providing a comfortable, well-balanced grip. A recessed switch in



the mic body allows a bass roll-off beginning at 250 Hz for further attenuating hand noise, and the supplied windscreens was effective in combating all but the most severe winds I encountered. Without the Warm Grip, the mic fit nicely into a ¼-inch mic clip for on-camera mounting.

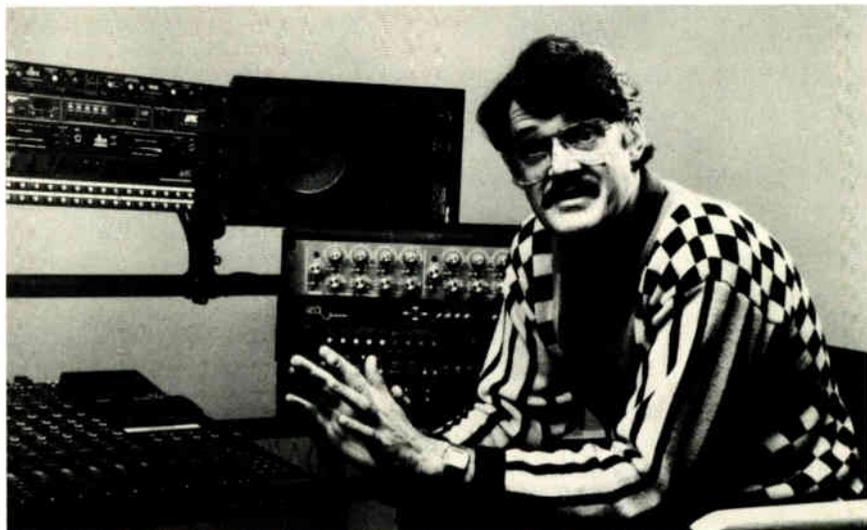
The RE45N/D's greatest advantage is in those applications where powering a condenser mic would be cum-

AUDITIONS

bersome, difficult or economically unfeasible—such as in commercial sound installations where phantom power is not available. The notion of climbing up to switch on some battery-operated, ceiling-mounted shotgun mics installed in a church is less than ideal. In ENG and EFP applications, the use of dynamic mics means one less thing to worry about in the field.

Another advantage offered by dynamic microphones is greater durability than condenser designs. Since shotgun mics are often used under conditions that are less desirable than most studio applications, durability becomes an important issue. The RE45N/D's rugged construction of aluminum, steel and high-performance plastics is of excellent quality throughout—in fact, the mic is guaranteed against malfunction from any cause for two years.

The Electro-Voice RE45N/D proved to be a solid, dependable performer that excels at vocal reproduction. It won't put any manufacturers of high-end condenser shotgun mics out of business, but at a list price of \$386.25, it's a cost-effective problem solver for



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able to accomplish: let the viewer actually see and hear various mics being A/B compared on different instruments. Fortunately, the sound quality of the tape is excellent, making full use of the VHS stereo Hi-fi release format to actually hear subtleties in mic placement and selection. I also monitored the program through a mono TV set and could still hear differences in the examples on the tape.

While such examples could easily be presented by an audio cassette course, *Shaping Your Sound with Microphones* uses the video medium to the fullest extent in several sections. The simplest of these involves Lubin demonstrating changes in responses of various polar patterns—cardioid, omnidirectional, figure-8—as they slowly rotate. The effects of off-axis coloration and attenuation is immediately evident. Split screens are later used to illustrate comb filtering, as an oscilloscope display in the lower half of the screen shows the effects of wave cancellation on the mics in the top of the screen.

Other topics covered include microphone types, pickup patterns, phase relationships, stereo miking, choosing mics and using mics on: drums, acoustic guitar, electric guitar, horns, strings, pianos and vocals. Each topic ends with a quick review of the main points covered in the section, and viewers are encouraged to stop the tape after each of these “chapters” and experiment on their own.

Overall, the 90-minute *Shaping Your Sound with Microphones* is a well-informed and accurate introduction to microphone technology and applications. Host Tom Lubin has a good rapport with the camera and manages to make this otherwise dry material seem more interesting with his lively delivery. I wish I had something like this when I was learning the ropes, but then again, I'm not sure how I could have used a VHS cassette in 1967. Fortunately, time and technology have changed since then.

First Light Video Publishing, 374 North Ridgewood Place, Los Angeles, CA 90004, (213) 467-1700. Also available through Mix Bookshelf, (800) 233-9604. ■

George Petersen lives with his wife and two musical dogs in a 100-year-old Victorian house on an island in San Francisco Bay.

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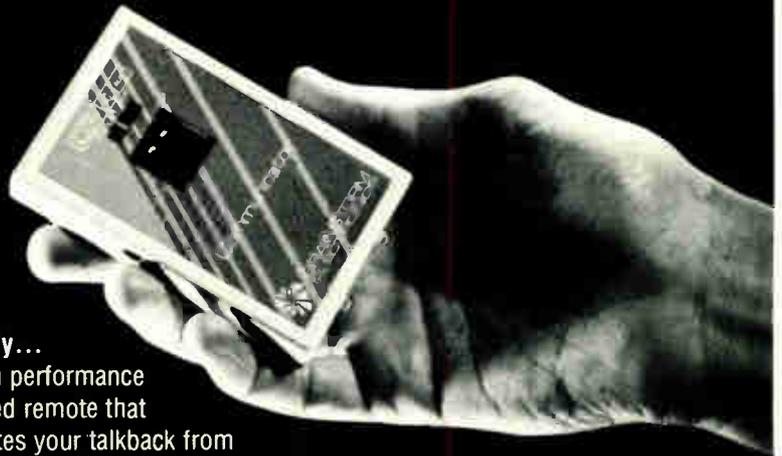
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by John Monforte

SONY

APR-24 MULTITRACK RECORDER

W

hile Sony has been positioning itself as a leader in digital audio, it has not forgotten that analog recording is still the mainstay of the industry. Amid the loudly trumpeted fanfare for competing digital formats, Sony (and its earlier incarnation, MCI) have sold 2,500 24-track analog recorders worldwide. So why mess with success? One reason is that the JH-24 and JH-16 machines were built around electronics that are cumbersome by today's standards.

Microprocessors can control transports more effectively than analog circuits, with fewer tweaks required for optimum results. Once the processor is involved a variety of useful functions can be added, which brings us to the other reason for a new machine: music recording has become a more sophisticated process with such methods as 48-track lockups becoming commonplace. Also, the video and film industries are rapidly employing these recorders for post-production. These applications demand a machine that is comfortable with the now-ubiquitous SMPTE time code, doesn't need external synchronizers and contains features that allow easy interface with other machines. After looking carefully at these and other changes in the industry, Sony introduced the APR-24 recorder.

A quick check of the APR-24's interior reveals that the audio cards, microprocessor controller and alignment cards are identical to those found in the APR-5000 series recorders. (For a detailed look at those recorders see *Mix*, December 1985.) Besides simplifying manufacturing, this compatibility makes it easier and less expensive for a studio to keep spare parts on hand. Both the APR-5000 and APR-24 machines are aligned with keystroke commands instead of

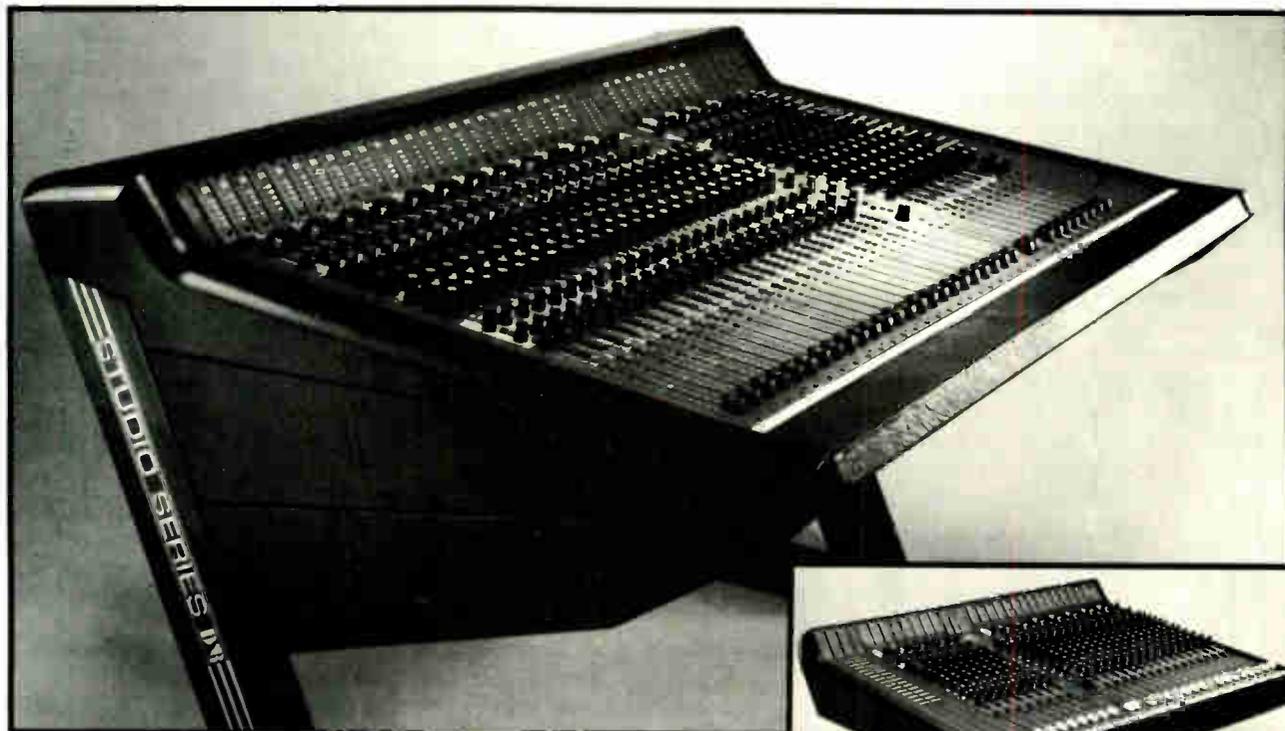
trimpots, and three completely different setups for each speed can be recalled from memory. New alignments or adaptations of existing ones can be set up in a fraction of the time required with trimpots. For instance, if you want to change operating level, simply select all channels for simul-



taneous alignment and tap the increment/decrement keys until the new level is reached.

Providing an internal oscillator and processor to perform automatic alignments at low cost is a simple matter, and this idea has not been lost on Sony engineers. In fact, quite a few specialized applications can be addressed with the APR-24's open-ended

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architecture. Right now there is ample room in the audio electronics housing for a noise reduction frame. Time and market requirements will someday determine how this space will be used.

Signal-level metering is done in two different ways. Each track has an LED bar graph meter that can be switched from a scale comparable in range to a normal VU meter to a "zoom" mode that shows close detail around 0 dB for alignment purposes. Also included is a single mechanical VU meter that shows either the level on the track selected for an alignment operation or a weighted average of all the tracks. There is also a two-digit readout that tells which track is being selected for alignment, or, when not aligning, it displays the number of the track being used for SMPTE. Here and on the remote are the standard LED status indicators for the tracks.

The transport is built around a solid, 4-inch casting and uses high-resolution Hall effect sensors for tension control and locating functions. Amorphous record and play heads are used for long life (said to have at least five times the life of conventional heads). This type of head design is also relatively free of the "head bump" often found in the low-frequency response of other recorders.

In addition to the normal transport motion controls, the transport panel has a "return to top" key that will locate the tape at the point where the machine last entered play mode. This is extremely useful in alignment procedures. There is also an effective, quiet, spot-erase feature, a tape time display and a jog/shuttle wheel for tape rocking, which, when depressed, moves tape at a speed proportional to the position of the control.

The rear panel has the Tuchel connectors for the transformerless, balanced inputs and outputs. Noise reduction switching is available through three "D" connectors. There is a pair of XLRs for SMPTE input and output, as well as a pair of BNCs that are used to loop through video, video sync or frame pulses to synchronize the framing of the internal SMPTE generator. This also serves as the input for a VITC code source. Another pair of BNCs send test signals in and out of the machine for alignment purposes, which are automatically routed to the tracks in alignment mode, eliminating

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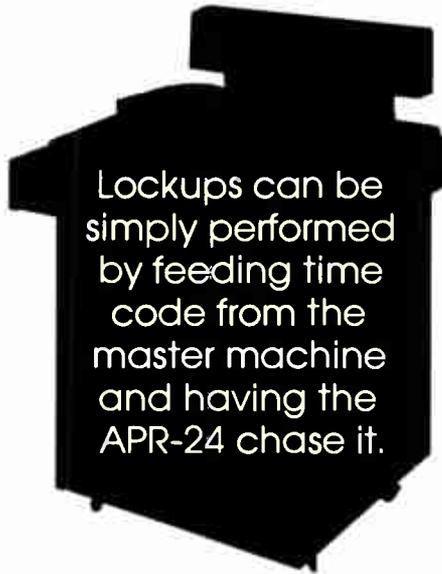
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the need for constant repatching during alignment.

Parallel and serial ports to the internal microprocessor are also included on the rear panel, allowing for fast and simple post-production setup with Sony video machines. While the machine has all the hardware needed to perform chase locking, it is not necessarily limited to that. A video transport could be controlled directly through the serial port if the software is adapted as such, so a sweetening/scoring setup can be controlled without the need for the video remote or another synchronizer. Since Sony makes many video recorders around a common protocol, and the APR 24 has easily upgradable software, it would be a simple matter to implement these embellishments based on market needs and user input.

The APR 24's standard, full-featured remote connects directly to the transport processor data bus. This allows for immediate response to remote commands for accurate punching operations and precise frame addresses when captured on-the-fly. Besides the normal functions found on a re-



note, there is another transport jog/shuttle wheel (which can be used for other data entry, such as vari-speed),

special function keys, and a numeric keypad for data entry and access to internal storage registers. Up to 25 locate points can be stored, as well as offsets. Start and stop points can also be set for looping, and store-record in and out points for automatic punches. Complicated punches can be rehearsed until satisfactory timing is established, and then actual recording can be initiated to those specifications with a tap of a key.

Other registers are used to configure the machine to the application. SMPTE code type, units for displaying vari-speed, preroll and postroll times, and other customizations can be called up. Five registers are provided for storing edit setups. Each location can store a snapshot of the machine's status, such as individual track record-ready and sync, in and out points, offsets, etc. The five user-defined function keys with their corresponding storage registers are a most intriguing feature. These soft keys allow the user to replace a series of sequential keystrokes with a single one.

Obviously, the best test of all this innovation is an actual situation. In

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general, as far as alignment or recording is concerned, there are two words that best describe what it's like using the machine: easy and fast.

Keystroke alignment of 24 tracks is as rapid as going at a 2-track with screwdrivers. With more practice, I'm sure I could become even quicker. A busy studio running several current projects on a machine can save enormous amounts of setup time (which is not covered in the client's bill) when switching back and forth between tapes. In case the memories become full, they can be saved by

writing them down on a form and kept with the tape. The settings don't seem to drift over time and temperature either.

Dropping in and out of record was free of thumps and noises. Responses to record commands were immediate, thanks to the remote's direct processor access. Locates were also performed swiftly and accurately regardless of the position of the locate points in the reel. Even when I wasn't planning to lock recorders, I recorded a time code track and used it for transport control; this offered greater accuracy in locating and punching operations and was as easy to use as

tach pulses.

Lockups can be simply performed by feeding the machine time code from the master machine and having the APR-24 chase it. Dialog replacement is easily accomplished since the machine remembers its own punch points. Complex, repetitive operations can be programmed onto the function keys to speed the work for the application at hand.

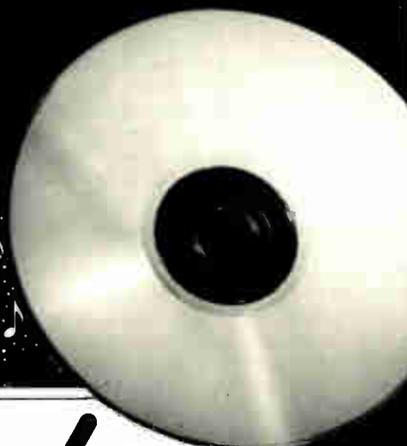
There will still be some folks who will want to hitch up their editors or synchronizers, and the APR-24 allows this through its parallel port. However, any machine has at least some delays and bottlenecks involved with piping commands and tallies back and forth through a port. The third-party manufacturer of the synchronizer also has to write control software that allows the machine to perform at its best. The APR-24 neatly circumvents all this by handling these manipulations locally on one processor with optimized software. Besides, those downtime hours of setup before sessions spent with a synchronizer and other transports are hours that can be used better in session.

After an hour or two with the machine and manual I was comfortable using its many functions. The only time I needed to look at the manual was to determine what registers pertained to which functions. A short cheat sheet with that information can be printed to keep handy near the remote.

There are a couple of interesting touches that reveal how much care was taken to make the recorder smooth to operate. If you hit record/play from a dead stop the machine will not enter record until it reaches speed. This prevents swooping bias sounds and punches with unstable pitch. Also, when fast-winding to the end of a reel, it automatically slows down before reaching the end of the tape so it will spool off more carefully.

Altogether, Sony has managed to assemble an impressive package of functions in a machine list priced around \$45,500. All the features mentioned here are standard, the only option being a floor stand for the remote. For the same price as 24 tracks of digital, a studio can have 48 tracks of analog. Compared to other similarly equipped analog recorders, a studio can add noise reduction. It looks like the JH-24 may soon find itself outnumbered. ■

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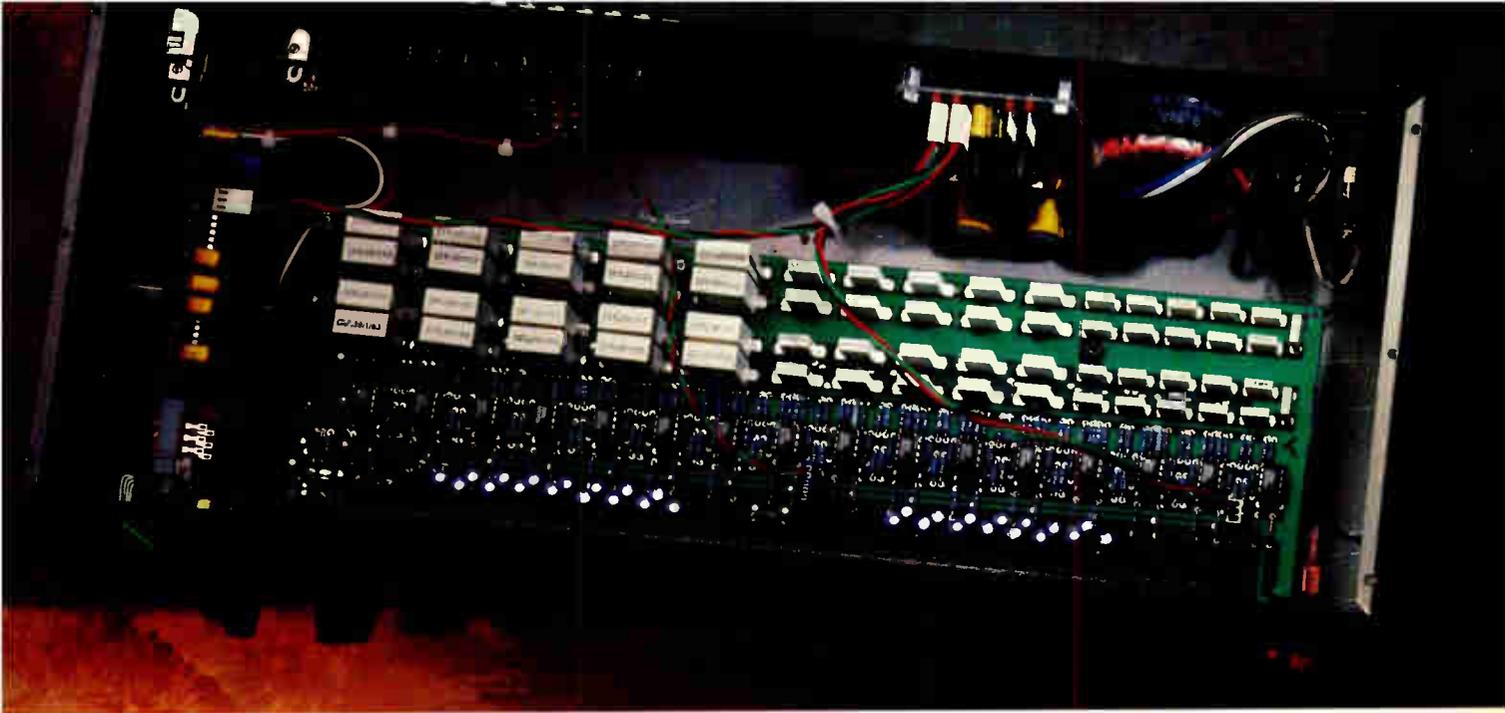
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JAMES HORNER



NINE OF THE MOVIE SCORES



(Above and top) James Horner pictured at his Los Angeles home studio and composition room.

For many of us working in the world of audio production, the film score has become the modern equivalent of classical music. Certainly, the compositional creativity exhibited by leading proponents of the art can entrance the visual images and envelop an audience in a cornucopia of aural delights.

One composer who arguably has done much for the genre of film composition is James Horner. He has made Hollywood his second home while he works on some of the most innovative musical scores to grace the silver screen. In addition to receiving a Grammy Award last year with co-composers Barbara Mann and Cynthia Weil for "Somewhere Out There," from the film *An American Tail*, Horner has received critical acclaim for his scores to *Krull*, *Something Wicked This Way Comes*, *48 Hours*, *Star Trek II: The Wrath of Khan*, *Brainstorm*, *Gorky Park*, *The Dresser*, *Testament*, *Cocoon*, *Star Trek III: The Search for Spock*, *Commando*, *Aliens*, *Project X*, *Name of the Rose*, *Batteries Not Included*, *Willow* and, most recently, *Red Heat*.

For Horner, the art of writing and conducting music for motion pictures

is also in painting. For Horner is the visual spectrum, his modern instruments created by an orchestra and electronic instruments, and he takes the aural textures and textures that stir the imagination. He crunches the visual images with an array of sonic colors, while the tones and timbres of his compositions paint the imagery with atmosphere, emotion and movement.

I caught up with this prolific composer during scoring dates for *Red Heat* at CBS Television Studios, Los Angeles.

Mix: How do you begin to think about the musical score for a motion picture?

Horner: Usually, the first time I see a film will be to decide if I actually want to do the score. While viewing the film, I'll know whether it's my kind of movie. There are certain films that I wouldn't normally take; a rock and roll movie, for example, would be the kind of film I'd pass on.

Mix: What would you describe as "your kind of movie"?

Horner: I'm most at home with dramatic underscores. My style ranges from symphonic to avant-garde, which I've done in various scores, to very

by Mel Lambert

The Recording of a James Horner Film Score:

A conversation with Shawn Murphy

Shawn Murphy has recorded James Horner's musical scores for a variety of motion pictures, including *Project X*, *Something Wicked This Way Comes*, *Testament*, *Brainstorm*, *An American Tail*, *Batteries Not Included*, *Where the River Runs Red*, *Willow* and *Red Heat*. We caught up with this busy independent scoring mixer and recording engineer at Sprocket Systems, Lucasfilm's Northern California post-production complex, during re-recording of the orchestral score for *Willow*.

Mix: You've worked with James Horner on a wide selection of orchestral and synthesizer-based scores. How do you set up for a large orchestral session?

Murphy: James and I know each other well enough by now that pre-production discussions just involve a couple of hours before the session. I don't usually get to see the score or hear the themes until we walk onto the scoring stage. I'll have a list of the orchestra and players involved; I would always know the instrumentation and if, for example, there's a choir. I would also determine if I'm going to have to seat the ethnic instruments among the orchestra—and go with an overall pickup—or should I isolate those players? Similarly, should I treat the chorus separately or as part of the overall orchestral feel?

I usually set up spaced omnis and maybe cardioids, depending on the room. I primarily use Telefunken M50s and B&K omnis, sometimes other types. I use sweetener mics typically recorded on separate tracks, but not mixed in with the monitor/3-track mix.

A typical scoring session would involve James balancing the orchestra on the stage the way he wants it, while I capture it in a way he'll be happy with. Typically, on the first playback he will comment on gross items—balance differences that occur in the room versus the control room, and generally more distant or less distant, and

—CONTINUED ON PAGE 118

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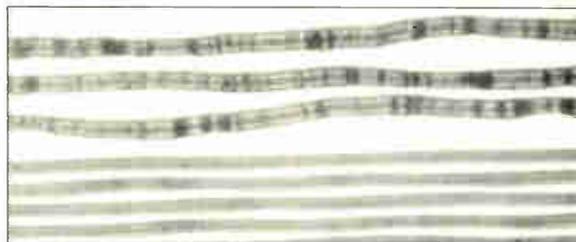
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rarefied themes, such as the scores for *The Dresser* or *Testament*. Those latter films involved music that I wrote for very small ensembles, and included some interesting aural "colors."

Mix: For many of the films you have worked on, the musical score has been very dramatic and pivotal to establishing a mode or pace for the film. For example, *Aliens*, *Commando*, *Star Trek II* and *Wolfen* are films for which the score served as a strong key to reinforcing what's happening on screen. What serves as the "key" to establishing a mood for a film score?

Horner: Those films, and others I've done, like *Gorky Park* or *48 Hours*, have more of an "urban" sound to them. When I first see a film, I first look for a color, a texture. I don't mean a real color, like yellow, blue or red; it's more a matter of the film's mood. I look for a holistic or overall color, which usually occurs to me as a certain sort of sound, or an ensemble.

When I am scoring, it's crucial to establish what instrument I'll be using. For example, if an oboe is going to be playing a particular line, the melody follows from that decision. I now have a "color" playing the melody, as opposed to saying: "I've got this beautiful melody; who gets to play it?"

I'm usually struck initially by the emotionalism of the film's theme, something in the film that I've found musically worthwhile. If I feel it needs an unusual fusion score, that's the type of music I love to get involved with. I'm always looking to fuse together different types of music, to combine some really strange elements, whether they be, for example, medieval or electronic music.

Mix: Is that because the process of composition involves a high degree of discovery as a personal experience—basically to see if your ideas work musically?

Horner: Yes. I'm always trying to push the outside of the envelope in my music. It's possibly unfortunate, but with purely orchestral scores you can be the most gifted composer in the world, with the most gifted themes, and you would simply have just *another* orchestra score. For me, a film score has to have something texturally beyond that of just a "big orchestra."

Sometimes I'll decide to add those textures electronically and other times with South American or African acoustic instruments; they'll be tucked way in there, so you don't quite know

what's going on. Sometimes it's a combination of more common instruments working in unusual registers.

Obviously, a big symphonic score is going to sound like a large orchestra. But, when I can, I always try to push out and around. Sometimes the filmmakers want me to be as absolutely off the wall as I can possibly be—sometimes to the detriment of the movie.

Mix: Do you find that success begets success? That now you have more freedom to experiment with musical ideas, more than when filmmakers were possibly looking for a "traditional" film score from you?

Horner: Yes and no. It's funny, but the pool of directors and producers I've been working with over the years is large enough that I seem to be employed a lot of the time; however, I also seem to be called upon now because of my slanted view of music.

Mix: Would directors tend to play you a score that they liked musically, or maybe indicate they wanted it to sound like so-and-so?

Horner: Very early on in my career they would play me certain composers. That's one of the signs I look for when I decide if I want to do a certain film score: what they say to me after the first screening. "Well James, here's what we're looking for. Would you listen to this?"

If it is a project I'm passionate about, and I've never worked with the filmmaker before, I'm much more tolerant than if it's a project I really don't care about. I like to feel as if I've been brought on the project for my own unique voice, and that's what they want to exploit, as opposed to instantly plunking notes onto the page.

Directors I've worked with before usually let me go, because they know what to expect. Walter Hill [director of *48 Hours* and *Red Heat*] is an interesting combination of: "James, I want something you've never done before" and, "James, I want something completely off the wall!" Sometimes, however, when I do give them something off the wall, they cannot relate to it and want something more "traditional."

You have to read between the lines and know the person. If they say they want something "avant-garde," it doesn't mean they want something atonal. Instead, they want something that relates to that concept: dissonant chords here and there, but with a tonal center, and something that's "fairly traditional." If they really want-

ed something avant-garde, I would play them Penderecki or Boulez or real 12-tone music, and ask them, "How avant-garde can we be?"

On the score for *Willow*, I was asked to provide a "Western-type" sound that Ron [Howard, the film's director] had in mind. All Ron could tell me was that he was after this "Western sound," a sort of Sergio Leone-type texture. I had to interpret his feel for a Western sound into a music cue for the scene.

Mix: Jangling spurs, maybe?

Horner: Yes, jangling spurs were what came to mind. So I put some coins in a cash bag, shook them in time to the music and achieved a *shink, shink, shink* sound like walking spurs, except 50 of them at a time. You have to feel your way and sometimes resort to a great deal of experimentation.

Mix: Do you become involved with creating artificial ambiences that can enhance a piece of music, possibly considering how reverb and processing can transform aspects of a score?

Horner: For acoustic music, I let the engineer make the choice. I like to work with one person most of the time; for acoustic and orchestral sessions I've been using Shawn Murphy, who is marvelous at being able to pick up on almost anything. He's really brilliant. [See sidebar.]

When it comes time to record an orchestra, I let him take care of the mumbo-jumbo. I know a lot technically, because over the years I've had to learn that. But although I understand recording gear, I don't know much about microphone technique and placement. Shawn and I have developed this rapport; he knows how I write and what weird little colors I go for and the dissonant sparkles, etc.

Mix: What about some of the ambiences that are added on the re-recording stage? I'm thinking of some of the fractured sounds in the score for *Aliens*. Where did those weird, discordant noises, which added so much edge and terror to the film, come from?

Horner: A lot of those effects were mine and were made after the fact. They were electronically enhanced textures or weird electronic noises I made specifically for the film; I do play around with ambiences. But in terms of the orchestral presentation, I don't mess around with that: I record it straight and then we process it. However, many of those sounds on

Aliens are built in as part of the music premises.

I rely on Shawn to get all those added textures. I'm always at the music remix session and will offer my input to his ideas. I might comment on the rough balances, but he knows how the panning should be set up for the Dolby Stereo mixes.

Mix: You have a strong academic background and are a classically trained composer. Where did you go to college?

Horner: The Royal College of Music in London [England] and then USC, where I received a Bachelor of Music degree in composition. My master's thesis at UCIA, where I transferred from USC, was an orchestral piece, and my doctoral dissertation was going to be a ballet. By that time I had spent all my life in academia, and I hated it. All I wanted to do was write music. But I knew that to write music you couldn't be disassociated from some academic institution. A professor with an academic power base has to get pieces performed; that's the reality of it.

While working on my PhD, somebody from the American Film Institute asked me to score a short film [*The Drought*]. I didn't know the first thing about movies; I didn't know about Jerry Goldsmith or any of the other big composers—not a thing!

I saw the movie and agreed to do the score. It was like being struck by lightning. I realized that this is what I wanted to do, that this is where I can get pieces performed. I can write in any style I choose—dictated by the film, of course—without it being called too ugly, too avant-garde, too eclectic, too middle-of-the-road, too reactionary. So, in 1980, I abandoned my PhD and teaching job at UCLA.

I saw my new role almost like that of a court composer: being hired by a film company to write music that would be performed by very good players, and to be paid for it. A contemporary version, if you like, of what someone like Haydn did. But that older world of commissions gets you only so far. You have to be one of the fortunate top composers to have pieces considered by the major symphony orchestras.

After about a half-dozen scores for AFI, I did four or five movies for New World Pictures, where I met people like Ron Howard and Joe Dante. Then I got a film at Orion [*Battle Beyond the Stars*], a co-production with New World Pictures. I was then asked to score *The*

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Hand, a film totally financed by Orion. It was a slow process of building my reputation and experience.

Mix: Was there a specific time during your career when you first started to bring in electronic elements to serve as a contrast to a primarily orchestral score?

Horner: I did that all the time in my "serious" compositions; it's been a trait of mine for a long time. Having, maybe, a string quartet or ensemble playing and then, off stage, to have a piano playing a weird Viennese waltz in a completely different key. I was always interested in combining those sorts of sounds.

I used to be thought of as a composer who couldn't write melodies. That comment never upset me, because my melodies tend to be more like Schubert, and unlike straight 4-bar tunes. It may sound snobbish of me, but I have a feeling that a musical background and an understanding of how to control and release tension—no matter how prosaic and abstract—is *really* important for writing film scores. I don't think a lot of people currently writing film music have received that sort of training.

It's one thing to write a tune that lasts eight bars, or spin that tune into a song, but quite another to take an 8-bar tune and weave it into a nine-minute cue. And be able to inflect everything with the subtlest of shadings, as if you were using charcoal on a page. You should have just as much control of the music as an artist would while sketching in charcoal; but you can see every dimension, the shades on the skin, and where the light is shining from. It's the same in music, but not many people can achieve the same degree of control and subtlety.

While composing, my "charcoal" is the coloring with the orchestra, and the thinness or thickness of those orchestrations. How much color should be there, or how sparse? How dissonant should it be before a sense of tonality comes through? How tonal should it be before it tears at you and maybe becomes a little more dissonant?

I always try to move from one type of film to another. I came off *Willow*, which has a big symphonic score with a lot of weird instruments and electronic sounds, to *Red Heat*, which is like night and day. I went from the score for *The Dresser*, which was very austere, to *Gorky Park*.

I like to go from night to day; it's

like a new canvas being put up, and I can start fresh on a new project. If I have to do two landscapes side by side, and they all use the same palette, it's very hard not to have similar ideas. But if, in between, I move on to something that is completely different—let's say, a clay nude after a landscape—I'm able to go back again to landscape and be fresh.

Mix: Here at CBS Television Studios, where you recorded the electronic score to *Red Heat*, you used synthesizer rigs from both Ian Underwood and Michael Boddicker. What was the process you used?

Horner: I play all the keyboards myself, direct to picture. Ian and Michael help me develop new sound textures and arresting "noises," then I create the music to a video workprint. It's a free-form process that I have started to use; it's out of the way of copyists, orchestrations and somebody else's interpretation of my melodies. There was no music written ahead of time for *Red Heat*. I had about 70% of the sound in my head, and I improvised against picture; every time I did it, it was different.

Working with Michael and Ian, one of them would get sounds while I played the other's. Or I'd give them a basic sound to further develop. Initially, Michael was shocked that he wasn't going to play; he's never worked this way before. But if I were to give the part to Michael to play, I would end up with a different color that would not be my own. I use them as a rich bank of sounds.

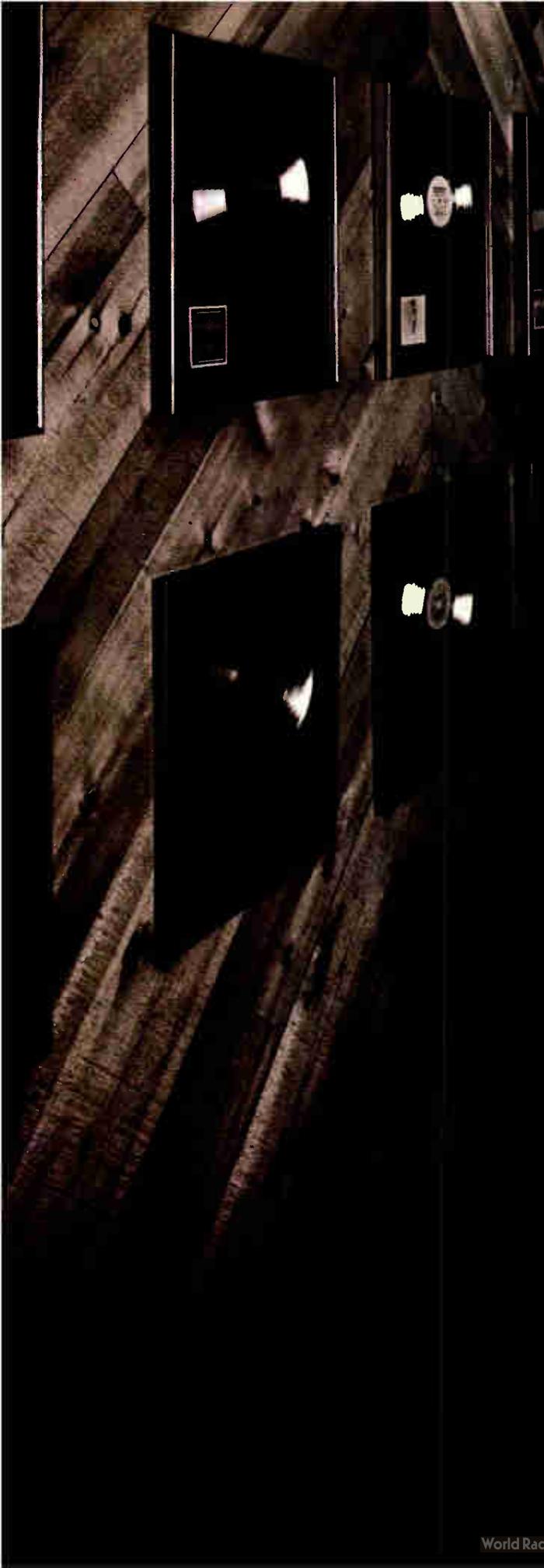
There was also a traditional "Russian" score for this film, recorded at The Burbank Studios. I have done only four combination movies like this: *Name of the Rose*, *Where the River Runs Black*, *Vibes* and now *Red Heat*. It often takes longer to work this way, because I have to be here playing the score rather than working in my home studio.

Mix: How do you choose the electronic textures and the types of voices and colors you need for your scores?

Horner: I have very specific tastes with synthesizers, in that I use them judiciously. The sounds I choose are not electronic in form, but "organic" and easy to listen to. I'm also interested in creating sounds over which I have control. I can sample a nice texture, then play in odd registers, for example.

I'm a "classical" person and love to

—CONTINUED ON PAGE 118



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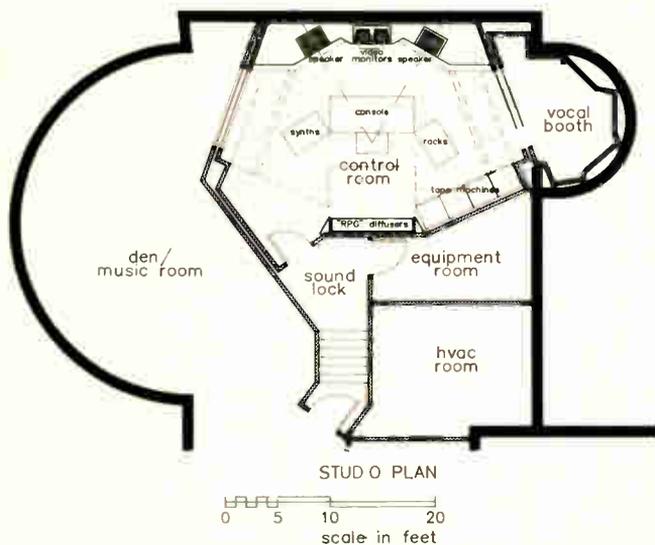
WHITNEY HOUSTON

FINDS A NEW HOME

Like other hugely successful recording artists, Whitney Houston decided it would be convenient to have a recording studio in her home. So when she bought a house in northern New Jersey, her goals included building a studio in the cellar. Houston brought in Bob Spangler, president of Susquehanna Sound in eastern Pennsylvania, as contractor/project coordinator.

"The blend of being able to swing a hammer and also use my ears has been really helpful," says Spangler, whose background includes 17 years as a studio builder and recording engineer. "I know how to perceive things, how things are going to sound, sometimes before I even build them."

When Houston's representatives first came to Spangler with the project idea, it was somewhat ambiguous. "They wanted a room that she could do demos in, and they wanted digital



compatibility. I'm thinking, 'Oh, that's a fine blend of motor oil and cheese.' That doesn't really make a lot of sense." Instead, Spangler suggested building a world-class room, "so no matter what Whitney put in there from an equipment standpoint, we would have a room that would justify it. Why couldn't we build a room where she could stay home and do her [scratch] vocals and finished vocals?"

Why not? The idea was immediately accepted, and the room was designed primarily to record her vocals.

Spangler asked an old friend, designer John Storyk of New York City,

Above: A look through Whitney's studio to the den/music room; left: architect John Storyk's floor plan.



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ARTIST'S · STUDIO

to help design the studio. Storyk is no stranger to home studios, having designed rooms for Run-D.M.C. producer Rick Rubin and veteran studio owner Howard Schwartz, among others. Spangler and Storyk had previously worked together on five rooms.

"The main philosophy," recalls Storyk, "was to accommodate all the equipment the way Whitney and her people liked to record: a large control room, with a lot of people, a lot of outboard gear, a small vocal booth, and the biggest issue—a large den/music room on the other side."

Along with trying to figure how to put everything in the space, Storyk and Spangler had to determine how to put it all in Houston's 12,000-sq.ft. house, which wasn't easy, according to Storyk. "The ceilings were not tall enough and the sound isolation was virtually impossible.

"Basically, we had the incredibly monstrous task of digging out the basement floor. And, of course, we had the soundproofing problems of going between the control room and her bedroom suite." Her 3,000-sq.ft.

bedroom suite, located directly over the proposed studio, was extremely heavy, thanks to its marble floor. Consequently, there were a lot of structural and acoustical concerns.

Says Storyk, "The basement was a standard basement: low ceilings and

"We tried to stay world-class and make it right."

lots of columns. The solution was to dig down about three feet, converting 9-foot space to 12-foot space, and put in a standard, state-of-the-art control room. We had to take columns out, put in new supporting beams, pour concrete. There was quite a bit of that stuff to deal with, and that was really the first issue."

The acoustic philosophy, on the

other hand, was fairly straightforward. "Large-sized room, no equalization in the monitors and UREI's Time-Aligned monitoring, which was a given. That fit in conveniently with the way the room, the home and this other room configured themselves," says Storyk. "It was obvious that the recording spaces would be to the side, which is what we wanted. So that was a bit of luck. Everything else was a bit of a hassle, but it fell into place."

Storyk was virtually given a free hand in the studio's design. "We put in a control room that I'd actually been drawing in theory for about a year-and-a-half, a little wider than most, basically an LEDE®-type room, expansive in theory, with ear-level monitors, no glass in the front, very bright and dispersant in the rear."

The control room ended up as a polygonal, 700-sq.ft. area. "I'd call it a paradigm MIDI room, except it's fully consoled," says Storyk. "It's a mix-down room, completely MIDI-wired, with a small vocal overdub booth on one side, and connected to this den/viewing room [which houses a piano] with a view of outside [see diagram]; something you couldn't do in the city

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because of the cars and whatnot.

"We didn't do too much acoustic work to the den," recalls Storyk. "The idea was for it to remain live, bright, living room-style. But we did put mic lines in and isolate it from the control room." The room also includes a wide-screen projection system and stereo system, both designed and installed by Spangler.

Equipping the studio "was fairly straight ahead," Spangler says. "We weren't going to do major tracking there, and when we ordered the console, we weren't thinking along the lines of mixing, because overdubbing was the room's main feature." Spangler decided to go with a Solid State Logic 4000 G Series. "I needed a sonically clean console, something with flexible EQ. I needed a console that had some good mic preamps in it and a large enough mainframe to accommodate future updating to 32-track digital."

Other equipment includes an Otari MX-80 with Dolby SR, Lexicon 480L, TC Electronic 2290 digital processor, Crown Micro-Tech 2400 monitoring and a variety of mics: AKG D-414EB for Houston's primary vocals, along with Neumann U87 and B&K 4000 omnidirectional condenser mics.

Although the room has been in use as is for more than a year, Houston has only had time to record a few projects—vocals for her song "A Moment in Time," and for a Japan Airlines TV commercial—because of touring commitments. Word is that she will begin working in her studio on her new album in early '89, according to Spangler.

"It's not a commercial facility," he continues. "Whitney's in a residential area that wouldn't allow her to have a commercial type of operation. So it's unique—a room designed for her and her purposes. We tried to stay world-class and really make it right."

Storyk proudly says of the finished room, "It looks sharp, sounds perfect, no equalization, great response. The listening position is very well-defined across the board. The isolation is exactly what we anticipated it to be. It wasn't a cheap studio, but cost wasn't really an issue. I'd do it again in a flash." ■

Karen Margroff Dunn, assistant editor of Mix, is also the associate producer of our Technical Excellence & Creativity (TEC) Awards.

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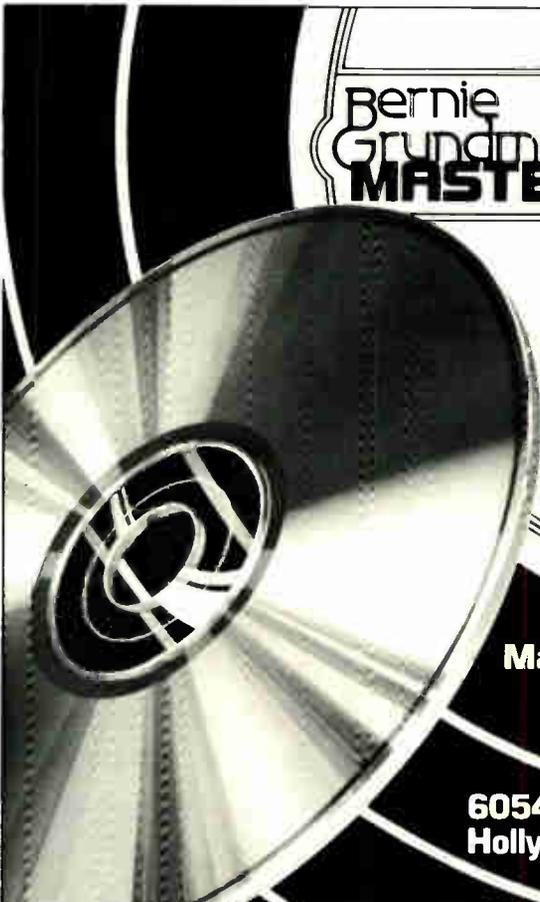
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by Mark Herman

SOUND REINFORCEMENT NEWS

Industry giant **Clair Brothers** (Lititz, PA) reports a brisk winter season for concert touring. Business manager **Greg Hall** says, "We have nearly as many tours out this winter as in past summers. Much of the reason is because Europe is so hot for touring," and adds, "A noted booking agent once prophesized that this would eventually turn out to be a 12-month-a-year business. I think it is about to come true. Last year was fairly strong through the winter season and it seems that this year is a step better." Asked about tours outside the usual North American and European routes, Hall replies, "India, of all places, is running a lot of shows. And South America appears like it might be hungry for Western acts. Also, there seems to be an awful lot of acts talking Soviet Union now." I guess *glasnost* is even filtering down to our sound reinforcement industry. Who would have thought this possible ten years ago?

A brief rundown on the many current Clair acts: Scandinavian band **Europe** is doing a three-month stint in Europe. . . . Another European group enjoying success overseas, although relatively unknown in the U.S., is **Bros**. This past holiday season Bros played five sold-out shows at London's **Wembley Stadium**, and five at the **N.E.C.** in Birmingham, UK, utilizing a 48-cabinet Clair S-4 system. The tour ended in late February. . . . **Michael Jackson** performed his rescheduled Southern California shows in January (see "On the Road"). Previously he had been at the **Egg** in Tokyo for nine sold-out (of course) outdoor shows that ended December 26. Jackson used a large (128-box) Clair S-4 system. . . . Hot-selling Christian vocalist **Amy Grant** continued her tour of coliseums and arenas. . . . Glam band

Bon Jovi worked the U.S. . . . **Duran Duran** is back working bigger venues after doing a smaller promotional tour. They are using a 40-cabinet Clair S-4 system. . . . Veteran road warrior **Kenny Rogers** keeps on trucking across the country. . . . **Big Country** is out on a smaller tour using 16 S-4s. . . . Japanese new age artist **Kitaro** toured Europe for the first time in January. . . . Athens, Georgia's **R.E.M.** went out in February. . . . A revitalized **Elton John** finished his tour of North America and is preparing to cover Europe early this month. . . . **38 Special** is back out in the U.S. . . . Rolling Stones guitarist **Keith Richards** finished his surprisingly successful and highly acclaimed tour of the U.S. in December. **Trip Khalaf**, one of Clair's senior staff engineers, mixed house, and is currently mixing house for Elton John.

Clair Brothers has an exciting new equipment announcement coming that will grab your attention. They have added substantially to their R&D department, and the results will be out soon. . . . Clair's new monitors, introduced this past year, have been received well. "We have integrated the new 12AM monitor package into almost all our tours," declares Hall. If you watch Michelob's Sunday-night music show you've probably seen the 12AM monitor wedges. **TD Audio** does the sound for the late-night TV program.

The **Power Plant** rehearsal studio, which is part of the **Schubert Systems Group** (North Hollywood) complex, reports strong business and the addition of another practice room. **The Bangles, Wendy & Lisa, Chicago** and **Charlie Sexton** recently used the facility. . . . **Al Jarreau** (see "On the Road") also tuned up at the rehearsal studio before heading to Europe in January, with **Mike Ferrara**

mixing house and monitor whiz **Kevin "Techie" Korecky** handling the stage mix. . . The Al Jarreau and **Bruce Hornsby & the Range** (see *Mix*, Nov. '88) tours are now using SSG's all-new, double 12-inch, JBL-loaded, bi-amped monitors powered by the new Crest 7001 amplifiers. **Alan "Loon" Bonomo** continues to mix

monitors for Hornsby. . . Other new equipment included custom SSG-built crossover units. . . SSG traveled to Hawaii for an **Oingo Boingo** New Year's show. Owner **Dirk Schubert** mixed house and caught some well-deserved vacation time.

Audio Analysts (Plattsburgh, NY) had a complete 40-box main P.A.

sound system in Australia and Europe with **Bryan Ferry**. Freelance engineer **Gary Bradshaw** handled Ferry's house mixing chores. Bradshaw also works with acts such as **Roger Waters** and the **Eurythmics**. . . **Pat Benatar** (see "On the Road") ended her tour of North America in December. . . After using a complete AA

ON THE ROAD

SOUND COMPANIES, EQUIPMENT, ARTISTS & PERSONNEL ON TOUR

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Pat Benatar Audio Analysts Aug-Dec North America	Soundcraft Series 4 40x16x2 ----- Soundcraft Series 4 40x16 ----- JBL 5234	(28) AA HDS-4 ----- AA 2x15	Crown MA2400, MA1200 ----- QSC 3800	David 'Dansir' McCullough (H) Ted Gregorek (M) Michael Caron Bob Leonard (T)
Robert Cray Sound Image Jan-May United States	Ramsa WR-S 840 40x8x2 ----- Ramsa WR-S 840 40x18 ----- BSS FDS 360	(10) Phase Loc Series 45 High ----- (6) Phase Loc Series 45 Sub SI 2x15	QSC 3800 ----- QSC 3800 QSC MX2000	Gary Newall (B, H) Dave Shadoan (M) Dave Harvey (T)
Gyuto Tantric Choir Ultra Sound East Nov-Dec United States	Gamble HC 40x16x2 ----- (from house console) ----- Meyer	(16) Meyer MSL-3 ----- (8) Meyer 650R2 Meyer UM-1, UPA-1 Meyer USW-1	Crest 4001 ----- Crest 4001 Crest 4001 Crest 4001	Mickey Hart (H, M) Keith Dirks (aH) Brad Cozelek
Michael Jackson Clair Brothers Dec Japan Jan California	Clair Custom 32x8x6 Clair Custom 32x8x6 Harrison SM-5 32x16 ----- Clair Custom	(128) Clair S-4 ----- (16) Intersonics SDL-5 Clair Custom	Carver 2.0 ----- Crown MA 10000 Carver 2.0	Kevin Elison (B, H) Rick Coberly (M) Mike Wolf (aH) 'Jim' James (aH) Forrest Green (aM) Barry Clair Bart Adams (T)
Al Jarreau Schubert Systems Group Jan-April Europe	Gamble Series EX 56x16x2 ----- Gamble SC 32x16 ----- SSG	(48) SSG Steradian ----- (24) SSG Steradian Sub SSG 2x12 SSG Steradian sidefill	Crest 8001 ----- Crest 8001 Crest 7001 Crest 7001	Mike Ferrara (H) Kevin Koreck (M) Dennis Omelveny (aH) Marty Simeone
Mike & the Mechanics Showco Jan-March Europe March-May US	Harrison HM-5 32x16x2 ----- Harrison SM-5 32x16 ----- Showco	(24) Prism ----- (8) Prism Subwoofer Showco 600	Crown PSA2, MT1200 ----- Crown MA2400 Crown MT1200	Mike Ponzek (H) Peter Buess (M) TBA
Eddie Money Sound on Stage Feb-Aug North America	Soundcraft 8000 40x8x2 ----- SOS Chesta 30x10 ----- PAS TOC	(8) Power Physics 442 (12) Power Physics 422 ----- Power Physics KB2	Crest 2501, 4001 Crest 2501, 4001 ----- Crest 2501, 4001	Geoff Ganiford (H) Bernie Fromm (M) Ricardo Caltagione

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NEVE 8128, 56/48/56, NECAM 96, Plasma + VU, Fil Patch, 5 yrs	\$225,000
NEVE 8128, 32/24/32, Refurbished, Avail. Immed.	\$72,000
SSL 4040E/6, 40/32/40, 1 yr, VU, Recall, G Computer, Bernoulli	\$150,250
SSL 4048E, 48/32/48, 3 yrs, VU, Remote Patch, P-Dsk on Left, Recall	\$215,000
SSL 4056E, 60/32/56, 6 months, All G Modules, VU, LH Patc, G Computer	\$286,875
SSL 4056E/G, 60/32/56, 2½ yrs, G Comp, 52 Mono/4 St Chan, Recall, VU, LH	\$241,875
SSL 4064E/6, 72/32/72, 1 yr, 56 Mono, 8 Ster, VU, Recall, P-Dsk, 3 Center	\$315,000
STUDER 902, 24/8/24, 2 yrs, Full/Patch, 12 PPM Meters	\$39,500
TRIDENT TSM, 40/24/32, 4 Band	\$55,125



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sound system across North America, the **Scorpions** took just the monitor rig on their European tour. West Germany's **Rocksound** provided the main P.A. for the popular German metal band and opening act **Vixen**. **Achim Schulze** mixed house for the Scorpions, and **Michael Briggs** handled the suddenly hot metal band, Vixen.

Chief AA engineer **Albert Lecesse** talks about recent equipment developments: "We're working on new monitor systems with custom horn designs. I have a computer program that helps with the design work on horns, and over the last several years I have managed to fine-tune some of the parameters to better correlate with testing. Now, with the computer, I have to build only two or three horn prototypes, instead of 50, to get what I want. Last year we redesigned our S-4 cabinets and converted them to what is now called the HDS-4 model; it was the result of several years of work. Now we're working on a major new HDS system that will come on line sometime this year. We're going to build an eight- or 16-cabinet system and do full-scale testing. After that, we will be ready to do a large-scale system (or systems). There will probably be an initial run of 60 to 70 cabinets to do an arena tour." . . . Regarding AA's CADD digital crossover, Lecesse says, "We're working on Version 2.0, which should be out later this summer. Version 1.0 is basically a three-year-old design. There are now high-performance DSP chips available that weren't around several years ago. The size and cost of the updated crossover will be greatly reduced." . . . Audio Analysts' long awaited CADD mixing consoles are finally nearing completion. Three sets of house and monitor consoles should be ready for the summer season.

The recent **1988 Performance Magazine Readers' Poll Awards** winners in the sound reinforcement categories were: Sound Company, **Showco**; House Sound Mixer, **Benji LeFevre** (Independent/George Michael); Monitor Sound Mixer, **Keith Carroll** (Clair Brothers); and Pro Audio Manufacturer, **Electro-Voice**.

Sound On Stage (Brisbane, CA) experienced no business slowdown this winter according to **Bob Walker**. "There really hasn't been an off sea-

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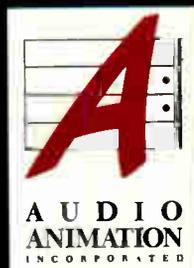
The MUSE provides the ultimate in flexibility and creative freedom by channeling its powerful capabilities to you through a remarkably intuitive interface. The control panel, designed with the guidance of top mastering experts, makes all relevant information instantly available through a high resolution color screen and 10 displays of up to 80 characters each. Create EQ and DRC curves with great finesse via the color screen or with conventional controls.

The MUSE makes it simple for you to be a perfectionist with 24 to 56 bit extremely accurate real-time processing. Surpass the most demanding expectations of your clients **and** yourself using **the MUSE's** highly sophisticated software and **thousands** of control settings. Configure the processing modules, route signals, edit automation, adjust time code, design ultra precise EQ and DRC curves, monitor any point on the signal path with headphones, line or VU meter and much more.

And **the MUSE** will maximize your productivity with an automation scheme that allows over 80 minutes of updating control functions at 100 times per second. An entire CD may be mastered automatically even while **the MUSE** is unattended! Store and recall every setting simply and swiftly with a disk based system.

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son for us this year. Since we moved to our new location in June, we've averaged over 100 shows a month. Besides our tours, the local work in San Francisco is strong. We installed the sound system at **Slim's**, a new club co-owned by **Boz Scaggs**, and put in a flying system that covers the balcony in the newly remodeled **Warfield Theatre**. We also work with the **Circle Star Theatre** in San Carlos." . . . SOS did the **San Francisco '49ers** football season again this year at **Candlestick Park**. They handle the NFL referees' wireless microphones, and more. Walker explains, "We have the refs on our Yamaha 1516 mixer, and we feed the signal to the TV network, radio stations and the stadium P.A. We also do the national anthem, pregame and halftime on-field activities, and the stadium announcer." . . . Continuing their Small World tour, **Huey Lewis & the News** worked Australia in January and February. Gamble consoles, effects, full monitor system and personnel were provided by SOS. Stacks and racks were provided by an Australian sound company. . . . After a short break over the holidays, **Engel-**

bert Humperdinck continued his ongoing tour, with **Louis Barrere** mixing house. . . **Santana** finished touring the U.S. in late November and planned to start touring again in late February. . . **Eddie Money** resumed his tour of North America in February. SOS's new Soundcraft 8000 console was used for the house mix by **Geoff Ganiford**.

Ommmmmm. . . . Ultra Sound East reported an unusual tour. In one of the most offbeat shows of late, Grateful Dead drummer **Mickey Hart**, **Phillip Glass** and **Kitaro** opened for the **Gyuto Tantric Choir** (see "On the Road")—a 21-member group of Tibetan monks—at **St. John the Divine** church in Manhattan. The tour also played in parts of the U.S. in late November and December with Ultra Sound. Utilizing a Meyer P.A., **Keith Dirks** mixed house and monitors off a Gamble HC-40 house console for Hart, Glass and Kitaro, while Hart mixed the headlining Gyuto Monks, who pray through low-frequency chordal chanting. (For more on the Monks, see "Choosing the 'Right' Mic" in this issue.)

Over and out. . . Vista Sound of Mukilteo, WA, just sold their entire P.A.

and lights, then called it quits in early January.

Located on the northern outskirts of the San Francisco Bay Area, **Golden Gate Sound** (Santa Rosa, CA) was started 20 years ago with an emphasis on sound reinforcement and equipment sales. Besides the audio division, they now have a 160-lamp, double-truss lighting system and another division, Professional Communication Design. It is the sales end of GGS and primarily handles video distribution for commercial clients. Usually GGS keeps within Northern California, staying very busy with local acts and national one-offs. Owner **Don Lind** says, "GGS does consistent audio work—there is little dead time around here. We do local nightclub equipment support and find ourselves working with a lot of smaller heavy-metal stuff for local acts. The **Daily Planet** and **Shooters** are local clubs that use us often. We also rent gear, provide audio for small industrial events and handle many outdoor dates in the summer." Their clients in past years have been the Russian River Jazz Festival (last four years), Palo Alto Jazz Festival, Sonoma County Fair (last

—CONTINUED ON PAGE 167

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J.L. Cooper's PPS-100 is a SMPTE/EBU to MIDI Synchronizer and Event Generator with smarts. The PPS-100 converts all SMPTE formats to MIDI Sync and Song Position Pointer with programmable tempo changes. The PPS-100 also generates MTC (MIDI Time Code), DIN sync, Direct Time Lock, and PPQN sync.

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Sound Thoughts on Live Performance

“Creating the subjective experience of live performance sound belongs to the artists and sound designers. Our creativity comes in building speakers and systems that give the truest possible account of what the performers produce.”

Meyer Sound has devoted itself to designing, manufacturing, and refining components that deliver superb sonic reproduction and expand the artistic possibilities of professional sound reinforcement.

Meyer strives for professional sound quality that is predictable and neutral over an extended lifetime and across an extended range. Even after extended use, Meyer Sound performance is never compromised.

As a consequence, Meyer Sound products have earned a reputation for the highest reliability in the industry. All are guaranteed to meet or exceed specified performance levels when properly installed.

“The general public’s sophistication keeps growing. Soon, if we have our way, the audience will demand the same accuracy in live performance that they get from home recordings.”

Instead of second-guessing the tastes of the market, Meyer produces sound systems that most truly represent the character of the signal they receive, leaving artistic control where it belongs—with the artists and sound designers.

Meyer takes a conservative view of exotic loudspeaker materials, preferring to use proven materials in new, more elegant ways.

Every part of every component undergoes rigorous, comprehensive testing. Meyer Sound controls all aspects of the system design—if not by manufacturing, then by modification and refinement to Meyer’s stringent standards.



John Meyer, Founder and President, Meyer Sound Laboratories

“As expectations rise, our performance standards have to rise even higher. And the only way to increase performance is with increasingly sophisticated measurement.

“Which is how we found ourselves also in the measurement business.”

Meyer originally intended to be solely a manufacturer of high-quality, rugged and reliable loudspeakers, expecting others to pioneer and perfect testing equipment. But the need to accurately measure the performance of Meyer components individually and in arrays outgrew the quality and resolution limitations of available testing equipment.

To make sound work in spaces, Meyer Sound Laboratories developed by necessity its own testing technology and methods.

John Meyer, his engineers and his designers have authored several definitive works, and research remains an integral, driving force behind all production.

SIM™ Equalization

SIM™ equalization is the logical result of Meyer’s commitment to uncompromised sound quality through sophisticated measurement. The non-intrusive SIM technology uses real-world program material (either voice or music) as the test signal. Working interactively with the sound designer, a Meyer SIM engineer helps create superior clarity for every member of the audience.

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John Meyer’s involvement in loudspeaker design began in 1967 when, as a technician for a Berkeley, California Hi-Fi supplier, he set out to discover why a leading manufacturer’s drivers kept tearing themselves to pieces. Further investigations convinced him that the market sorely needed a class of rugged professional speakers that would maintain their characteristics over time.

Research in Switzerland in the early seventies secured his knowledge base. In 1972, Meyer developed the JM3 all horn loaded tri-amp system with rigging, which was the standard for Broadway shows until the introduction of the UPA in 1980. From 1973 to 1979, Meyer sought out the best available parts and designed the first Ultra Series™ reinforcement speakers. In the decade since, John Meyer has established Meyer Sound Laboratories at the forefront of professional reinforcement technology.

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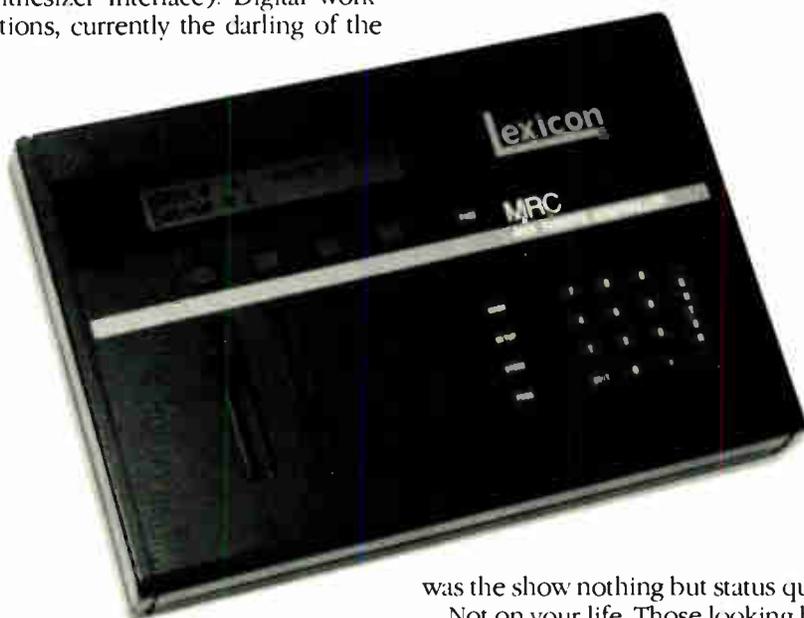
by Craig Anderton

NEWS FROM THE FRONT

TO BOLDLY GO WHERE NO MAN(UFACTURER) HAS GONE BEFORE

The place: Los Angeles. The time: November 1988. The event: The Audio Engineering Society Convention. Despite its strong connection with pro audio, AES has frequently been associated with musical instruments and synthesis over the years. The modular, voltage-controlled synthesizer made its debut at AES, and just a little under 20 years later, so did MIDI (although it was born under the name Universal Synthesizer Interface). Digital workstations, currently the darling of the

nology." Those looking behind the front panel of various new pieces of gear were disappointed: there was nothing to compare with the emergence of, say, sampling, FM synthesis or digital audio. Sure, there were a lot of big-bucks digital editing devices, but these still used the same old 16-bit/44.1kHz A/D-to-D/A conversion shuffle and required gobs and gobs of RAM. So, technologically speaking,



MI set, have been staples of the AES diet for years now. Indeed, AES is the temple of high-tech at which many musicians worship the gods of advancing technology.

At this year's show, though, the buzz among the crowd was "no new tech-

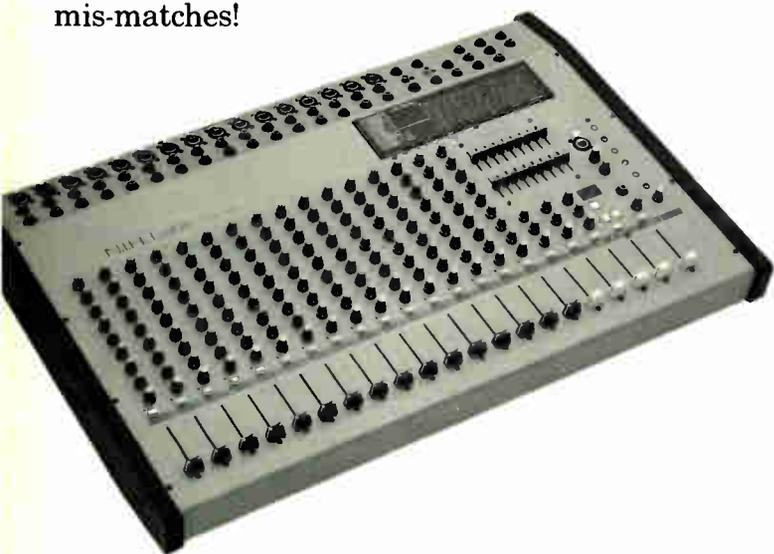
was the show nothing but status quo?

Not on your life. Those looking behind the front panel missed where the action really was: *the front panel itself*. Now that the technology is in place, the race is on to see who can make that technology easier, faster and more cost-effective to apply. People are tired of waiting for data to be massaged, tired of memorizing arcane

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Powered Mixers

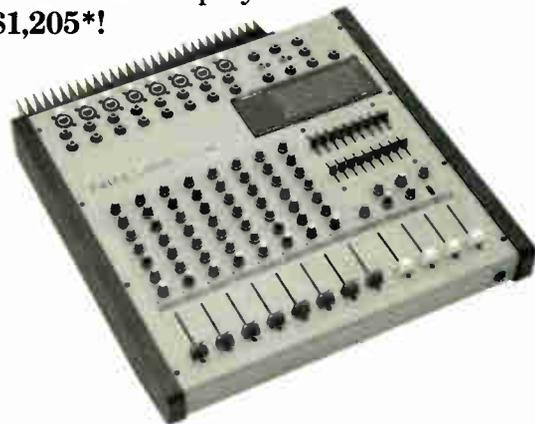
Model PM-1600 gives you everything you need in a state-of-the-art PA mixer — 16 INPUTS, 2 STEREO POWER AMPS, DIGITAL EFFECTS PROCESSOR, TWO GRAPHIC EQUALIZERS AND A 2-WAY ELECTRONIC CROSSOVER — in just one performance package! Imagine, no more lugging around separate units, no more wiring hassles and no more impedance mis-matches!



Unlike other PA mixers, this has not one, but *two stereo power amps* built-in. These are not some “second rate” amps, either. The first amp is basically the N.I.H. Model P-700 described below. 400 watts per channel into 4 ohms! The other stereo power amp puts out 250 watts per channel into 4 ohms. Since these are **stereo** power amps, you have 4 channels of built-in amplification you can use *any* way you wish.

The built-in digital effects processor has 99 programs including digital reverb and digital delay. There are LED meter displays for the mains, effects buses and monitor, a built-in talkback mike, a stereo 9-band graphic equalizer for the mains, another 9-band graphic for the monitor and a whole lot of patching flexibility. This is your best bet yet in a PA mixer. **SAVE \$2,755*!**

Model PM-800 is for less demanding reinforcement situations and smaller rooms, perfect for small to medium size halls. You get 8 inputs with trim, sweepable midrange EQ, 2 effects send controls and solo. There's the 400 watt stereo power amp, dual graphic equalizers, plus digital delay, 5 bar LED meter display and talkback mike. **SAVE \$1,205*!**



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Power up your speaker systems with the N.I.H. Labs **Model P-700** amplifier with built-in electronic crossover, and turn on to excellence. It has all the power to improve your sound enormously. The sound quality is superior to many so-called “esoteric” hi-fi amps.



There's 400 watts per channel into 4 ohms; 250 watts per channel into 8 ohms; superb specs. You get a built-in **2-way electronic crossover** with 18 dB/octave slopes which will save you both money and wiring hassles. XLR + 4 *balanced* line inputs **and** unbalanced phone jack inputs. Mono bridging. 5-way binding posts for your speaker connections. Rugged, reliable, with a proven fan cooled design — plus *every* unit goes through a 48 hour burn-in period at our warehouse — **in addition to the manufacturer's testing!** **SAVE \$601*!**

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Model CN-40 is THE FIRST 3-WAY STEREO/4-WAY MONO ELECTRONIC CROSSOVER TO GIVE YOU AN EXACT DIGITAL READOUT OF THE CROSSOVER FREQUENCY! One of the hardest things about



using an electronic crossover is getting the exact crossover point correct. Not only does the digital readout make this task much easier for you, but it also makes it possible for you to *repeat the same settings*. You'll have balanced XLR connectors, high quality sound and bonzo-proof adjustments. **SAVE \$501*!**

Model PE-30 gives you FOUR BANDS OF FULLY ADJUSTABLE, FULLY PROFESSIONAL PARAMETRIC EQUALIZATION IN A 1-3/4" RACK SPACE. Now you can solve all those difficult equalization problems just like



they do in world class studios and sound reinforcement companies. With "Q" or bandwidth controls, you can dial in the exact EQ sound and range you need without affecting tones that are octaves away from your center frequency. With the PE-30, you control the notch. **SAVE \$396*!**

Model R-16 is the second best digital effects processor in the world and about 1/10th the price of the very best (the Quantec QRS/XL). There's a 16 bit processor PLUS a 32 bit numeric co-processor for **superior** reverb sound quality; full



MIDI control of effects parameters and changes; sampling capability; 99 programmable sounds (30 pre-set); user changeable parameters. This unit eats all other digital effects processors for breakfast, except for one. **SAVE \$1505*!**

Now that you've had a taste of the good stuff from N.I.H. Labs, here's the real clincher:

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P-700	Integrated Power Amp	\$1,300.00	\$ 699.00	\$ 601.00
CN-400	Crossover Network	\$ 850.00	\$ 349.00	\$ 501.00
PE-30	Parametric Equalizer	\$ 595.00	\$ 199.00	\$ 396.00
R-16	Digital Effects Processor	\$2,500.00	\$ 995.00	\$1,505.00



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command sequences to communicate with a computer and tired of squinting at tiny, non-backlit LCDs. And manufacturers now see a new opportunity to sell ergonomics as well as technology.

One of the most striking examples of streamlined ergonomics is the general-purpose control device, such as Lexicon's MRC. The company behind the MRC's design, Clarity, has already made a name for itself with the XLV controller (an automation device for the Lexicon 224, 480L, AMS RMX 16 and other signal processors). The MRC includes several sliders and switches, which can be assigned to output various MIDI system codes and therefore let the MRC function as a control source for MIDI devices.

Specifically, the MRC can currently create "virtual front panels" for the Lexicon LXP-1 and PCM70 digital signal processors that control these machines' parameters via sliders and switches, in real time. This is a big improvement over having to punch up a parameter, modify it, punch up another parameter, modify it, go back to the first parameter to tweak it, and so on. Of course, the MIDI data generated by the MRC can also be recorded into a sequencer, thus letting you "play" your signal processors in real time and record the results for posterity.

Perhaps even more interestingly, the MRC includes preprogrammed macros

designed for use with FM synthesizers. For example, a "brightness" macro, tied to a single slider, can control numerous FM parameters simultaneously to create a brighter sound. This is obviously much easier than tweaking multiple FM synth parameters in search of increased brightness. TX802 owners should find the MRC particularly attractive for real-time editing. I sure do.

In a similar vein, Roland's GC-8 is an outstanding remote controller whose graphics rival those of some computers. There are 28 buttons and five knobs, all of which are unlabeled, as they change function depending on the unit being controlled—but don't worry, the oversized LCD provides enough visual feedback anyway. When controlling the Roland R-880 reverb, for example, the display graphically shows room size and response curves; there's even a screen very much like Digidesign's *Turbosynth* program, in which you can "drag" different reverb submodules onto the display and connect them with software "patch cords." This is absolutely wild! Even the displays built into Roland gear have reached new levels of functionality; for example, the LCD in its A-50 mother keyboard displays the actual velocity curve being used, split points and much more.

Roland's creative use of LCDs brings up another interesting point. Is it possible that computer-based editor/librarians are simply a transitional stage

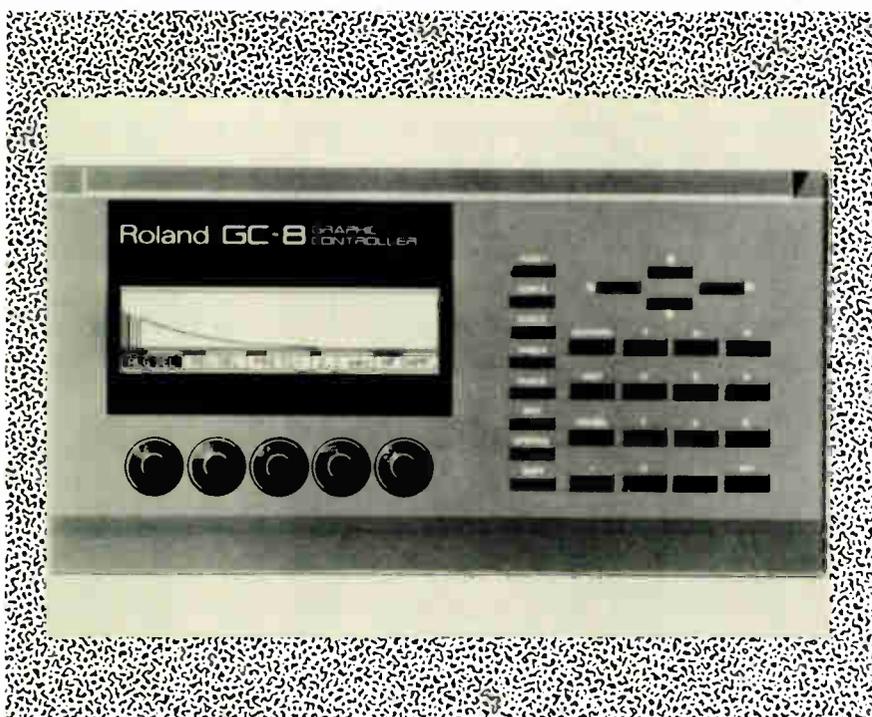
between "dumb" instruments and instruments with built-in editing software? Roland's S-50 sampler took a similar tack by including an output for an RGB monitor so that samples could be edited on screen using the S-50's own editing software, thus eliminating the need for an external computer. Conceivably, the front panels of the next generation of instruments will be so usable and simple that external computer-based programs will be unnecessary.

But don't send sympathy cards just yet to the companies writing editing software. More and more manufacturers seem willing to use an existing computer "front end" than design their own from scratch, and someone's going to have to write appropriate software. Synclavier uses the Macintosh II as the front end for its new 3200 workstation, as does Symetrix for its new digital audio recorder. Nor is the Macintosh the only game in town. Wave-Frame bases its system on a 386-based PC running Microsoft Windows, and Hybrid Arts has piggybacked its ADAP system on top of the Atari ST line of computers for several years now. (In fact, with Atari announcing significant price reductions in its RAM-loaded Mega series, the ST may become the least expensive passport yet to digital recording.)

The quest for a more hassle-free environment involves more than just the interface between human and machine, though; we also need to consider the machine-to-machine interface. MIDI has gone a long way toward streamlining the link between computers and musical instruments, and now the AES/EBU digital audio transmission standard seems poised to do the same thing for digital audio. As more companies adopt this standard, we can expect to see more signals staying in the digital domain as they move from one piece of gear to another. Sure, the goal is to improve fidelity; but simplified interconnection also reaches into the area of ergonomics.

No new technology at the 1988 AES? Maybe. But I suspect that the real revolution is just beginning, and the victors will be those companies which realize that in the end, it's people who use machines... not the other way around. ■

Craig Anderton writes books, produces and performs music, and edits Electronic Musician, our sister publication.



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Mix, July 1987

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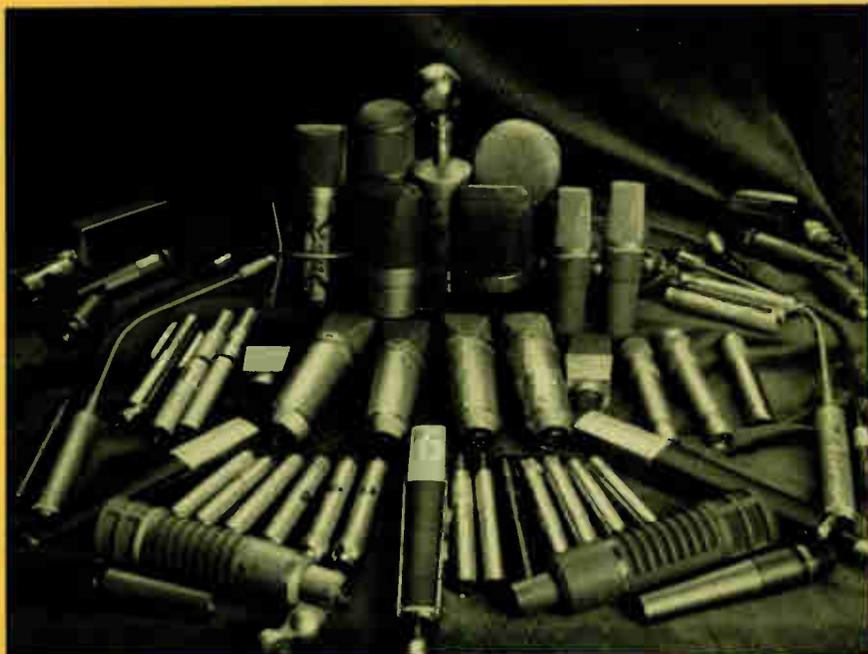
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INDEPENDENT
ENGINEERS
TALK ABOUT
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Shure SM58

by Linda Jacobson

CHOOSING



A great city skyline with futuristic skyscrapers and century-old cathedrals is the image suggested by our recent informal poll of independent engineers. We asked them to talk about the hot new microphones for recording vocalists. We learned that although they favor digital-age consoles and tape machines, the mics of choice are of '40s, '50s and '60s vintage.

Maybe the engineers we called *did* seem conservative in outlook ("Awww, they just don't make 'em like they used to"), but it's important to remember that the "average" independent engineer can't afford to buy and tote around a sack full of new mics. Therefore they only get to use what's offered by the studios they frequent. If these engineers don't call attention to the very latest transducer technology, it's because studios haven't started investing in the stuff.

Mix contacted 35 independent engineers, all with extensive chops in recording solo vocal artists or vocal-oriented groups. Along with querying about their favorite mics, we asked how they went about selecting and using those mics.

The independent engineer's ultimate goal is to please the client. To

that end, some engineers, particularly those who work with the stars, just hand the miking decision to the vocalists who know exactly which mics suit them best. "When I was doing Barry Manilow's new album, jazz vocalist Dianne Schuur came in the studio for a song," recalls Michael Braunstein of Los Angeles. "I had a U87 up and Dianne [who is blind] asked what mic we were using. I told her, and she said, 'Great, that's exactly what I like.' And she worked that mic like I never heard it worked before! Her nose was touching it, and there was no pop filter and no proximity effect. She knew that mic. Here she was swallowing that mic, belting it out, and there wasn't a pop."

"Experienced vocalists, like Stephen Stills, know the mic they like to use," continues Braunstein. "But most of the better artists, Stills included, are willing to try new stuff. A real talent keeps abreast of the times. Anyone who's afraid of change will stagnate."

When working with vocalists who have less recording experience, or with experienced vocalists for the first time, "The first rule of thumb [in selecting microphones] is to use whatever works, because everybody's voice is different," says Richard Adler. Adler, a Nashville engineer who's recorded

THE "RIGHT" MIC

Johnny Cash, Dolly Parton and Ricky Skaggs, echoes the sentiments of most of the engineers we surveyed: come time for picking out a mic for taping, engineers put up two, three or more microphones (a.k.a. "the press conference"), ask the artist to sing a verse or two into each mic, then select the winner. Dallas engineer Phil York, who's been at the board for gold albums in the past, says, "I just put [the differently miked vocals] on different tracks and let them pick [the mic]."

And which mic wins most often? That changes from song to song and from day to day. It depends on the type of song and its arrangement, the vocalist's skills and peculiarities, the mic's traits and capabilities, the producer's mood and preferences, the recording medium (digital reveals every nuance of mics and mic preamps), the number of available tracks, the venue (studio or stage), and, oh yes, the availability, type and number of mics on hand (or rentable).

General rules come up when considering which mic design best handles which kind of sound. Dynamic moving-coil mics are effective at extremely high sound pressure levels and can survive tremendous punishment (thereby lending themselves to live, heavy metal albums), while dynamic ribbon mics are noted for "warm" low end and even frequency

response (good for tenor crooners). Condenser mics stand out sonically and are especially appreciated for their performance and transparency in the high end (great for adding intelligibility and "brightness," or "presence"). Some of those vintage tube condensers go for thousands of dollars.

mics from the West German manufacturer, Neumann; the ubiquitous AKG C-414 condenser from that Viennese manufacturer; and the low-cost, workaday Shure SM57 and SM58 dynamics out of Evanston, Illinois. These mics work well on many vocalists and probably can be found within shoutin' distance of most 24-track studios.



Sennheiser MKH 40 P48

IN THE STUDIO

Among the independent engineers we contacted, the studio vocal mics mentioned most often are: the venerable M49, U67 and U47 tube mics (some with Stephen Paul Audio mods), U87 (some with mods by Stephen Paul or Klaus Heyne) and U89 condenser

For female voices, Adler likes the Schoeps SKM5 condenser: "It works well on people who have soft voices, without having to be too close to them." Karen Kane of Boston, who specializes in acoustic music, likes the dynamic Electro-Voice RE20 for "females who sing extremely high and

MIKING THE MONKS

A thousand miles from the closest digital synthesizer, near the base of the Indian Himalayas, lives a group of Tibetan Buddhist monks. Exiled from their native Lhasa by Communist China's invasion in 1959, these monks spend their days creating sounds we Westerners have only heard in our dreams.

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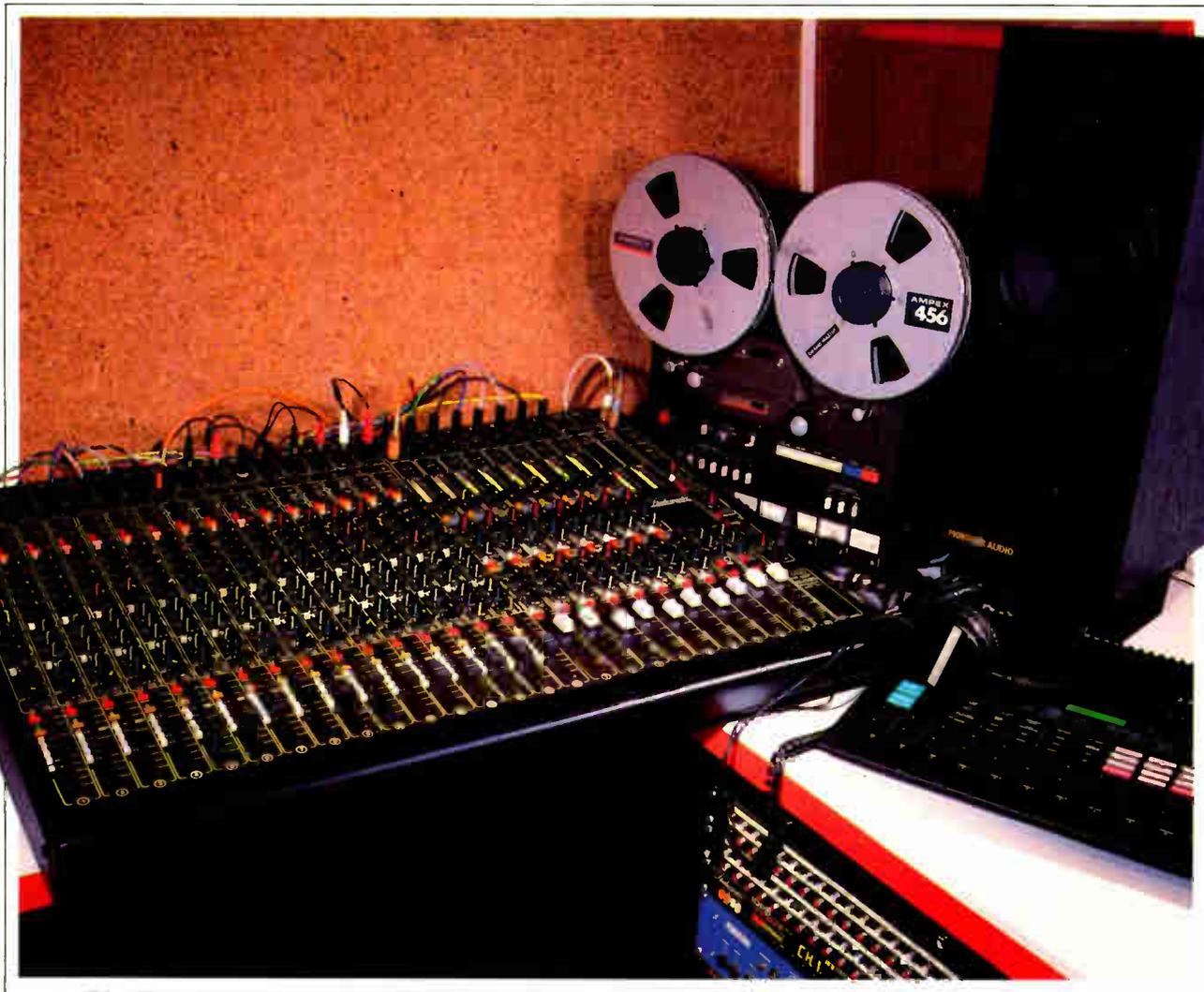
—CONTINUED ON PAGE 117

Tom Flye and Mickey Hart mike the Monks.



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bright." Paul Christensen of Dallas notes that the RE20 "works on some women because they're more sibilant; it gives their voice more warmth if they're breathy."

For male singers with "big voices," Adler likes the Neumann U89, which also rates well with L.A.'s Don Mack (Brian Eno, David Byrne): "It has the warmth and clarity that most mics seem to miss." Kane and Dave Dachinger of NYC give high points to the Neumann U87 for male vocals. Says Dachinger, "I just finished recording Sly Stone live in the control room for a Bar-Kays record. We used a U87. We placed Sly in between the two monitors, which were polarity-reversed so the mic didn't pick up a lot of monitor information. He sang with the live mix, not using headphones. I like to go in as flat as possible, using a good-quality preamp and a mic that fits the voice."

For "more intimate-sounding vocals," L.A.'s David Blade (Doris Day, Jimmy Cliff) likes "the Shure SM7 dynamic mic, especially because it has the proximity effect that condensers don't. I hear it's popular with Michael Jackson and Crosby, Stills & Nash, but that's only a vicious rumor." We received confirmation of part of that rumor from Braunstein, who describes a scene starring the CSN ensemble: "They were used to not using headphones, so we set up speakers in the studio. By using various combinations of out-of-phase mics and speakers, they all sang into one SM7 with very little background leakage of the cue track, which was coming through speakers at relatively high volume."

The SM7 also scores points in Memphis with engineer Danny Jones. "I just worked with a singer, and although I often use [condensers], I ended up using an SM7. He was an R&B vocalist with an extremely powerful voice. He just tore our old tube mic to pieces; it was too sensitive for him. I try to go with a mic that's going to keep me from EQing the vocalist."

Shure SM57s and 58s keep popping up. "I was recording a male vocalist in a studio that has all the best condensers," says Kane, "and we listened to them all. But there was something missing. We ended up trying an SM58 and he loved it. Granted, he has an unusual voice—he's a folk artist—and the condensers just didn't do him justice. The 58 gave his voice a certain warmth."

Despite their fondness for things old, several engineers have been able to check out newer microphones on the market. "I've been experimenting with the Neumann TLM170," notes L.A.-based Dean Burt (Teddy Pendergrass, Crystal Gayle, Judy Collins). "It's true-sounding and doesn't add too much coloration. To me, it's a cross between the U87 and the C-414 with the presence of a tube mic. That's the best of everything."



"I've also used the Bruel & Kjaer 4007," Burt continues. "It's a really nice mic with an omni pattern that gives a true sense of being in the room with the vocalist, hearing the whole sound, as opposed to a cardioid with a dry, directional pattern. I tend to use it for more moderate-level vocals, because it gives a slightly different presence. The TLM170 would work better for louder vocals, but it depends on the artist."

Dachinger mentions a newer mic that somewhat emulates his favorite Telefunken 251: AKG's The Tube. "It's the closest to the older mics in terms of clarity and warmth. I've used it for male lead vocals in a medium-level reggae/rock band I recorded live."

The relatively new AKG C-460 condenser rates with Bill Mueller of Phoenix, Maryland. The two-time Grammy nominee says, "It's a really nice, flat, cardioid mic with a small capsule. The advantage is its terrific transparency; you don't have to EQ it a lot because it's very uniform. It has a half-inch diaphragm instead of a one-inch, so it doesn't have the same sibilance build-up when you work it close. It's great for a lead singer who knows how to work a mic and can do it without overdoing the pops."

Veteran engineer David Kasperin of Rochester, New York, likes the Beyer M500 ribbon dynamic "for singers with a deeper, more throaty sound, especially female. The style of music doesn't matter—it's their vocal range." He recently completed an album for folk singer Mitzi Collins using an AKG C-414. ("The 414 has its own built-in roll-off, and you can change the pattern for different rooms and situations, so once people know it, they request it. But sometimes the 414 is just too clear and shows imperfections.")

Another new mic that's attracted the ears of L.A.'s Howard Wolen (Smokey Robinson, Dionne Warwick) is the AKG C-1000, "a nice, crisp vocal mic." Wolen points out, "Some mics pick up *too* well. So the best choice for recording is not always the 'best' mic available."

ON STAGE

"When you're dealing with live recording, you can't put up what you'd use in the studio, because you have to worry about the other instruments it picks up, handling noise, monitor leakage," notes Robin Danar of New York City. (Or, as Paul Christensen

puts it, "When you're live, you're not the master of your own destiny. It's not like the only things you have to worry about are tightness, response and transparency.") In many live-to-tape gigs Danar prefers the late-model dynamic Beyer M88, because "it has a real hot signal, it's warm and very directional. I used it for a live recording of Suzanne Vega and also with The Church. It seems to have peaks in the right places. But if the artist runs around the stage and handles the mic a lot, I rely on the [Shure] SM58."

Another Shure mic, the SM87 condenser, is admired by San Francisco's Paul Stubblebine (who engineered Pete Sears' new album), "particularly when you're faced with the extra problem of hands holding mics, and you need a mic with low handling noise. The SM87 handles all those problems well and sounds good to boot. You need an additional foam windscreen on top of its built-in screen, however."

"For loud rock and roll or gospel shows where the stage is packed and I want to record a single vocalist, the best mic is the [dynamic] Sennheiser MD-441," offers Edwin Bukont of Alexandria, Virginia. "Its tight, on-axis pattern gives a nice clean vocal and it rejects off-axis well. The singer can



eat it without having it distort, and if the singer's at a keyboard and wants to rock and roll, you can record the vocal without having problems with monitor feedback."

Live radio concerts are a specialty of Christopher Gately, who lives in Bryn Mawr, Pennsylvania. "An extremely durable mic that performs great in the monitors, in the house and on tape is the Beyer MC734 [condenser], the handheld version of the MC740. The polar pattern is consistent, so I can get the monitors loud without

feedback. Hypercardioid mics tend to emphasize the bass end too much. The 734 has good high end, and a larger diaphragm so it can take low end. Also, it has a good pop filter and it's really rugged. I use it for all kinds of vocals, male and female.

"Another mic I like is the Beyer M500, which I find extremely good for female jazz and acoustic singers, like Sarah Vaughan or Carmen McRae," adds Gately, who's worked with Chaka Khan and the Neville Brothers. "The 734 can take levels better in rock and roll, but in an acoustic situation, I like the M500 because it's a little brighter."

Joseph Magee of Culver City, California, works in acoustical recording, particularly orchestral (see *Mix*, January '89). "Of the new condensers, a straight-off-the-shelf mic that I trust is the new MKH-40, Sennheiser's cardioid for spot miking. Another favorite is the Sanken CU-41—it's one of the most transparent condensers, a two-capsule job, very expensive. When I mic vocal soloists in an orchestral situation, I always use a stereo pair, never a mono source, because the voice functions as an acoustical instrument and comes out in the overall orchestral image in one location. When you pan a mono spot mic, you can hear the mono source flattening out the mix, and can hear that it's spot-miked. By using a stereo pair, I can pan that voice anywhere in the image, make it bigger or smaller, and have a larger window in terms of gain. When you start using Sanken 41s, it gets expensive—that's about \$5,000 or \$6,000 per mic."

Brad Miller of Incline Village, Nevada (near Lake Tahoe), finds that his own custom mic works best. For on-location music recording, he's used the hypercardioid, 4-channel, MS-4 condenser mic since 1970. "It's custom-designed by Mobile Fidelity Productions to record in a quadraphonic or stereo configuration, and its frequency response is from 2 Hz to 20 kHz," says Miller, noting the mic's suitability for the quad or surround sound systems used in Imax theaters and similar applications. He adds, "It's DC-servoed, so frequencies below 20 Hz don't shift in phase. It gives a tremendous bottom end, and I tend to use it for all my work."



AKG 414 B-ULS

IN TV/FILM WORK

When taping a musical program that's bound for visual media, extra care

must be taken *vis-a-vis* microphone appearance. And that usually means it's lavalier time. Christensen remembers a show that featured "eight people playing acoustic stringed instruments, all dancing around. Imagine a guy having to sing while there's a banjo against his chest. This is a worst case, but if you have to use [lavaliers], use the Tram, a British mic. Its response is super flat, so there's nothing sticking out. And you get a lot of isolation. Another favorite for vocals is the Audio-Technica A5M condenser, a very small, ball-type mic about half the size of the SM58. Directors and talent like it because it's not obtrusive and it has a killer response."

Veteran TV audio engineer Jacob Collins of Chicago also admires the Tram, noting its popularity with TV and film production crews. Says Collins, "It's a small, flat, square mic, and it has more isolation, so you don't hear clothes rustle in quiet passages."

Manhattan-based Richard Oliver (Rolling Stones, Orleans, Yes) recently engineered audio for an upcoming feature film, *Rock & Roll Vampire*. Within the film is a music video, for which Oliver used "a U87 for lead vocal, a U47 tube for another vocal that was deeper and more affected, and two U87s for the background vocals, the women. But I would also use an RE20 or AKG Tube depending on the texture of vocals, or a Sanken, or Sony's equivalent to the 414. I like the new AKG 414EB but it's still a 414, just a little cleaner. I'd go for that for a peaky high end and different bottom texture. I run by sense of smell."

SENSE OF SMELL

Karen Kane voices a common frustration when asked, "What's your favorite mic and when do you use it?" She says, "I can't really describe it. It's such an *aural* process. I go by feel and instincts, and what I hear. That's how I choose."

Classical music engineer Lolly Lewis (Telluride, SF Conservatory of Music) refuses to single out a particular mic for praise. "If I do my job well, then it doesn't matter what mic I use," she states emphatically. "What sounds good on Monday might sound good on Tuesday, but maybe not. The equipment is not important—as long as the equipment is really good. The point is, once you have a good mic—I like something really warm, like a big old diaphragm mic—what's im-

portant is *not* the mic, but where you put it and what the music sounds like coming through it. When it works, you know it." ■

—FROM PAGE 113, MONKS

a second note, the harmonic third, two octaves and a third higher. The harmonic fifth is a clear yet less audible tone that's more of a resonance than a pitched note.

When 20 monks use this technique (and circular breathing) to sound like 60 monks—their guttural, vowel-like "lyrics" accompanied by cymbals, trumpets, drums and bells—the effect is eerie and exotic, and can be thoroughly mesmerizing. No less than a cultural and physiological phenomenon, it can be experienced on CD and cassette in our little part of the planet.

That we can hear the Gyuto Tantric Choir in full digital-audio glory is due in part to ethnomusicologist, record producer and Grateful Dead percussionist, Mickey Hart. Hart is creating with music and sound what Marshall McLuhan said the media would create with information. Hart's version of the global village is called *The World*, a series of adventurous, moving and sonically superb releases on Rykodisc. The first several *World* releases came out last November. They encompass aural journeys into Egypt, Africa, India and Eastern Europe. The new Gyuto Monks release is expected this season.

Last December, Hart brought the Monks to the 5,000-sq.ft. stage at George Lucas' Skywalker Ranch in Marin County, California. For this recording, as well as the other *World* releases, Hart enlisted the help of veteran engineer Tom Flye.

Flye started engineering audio in the mid-'60s, in Manhattan. The former professional musician worked his way up to the Record Plant, where he specialized in location recording for rock and pop artists including the Allman Brothers, John Lennon, Elvis Presley and Jimi Hendrix. He moved to California to build the Sausalito Record Plant, and served there as chief engineer for years before going independent.

To mike the Monks, Flye says, "We used a bunch of different combinations of condenser mics, mainly because that was what was avail-

Linda Jacobson is assistant editor of Mix. She hails from Far Rockaway, NY, where one can see (on a clear day) the inimitable Manhattan skyline.

able! Skywalker Ranch has quite a few very high-quality microphones, all modified by Klaus Heyne. We brought a few of our own mics, too. We used [Neumann] U87s, [AKG] C-12As, C-12s and 414s, [Neumann] M49s, 67s and a couple of TLM170s. We set the mics up on booms in front of each of the 20 monks, who sat on their mats in [the traditional] two lines, facing each other. Each vocal mic covered whatever instrument the monk played, *more than enough*," laughs Flye. "We also close-miked each drum separately using [Sennheiser] 421s. Then we arranged four stereo pairs in the room, starting with right in the middle of the [two lines of] monks to far back in the room.

"We rented a bunch of high-quality microphone preamps—Massenburg, Focusrite, Jensen, API and 16 from Ultra Sound [the Marin-based sound reinforcement company that handles the Grateful Dead's live needs]. We ran the mics directly into the preamps, then into an Otari 32-track digital tape recorder. We used an Ultra Sound [custom] P.A. board to monitor, with a set of Meyer 833 studio speakers.

"One of the biggest problems with recording this music is the balance between vocals and instruments. They're chanting—it's not like they're rock and roll singers. When they start playing those cymbals and bells and loud horns, it's so much louder than the vocals. So we ended up arranging what they were doing. Instead of all of them playing bells and cymbals [as is traditional], we said, 'Okay, now you all play the cymbals; you all play the bells; and then the horns, over there.' That was the only way to have control over the balance, because I was using close-miking, and no matter how close you get, when they start ringing those bells, the transients overwhelm you. Even if you ride the mics, you lose the vocals."

Flye shock-mounted each mic stand with small rubber squares,

—CONTINUED ON PAGE 118

—FROM PAGE 117, MONKS

because the soundstage floor is a resonator. He was also "careful of the wind from their breath," and rigged up pop filters using nylon stockings and coat hangers. Although he knew immediately that five monks produced louder mouth sounds, he taped a filter onto every mic stand: "Mickey wanted me to get the mics in as close as possible [about a fist-width away] to try to get this balance together." (Hart, Flye and associates also taped a distant-miked version of the same chants, in which they spread the mics around the room, out of sight of the video cameras that were recording the scene.)

Each chant lasted 30 minutes (due to the earthly limitations of digital audio tape stock), although the chanting actually can go on for hours. "Their translator stood over to the side where he could see us

in the control room and when we'd get up to about 28 minutes on the tape machine," Flye says, "we'd give him the high sign, he'd give the chant leader a high sign and they'd go into the end of the chant.

"You have to consider that this is not really a performance, it's a religious experience. We're just documenting it. But I think the Monks are all getting into [recording] now. They'd sing right into the mics, and [when we were A/B-ing mic setups] you could see them concentrating on the microphone. I think they were intrigued by the process," muses Flye, who has just finished mixing two more *World* discs: drum master Babatunde Olatunji's *Drums of Passion: Dance to the Beat of My Drum* and Hart's own groundbreaking *Music to Be Born By*.

The types of music Hart chooses to record all share a common char-

acteristic: their transformational nature. "The music is not necessarily meant for entertainment," Hart says, "but for transformation. It's music to alter your consciousness by. All this music is listened to by the *receptive* side of the brain, not the analytical side. It's also music that has never been recorded well, or given the proper respect and attention needed for a 20th-century recording. Plus, I love music that shakes your bones. The Gyuto Monks' music has an inner dance, and it shakes your bones, too. I don't really 'produce' these projects in the strict sense of the word; I see myself more as a recordist. I'm just in love with sound."

Proceeds from the sales of the Gyuto Monks' release (authorized by spiritual/civic leader, the Dalai Lama) go to help build the Monks a much-needed, new monastery.

—by Linda Jacobson

—FROM PAGE 94, HORNER

write for a large orchestra, but, as I explained, I'm always looking to push the outside of the envelope. I use colors where they are appropriate. Apart from films that use traditional orchestra scores, I tend to take chances to extend my knowledge. I get bored working on the same things all the time. Spielberg's *The Land Before Time* is my next project after *Red Heat*; I wouldn't be able to do a *Wil-**low*-type score right next to an animated film, like *The Land Before Time*. *Red Heat* is more "edgy."

Mix: How do you avoid the more obvious Hollywood movie clichés and present aural landscapes that go beyond the conventional mold?

Horner: Fortunately, my imagination is much more rampant than my employers will ever let it be. I have no trouble breaking out of the mold because I have lots of alternative ideas.

A lot depends upon the director: how much he trusts you, how much he trusts himself and how much he is willing to let the film style speak for itself.

I made a conscious decision to concentrate on doing film scores; I've been offered TV movie-of-the-week scores, but have turned them down. Film music is my first love, and that's all I have ever wanted to do. ■

—FROM PAGE 91, MURPHY

more or less "detail" on this or that instrument. It's very seldom major factors, because James and I seem to agree on the basic feel of the orchestra.

When scoring to picture, continuity is essential. If you approach it as a musical score—rather than a set of elements "inflicted" upon the film—then you have to retain an overall sense of sonic continuity. Some film scores are based on songs, but in James' case, it's a matter of looking for some coherence from beginning to end. Even though there may be many textures and many elements that come and go throughout the score—particularly for James' combination scores of orchestral parts laid over a synthesizer-based electronic pre-score—there is always a sense of continuity through the composite score from the picture's beginning to end.

For his hybrid scores, which involve orchestral and electronic elements, James will rough in a sequence with a basic sound and then lay in additional textures. If he likes a particular sound, he will go through the film and use it at a variety of different places as a recurring theme, so we do a lot of tape spooling backwards and forwards

to reach the required locations.

Mix: How do you achieve the ambiances used on his scores?

Murphy: I've gotten to like the [Lexicon] 480 a lot recently and have been using that. I've always liked the [Lexicon] 224, but the 480 offers two stereo machines in one chassis and a wide range of fine reverb programs. I always listen through the Dolby Stereo [4:2:4 surround-sound] matrix to monitor how it will be affected by the artificial reverb and delay I'm adding to synth elements.

Mix: What are your favorite rooms for scoring?

Murphy: For real orchestral recording, Abbey Road [London] is superb. In Los Angeles, I like MGM, TBS [The Burbank Studios] and [20th Century] Fox. [Record Plant] Stage M is good, but a very short room; it's great, though, for recording an orchestra with a rhythm section, or an orchestral date where you need to maintain control during mixdown. Another great-sounding room in Los Angeles is Royce Hall, which hasn't yet been used to record a film score. I also think the new scoring room at [Lucasfilm's] Skywalker Ranch is going to sound good. ■

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Facility Manager: Gail Nord. **Engineers:** Jack Leahy, Sam Lehmer, Gary Clayton, Jeff Kliment. **Dimensions:** Control A: 13x17, Studio A: 16x26x13, Iso A: 9 1/2x10; Control B: 11x16, Studio B: 14x20x13, Iso B: 8x9, 4x7. **Consoles:** A: SSL 4048E 32x32 Total Recall, B: NEOTEK Series III 28x24; C: Soundcraft 600 24x16. **Audio Recorders:** MCI JH-24 24/16-Trk, MCI JH-110 4/2-Trk, Fostex E16+E22. **F/T Suite:** KEM K-800 6-Plate, Sharp XC801 color camera, full edge code transfer capability. **Video Recorders:** Sony BVU-800, JVC 8250, VHS and Beta. **Synths/Computers:** E-Mu II, DX7, Macintosh Plus. **Film & Video Equipment:** Film editing and duplication avail. **Other:** Complete post-production and recording services available. 48 tracks of audio synchronized to picture. L/C/R S Dolby Stereo sound monitoring.

BusinessPages! Services Key

BusinessPages! half-page ads feature a box with letter abbreviations for the types of services the advertiser offers. The key to these business services is as follows:

ARM Audio Recording, Music
APPV Audio Post-Production for Video
VP Video Production
TD Tape Duplicating
CDM Record/CD Mastering
SR Sound Reinforcement

MIDI MIDI Production
APPF Audio Post-Production for Film
SDS Studio Design/Supply
CDP Record/CD Pressing
RLR Remote/Location Recording

BUSINESSPAGES!

World Radio History

I N D E P E N D E N T

ENGINEERS & PRODUCERS

Mix does not take responsibility for the accuracy of the information in these listings, which were supplied by individuals listed below.

GLENN S. ABBEY; Engineer; TWIN VALLEY AUDIO, 4834 Crockett Ct.; Raleigh, NC 27606; (919) 851-4406.

ROD ABERNETHY; Engineer & Producer; SCORES, 1101-A DOWNTOWN BLVD.; Raleigh, NC 27603; (919) 821-3600; FAX: (919) 821-5614. Credits & Services: With the addition of a new Synclavier Digital Production System, I've been busy writing, producing and recording film scores for De Laurentis Studios, Honda McDonald's, Hardee's, Burroughs Wellcome, Northern Telecom and AT&T, just to name a few. Located in the heart of the Carolinas, within the Videofonics production complex in downtown Raleigh. Scores is a full-service 24-track studio that caters to a wide range of clientele, from IBM to Corrosion of Conformity. Contact me for a free production demo.

M.D. ACOSTA; Engineer & Producer; SILENCE, INC. PO Box 710, Maplecrest Stn.; Maplewood, NJ 07040; (201) 763-0453. Credits & Services: Studio production: Nu Shooz, "I Can't Wait" Hot Tracks remix. Live engineering: Chuck Berry, Country Joe MacDonald, Shadowfax, Rail, Ferron, B.B. King, Roomful of Blues, Dave Mason, Dan Siegal, Bonnie Raitt, The Band, The Byrds, New Riders of the Purple Sage, John L. Hooker, James Cotton, Al Stewart. New producer originally and engineer. Unexpected success on first production project (Nu Shooz). New York/New Jersey area. Free to travel anywhere. Macintosh MIDI studio available for pre-production. Broad-based experience with current technology. Please call for details.

RICHARD ADLER; Engineer & Producer; PO Box 21272; Nashville, TN 37221; (615) 646-4900.

MICHAEL AHARON; Engineer & Producer; MICHAEL AHARON MUSIC PRODUCTIONS, 705 Schell St.; Philadelphia, PA 19147; (215) 238-0918. Credits & Services: Credits: producer, arranger and/or multi-instrumentalist for Fred Small (Flying Fish), John McCutcheon (Rounder), Trapezoid and other pop, rock, jazz and folk artists. Composed original music for the film *Let the Door Be Made of Iron*, winner of the CINE Golden Eagle and PhilaFilm gold awards and submitted for nomination for Academy Award for Best Documentary Film of 1988. Original music and sound FX design for various industrial videos and national TV ads. Clients include Heinz and Rosenbluth Travel. Services: album/demo production and arranging. Film scoring. Performance on keyboards, bass, guitar, cello and drum programming. Attention songwriters: additional musicians are optional. 8/16/24/32-track recording, MIDI room w/Fairlight, etc. Automated mix-to-digital Dyaxis digital recording/editing system and much more. Production values to fit any budget.

CHUCK ALLEN; Engineer & Producer; PO Box 38082; Tallahassee, FL 32315; (904) 656-7935. Credits & Services: Steve Morse/Band, The Dregs, Yes, Billy Squier, Art-in-America, B.T.O., The Heartfixers, Jackson Browne, Todd Rundgren/Utopia. High-quality engineering and producing for in-studio, on-location, pre/post-production for video or film, broadcast and concert sound reinforcement applications. Systems consultation and design. Installation supervision and management.

TOMMY JOE ANDERSON; Engineer & Producer; ACA DIGITAL RECORDING, PO Box 450727; Atlanta, GA 30345; (404) 284-0948.

PHIL APPELBAUM; Engineer & Producer; BOGUS THUNDER, 5532 Amistad Rd. NE; Albuquerque, NM 87111; (505) 822-8273.

NICHOLAS ASTOR-GROUF; Producer; NICK-KNACK PAD-DYWACK RECORDS, PO Box 3248, Yale Station; New Haven, CT 06570; (203) 776-8458.

DEAN BAILIN; Engineer & Producer; 4 CATS STUDIO, 325 W. 52nd St.; New York, NY 10019; (212) 582-8663; (201) 327-5428. Credits & Services: 16-track extensive MIDI setup, facilities geared toward pre-production/finished master recordings. Extensive outboard gear, digital mixdown. Producer/engineer/songwriter. Vast experience in synth and drum programming to aid artist in arranging and crafting songs to meet today's standards. SMPTE-based synchronization of 16-track to computer allows for flexible arranging possibilities with virtually no track limitation. Automation and specialized guitar preamps are available. 15 digital reverbs and 66-input mixing configuration, 15 pop samplers and synths with extensive sound library. Credits: musical direction for Rupert Holmes, 3 years; featured guitarist on recording hits *Pina Colada* and *Him*; sound scoring for CBS-TV and Fox TV. Master recordings: Erika Records, *Tristan Shotgun*; One World Records, *Joe Voce California*; Macola Records, Michael Christensen; 100 Ways; MEG Records, Rich Contri *Everything to Me*. Wrote and produced master recordings for new artist Jodi Bon Jovi. Vast background as studio guitarist and synth programmer in NYC.

GARY J. BALDACCINI; Engineer & Producer; 7859 NW 15th St.; Miami, FL 33126; (305) 477-1272; FAX: (305) 477-4875.

AARON J. BARON; Engineer & Producer; 455 Harding Dr.; South Orange, NJ 07079; (201) 762-3268. Credits & Services: Audio-for-television—Leonard Bernstein's 70th birthday gala, BSO, Tanglewood. In performance at the White House series, 1987-1988. 1988 Mumm Champagne Classical Music Awards. Disney Holiday Splendor Christmas Show. MENC/McDonald's World's Largest Concert 1988. Sound consultant—the Grand Opening of the World Financial Center, First NY International Festival of the Arts.

SAM BEAMAN; Producer; VALENTINE PRODUCTIONS, 910 16th St., Ste. 900; Denver, CO 80202; (303) 893-0912.

GEOFF R. BENSON; Producer; GEOFF BENSON MUSIC, 233 E. Wacker Dr., Ste. 905; Chicago, IL 60601; (312) 819-0432. Credits & Services: Budweiser, KangaROOS, IGA stores, Southwestern Bell, Cybernet Cellular, Eveready, United Van Lines. Composer/producer. Original compositions in music and sound effects. Specializing in post scores for commercials and film. Record production. New England Digital 8-track Direct-to-Disk, © Synclavier digital audio system with 32 polyvoices, 16 FM voices, Macintosh II, Optical, SMPTE, MIDI, 20MBRAM, Kennedy Tape Linn 9000, Yamaha TX816, Prophet-60B, Oberheim Matrix-1000. Call Geoff Benson Music to discuss your upcoming projects, to arrange a demo, or to request an audio or video-demo.

MICHAEL BITTERMAN; Engineer & Producer; MIDNIGHT MODULATION, 2211 Pine Ln.; Saugerties, NY 12477; (914) 246-4761. Credits & Services: Credits: produced and engineered *Woodstock—Moods & Moments* (Prism Records), *Five After Eight* (OC Records); *Company Wife*, Denise Finley. Engineered Jean Redpath (Rounder), Priscilla Herdman (Flying Fish), John Hall, Dan Brubeck, The Band, John Sebastian, Orleans and NRBQ. I own and operate Midnight Modulation, a fully loaded 16-track studio w/full MIDI setup. Located in Woodstock, NY, I have access to many of the fine musicians here. I have produced artists ranging from folk music to pop to cabaret to rock. I can give you a state-of-the-art sound for a fraction of the price. I am extremely eclectic and will serve every project on its own high merits—from production through engineering the final mix.

ALLAN "BLAZE" BLAZEK; Engineer & Producer; 7320 Hawthorn Ave. #410; Hollywood, CA 90046; (213) 850-6915. Credits & Services: Allan Blazek has worked with such names

as the Eagles, The Who, REO Speedwagon, Joe Walsh, Mickey Thomas, Johnny Winter, Dan Fogelberg and the J. Geils Band. Most recently he made his mark on the charts as co-producer of Glenn Frey's first two hit solo albums, *No Fun Aloud* and *The Allnighter*. Originally a musician, Blazek left his bass guitar behind in the early '70s to work as an assistant engineer with producer Bill Szymczyk. In 1973 Blazek engineered Joe Walsh's smash LP *The Smoker You Drink the Player You Get*. Two years later he co-produced the Elvin Bishop Band's *Struttin' My Stuff*, which contained the hit single "Fooled Around and Fell in Love." In 1975 Blazek first began working with the Eagles, sharing engineering duties on *One of These Nights*, and the quad mix of *On the Border*. In 1976 he worked on the megahit album *Hotel California*. Blazek's current work with Glenn Frey is a direct result of their joint success: with the Eagles, Allan Blazek is not a one-dimensional type of producer who can only interpret one type of artist or produce only one type of sound. Anybody who can work successfully with both Dan Fogelberg, (*Souvenirs*, 1974) and The Who, (*Face Dances*, 1980) has a spectrum of understanding wide enough to accommodate anyone's musical needs. Over the past 15 years, Allan Blazek has proven time and again that when it comes to producing records of any kind, his ears have it.

MONTE BOBO; Engineer & Producer; PROJECT-B, 1940-B Olivera Rd.; Concord, CA 94520; (415) 685-8318.

TOM BOILARD; Engineer & Producer; TAB PRODUCTION, 3185 Boston Rd.; Wilbraham, MA 01095; (413) 599-1448.

PHIL BONANNO; Engineer & Producer; CHICAGO RECORDING CO. 232 E. Ohio St.; Chicago, IL 60611; (312) 822-9333; FAX: (312) 822-9189. Credits & Services: Nikki, Cheap Trick, Survivor, Bon Jovi, EIEIO, Darryl Steummer, Insiders, Dave Mason, *Rocky III*, *Rocky IV*, *The Karate Kid*.

DAVID M. BOOTHE; Engineer; 6133 Kenwood; Dallas, TX 75214; (214) 824-3687. Credits & Services: David M. Boothe has specialized in audio-for-video (both live production and post-production) and music recording since 1971. Production credits include many large, complex, live broadcasts such as the Miss Louisiana Pageant, the Miss Mississippi Pageant and over 30 live concerts for Discovery Broadcast Network. Post-production credits include: *The Oakstreet Chronicles* (aired on The Disney Channel), *Barney and the Backyard Gang* children's series, *Social Studies* (Tabor Media), animated children's shows for Concordia Publishing and the ongoing *Kids in Crisis* documentary series aired nationally.

ROBERT BOTH; Engineer & Producer; TWAIN PRODUCTIONS, 18 Hiawatha Pass; West Milford, NJ 07480; (201) 697-7540. Credits & Services: James Brown, Lyn Collins, The J.B.s, Hank Ballard, Robert Kraft & The Ivory Conto, Mutha Records, TR Records, The Watch, Tom Storms, Tito Rodriguez Jr. and others. Three gold records for work with James Brown Engineering and/or production services in own 24-track studio or studio of your choice, will travel. Album or single projects. Musical directions: rock, pop, R&B and jazz, solo performers or groups. Personal one-to-one service.

RICHARD (RICK) BOYLE; Engineer & Producer; 9206 McNeil Ave.; Wichita Falls, TX 76309; (817) 692-5992.

JAMIE BRIDGES; Engineer & Producer; 256 State St.; San Mateo, CA 94401; (415) 347-1186. Credits & Services: I've engineered and produced in the San Francisco Bay Area and L.A. for eight years, recording every style and sound imaginable—some famous, some not. I can engineer and produce your project without getting in the way of your music, or work with your producer. I can also help you find a studio or studios that best suit your music and budget.

INDEPENDENT ENGINEERS & PRODUCERS

MICHAEL LEO BROTHERS, Engineer & Producer, JOINT EFFORT ENGINEERING & PRODUCTION, 4463 Treehouse Ln. #16-D, Tamarac, FL 33319; (305) 735-3439.

HARRY BROTMAN, Engineer & Producer, BROTMAN MUSICAL SERVICES, 19010 Avers Ave., Flossmoor, IL 60422; (312) 799-7711. Credits & Services: Recent national airplay: Tyrone Davis *Flashing Back* (Future), engineered and mixed, Iron Cross *Church and State* (Turmoil), recorded and mixed, Shock-A-Ra *Love is Rising* (Future), engineered and mixed. Mixed: Marco Spoon (Future), Joni James (CBS) Album tracking: Lon Salton (EMI-UK). Tracking and mixing: Al Rowe, Campfire, Pierre's Phantasy Club. Engineering, co-production, production, analog and digital synthesis, sampling, programming/sequencing. Lucky 13th year servicing Chicago and beyond. Requestable at many fine 24-track facilities, including ARS Studio, Seagrape, PS Recording, Pyramid, Startrax and Sonic Art. European near-field monitors/amplifier system goes everywhere. Also, European condenser and ribbon microphones plus various outboards (16 channels of the good stuff!). Custom pre/post-production assistance on all projects is included.

CHRIS BROWN, Engineer & Producer, PERSON TO PERSON PRODUCTIONS, PO Box 546, Litchfield, CT 06759; (203) 567-9012.

FIL BROWN, Engineer & Producer, PO Box 61038, Pasadena, CA 91106; (818) 440-0553.

E. MICHAEL BRYDALSKI, Engineer & Producer, FRIENDLY NATIVE CREATIONS, 194 Norwood Ave., Buffalo, NY 14222; (716) 884-0622.

CHRIS BUBACZ, Engineer & Producer, ON TEN PRODUCTIONS, 87-86 116th St., Apt. D-5, Richmond Hill, NY 11418; (718) 441-5271; (914) 362-1620. Credits & Services: Engineering, mixing and production for artists on labels such as Atlantic, Arista, Passport Enigma, Megaforce, CBS, MCA, Private Music, RCA and A&M

RICHARD JAMES BURGESS, Engineer & Producer, BURGESS WORLD CO, 7095 Hollywood Blvd. #104-345, Los Angeles, CA 90028; (213) 850-7337; FAX: (213) 850-5302.

DANNY CACCAVO, Engineer, THIS WAY PRODUCTIONS, INC. 66 W. 84th St., Apt. 2C, New York, NY 10024; (212) 724-3308. Credits & Services: Tim Moore "Flash Forward," Kiss "Luck It Up," Sargin "When Midnight Comes," Kate & Anna McGarrigle "Rainbow Ride," Laurie Anderson World Tour 1986, Lauren Smokin, The Pilgrims, Will Sexton, Unconquered, Raining Violet "Ocean of Dreams." Engineering with creative musical input. Generally bent on rock and roll, with sound designing when appropriate. A partner in This Way Productions, a 24-track recording facility in Manhattan

KEN CAILLAT, Engineer & Producer, CAILLAT PRODUCTIONS, PO Box 1064, Malibu, CA 90265; (213) 456-6047; FAX: (213) 456-5778. Credits & Services: Grammy Award-winning producer, Grammy-nominated engineer—Fleetwood Mac *Rumours*. Album credits include: Fleetwood Mac *Rumours*, *Tusk*, *Fleetwood Mac Live*, *Mirage*, Chicago, David Becker *Siberian Express*, Lionel Richie *Dancing on the Ceiling*, Tom Scott *Streamlines*. Film or television credits include: *52 Pick-up*, *Firewalker*, *RoboCop*, *Miami Vice* and Universal Studio's *Earthquake* commercial (3-D audio). Spherical sound 3-dimensional audio: Pink Floyd *A Momentary Lapse of Reason*, Michael Jackson's *Bad*, Roger Waters' live radio broadcast from Radio City Music Hall, Tom Scott's *Streamlines* and Lionel Richie's *Dancing on the Ceiling*. Electronic Design: Photon Game Centers. Services: production, arranging, song reconstruction and evaluation, 3-dimensional audio, film scoring, sound effects and mixing, and electronic design

CARL CANEDY, Engineer & Producer, NEON CITY PRODUCTIONS, INC. PO Box 48, Cortland, NY 13045; (607) 756-7906; (212) 877-6129. Credits & Services: *Ra Pariah*, *Apollo Ra*, *Young Turk*, *Young Turk*, *Circus*, *Broken Dolls*, *Roxx Gang*, *Roxx Gang*, *Chalice*, *Phil Accardi*, *Thrashin' Blues*, *Violent Playground*, *Spreading the Disease*, *Anthrax*, *Feel the Fire*, *Overkill*, *Heavier than Thou*, *The Rods*, *The Beast is Back*, *Blue Cheer*; *Gone With the Wind*, *Rhett Forrester*, *Thrasher*, *Thrasher*, *Violence & Force*, *Exciter*, *Stricken by Might*, E.X.E. World-class production, sensitive to artists' goals. Publishing. Looking for the strong new artists. Full in-house 24-track facility with lodging. Resume and studio brochure on request.

PETER M. CARLSON, Engineer & Producer, PO Box 1454, Aptos, CA 95003; (408) 462-2722.

RON CARLSON, Engineer & Producer, ZOOM TAPES & PRODUCTIONS, 256 S. 1st St., RR3, Box 19A, Ogden, IA 50212; (515) 275-2048.

STEVE CARR, Engineer & Producer, HIT AND RUN STUDIOS, 18704 Muncaster Rd.; Rockville, MD 20855; (301) 948-6715. Credits & Services: Bruce Springsteen "Live at Bedrock," *Meet the Flintstones* (Billboard Pick Single, Nov '82) Tommy Keene *Places That Are Gone*, 1984 *Village Voice* Number One EP of the Year. Ohio "Change in the Wind" *Musican* magazine Best Unsigned Band in America—first place winner, Tommy Keene (Griffin Records) "Listen to Me" (single B-side). Producer of the Time/Life digital remastering of The Rock and Country Classics Services breakthroughs and miracles.

DON CASALE, Engineer & Producer, DON CASALE MUSIC, INC. 377 Plainfield St.; Westbury, NY 11590; (516) 333-7898.



KEVIN CASEY
Redwood City, CA

KEVIN CASEY, Engineer & Producer, 208 Shorebird Circle, Redwood City, CA 94065; (415) 592-8706. Credits & Services: Please call or write for an updated list of credits. I am currently working with an SSL G Series console. I have worked as an independent and staff engineer at a number of 24- and 16-track studios in the San Francisco Bay Area. If you're running on a tight budget, I can help put together a cost-effective plan for recording your project utilizing different studios, from budget to state-of-the-art. I have worked with all styles of music—classical, string quartet, jazz, R&B, modern rock and heavy metal—though as a producer, modern rock with a Big Beat is my forte. In addition to my technical knowledge, I am an experienced vocalist, musician and songwriter, so I know what it takes to be on either side of the glass. I am interested in taking on more projects as a producer or co-producer, as I like a high level of involvement in the music.

PAUL CHITEN, Producer, HOT SPOONS PRODUCTIONS, c/o Hot Spoons Productions; 1226 Harper Ave., Ste. 4; Los Angeles, CA 90046; (714) 656-6874. Credits & Services: Worked with Michael Jackson, Tina Turner, Commodores, Five Star, Anita Baker, Natalie Cole, Breakfast Club, Jose Feliciano, Imagination, Alisha, Laura Branigan, Starpoint. Also music for film, video and television: *Solid Gold*, *Fame*, *Mona Lisa*, *Witness*, *Gung Ho*, *River's Edge*, *Coming to America*, *Santa Barbara*. Songwriter/producer/arranger/composer/monster keyboards/vocals—I get excited by music that reaches for something—whether it be music to dance to, sit and listen to, cry to, whatever I work mainly in the areas of R&B, dance music, R&B/pop and new rock particularly with English influences. If it has vision and heart, I am interested.

PAUL CHRISTENSEN, Engineer & Producer, OMEGA AUDIO, 8036 Aviation Pl.; Dallas, TX 75235; (214) 350-9066. Credits & Services: U2, REM, Lynyrd Skynyrd, Dizzy Gillespie, B.B. King, Marilyn McCoo, Lee Greenwood, Johnny Cash, Willie Nelson, Commodores, Ray Charles, Merle Haggard, Helen Reddy, Hall & Oates, Art Garfunkel and over 200 major artists in the past 13 years. Engineering and producing services with emphasis on audio-for-video and film. Specialty is consultation for live video shoots from concept to completion. Extensive experience in digital audio/video interlock, stereo television, video disc and videocassette release both Beta and VHS Hi-Fi

ALEX CIMA, Engineer & Producer, 1501 E. Chapman Ave., Ste. 100, Fullerton, CA 92631; (714) 680-4959. Credits & Services: Releases on Deutsche Grammophon/Polydor International-Germany, GNP-Crescendo and Chromosome labels. Worked for all TV networks, recorded audio-visual projects, radio/TV commercials, film trailers and music videos, as well as special projects for major entertainment companies. Audio recording/production, analog and digital music synthesis, project troubleshooting, consulting. Proprietary computer program for hit analysis and video/film footage to MIDI sequencer synchronization.

SCOTT COCHRAN, Engineer, MIDILAND STUDIOS, 1615 Rancho Ave., Glendale, CA 91201; (818) 507-7982. Credits & Services: As the chief engineer and studio manager of MIDI-

LAND. I enjoy working with major film and television companies, advertising agencies, radio and television ID syndicators, audio-visual production facilities, image marketing production facilities, bands and solo artists. Recent engineering achievements include the music score for two Magical World of Disney movies, various Disney movie trailers, the main title for NBC's *Heat of the Night* TV series, the main title and various promos for *Group One Medical* (MGM), the latest single for Luanne Lee, a national spot for the American Cancer Society, the music score, dialog and effects for the 1988 Mazda National Dealers Convention, and the radio IDs for KROQ-FM Los Angeles.

BRUCE COLGATE, Engineer, BRUCE COLGATE PRODUCTION SERVICES, 284 Chamberlain Ave.; Bridgeport, CT 06066-3948; (203) 372-7005.

MICHAEL COLLINS, Engineer & Producer, THE COMMERCIAL REFINERY, INC. 2105 Maryland Ave.; Baltimore, MD 21218; (301) 685-8500; FAX: (301) 685-0313.

J.R. CUMMINGS, Producer, SOUNDSTAGE I PRODUCTIONS, 13270 6 1/2 Mile Rd.; Battle Creek, MI 49017; (616) 979-1532. Credits & Services: Jingles and/or original music/soundtracks for such clients as: Whirlpool, North American Van Lines, Dolly Madison, Bil-Mar Foods, Upjohn, State of Michigan, Archway cookies, Kirsch Windows, The Truck Channel, Eaton's, Prab Robots, Scores of Regional Music Works, Lansing General Hospital, Crystal Chrysler-Plymouth, Metro Toyota, Denooyer Chevrolet, Harold Zeigler Lincoln-Mercury, Savannah Light & Power, Consumers Power, Felpausch, U.S. Government, many more. Original music scores for corporate/advertising clients. Including audio-for-video, motivational, training, industrial and commercial music. We pride ourselves on consistently producing superior product through our experienced staff and up-to-date technology.

ALEXANDER H. CUSHMAN, Engineer & Producer, RARA AVIS PRODUCTIONS, 1687 Farmington Ave.; Unionville, CT 06085; (203) 673-7564.

DAVID DACHINGER, Engineer & Producer, RECORDING AND SOUND SERVICES, 127 W. 78th St.; New York, NY 10024; (212) 496-0049. Credits & Services: Roberta Flack, Keith Sweat, Michael Bolton, Southside Johnny, Sly Stone, Mtume, The BarKays, Isley-Jasper-Isley, Third World, The System, Was (Not Was), The Clark Sisters, Hugh Masekela, Jane Fonda, Arnold Schwarzenegger. Jingles include Burger King, Miller Beer, GTE, Pacific Bell, Hershey's, Pioneer Stereo, U.S. Census Bureau. Recording engineering, mixing, production and programming.

ROBIN DANAR, Engineer & Producer, SQUID PRODUCTIONS, 1689 1st Ave. #1; New York, NY 10128; (212) 289-5868. Credits & Services: Suzanne Vega, The Church, Laurie Anderson, Randy Newman, Linda Ronstadt, Ry Cooder, Buster Poindexter, Garland Jeffries, Reckless Sleepers, Grayson Hugh, Buckwheat Zydeco, Manhattan Transfer, Kids in the Kitchen, Uptown Horns, Crossfire Choir, Grace Pool, Longhouse, Urban Blight, Lonesome Val, Joy Askew, Sylvan Sylvain, Richard Lloyd, Chris Stamey, Peter Holsapple, Lush Plush, OK Savant, Second Self, Saqqara Dogs, Anna Domino. Squid Productions provides both recording engineering and production services and live engineering and production services. Studio specialties have been high-quality demos and independent records, with several subsequent major label releases. Live specialties have been coordination of shows, live mixing and remote recording internationally. Live mixes and multitrack recording and mixing have also been done for MTV, Showtime, Westwood One, WNEW-FM and other international radio networks. Will tour

ERIC DAVID, Engineer, THEATRICAL/CONCERT/STUDIO ENGINEERING, Beverly Hills, CA; (213) 273-0859.

JIM DEAN, Engineer & Producer, MUSIDEO PRODUCTIONS, PO Box 117008; Burlingame, CA 94010; (415) 344-4434. Credits & Services: Chris Cain Band, The Uptones, Don't Panic, Hobo, Hard Rain, The Leaders, The Wavers, Hunt and Peck, Pray for Rain, World Zap Art, Chico Freeman, Suzanne Pittson Quartet, Patrick Winingham, Ronnie Montrose, Annie Martin, Enigma, Profono/CBS, Blue Rockit Records, Blackhawk Records. Music production and engineering for demos, albums and soundtracks. I have ten years experience recording a variety of musical styles from all over the world. I am always listening for new talent and concentrate heavily on artist development while increasing my contacts with record labels. If you are trying to define your "sound" and get it on tape or disc, I can be of assistance. Send tapes to the address listed or write for further information. Tapes will not be returned without a stamped, self-addressed envelope.

EUMIR DEODATO, Producer, KENYA MUSIC, INC. 60 East End Ave. 20; New York, NY 10028; (212) 472-2933; (212) 334-8444. Credits & Services: Ten platinum records (LP) including 2001, *Kool & The Gang*, among the older projects. Contact the above numbers for more information. Complete MIDI services including top-of-the-line sequencers and software programs (Macintosh). Owner of one of the best studios in NY (Duplex), access to the best songs, never missed the charts, many keyboards, etc

MARK DERRYBERRY; *Engineer & Producer*, STARFLIGHT SOUND, 1175 S. Lincoln St., Denver, CO 80210; (303) 744-9751; E-Mail: Pan "FREEREELIN."

HANK DONIG; *Engineer & Producer*, WIZARD MUSIC GROUP, 8033 Sunset Blvd., Ste. 358; West Hollywood, CA 90046; (818) 905-1703. Credits & Services: Kenny Rogers, Lionel Richie, Devo, Air Supply, Crusaders, Egyptian Lover, George Winston, Russ Parr, Kingston Trio, Kin Vassej, Lynda Carter, PPI, Star Search, G.L.O.W. (musical director for the national TV show). Total production package includes 48-track studio, songwriting or publisher "A" drawer songs, arrangements, double-scale musicians and BG vocals, all engineering and total package includes shopping a record deal or pressing records for an independent distribution network. We produce master-quality, radio-ready tapes. Audio post-production for film including all music cues and sound effects with pre-mix-to-digital format.

HUGO DWYER; *Engineer & Producer*, HUGO DWYER MUSIC, 70 Carmine St. #SR; New York, NY 10014; (212) 929-4197. Credits & Services: Robbie Neville, Fleetwood Mac, Information Society, Erasure, Depeche Mode, Jellybean, Sinead O'Connor, Swing Out Sister, The Jets, Tina Turner, Debbie Gibson, The Jazz Passengers, Noel, The Christians, Book of Love, Cover Girls, Eighth Wonder, Martika, House of Momms. Recording, production and remix services for all forms of contemporary music.

RICHARD DYSINGER; *Engineer & Producer*, STRICTLY AUDIO, 132 W. 24th St. #331; New York, NY 10011; (212) 713-5251. Credits & Services: Music production and engineering Shannon, Atlantic Records, Mickey Stokes, Allmar Records Studio consultation and construction: Bronese Recording Studio, St. Maarten N.A. Special event audio production: New York Philharmonic charity balls.

EBN; *Engineer & Producer*, MSP MUSIC, INC. 476 Broadway, New York, NY 10013; (212) 226-1030. Credits & Services: Credits as producer, programmer, engineer or musician include: Air Race, Richard Burgess, Keith Diamond, Ebn Oz, Bob James, Jimi Hendrix, John Luongo, Arif Mardin, Gary Moore, Gary Myrich, Phil Ramone, Riff Raff, Scritti Politti, Ravi Shankar, Star Point, Harold Wheeler, James Ingram, Michael Bolton, ABC-TV (*All My Children*), Miller Beer, *Wall Street Journal*, McDonald's, Burger King, Goodyear, Neil Kernon, MTV, Judy Tenuta, etc. Fairlight CMI Series III state-of-the-art 16-bit computer musical instrument. Over a billion-and-a-half bytes of online storage with eight or more tracks of direct-to-hard disk recording. Digital inputs and all the latest updates.

24-track music production and recording, Fairlight programming, film scoring. Complete state-of-the-art production facility is available on premises, including Fairlight CMI Series III, Studer A80 24-track and 2-track tape recorders, 3/4" video lockup to 24-track Studer 810 center-track time code, stereo 2-track and a complete line of top-quality signal processing equipment, musical instruments and special effects. EBN also has one of the most extensive Fairlight sound libraries available in the world. Complete MIDI studio, IBM AT.

DAVID EDWARDS; *Engineer & Producer*, DB E PRODUCTIONS, 7221 Judson Ave., Westminster, CA 92683; (714) 892-0877; (714) 892-6448. Credits & Services: Credits and references available upon request. Multitrack recording, live recording, sound design and installation. Production, co-production with artist or producer, pre-production planning and arrangement consultation. Experienced in many different musical and voice-over styles. Work in an efficient, easygoing atmosphere dedicated to capturing and enhancing an artist's sound.

DOUG EPSTEIN; *Engineer & Producer*, DOUG EPSTEIN PRODUCTIONS, INC. 250 W. 16th St.; New York, NY 10011; (212) 807-6195.

STEVE ETT; *Engineer & Producer*, CHUNG KING HOUSE OF METAL, 247 Centre St., New York, NY 10013; (212) 925-4356; FAX: (212) 334-9145. Credits & Services: 24/48-track recording and mixing. Production credits: Beastie Boys, Run-DMC, LL Cool J, Danzig, Slayer, Public Enemy, Heavy D & the Boyz.

DALE EVERINGHAM; *Engineer & Producer*, AUDIOVISIONS, 8367 Golf Links Rd., Oakland, CA 94605; (415) 568-1617. Credits & Services: Complete audio production, engineering and music services that can make your audio visions a reality. Highest quality audio in analog and digital formats. Expert in Q Lock, Eclipse and DiskMix automation systems. Extensive MIDI and computer production skills. Project planning, consultation and pre-production with Macintosh sequencing. Call me to discuss your next CD album, commercial or film project and find your audiovisions. Credits labels—Epic, Wing, Intima, Q-West, Windham Hill, MCA, Tabu, Global Pacific and Music West Artists—Thomas Dolby, Channel 2, Eddie Money, Tony/Toni/Tone!, Will Ackerman, Curtis Ohlson. Film and video—NBC, KPX, Annheuser-Busch, "Ski Extreme," "Of Men and Angels."

SHANE FABER; *Engineer & Producer*, NOW+THEN MUSIC, 412 E. 78th St. #2A, New York, NY 10021; (212) 879-4667.

Credits & Services: Now+Then Music is a full-service music production company with a simple philosophy: ears and experience make the difference! Musician/producer/engineer Shane Faber is the man behind the message and the "ears" in particular. Equally at home on either side of the console, in live and MIDI-intensive situations, his unique talents are in constant demand. A '60s pop melodic sense, a love of jazz (acquired with a degree from the Univ. of Miami, 1977), three albums of pop rock with his own band, Bad Sneakers, in the early '80s, and more recently his work with rap and R&B artists, are all elements of his dynamic musical sensitivity. Record production, original music for film, TV, commercials, industrials and trade shows, engineering and MIDI consulting. Clients: BT Express, Blue Jean Regime, Burrell, MCA Publishing, PolyGram, Quark, Geffen, Fever Records, Volvo, Valvoline, Kellogg's, Avon.

JOE FERLA; *Engineer & Producer*, FREE MUSIC, INC. 235 E. 22nd St., Ste. 2T; New York, NY 10010; (212) 685-5351.

JAMES E. FOX; *Engineer & Producer*, LION & FOX RECORDING, INC. 1905 Fairview Ave. NE, Washington, DC 20002; (202) 832-7883. Credits & Services: Folk, reggae, rock, big band, jazz, country. Full-service 24-track recording studio—Emulator II, DX7, LinnDrum, Hammond B-3, drums. Complete MIDI system with computer sequencer and tone generators (Kurzweil, Alesis, Roland, Yamaha).

ROB FREEMAN; *Engineer & Producer*, TITLEWAVE PRODUCTIONS, 135 Nyac Ave.; Pelham, NY 10803; (914) 738-1310. Credits & Services: Production credits include: Go-Go's double platinum LP *Beauty and the Beat*, Twisted Sister, Regina, Jailbait, Gowan, Tim Moore. Engineering and remix credits include: Kiss, ABBA, Blondie, The Ramones. Full-service music production company with strong emphasis on songs and artist's performance—state-of-the-art with a "human" touch. Songwriting and arranging a specialty. Rob commands a cost-effective, radio-oriented production style. Sixteen years of hit-making experience.

GREGORY FREY; *Engineer & Producer*, GRAPHIC SOUND PO Box 311; Manville, NJ 08835; (201) 231-0493.

JIM GARDINER; *Producer & Engineer*, LIVE OAK STUDIO, 1300 Arch St.; Berkeley, CA 94708; (415) 540-0177. Credits & Services: Worked with Thomas Dolby, Rosie Gaines, Curtis Ohlson, Andy Narell, Pharoah Sanders, Epic, Capitol, Intima and many others. Complete music production offered by experienced composer/arranger, film scores and record production. —CONTINUED ON NEXT PAGE

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duction. Two complete 24-track studios with full selection of outstanding keyboards and outboard gear. Q.Lock with disk-based automation. Inspirational environment with cityscape views of the San Francisco Bay Bridge. All of this with the pinkest sound in the Bay Area.

(MS.) TERRY GARTHWAITE, *Producer*, FOOJONJOY PRODUCTIONS. Box 14, San Geronimo, CA 94963; (415) 488-4778.

CHRISTOPHER D. GATELY, *Engineer & Producer*, CHRIS GATELY AUDIO. PO Box 526; Bryn Mawr, PA 19010; (215) JBL-3605. **Credits & Services:** WMMR, WIOQ, WYSP, WRTI, WPST, WMGK. Bruce Springsteen, Dave Mason, Bruce Hornsby, Crowded House, Marshall Crenshaw, Neville Brothers, The Band, The Empire Rock Club Fall Broadcasts 1987-1988, Freddie Hubbard, Wynton Marsalis, The Crusaders, The Police, The Hooters, Pat Metheny, Chaka Khan, 1987 and 1988 Mellon Jazz Festival, Philadelphia Folk Festival 1983-1988, Airt, Penns Landing Jazz Series 1988 and many, many more. Remote and studio recording, sound reinforcement and studio installation. I have much gear and I am very proficient in its use. My experience and expertise can be an asset to any project. Syn-Aud-Con graduate SPARS combined scores: 517. Give me a call to find out how I can be of service.

BOB GERARDI, *Producer*, BOB GERARDI PRODUCTIONS. 160 W. 73rd St., New York, NY 10023; (212) 874-6436.

STEVEN H. GERBER, *Producer*, R³ PRODUCTIONS. Box 9290; Wichita, KS 67277; (316) 687-6046.

PAUL GERRY, *Engineer & Producer*, THE CUTTING EDGE CUSTOM DISC MASTERING. Box 217; Ferndale, NY 12734; (914) 292-5965. **Credits & Services:** Producer and engineer for Revonah Records, Tel-E-Vue Production Records, Quickway and Studio 17 Records. Production engineer and disc mastering on numerous independent artists' LPs, EPs and 45s. Disc mastering, plating, pressing, engineering, jacket design, layout, photography, artist development and management, studio clips, demo records, tapes and videos. Record production for LPs, EPs and 45s.

LOU GIORDANO, *Engineer & Producer*, LG PRODUCTIONS. 312 Cambridge St.; Cambridge, MA 02141; (617) 497-0647. **Credits & Services:** Records: *Christmas In Excelsior Daylo* (RCA/Big Time), *Bleached Black* (Important/Relativity), *Mission of Burma EP and Forget LP* (Taang), *Christmas Ultra-Prophets of the Psychic Revolution* (IRS/MCA), *Big Dipper Craps*. Record engineering and production; specializing in alternative/underground rock bands, including extensive pre-production/arrangement and overseeing of mastering.

TONY GIOVANNETTI, *Engineer & Producer*, DELTA PRODUCTIONS. 135 MacDougal St.; New York, NY 10012; (212) 473-5385. **Credits & Services:** Specializing in total production services—sound reinforcement for large-scale events in alternative spaces. Recent credits for site-specific work include: Grand Central Terminal, the Brooklyn Bridge, Staten Island Ferry, New York City Parks including "Liberty Dances" in Battery Park. Recently opened Wexner Center of Fine Arts in Columbus, Ohio.

DAVID GLASSER, *Engineer & Producer*, AIRSHOW, INC. 7021 Woodland Dr.; Springfield, VA 22151; (703) 642-9035. **Credits & Services:** Specializing in location recording, engineering coordination and technical direction for remote recording and broadcast. Recent projects and clients include *Sweet Honey in the Rock Live at Carnegie Hall* (Flying Fish Records), New Orleans Jazz and Heritage Festival, *Happy New Year USA!* (live PBS special with Mel Torme and the Baltimore Symphony Orchestra), Pennsylvania Radio Theatre, *Tribute to TheLonious Monk* (PBS special), *New Music America Festival*, *The Bob and Ray Radio Show*, U.S. Air Force Band, Paul Winter Consort, Billy Taylor, WETA, WBUR, WJHU, WGBH, WFPW, NPR, Radio Smithsonian. We can supply a portable recording system featuring Calrec by AMS console, Sony digital recorders, KEF/Bryston monitoring and API audio distribution all packaged for efficient on-site setup and transport. SPARS member. Please give us a call to discuss your next remote recording or broadcast project.

KHALIQ GLOVER, DAVE HAMPTON, *Engineer & Producer*, VISION RECORDS. PO Box 9564; Canoga Park, CA 91309; (818) 347-1697. **Credits & Services:** Khalik Glover is an independent engineer/producer whose credits include: Michael Jackson, Lionel Richie (*We Are the World*), Quincy Jones, Peter Cetera, Jeffrey Osborne, Jermaine Jackson, Kenny Rogers, Donna Summer and many others. Services include record mixing, recording, production, songwriting, synth programming. Dave Hampton is an independent engineer and technical consultant who specializes in pre-production, sampling and synth programming. He also provides modification and

repair of keyboards as well as keyboard setup and support for live touring application. Credits include: Dean Gant (Anita Baker/Peabo Bryson), Howard Hewitt, Jeffrey Osborne, Raymond Jones (Desiree Coleman/EU/Donna Allen), Gerald Albright, Ralph Johnson/Sheldon Reynolds (Earth, Wind & Fire), Jay Ferguson, Robert Palmer, Nathan East, Marcel East and many more.

STEVEN M. GOLD, JOHN ALTERS, *Producer*, HIPPOGRIF PRODUCTIONS, INC. 246 Fifth Ave., Ste. 202; New York, NY 10001; (212) 481-9877.

SCOTT GORDON, *Engineer & Producer*, SCOTT GORDON ENTERPRISES, INC. PO Box 791; Paramus, NJ 07653-0791; (201) 967-9765.

DOUGLAS GRAMA, *Engineer & Producer*, SITUATION ROOM PRODUCTIONS. 320 W. 37th St.; New York, NY 10018; (212) 736-7774. **Credits & Services:** Fat Boys, Big and Beautiful, Crushin', Blow Monkeys, She Was Only a Grocer's Daughter, Digg'n' Your Scene, Wet Wet Wet, Popped In Souled Out, Ellert Drieson, RCA, EMI, Phonogram, Warner Bros., PolyGram. Full production staff offering writing, arranging, programming and remixing. Top NY session players available. 24-track recording and mixing room. 12-track pre-production/MIDI room with vocal booth. Call for further information.

ERIC "GRIFFY" GREIF/ALAN PANGELINAN, *Engineer & Producer*, EDGE ENTERTAINMENT, INC. 152 W. Wisconsin Ave., 9th floor; Milwaukee, WI 53203; (414) 223-3343; (312) 336-8950; FAX: (414) 276-8283; FAX: (312) 336-6895.

LEW HAHN, *Engineer & Producer*, LEW HAHN PRODUCTIONS, INC. 11 Riverside Dr., Ste. 7-L West; New York, NY 10023; (212) 580-7896. **Credits & Services:** Expert SSL mixer, made dozens of major hits. Engineered and mixed numerous platinum and gold records, several Number Ones including "Against All Odds" Phil Collins and "I Feel For You" Chaka Khan. Best selling 12" on "I Feel For You." Top hits with Culture Club, Bette Midler, Aretha Franklin, Carly Simon, Bee Gees, Hall & Oates, Scritti Politti and many others. Production credits on projects with such artists as Culture Club with Boy George, Bette Midler, Judy Collins, Bobby Short, Dazz Band, Five Star and more. Offering the latest in production techniques, technology, effects and sounds.

MARK HALLMAN, *Producer*, SCEPTRE PRODUCTIONS. 7308 S. Congress; Austin, TX 78745; (512) 462-2209. **Credits & Services:** Navarro (Capitol), Carole King (Capitol, Atlantic), Ian Matthews (Windham Hill/A&M), Eliza Gilkyson (Gold Castle/PolyGram), Christine Alhier, Alex Shea, Lifeseyes, Anneke Speller and Romp, Tommy Eglin. Record and demo production, synthesis, composing, sequencing, arranging, 16/24-track recording, representation to record labels.

STEVEN R. HAMMOND, *Engineer & Producer*, RAVENSHEAD PRODUCTIONS. 1651 Rexdale Dr.; Cuyahoga Falls, OH 44221; (216) 923-6759.

DAVE HARDY, ALEX LEDVIN, *Engineer & Producer*, UBIQUITY PRODUCTIONS, INC. PO Box 91; Lindenwold, NJ 08021; (609) 783-7650. **Credits & Services:** Island Records, Select Records, Prudential Insurance Co., Pyramid, Pop Art, Muscle Majik, W DAS Radio. Ubiquity Productions specializes in urban contemporary, House, club, rap and jingle production (full-service). Full automation and a wide array of sound modules and outboard gear makes this facility production heaven. Product can be cut in-house or production staff will travel for transfer. Minutes from Philadelphia. For information, call (609) 783-7650 or (215) 742-3067.

STEPHEN A. HART, *Engineer & Producer*, HART PRODUCTIONS. 1690 Creekvine Circle; Petaluma, CA 94952; (707) 762-2521. **Credits & Services:** Extensive background in digital multitrack recording. Mixing in 1987/88 has taken me to Montreal, Chicago, Dallas, Los Angeles, Milan, Italy, New Orleans, San Francisco, New York and London. Client list: Windham Hill/A&M (ten albums), Warner Bros., Island, Arista, Geffen, CBS, EMI America, EMI Italia, Pablo, Milestone, Capitol, Concord, Fantasy, MCA, Paroles et Musique, Music West. Album credits include: Will Ackerman, Neville Brothers, KBC, Pete Escovedo, Melissa Etheridge, Oscar Peterson/Joel Pass, Vasco Rossi, Steve Smith/Vital Information, Dynatones, Flora Purim/Airt, Jimmy Barnes, McCoy Tyner, Andy Narell, Stephen Grappelli, Metamora, Azymuth, Kingfish, Sten/Walder, Scott Cossu, Kenneth Nash. Video/film post credits include: *Ama-deus*, *Blue Velvet*, *Wildcats*, *Whoopi Goldberg*, *Huey Lewis*, *Rick Springfield*, *Evening Magazine*. I have also worked with artists such as: Branford Marsalis, Sheila E., Steve Perry, Jan Hammer, Billy Idol, Grateful Dead, Carlos Santana, Michael Hedges, John Denver, Ronnie Montrose, Peabo Bryson and Ross Valory.

WILLIAM OTTO HEATH, *Engineer & Producer*, OTTO STUDIO. 1413 Putnam; Richland, WA 99352; (509) 943-6470; (509) 376-0554.

GENE HEIMLICH SEE PAGE 130

JAY HENRY, *Engineer & Producer*, VISUAL MUSIC. 235 E. 13th St. #3-D; New York, NY 10003; (212) 505-9281. **Credits & Services:** Credits: 15 years experience in recording and

broadcast industries. Gold and platinum records on MCA, Warner Bros., Columbia, CBS, Arista, Alco and Profile. Worked on projects with Prince, Run-D.M.C., LL Cool J, Al B. Sure, Heavy-D, Guy, Living Colour, Shannon, Whodini, Public Enemy, Defunkt, Alphonse Mouzon, Larry Coryell and Daniel Ponce Services. software-based, audio/video pre- and post-production. Full music production services for albums, singles and master demos, including: digital recording and editing; arrangements and lyrics, music video packages, multitrack lockups; studio and location production services for video and film; MIDI/SMPTe interfacing to video, film and live performance with MIDISCORE™, featuring Fairlight CMI and Macintosh computer. Custom chip blowing, sample editing, sample library, synthesizer and drum programming; custom signal processor software and unusual equipment rentals.

BOB HODAS, *Engineer & Producer*, PO Box 2028; Sausalito, CA 94965; (415) 331-6941. **Credits & Services: Credits: Doobie Brothers, Village People, Marty Balin, Amanda McBroom, Mickey Hart, Casiopea, Good Sound Foundation, Schoenherz and Scott, Will Ackerman, Osamu, Sayuri Ishikawa, Merle Saunders, The Pope Services. recording and concert engineering, film, album and demo production; consulting.**

JEFF A. HOFFBERGER, *Engineer*, EVENTS/NATIONAL SOUND. 4201 Cathedral Ave. NW #704 W; Washington, DC 20016; (202) 966-2639; FAX: (703) 550-0521. **Credits & Services:** House engineer, monitor engineer, stage manager, assistant production manager, relief tour bus driver.

BOB HOLBROOK, *Engineer & Producer*, HOLBROOK MEDIA PRODUCTIONS. 2143 W. Main St.; Jeanerette, LA 70544; (318) 276-6267. **Credits & Services:** Music and jingles for McDonald's, Pepsi, Wed. Child, Fischer's Auto Parts, City of Lafayette and many more. Albums, singles and demos for regional and local groups. Movie and commercial post-scoring audio. Full-scale video production. Audio voice-over prod and talent pool. Complete 24-track recording studio, with Studer, Lexicon, Otari, AKG and more. Large selection of MIDI instruments, keyboards and drums. Complete video ¾" field equip (Sony) with ¾" editing (Sony). Also writing, publishing, producing and more.

GORDON D. HOOKAIO, *Engineer & Producer*, 80 Wayne Rd.; Needham Hts., MA 02194; (617) 324-6407.

PETER KIRK HOPPER, *Engineer & Producer*, MASTERVIEW SOUNDCRAFTS. 1621 Dryden Rd.; Freeville (Ithaca), NY 13068; (607) 347-4223.

CHRIS HORVATH, EUGENE LO, MATT TUCKER, *Engineer & Producer*, TRIPLE THREAT PRODUCTIONS. 7808 Green Lake Rd.; Fayetteville, NY 13066; (315) 637-6656. **Credits & Services:** We have individually worked for WAQX-FM, WJPZ-FM, WVUM-FM, HBO/Cinemax, Studio Center Sound (Miami) and Greene Street Recording Studios (NYC) on major projects. We have also produced industrial videos and documentaries for clients including the Syracuse Police Department. In addition, two cable television shows we worked on received Ace Awards. Working from Syracuse, New York, and Miami, we provide a creative hand in music recording, mixing and production. Like our music services, our video production services cover every aspect from pre-production to post-production, including producing, directing, camera work, audio-for-video and editing. Bring us your idea and we'll turn it into something special.

MATTHEW C. HOWE, *Engineer & Producer*, STUDIO CENTER SAN JOSE, INC. 434 S. First St.; San Jose, CA 95113; (408) 993-1040; FAX: (408) 993-1056.

STEVEN V. ISBELL, *Engineer & Producer*, HIGH FREQUENCY PRODUCTIONS. 907 Evergreen Ave.; Cayce, SC 29033; (803) 796-8404.

IVAN IVAN, *Producer*, I-SQUARED, INC. c/o This Beats Workin' Mgt.; 410 W. 53rd St. #219; New York, NY 10019; (212) 265-1650; FAX: (212) 262-9764. **Credits & Services:** Depeche Mode, Devo, Figures on a Beach, Book of Love, Cookie Crew, Echo & The Bunnymen, New Order, Gene Loves Jezebel, Dominatrix, Martini Ranch, David Lasley, Red Rockers, That Petrol Emotion, Bow Wow Wow, Velveteen, Meri Wilson, Wire Train. All pre-production and production services available. Please contact management at (212) 265-1650.

STEPHEN JARVIS, *Engineer & Producer*, AKASHIC RECORDS GROUP. PO Box 395; Danville, CA 94526; (415) 837-7959 (home).

DANNY JOHNSON, *Engineer & Producer*, SERIOUS AUDIO. 5839 Silvercreek Azle Rd.; Azle, TX 76020; (817) 281-7988.

STEVE V. JOHNSON, *Engineer & Producer*, I HEAR YA! RECORDS. PO Box 8087; Washington, DC 20024; (202) 347-0001; (301) 654-3163.

KALI, *Producer*, AZIZA ENTERTAINMENT GROUP. 1428 N. Scottsdale Rd., Ste. 158; Tempe, AZ 85281; (602) 481-3799. **Credits & Services:** Production/management. T-Wax, Keith Loring, J.R. Rock, The Cutie Pies, Stanley LePrince Ball, Dexter Benjamin and the Colter Boys. Production coordination in-

cludes development of concept and budget, screening original material, locating original material, in-house composition, contracting musicians and selection of recording studios and engineers to best expose artist's talent. Our primary focus is developing highly commercial music and our staff is adept at working in an acoustic or high-tech MIDI environment. Drum programming, sound effects and sampling are used to create hot dance tracks, modern adult contemporary and pop hits. Additionally, we are cognizant of the current sounds and trends developing in street music such as rap and go-go. We only work with artists willing to accept direction and objective criticism. We do not subscribe to the school of "fix it in the mix", we believe the recording process should be planned and well thought out.

KAREN KANE; Engineer & Producer, 396 Broadway, Somerville, MA 02145; (617) 628-6469 (New England) (312) 769-9009 (Midwest). Credits & Services: Credits: many independent labels, plus artists on Rounder Records, Flying Fish, Folkways and Lady Slipper Records. Artists include Kay Gardner, Suede, Alex Dobkin, Betsy Rose, Fred Small, Willie Sordill, The Chicken Chokers, Charlie King, Bright Morning Star, Marcia Taylor, Southern Rail, Linda Worster, Matt Glaser, Wes, many more. Services available for any city—mostly connected to the New England and Chicago areas. I offer no-charge pre-production meetings and unbiased advice about recording in the New England area in which I've been working for the past 14 years. I am easy to work with, fast, efficient and patient. I specialize in acoustic music as well as great drum sounds.

JEFFREY KAWALEK; Engineer & Producer, KAWALABEAR PRODUCTIONS, 225 Warren St., Jersey City, NJ 07302-4426; (201) 451-4313. Credits & Services: All engineering and production services from tracking to mixing. Recording credits include Dr. Buzzard's Original Savannah Band, George Benson, White Lion, Peter Gabriel, Roger Glover, Steve Arrington's Hall of Fame, John Tropea, hundreds more. Mix credits include Adrian Sherwood, Vernon Reid and others. Live sound mixing a specialty.

STEPHEN KAY; Producer, TECHNISOUND, INC. 140 Madison Ave., Westfield, NJ 07090; (201) 233-2026. Credits & Services: Julius Hargett (Virgin Records), Charlie Singleton (Epic Records), Grand Master Flash, NBC (Olympics, Wimbledon, ROMA '87), Pepsi-Cola, Gianettino & Meredith Advertising, Sid Woloshin, Inc., Resorts International Casino, TKR & OK Cable, Gitano, Rock Video International, consultant for Sound Genesis Corporation. Services offered: records, film scores, jingles, demos and session work featuring a fully loaded Fairlight Series III, the state-of-the-art, 16-bit digital synthesizer/sampler/audio production device. Recently updated with REV7 software and hardware, the system now features 16MB RAM, 8-track direct-to-disk digital recording and over 400 MB of instant-access disk storage. Gigabyte sound library, from orchestral to dance/pop/rap. Fully equipped 16-track studio/MIDI control center, 48-input TAC Scorpion, Tascam 1" MS-16 w/dbx, UREI and E-V monitors, Tons O' Digital FX, DX711FD w/1,500+ sounds, TX802 rack, Prophet-VS rack, 7.4" Yamaha grand, two vintage customized ARP 2600s, Macintosh Plus w/Passport and Opcode software, digital mixdown, more. Complete your master-quality project in-house (production, composition and arrangement available) or do pre-production for transfer at a larger facility. Will travel with Fairlight III and rack to location of your choice for session work. Fifteen years of professional experience—demo tape available.

RICHARD KAYE; Engineer & Producer, PMF PRODUCTIONS, 417 Teaneck Rd., Apt. 2A; Ridgely Park, NJ 07660; (201) 440-8618. Credits & Services: Abbylynn, Absolute Music, Laurie Anderson, Ashford & Simpson, Roy Ayers, Joe Carter, CHAD, Sarah Dash, Janice Dempsey, Art Farmer, Hook, Line & Singer, Freddie Jackson, Lenny Kaye, Chuck Loeb, Steve Lunt, Michael Karp Music, Michael Levine Music, Mr. Spats, Najee, Napua, New York Jazz, Ray, Goodman & Brown, REW Productions, Rendezvous Records, Jules Shear, Singer & Co., Darryl Tookes, Scott White.

JOHN P. KAYNE, DAN SNYDER; Engineer & Producer, PEPTUNE PRODUCTION SERVICES, 61 Old Bridge Tpk., East Brunswick, NJ 08816; (201) 254-5583. Credits & Services: Providing broad-based production and consultation services in music and sound for all media as well as solo and group projects. Our experience with all facets of audio, composition, recording, performance and hardcore technological know-how ensures professional-quality work from demos to full-blown multimedia productions. Our MIDI/4-track studio with lockup to video, featuring synths like the Emulator II+ HD, as well as various outboards, provides us with a cost-effective pre-production facility to keep budgets at a minimum while maintaining state-of-the-art sound. We have access to fully equipped 8/24-track studios only minutes away from our offices, as well as additional musicians, vocalists, songwriters and lyricists. Well versed in musical idioms from avant-garde to classical to rock, there is no style that escapes us. Besides our production work we are also technical specialists in media electronics including multitrack audio, effects, synths, MIDI, video transports, camera and projection, as well as computers. "Not since the Manhattan Project has there been such a secret collaboration of sheer unknown genius; sound that will change your understanding of physics."

PETER R. KELSEY; Engineer & Producer, 2038 S. Holt Ave. #10; Los Angeles, CA 90034; (213) 837-7939. Credits & Services: Credits include Slayer, Pebbles, Bill Ward (Black Sabbath), Jean-Luc Ponty, Weather Report, Wall of Voodoo, The Fixx, Graham Parker, Michael Stanley Band, Linda Ronstadt, Elton John, Brian Eno, "Weird" Al Yankovic. Services: any variation on the producer and/or engineer theme.

JOHN KING; Engineer & Producer, CHUNG KING HOUSE OF METAL, 247 Centre St., New York, NY 10013; (212) 219-8485; FAX: (212) 334-9145. Credits & Services: Two full 24/48-track recording and mixing studios with Neve V Series console with Necam 96. Studio credits include albums by Run-D.M.C., LL Cool J, Beastie Boys, Public Enemy. MIDI production room available. Expert repair service and equipment rental company.

BILL KRAUSS; Engineer & Producer, 87 First Ave., New York, NY 10003; (212) 505-8092. Credits & Services: Produced and co-engineered two albums and two EPs for Bar/None artists They Might Be Giants. *They Might Be Giants* (1986), *Lincoln* (1988), *Don't Let's Start* (1987) and *She Was a Hotel Detective* (1988). TMGB is a duo that performs live with taped accompaniment; from 1983-88 I engineered, all their show tapes as well as doing their live sound mixing. Produced soundtrack for "Shimmelseen," an 18-minute animated film by The Jickets (1988). Extensive experience with Mac-based MIDI sequencing and drum machine programming. Current projects include The Ordinaires (9-piece instrumental conglomeration) and The Jickets (NY pop/rock weirdos). I like to work with people whose music does not lend itself to easy categorization. I'm not a producer with a "sound"—my strength lies in my ability to help musicians refine and realize their ideas.

JACK LANCASTER; Producer, 315 N. Avon St., Burbank, CA 91505; (818) 845-6678. Credits & Services: Produced various artists in top London studios, including Rod Argent, Stephane Grappelli, Gary Moore, Brian Eno, Clive Bunker, Phil Collins, Ella Jordan, Manfred Mann, Cosy Powell, Zeitgeist, Krisma, The Permutations, several film and TV scores, etc. Have had hit singles in Europe and USA. Production arrangements, compositions, play all saxes, flutes, clarinet. Lyricon. Can supply engineer for productions. Have produced many styles of music including rock, new wave, pop, fusion, etc.

PAUL D. LEHRMAN; Engineer & Producer, PAUL LEHRMAN PRODUCTIONS, 184 Palmer St., Arlington, MA 02174; (617) 643-2700. Credits & Services: *The Celtic Macintosh*, world's first all-MIDI album, now available from Themes/KPM Libraries; Digital Equipment Corporation; Lexicon Corp., Jewish National Fund; WGBH, Urso Major; dbx; AKG; Mass. Audubon Society; Century III Teleproductions; George Crumb, *Apparitions* (Bridge Records), winner High Fidelity award, *New Music for Guitar Vol. 3* (Bridge Records), numerous albums, industrials, videos, live electronic and computer-music concerts. Complete music and sound production and consultation services for all media, composition, arranging, sweetening, effects, synthesizer and sequencer programming. Specializing in folk, new age, avant-garde and the unusual, with much experience in film and video scoring and library production. Fully equipped, private, computerized MIDI production studio with film/video sync for ultra-fast turnaround. As a musician, engineer and software designer, I can find the best and most efficient way of doing any project, from a record album to a multimedia extravaganza. As a leading expert on MIDI, I can also help you design your own facility and work with you to make it successful.

JEFFREY LESSER; Engineer & Producer, JET LASER PRODUCTIONS, 4214 Farmdale Ave., Studio City, CA 91604; (818) 980-2891. Credits & Services: Producer of Rupert Holmes, Barbra Streisand, Pat Travers, Head East, Sailor, Strawbs, Straight Lines, Sparks, Starcastle, Hounds, Vivabeat. Co-producer of Kool & the Gang, Colourfield, Chiefs of Relief, Royal Crescent Mob, Will & the Bushmen, Cry No More, Louise Goffin, Mental as Anything, All About Eve, Earl Slick, Kids in the Kitchen. Engineer and/or remix: Lou Reed, Debbie Harry, Missing Persons, Robert Palmer, Ric Ocasek, Ultravox, Oingo Boingo, Quarterflash, Renaissance, Blue Oyster Cult, Ruben Blades, House of Schlock, Fernando Saunders, Climax Blues Band, Stylistics, Alice Cooper Television *Playboy Candid Camera*, *Silver Spoons*, *Robert Klein Show*, *Ripley's Believe It or Not*, *Rock & Roll Tonight*. Tech specs: producer/engineer/mixer, SSL E and G Series Auto, Neve, all formats, live recording, electronic and sample MIDI recording, songwriter, vocal and music arranger. Comments: reviews all submitted tapes, international reputation, travels extensively, expert in every aspect of records, film, video, radio, television and advertising.

LOUIS LEVIN; Producer, LOUIS LEVIN MUSIC, 211 E. 53rd St., New York, NY 10022; (212) 223-0025.

AARON LEVINSON, ADAM GUTH; Engineer & Producer, ALTAMIRA PRODUCTIONS, 1002 S. 49th St., Philadelphia, PA 19143; (215) 222-4937. Credits & Services: Altamira is a full-service pre-production facility located in the heart of musically historic West Philadelphia, featuring 8-track recording, 64-track MIDI sequencing, sampling, MIDI synthesizers and

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drum machines, and video on demand (rental fee included) We also provide professional services and consultation in the following areas: record production, musical arranging/composition, songwriting, video production and jingle writing. Altamira maintains professional relationships with some of the leading primary production studios in the Philadelphia metropolitan area. Arrangements can also be made to hire a variety of internationally recognized Philadelphia- and New York-area musicians. From killer hip-hop DJs to avant-garde saxophonists and good ol' lead guitarists, Altamira provides whom-ever is necessary for whatever the session. So give us a call and let's discuss your project. Like you, our goal is nothing short of excellence.

JOEL LINN, MARTHA RUBIN; Producer; FOG CITY SOUND. 101 Devin Dr., Ste. 100; Moraga, CA 94556-1303; (415) 376-4321; (415) 376-7995. Credits & Services: A full-service production agency offering original composition, accompaniment, arranging, orchestration, sweetening, lyrics, contracting, recording, mixing and editing. We'll oversee any part of your project or coordinate your entire audio needs from conceptualization to completion. Our personnel consists of the writers, arrangers, engineers, studio technicians, instrumentalists and vocalists who have created the San Francisco Bay Area's world-class symphony, opera, ballet, jazz, film, arts and popular music scene. Drawing from this large pool of talent, we're fluent in all styles from Renaissance to rock, blues to Baroque, new age to folk. Audio consultation, ambient repertoire design, sound effects library, live music and post-production support are offered. Explore our resources for TV, radio, cinema, live theater, recording, jingles, IDs and logos. Credits include S F Ballet Orchestra, Blackhawk, Lillenas, Menus and Music, Bogas Productions, Stankus Information Displays, Word, Inc., Twain Productions, Signs of Life, Steve Erquaga, Benson, Inc.

JAMES A. LOCKYER; Engineer; J.A.L. AUDIO. 2245 N. 36th St. #305; Phoenix, AZ 85008; (602) 244-8422.

JOSEPH MAGEE; Engineer & Producer; JOSEPH MAGEE AUDIO ENGINEERING. 4124 Vinton Ave.; Culver City, CA 90232; (213) 558-4208. Credits & Services: Audio produced/engineered following ensembles/artists Orchestras—L.A. Philharmonic, Amsterdam Concert Gebow, L.A. Chamber, "Y" Chamber, Fort Worth. Opera Co.—Royal Opera of Covent Garden, L.A. Music Center Opera. Festivals—New Music America, Olympic Arts, Seattle Chamber. Artists—Andre Previn, Pierre Boulez, Michael Tilson Thomas, Lincoln Mayorga, Marni Nixon. Consultant for Panasonic/Ramsa and Denon America. World-class audio recording/production for broadcast and record. Specializing in classical, new music and jazz recording. Acoustical or acoustical/electronic ensembles. Expertise in both minimal mixing techniques or close miking for any size ensemble. Location or studio recording. Consulting services also available.

ERNE MANSFIELD; Producer; MANSFIELD MUSIC GRAPHICS WINDSAILOR MUSIC (BMI); PO Box 737; Berkeley, CA 94701; (415) 652-3647. Credits & Services: Produced Windsailor, ColorDrops, on Catero Records, Aspen/Blackhawk Records and National Radio of Spain. Also produced albums on CBS-France, Cathedral Records and Center for Growth in Wholeness. Arranger/transcriber/copyist for many artists including Narada Michael Walden, Herbie Hancock, Terry Riley, John Adams, Dan Kobialka, Landmark Records, San Francisco Symphony. My specialty area is acoustic music: jazz, folk, classical, new age, etc. My skills include arranging/composing, performing on a number of instruments (woodwinds and keyboards) and start-to-finish production, including rehearsing, recording, album art supervision and copyright administration. I'm also a specialist at songbook production. Music-Graphics is a full-service music typesetter/songbook designer, working on many book productions including *The Kate Wolf Songbook*. Send for brochure. Through my recordings and performances I have received grants from the National Endowment for the Arts and the California Arts Council.

JAY MARK; Engineer & Producer; JAY MARK PRODUCTIONS. 309 W. 82nd St. #4B, New York, NY 10024; (212) 362-6002. Credits & Services: BoDeans, Jerry Harrison, Talking Heads, Rolling Stones, Madonna, Eurythmics, Huey Lewis, Fishbone, Aretha Franklin, Chuck Berry, Arcadia, David Bowie, Elton John, General Public, Style Council, Lou Reed, O'Jays, Trampms, Queen, Romeo Void, Stacey Lattisaw, Steve Miller, Stevie Wonder, Teddy Pendergrass, Thompson Twins, Todd Rundgren, Village People, Bananarama, Bonnie Raitt, Beatles Services recording, overdubbing, mixing (specializing in dance mixes). Special rates available for entire projects.

DAVID MARSAC; Engineer & Producer; MARSAC AUDIO SERVICES. PO Box 77; Briarcliff Manor, NY 10510; (914) 279-7945.

ROBIN MCBRIDE; Producer; BIRD PRODUCTIONS. 1946 N. Hudson Ave.; Chicago, IL 60614; (312) 787-6060.

JULIAN MCBROWNE; Engineer & Producer; MCBROWNE MUSIC. 160 Washington Ave.; Brooklyn, NY 11205; (718) 797-3389.

JAMES MCLEAN; Engineer & Producer; MCLEAN CREATIVE SERVICES. 230 W. 55th St. #11D; New York, NY 10019; (212) 517-1645. Credits & Services: Over 200 location recordings since 1984. Engineered classical music and jazz concert recordings for NPR's Performance Today, American Jazz Radio Festival and affiliate stations. Extensive professional experience in the celebrated Troy Music Hall, including concert recordings of the Stuttgart and Cologne Chamber Orchestras, Bancho Musicale and Cambridge Quartet. Produced jazz broadcast recordings of Lionel Hampton, Kenny Burrell, String Trio of New York, Marilyn Crispell, Reggie Workman, Jane Ira Bloom and many others. Engineered Richard Lainhart's *These Last Days*, an electronic music premier release for the new Periodic CD label. Services offered: location session and concert recordings of modern and traditional classical, jazz, folk and rock music. Mixing direct-to-2-track digital is my specialty. Professional audition and grant tapes of superior quality at competitive rates.

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MIKE MICHAELS; Engineer; STUDIO M PRODUCTIONS UNLIMITED. 8715 Waikiki Station; Honolulu, HI 96830; (808) 734-3345; FAX: (808) 735-9937.



BRAD S. MILLER
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BRAD S. MILLER; Engineer & Producer; MOBILE FIDELITY PRODUCTIONS OF NEVADA. PO Box 8359; Incline Village, NV 89450; (702) 831-4458; (702) 831-4459. Credits & Services: Founder, Mobile Fidelity Sound Lab, Mobile Fidelity Records and Productions, creator of The Mystic Sounds Orchestra and producer/engineer of numerous special effects recordings. Principal in development of Colossus digital audio system with Louis Dorren. Location/studio recording where accurate archival of live performance or final mix is required. Production services include the Colossus (4-channel) PCM digital audio system with 1630 compact disc format compatibility; and/or 4-channel surround microphone (MS-4). Recommend that interested parties inquire as to latest compact disc samples in release by clients utilizing Colossus, MS-4 or both. Conversion of existing sound effects and music libraries into Colossus format and then to optical hard disk also available. Written information package available upon request.

JIMMY MILLER; Producer; MILLER VIGLIONE PRODUCTIONS. 5 Strathmore Rd.; Haverhill, MA 01835; (617) 935-5386; FAX: (603) 382-3287. Credits & Services: Producer with 24-track SSL recording studio just outside of Boston. Credits include Traffic, Blind Faith, George Clinton, Motorhead, BBC Rock 'n Roll Circus with John Lennon, The Who, Jethro Tull and Led Zeppelin. Eighty-eight gold records. Award for Eric Clapton's *Crossroads*, 12 albums with the Rolling Stones including *Beggar's Banquet*, *Let It Bleed*, *Exile on Main Street*, *Sticky Fingers*, *Goat's Head Soup*, *Tattoo You*, *Hot Rocks* and more.

ROBERT L. MISSBACH; Engineer & Producer; REAL LIVE MUSIC. PO Box 684; Mill Valley, CA 94942; (415) 453-5025. Credits & Services: Clients include: Huey Lewis & the News, Santana, Journey, Michael Bolton, Jimmy Barnes, Union Pacific, Dynatones. Albums, soundtracks, demos, audio-for-video, live recording, radio mixes, even tapeless MIDI music.

P. DENNIS MITCHELL; Engineer; 410 W. 53rd St. #319; New York, NY 10019; (212) 265-1650. Credits & Services: Johnny Kemp, Bobby Brown, Erasure, Pretty Poison, John James Guy, Miki Howard, Blondie, Jacksons, Stephanie Mills, Deja, Glenn Jones, Today, Patrick O'Hearn, Youssou N'Dour, Boy George, Teddy Riley, Shep Pettibone, Peter Baumann, Mark Berry, Francois Kevorkian, Peter Cardinali, Le Mel Humes, Timmy Regisford.

ERIC MORGESON; Engineer & Producer; EMP PRODUCTIONS, LTD. 5619 N. Beech Daly; Dearborn Hts., MI 48127; (313) 561-7489. Credits & Services: Producing for EMP Productions, Ltd., production credits include Epic artists Billy Always and Krystal, PolyGram artist Gerry Woo, and Sharon Bryant on Wing. Engineering on projects for George Clinton, Kiara, Chapter 8, Steve Washington, Dennis Coffey, The Dramatics, Michael Henderson, Earl Klugh, Ready for the World, Alexander Zonjic and Mitch Ryder. We offer the finest in music production and engineering, featuring the Synclavier digital music system interfaced with the state-of-the-art recording facility in Detroit, Studio A. We also provide custom songwriting, arranging, mixing and sound design.

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RICHARD A. MUSK; Producer; MUSK MUSIC, INC. 455 Hope St.; Stamford, CT 06906; (203) 323-7022. Credits & Services: Credits: HBO, Cinemax, IBM, Armstrong Tire, Huebline, GTE, Steuben Glass, *Time* magazine, Capitol Records, Universal Studios, Wyeth Laboratories, Ricoh, Fisher Price, Banner Industries, NeXT Computer. Services: original composition and arrangement for film, video, industrial, documentary, jingles, logos, songs. Fairlight CMI rental and programming.

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JERRY NORELL; Producer, JERRY NORELL PRODUCTIONS, 71 Willowood Dr.; Wantagh, L.I., NY 11793-1248; (516) 731-7020.

BOB OLHSSON; Engineer, 1408 Donna St.; Novato, CA 94947; (415) 897-9216. Credits & Services: Quicksilver Messenger Service, Enchantment, Stevie Wonder, Jacksons, Diana Ross, Chuck Jackson, Smokey Robinson, Terry Johnston, Four Tops, Fantastic Four, Marvin Gaye. Recording, editing, mixing and production. Home studio projects sweetened, mastered, edited or mixed. Transfers to 24-track. The use of Quicksilver's modern (24-track plus MIDI) reproduction of a late-'50s studio is also available.

RICHARD OLIVER; Engineer & Producer, 854 7th Ave., Apt. 9; New York, NY 10019; (212) 459-9643. Credits & Services: Engineering major projects including Rolling Stones, Orleans, Yes. Producing and engineering rock, metal, pop, R&B. Major film, music video, television and even advertising. Extremely large digital experience, multitrack to CD masters. Also published songwriter. Also started NuArt Films with Yianni Stamas. Producing films, videos, records and CDs, and producing digital sound-to-film, music, voice, ADR, FX, all aspects (212) 627-7985. Extensive working knowledge and long-term experience recording and computer mixing on consoles such as SSL, Neve, Trident and MCI/Sony. Many 48-track projects. Full working knowledge of synchronization, frame rates, pilot tones 60Hz, 50 and 59.9, lock-to-picture, outboard equipment, digital projects, Mitsubishi and Sony machines. Mixing to all formats 1/4" stereo, 1/2" stereo, mono L pilot right, 1630, X-80, F1, DAT, 4-track, 6-track for Mag. Also editing. Also unparalleled technical knowledge. And on and on and on. And... an acceptable, productive, responsible, nice guy people like to work with

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JOHN POPPO; Engineer & Producer, 347 W. 39th St., Box #9W, New York, NY 10018; (212) 268-7445. Credits & Services: Services include: engineering, production, mixing, keyboard and drum machine playing and programming, songwriting and consulting. Most recent engineering credits include remixes of: Pet Shop Boys *I Want a Dog for EM!*; Karyn White *Secret Rendezvous*, Chaka Khan *Ain't Nobody and Morris Day Daydreamin'* for Warner Bros.; *Imagination Instinctual* for RCA; *Smokey Robinson Love Don't Give No Reason* for Motown; *Gap Band I'm Gonna Get You Sucka* for Arista; *Will Downing Love Supreme* and *Lost Boys Time for a Change* for Island; *EPMD's* album for Sleeping Bag; *Blue Moderne's Do That Again* for Atlantic; and *Raheem Leblanc's* debut album for Capitol. Other credits include engineering for: UFO, Mantrix, Chandra Simmons, Lauren Smokin, Jeffrey Daniels, Touch, Janice Christie, Arts & Crafts, Marshall Jefferson, Jack Douglas, Frankie Knuckles, David Morales, Tony Humphreys, Timmy Regisford, Freddie Bastone, Don Covey, Liberty DeVito, Sly & Robbie, Randy Muller, Arthur Baker, Herb Powers, Raul Rodriguez, Colonel Abrams, Greg Riles.

MICKEY RAT; Engineer & Producer, MICKEY RAT. Cheez-box 1332; Silver Springs, MD 20902; (301) 942-9007.

STEVEN REMOTE; Engineer & Producer, REMOTE MEN VISUAL MUSIC ENT. PO Box 791; Flushing, NY 11352; (718) 886-6500. Credits & Services: Recorded and/or engineered a variety of artists: Beach Boys, Pat Benatar, Living Colour, Thomas Dolby, Squeeze, The Neville Bros., Nona Hendrix, Clarence Clemons, Allen Toussaint, Black Uhuru, The Blasters, Dr. John, Frank Zappa, Police, James Brown, Simple Minds, Howard Jones, The Ramones, XTC, Stevie Wonder, David Sanborn. Plus clients such as: A&M, Arista, BBC-TV, CBS, Fantasy, FM Tokyo, Geffen, King, Landmark, MTV, PBS, Proliet, Turner Broadcasting, Virgin, WLIR-FM, WBCN-FM, WNEW-FM, WPIX-FM, WPIX-TV to name a few. I am available as an engineer and/or producer for pre- and post-production, audio mixing (studio or live), digital and analog recording. I also own a state-of-the-art, dual 24-track mobile unit.

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ROB ROBERTS
Walnut Creek, CA

ROB ROBERTS; Producer, OCEANHILLS MUSIC GROUP 522 Jones Pl.; Walnut Creek, CA 94596; (415) 932-0488. Credits & Services: Produced and recorded, separately and collectively, David Cochrane, Paulinho Da Costa, Ndugu Chancier, Paul Harris and Chuck Kirkpatrick among other recording artists. Recognize and evaluate the uniqueness and potential of the artist and material within the current marketplace. Producing: contemporary rock/pop-AOR crossover/contemporary Christian rock/jazz rock

SUSAN E. ROGERS; Engineer, 7270 W. Franklin Ave. #316; Los Angeles, CA 90046; (213) 876-1892. Credits & Services: Prince Sheila E., Jill Jones, Madhouse, The Family Jesse Johnson, Wendy and Lisa, The Jacksons, Gina Foster, Michael Penn.

RICK ROONEY; Engineer & Producer, RICK, Planet Dallas Studios, 3515 Dickason; Dallas, TX 75219; (214) 521-2216. Credits & Services: Shallow Reign (Island), The Tribe (My Highway), Pictures (S.W. Experience Records), The BoDeans, The Rainmakers, The Smithereens, George Gimmarc's Rock and Roll Alternative Syndicated Radio Program, Lost Highway Complete turnkey album packages, 24-track MCI-automated studio synths, drum machines, guitars, Yamaha drums, living quarters for out-of-town projects; studio design by Lakeside Assoc. L.A.

BOB ROSA; Engineer & Producer, 143 Fingerboard Rd.; Staten Island, NY 10305; (718) 448-1048. Credits & Services: All engineering services including production, mixing and remixing. Own full range of state-of-the-art outboard gear. Credits include B-Rock, Bee Gees, Michael Bolton, Cheap Trick, Cover Girls, Duran Duran, The Fan Club, The Fat Boys, Fleetwood Mac, Gavin Christopher, David Grant, Debbie Gibson, James Ingram, Freddie Jackson, Janet Jackson, LaToya Jackson, Mick Jagger, Luce, Latin Rascals, Anne Murray, New Order, Paul Pesco, Pet Shop Boys, Shannon, Sheena Easton, Sly Fox, Starpoint, The System, World at a Glance, Zebra. Management Ms. Leslie Best (212) 966-9078

JAY ROSE; Engineer & Producer, JAY ROSE/SOUND DESIGN, 20 Marion St.; Brookline, MA 02146; (617) 277-0041; FAX: (617) 232-8869. Credits & Services: Specialist in sound design and advanced engineering for radio, video and commercial film. More than 150 top awards as designer, director or editor. Includes 13 Clics, multiple New York "Andy" and "One Show" awards; New England "Hatch" and "Emmy", many others. Maintains full SMPTE/MIDI studio for track development; also engineers at major New England 24-track facilities and on location with stereo and mono Nagras. Expert CMX FASS-1 editor. Credits include thousands of radio and television spots, promos for Showtime and Discovery cable networks, home video games for Parker Brothers, documentary editing for NBC and MGM. Also associate professor at Berklee College of Music

BARRY RUDOLPH; 5627 Irvine Ave.; North Hollywood, CA 91601; (818) 985-1855. Credits & Services: Engineered for Hall & Oates, Lynyrd Skynyrd, Rod Stewart, Waylon Jennings, Al Wilson, Johnny Mathis, Shalamar, Lakeside, O'Bryan, Don Cornelius, James Last, John Prine, Roy Buchanan, Stanley Clarke, Natalie Cole, Levon Helm, Steve Cropper, Duck Dunn, Robin Smith, The Rockmelons, Dazz Band, Parthenon Huxley, David Kahn, Maurice White, Juice Newton and Cher.

THOM SANTORELLI; Engineer, SANTORELLI PRODUCTIONS, 393 Sunrise Hwy., Ste. B-3, Federal Square Professional Bldg.; West Babylon, NY 11704; (516) 661-2454. Credits & Services: Recording industry tech services authorized services—Kurzweil, E-mu Systems, Akai Professional, Otari, Yamaha, Tascam, Marshall, Korg, Foxtex, Ensoniq, Oberheim, Crowi, Carver, Studiomaster, Kawai, BGW, Crest. Credits: Doug Stegmeyer (Billy Joel), Aldo Nova, Uli Jon Roth, Merv DePeyer (Cameo), Elliot Easton, Marc Fredericks, David Nelson (Flo & Eddie), Joe Franco, Rebbie Jackson. Studios: Cove City Sound, Electric Lady, Quadrasonic Sound, Callope Studios, Secret Productions, TIKI.



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DENNIS SCOTT
Great Neck, NY

DENNIS SCOTT; *Producer & Engineer*; DENNIS SCOTT PRODUCTIONS, 5 Locust Cove Ln.; Great Neck, NY 11024; (516) 829-8747. **Credits & Services:** Credits: recipient of the 1981 Grammy Award for Best Recording for Children. Dennis has produced artists such as Crystal Gayle, Loretta Lynn, Tanya Tucker, Glen Campbell and the Muppets. Directs and engineers Lee Arnold on a *Country Road*, a weekly syndicated radio show for the Mutual Broadcasting Network. Written and produced numerous children's LPs for Sesame Street, Random House, MacMillan, Troll Publications, Caedmon, Peter Pan and Wonderland Records. Created music for videos including *Scholastic Magazine*, *New Zoo Review*, Video Research and Select Video. Work featured on *Who's the Boss* (performed by Ray Charles), *Fame*, *Hee Haw*, *Richard Simmons Show*, *Muzak* and others. Currently music director for the National Child Safety Council. Services: specialize in creating and producing music of many styles for records, TV, film, radio and jingles. Original songs and lyrics as well as underscoring and post-production. Children's product is particular area of expertise. Own and operate 16-track studio with SMPTE hookup. Quality material written and produced according to specifications. There's never been a deadline I couldn't meet.

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BERESFORD SINCLAIR; *Engineer & Producer*; SINCLAIR BROS. PRODUCTION, 13441 Tobiasson Rd.; San Diego, CA 92064; (619) 748-6771.

JERRY SKORA; *Engineer*; PRODUCERS VIDEO/ON SITE VIDEO SYSTEMS, PO Box 1865; Palatine, IL 60078; (312) 934-0999. **Credits & Services:** Technical producer for single and multicamera productions. Credits include commercials (test spots), industrials, teleconferences and concerts. Complete engineering and crew support. Equipment includes Ikegami HL-79EAL and 791 Series cameras, Grass Valley production switchers. Video mastering with Ultimatte 5. Video assist systems. All tape formats available. Engineering and consulting services and maintenance on Sony, Ikegami, Hitachi and JVC.

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RON STREICHER
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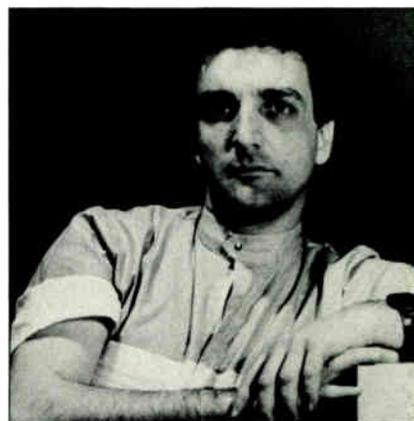
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SCOTT D. TUTTLE; *Engineer & Producer*; 3615 4th Ave. S.; Minneapolis, MN 55409; (612) 827-1990.

ART TWAIN; *Producer*; ART TWAIN CREATIVE SERVICES, 329 Rishell Dr.; Oakland, CA 94619; (415) 531-2267. **Credits & Services:** Independent producer for 18 years, after 6 years as agency copywriter/producer. (Was head writer on *Levi's* account.) Now I write, produce, compose and arrange for radio and TV spots, movies, TV shows and multimedia programs. I do music, humor and sound effects. Can do any part of the project: production, writing, composition, arrangement, creative editing, any combination. Client list includes *Levi's*, *Visa*, *Chevy*, *The Gap*, *NFL Films*, *Fisher Price*, *Chrysler*, *Clorox* and countless local, regional, national and international clients. Clio winner on *Levi's* 501 series *Blues Man* spot. Also custom sound effects and voices, as in *Levi's* animated *Collage* series, on which I did all the sound effects and voices. Diversify without compromise is the key. Every kind of music. Every kind of sound. Every kind of voice. Always killer production.

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DUSTY WAKEMAN; *Engineer & Producer*; MAD DOG STUDIO, 1717 Lincoln Blvd.; Venice, CA 90291; (213) 306-0950. **Credits & Services:** Dwight Yoakam *Buenos Noches Warner Bros. LP*, Buck Owens *Hot Dog Capitol LP*, Jim Lauderdale *Point of No Return Epic LP*, Lucinda Williams *Lucinda Williams Rough Trade LP*, Bonedaddy's *A-Koo-De-A! Chameleon LP*, Tailgators *C'mon, Let's Go Enigma LP*, Lonesome Strangers *Lonesome Strangers Hightone LP*, *A Town South of Bakersfield*, Vol. II Enigma LP. Services: music recording for albums, film, television, advertising. Owner of Mad Dog Studio, full-service 24-track with Neve 8108 w/Neacm, Studer A800, great mics and tons of outboard gear. Emulator E-III programming.

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SCOTT WARNER; *Producer*; AWOL RECORDS, Rd. #5, Box 352; Latrobe, PA 15650; (412) 351-6672. **Credits & Services:** Credits: metal promotion director for AWOL Records. Currently signed with Zanzibar Records. Produced, performed and wrote "Zip It!"—The Morton Downey, Jr. rap (endorsed by Downey and played on the show). *The Affordable Floors Holocaust*, *Thick as Thieves*, *Livewire*, *Slammer*, *Bashful*, *Seance* and *Gronnesto*. Co-producing the debut LP by *Necropolis*. Currently composing industrial and dance music for Zanzibar. Graduated from The Recording Workshop, Ohio. Services: production, arranging, drum programming, songwriting and artist promotion. Will write with or for the artist. Have worked with one of the top metal producers in the U.S. on two projects. Currently forming production company. Fees for services are negotiable. Will travel and a response is assured. I'm looking for artists on the cutting edge, so call or send tapes to the address above. Let's get together and make a record!

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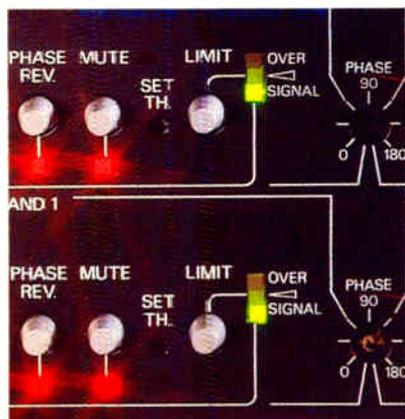
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DANA WHITEHAIR; Engineer & Producer, AEA PRODUCTION SERVICES. 392 Meeting St.; Charleston, SC 29403; (803) 722-6855.

SAM WHITESIDE; Engineer & Producer, 4290 Bells Ferry Rd., Ste. 106-580; Kennesaw, GA 30144; (404) 928-4150. Credits & Services: Engineer at Sound Exchange Studios/Eventide Clockworks '72-'73; chief engineer/producer at Capricorn Sound Studios, Macon, GA, '73-'79, currently independent producer/engineer. I've engineered albums and mixed live for artists such as Allman Bros. Band (gold album), Sea Level, Marshall Tucker Band (gold album), Chuck Berry, Willie Nelson, Bo Diddley, Chuck Mangione, Charlie Daniels, Mark O'Connor, Elvin Bishop, Kitty Wells, Billy Joe Shaver, Archie Shepp and more.

SUSAN WINTHROP; Engineer & Producer, AUDIO ANTICS WEST. 156 W. 94th St.; New York, NY 10025; (212) 662-8685.



GEOFFREY WORKMAN
Denver, CO

GEOFFREY WORKMAN; Engineer & Producer, ORIGINAL PROJECTS UNLIMITED. 2244 Lowell Blvd.; Denver, CO 80211; (303) 455-8208. Credits & Services: Credits include Journey, Queen, The Cars, Motley Crue, Tommy Tutone, Foreigner, Dokken, Twisted Sister, Toto, Sammy Hagar, Ron Wood, Gary Myrick, Roxanne and more. Original Projects Unlimited's primary interest is in working with original bands that are looking to put together a quality independent package, including recording production, engineering, art direction and marketing strategies. Personal band management and direction for musicians is also the company's intent. Original bands may send demos and bios. Recording studios may submit brochures

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STEVEN J. WYTAS; Engineer & Producer, STEVE WYTAS PRODUCTIONS. c/o Free World; 165 Linden St.; New Britain, CT 06051-2413; (203) 224-1811.

DON YOUNG; Engineer & Producer, 171 E. 99 St. #19; New York, NY 10029; (212) 860-9143.

ERIK ZOBLER; Engineer, 9814 Shoshone Ave.; Northridge, CA 91325; (818) 993-1651. Credits & Services: Engineering credits: George Duke, Al Jarreau, Miles Davis, Sarah Vaughan, Jeffrey Osborne, Gladys Knight and the Pips, Natalie Cole, Dianne Reeves, Smokey Robinson, Stanley Clarke, Sadao Watanabe, Hiroshima, Yellowjackets, Rodney Franklin, Deniece Williams, Jody Watley, Howard Hewett, Vanessa Williams, Nia Peeples, Evelyn King, Gloria Loring, Ready for the World, Meltzo Forte, Atlantic Star, Maynard Ferguson, Anita Baker. Production services also available.

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by Iain Blair

PAUL FOX

THE ROAD TO XTC

When the legendary British band XTC decided to embark on their ninth album last summer, they picked a relatively new producer, Paul Fox, to do the honors. Given the group's previous producer associations (including such illustrious names as Steve Lillywhite, Hugh Padgham and Todd Rundgren), it's not surprising that some people, not fully aware of Fox's extensive track record in the studios, asked "Paul who?"

XTC had no such doubts (see sidebar), and their assignment was both a testament and a challenge to Fox's talent and credibility. Over the past year-and-a-half, Fox has emerged as a distinctive and successful producer, fueled by hits with such divergent artists as Boy George, Yes and Virgin/UK bands Scarlett & Black and Yeah Boss.

"Getting into production was really the logical extension of everything I'd

been working toward over the years," says Fox, who first made a name for himself as a top synthesizer player/programmer and arranger. "I'd always wanted to produce. It was just a matter of evolving to a point where I felt I could say, 'Right, I know what I'm doing now.'"

Born in New York, Fox moved to California in 1972 and two years later decided to base himself in San Francisco and "seriously get into music." After a few years of playing and programming synthesizers for various local bands, he moved to Los Angeles in 1979 and started racking up some heavyweight credits on the session circuit. Eclectic and innovative, his playing was featured on hit albums by a wide range of artists, from the rock and roll of Rod Stewart, Krokus and Motley Crue, to progressive outings with The Tubes, Living in a Box and



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Cock Robin. It also graced pop hits from Kim Wilde, Patti LaBelle, Five Star and the Pointer Sisters.

At the same time, Fox was also developing his songwriting talents, penning "Talk To Me" for Chico DeBarge and "Janet" for The Commodores' *Nightshift* album. "I never considered myself a writer per se, but it did give me another boost toward production," he says. "And working with the Pointer Sisters and Richard Perry, I've done all their keyboards since 1983, also taught me a lot about production.

"More than anything, though, I wanted to produce because it would allow me to combine everything I knew. I'd still be able to write, arrange, play and develop an overall concept for the sound of an album," he adds. "It really came down to having control."

Fox cites Tom Werman and Richard Perry as two major influences in his production techniques. "I learned a general sense of really becoming part of the record from Tom. When we did Motley Crue, he'd almost become part of the band, enhancing and preserving their sound rather than trying to

XTC IN THE STUDIO

by Iain Blair

XTC have always danced to the beat of their own drummer. When the original four-piece of Andy Partridge, Colin Moulding, Barry Andrews and Terry Chambers first appeared in the aftermath of the London punk explosion, they impressed audiences with their warmth and humor while their contemporaries sneered and spat. By 1979, they had conquered both fans and critics with their first Top 20 hit, "Making Plans For Nigel," from the classic *Drums & Wires* album, and begun several years of relentless touring.

But by 1982 the pressure had begun to take its toll, and with the

change and refine it. On the pop side, I learned from Richard the real importance of having the right songs, and of not being afraid to rewrite and rework ideas, if necessary with outside writers."

Fox got his first break as a producer

release of *English Settlement* and the departure of Chambers (Andrews had already been replaced by guitarist Dave Gregory), XTC decided to retire from touring altogether and instead concentrate on studio work. Since then, they have released a series of highly acclaimed albums including *Mummer*, *Big Express* and 1986's *Skylarking*, produced by Todd Rundgren.

Mix finally caught up with the elusive and reclusive Andy Partridge at Summa Studios, where the band was putting the final touches to album number nine.

Mix: What can you tell us about the new album?

Partridge: It's much tougher and harder than the last one. We had

—CONTINUED ON PAGE 138

in 1987 when his talents came to the attention of Virgin Records' America A&R executive Gemma Corfield. "She'd heard a tape I'd done and asked me if I'd be interested in redoing a single by Scarlett & Black." The result was a successful debut album

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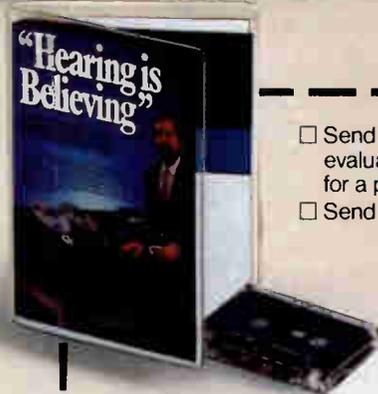
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—CONTINUED FROM PREVIOUS PAGE

for the group and a Top 20 hit with "You Don't Know."

This led to another "salvage job," this time with Boy George's first solo U.S. hit, "Live My Life." "Virgin gave me the tapes, and the only thing I kept was his vocals and the time code," recalls Fox, who also provided additional production and mixing for two Top 10 AOR tracks by Yes, "Rhythm of Love" and "Big Generator," and flew to Scotland with engineer Ed Thacker to produce an album for the Scottish group Yeah Boss, due out early this year.

With this successful track record behind him, Fox jumped at the chance to produce XTC's new album when the idea first came up at a meeting with Corfield. "I'd always been a huge fan, and I really felt I could do a good job," says Fox, who promptly flew to England to meet the band. "I just felt we'd be a good match because they've always been slightly alternative, and my stuff has always been fairly commercial, so hopefully we'd strike a good balance.

"I also felt we had a lot of similar influences—The Beatles, The Kinks, The Who—a lot of the classic British '60s bands, and that I could give them the benefit of my technical expertise and synthesizer playing/programming experience, and that they would feel freer to experiment than they had in the past.

"I've always felt that above all, XTC are great musicians and songwriters, and I wanted to get that across and cross them over instead of reinforcing that perception of XTC as a slightly quirky, alternative band," continues Fox. "So we spent quite a lot of time narrowing down the raw material. They initially gave me 26 songs to choose from, and I chose the 15 tracks I felt were the strongest, both artistically and commercially.

"I'm a strong believer in pre-production. It's very important to rehearse and work out all your ideas before you go into the studio, because it saves a lot of time and money," says Fox. "I also like to experiment with ideas and sounds, but again before the tape starts rolling. So we spent three weeks rehearsing at Leeds in North Hollywood, and then in June started cutting drums at Ocean Way, Studio 1. I felt that'd be the best room

for the band because it's big and it has a wide selection of old tube mics, limiters and equalizers. It's also where the Beach Boys cut all their hits."

Fox then moved the band over to Summa Music Group for the rest of the sessions, which lasted approximately three months. "We used a lot of combinations of sampled sounds, although I used essentially the same equipment I always use," he reports. "All the basic vocals were cut with an AKG C-12 mic and a Fairchild limiter. We wanted to cut the tracks on a flat, warm-sounding console, so I used a Neve 8108 at Ocean Way, and at Summa we used our new API board, which

was reconditioned by Frank De Medio, who originally customized the board in the mid-'70s."

Now in the final stages of the three-week mix, Fox and assistant Ed Thacker have been using an SSL G Series. "We purposely avoided using the SSL to track on because it's too cold, but it's ideal for mixing," says Fox, who also programmed most of the synthesizers and played some keyboard overdubs on the LP.

"It's been a great experience for me," sums up Fox, "especially working with a band I've always admired. I'm really hoping this album will be the one to introduce them to a much

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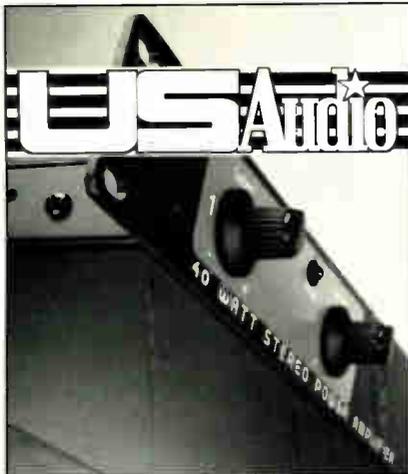
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larger audience. If it's a hit without compromising their musical vision, then I'll feel I've done my job as a

producer." ■

Iain Blair is a contributing editor to Mix and a widely published freelance writer.

—FROM PAGE 134, XTC IN THE STUDIO

an even bigger selection of songs to choose from then, but Todd Rundgren went mainly for the quieter, more introspective stuff, so the record had this pastoral, paisley kind of feel. This new album is more like a psychedelic dragster—very fast, with lots of chrome and huge flames coming out the back. It's quite flashy.

Mix: Are you using a lot more machines and computers now?

Partridge: Definitely. On the last album, it was virtually all real instruments—real strings, real brass. This is more like *Big Express*, where it was about a 50-50 mix of drum machines and synthesizers and real instruments. Hopefully, it's using what technology has to offer without sounding too stiff and dead, because I hate air-brushed music, where everything is perfect but soulless. It's pointless.

Mix: What made you go with Paul Fox as the producer?

Partridge: It was a whim. And he was one of the only people that bothered to come and see us. We listened to what he'd done with Boy George and the Yes remixes, and we just thought, "They're really bright and chrome and they jump right out of the speakers at you." I think after the understated sound of the last album we all wanted something with some punch.

Mix: What are the major differences between working with Paul Fox and Todd Rundgren?

Partridge: They approach things differently in the studio, but the major difference is one of personality. I think Paul's a warmer person. Todd has a well-deserved reputation for being this difficult, hermit-type character, and although he's a wonderful musician, he's not easy to work with, and that spoils the experience slightly, although I think the end result was fine.

I think Paul approached the project much more on the level of being a fan, and he didn't set out to try and change us too much. So he tended to nurture some of the

more offbeat ideas, while at the same time bringing his strong commercial sense to the production end. Because of that, I'll stick my neck out and say that this will probably be our most successful album yet.

Mix: Do you make a lot of demos before you start recording?

Partridge: Yes, I make 4-track demos on a Portastudio cassette system, crouching over it and mumbling the vocals so as not to annoy the neighbors. I usually demo everything as simply as possible, because I don't want to set up the finished song too much. Although some are fairly well-conceived before we arrive in the studios, while others are just the merest sketches of ideas that we then work up to an acceptable shape.

Mix: Do Colin and Dave contribute to these basic song demos?

Partridge: No. What usually happens is that I get stupidly enthusiastic if I've written something I'm proud of, and I've been known to play it on the phone or go 'round to their places immediately and start strumming away on acoustic guitar. Then I make a demo in whatever finished stage, and then, for instance, if there's no bass line, I talk to Colin about the kind of thing I think it needs, and he goes off and works on that, while Dave largely ends up as the icing chef, doing lots of little bits and pieces and all the decorations. It seems to work quite well that way.

Mix: How were the actual sessions themselves?

Partridge: I think they're the longest ones we've ever done—it's been about four months. But it's also been very enjoyable. Spending time on pre-production first helped us get all the material in shape, so we didn't waste any time and we were able to experiment with a lot of different sounds and effects. Paul's very good at all that stuff.

Mix: Are you a tech-head at all?

Partridge: Not at all. In fact, I find a lot of that just gets in the way of what I'm trying to do in the studio. I spend so long trying to under-

stand the English/Japanese manual that the sessions are usually over before I'm remotely ready. You know, I've written a bunch of songs on a five-string guitar before 'cause I was just too bloody lazy to buy the top E string and put it on.

Mix: With that in mind, do you hate mixing?

Partridge: Actually, no, which surprises me as well. This is the first time we've ever done really automated-aided mixes and I'm enjoying it, although I also think there's a narrow line to tread. On the one hand, you can come in the next day, listen to a mix, and if the vocal or some guitar figure isn't loud enough you can adjust it and leave all the other tracks exactly at that peak you were so happy with. On the other hand, I think there's a real danger with automated mixes: everything starts to sound too polished and bland. Hopefully, we've managed to walk the line between both approaches. I know that Paul is very aware of balancing the necessary sonic impact with our slightly quirky studio methods.

Mix: Before 1982 XTC toured virtually nonstop, but since your *English Settlement* album you've become a studio band. Why did you stop touring?

Partridge: Basically 'cause I hate live performance and I hate showbiz, despite the fact that I get very drunk and ham it up. I never liked that whole showbiz thing of being fantastic on command, and I couldn't do it very convincingly either. It just wound me up mentally and physically to such a state that I couldn't enjoy it, so we stopped. The ironic thing is that since we stopped touring, our records have sold better, and we've made better music. I strongly feel that it's the records that last, that people relate to them or CDs or whatever rather than to some show they caught four or five years ago. I think of recorded music and live shows like reading a book or having dinner with the author—you may have fun at the dinner and the author may be witty and entertaining, but it's the books that you read over and over again. And it's the same with records. It may sound a bit pompous, but they're the art, with a capital "F," of course.

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PHOTO: V. LEE HUNTER

JULES SHEAR FINDS A NEW GROOVE

by Holly Gleason

"I had some real happy moments with the Polar Bears," admits Jules Shear, a man known more for his songs than for playing them. "But, they were pretty isolated, because with that band I'd write the songs at home and bring 'em into the band. With this band, we all write the songs together. There's a strong feeling of collaboration, which I'm finding I like very much."

The band Shear is referring to is the Reckless Sleepers, a critically acclaimed aggregation that takes its name from a like-titled Rene Magritte painting Shear saw in England. Originally designed as a vehicle for the songwriter and former Cars guitarist Elliot Easton to play live, the group self-destructed when Shear realized, "The

songs were too heavy for me to sing even though I was writing them. They were more in a Led Zepelin vein, and I wasn't working out as the singer."

But after breaking up, Shear called on drummer Steve Holley, bass player Brian Stanley and guitarist Jimmy Vivino to help him work out some song ideas, and things developed from there. "When the band was originally together, I'd listen to Steve and Brian playing reggae things whenever we had a break and it got me thinking, 'Hmm, my melodies and my words over this reggae stuff; wouldn't that be fun?' So, after the band broke up, I called them."

But given that Shear and Vivino had also grown up with healthy doses of American soul and the British invasion, it wasn't long before things began mutating away from reggae. Suddenly, the man who'd written "All Through the Night" for

Cyndi Lauper and "If She Knew What She Wants" for The Bangles was fronting a fairly funky group of white guys who were attracting notice from all sorts of industry types.

The Reckless Sleepers signed with IRS Records, and the critics' darling moved from a marketing problem to the most mainstream thing the company has to offer. What really attracted the Pittsburgh-born Shear to IRS was the label's general attitude toward recording.

"Their philosophy is—let's not spend a zillion dollars on a record. You guys are the band. You play and let's record as it is. Let's not make a high-budget record, but let's make lots of records together," Shear continues,

clearly pleased. "And I thought, 'Well, I want to make lots of records with this band, so this seems like the right philosophy to me.'

"Besides," comes the conspiratorial aside, "I'm not into spending a lot of money making records, so it jived with my thinking. Even with the Polar Bears, we always spent a fraction of the budget."

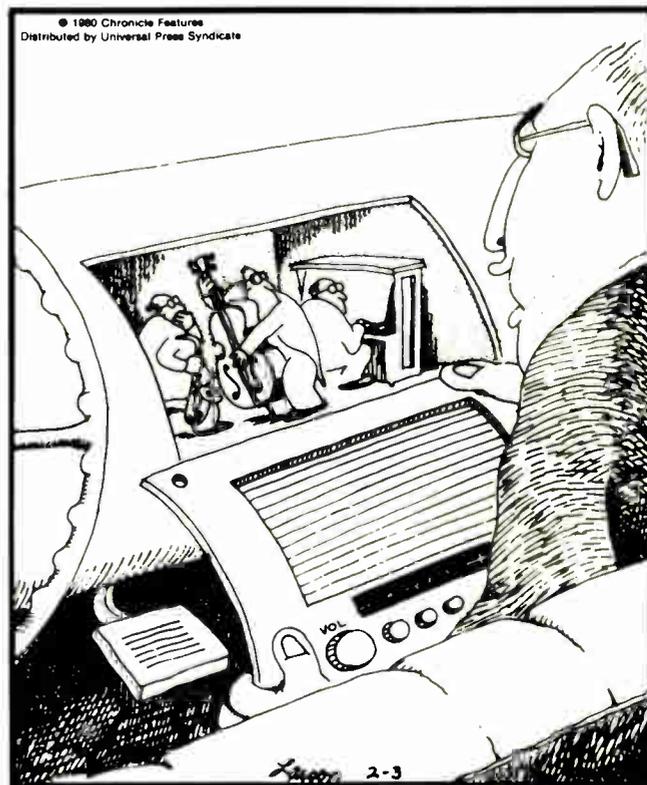
Indeed. Recorded for slightly more than \$70,000, *Big Boss Sounds* is a joyous outing co-produced by Shear and Scott Litt that features basic tracks cut live.

If there was any extravagance built into the project, it was recording nine of those tracks at the Power Station in NYC. "We

—CONTINUED ON PAGE 142

THE FAR SIDE

By GARY LARSON



"Aha!"



GARRY TALLENT'S "SHORE FIRE" SUCCESS

by Mary Ann Shive

Garry Tallent is best-known for his illustrious bass work in Bruce Springsteen's E Street Band. A native of Detroit, he joined the group in January 1971. It was during Springsteen's hiatus from the road in 1986, follow-

ing the *Born in the U.S.A.* tour, that Tallent also became co-owner of Shore Fire Studios, a 24-track facility in New Jersey, about 50 miles south of New York City.

Immediately after the tour in 1986, Tallent became involved with Jersey Artists for Mankind (JAM), a local spin-off from Live Aid that was the fund-raising effort of Jersey Shore musicians. He co-produced JAM's independent album at Shore Fire, including the internationally released

—CONTINUED ON PAGE 143

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—FROM PAGE 140

couldn't really afford to go into the Power Station for any length of time on our budget," Shear explains. "So, when other bands would be in from Monday to Saturday, we'd go in there on Sunday and try to cut some tracks.

"We just kept playing all day until we got them. And it basically sounded the same when we were cutting the tracks as it did when we were making the songs up. I mean, when you're writing the songs all together with the rhythm section there in the room, playing *loud*, it definitely keeps things interesting and more groove-oriented, which was also reflected in the recording of the album."

Though a product of collaboration, *Big Boss Sounds* remains predominantly colored by Shear's inimitable sense of melody and point of view. To that end, his songwriting also influenced his co-producing.

"I think knowing the inner-workings of a song and knowing what's expected of a song is an advantage to begin with," Shear acknowledges. "This way, it's just a matter of finding a way to fulfill that, rather than being somebody working on the song not knowing where they're coming from in the first place."

As for Litt, who was splitting his time between *Sounds* and Patti Smith's *Dream of Life*, Shear explains his role as follows: "Coming from an engineering standpoint, Scott had a lot to do with sonics and how things were going to be miked. But, he also gave us perspective on things.

"He was there mainly to make sure I was considering everything I should've been, which is really enough of a role for a producer right there."

Along the way, Shear has worked with some excellent producers, including Todd Rundgren, Peter Gabriel and Stephen Hague. He picked up some valuable lessons from each.

"From Todd, I learned the value of working quickly, but also some of the pitfalls. In Jules & the Polar Bears, I was always the one saying 'Faster! Faster! Faster!'—not only the tempos, but the amount of time we spent making them. But working with Todd cured me, because I think the record [*Watchdog*] suffered from it.

"From Peter Gabriel, I learned that each individual sound doesn't have to be great, because it's the overall

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quality of the thing that matters. I want things to sound good, mind you, but I'm not obsessed with having the most amazing snare sound.

"Then there's Stephen Hague, who would get into all this real technical stuff. But as fun as that stuff is at the time, it's always so boring to talk about."

And since it doesn't have much place on *Big Boss Sounds*, it borders on irrelevance. To get to the heart of the matter, *Sounds* is one of those albums that works on a hypnotic reggae undertow that's overlaid with spare playing, heavy-duty grooves and Shear's delightfully nasal vocals.

Of the general mix, Shear offers, "Being a white person, I'm not content to just let a groove be a groove. No, I want to put something melodic on top of it, add some lyrics I like. That's really what I'm into."

Yet, the secret of success here comes from something Shear never comes right out and says; it's most definitely a product of his songwriter's outlook. Wisely, Litt and Shear have conspired to let good songs do the talking—and it works. ■

—FROM PAGE 141

single, "We've Got the Love," on Arista.

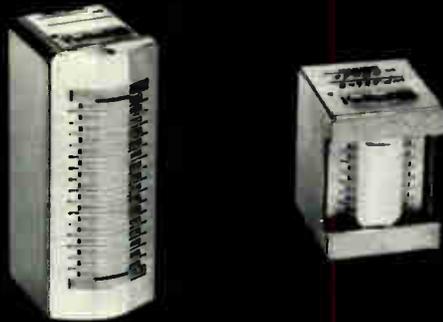
During those sessions, the studio's owner became entangled in a financial dilemma that threatened to close the facility. Tallent, himself a local resident, was faced with losing the convenience of the studio and decided to invest whatever money was needed to keep it going.

He says his partnership was a natural progression and the culmination of several events. "I had lots of free time then, since I was off the road. There were also musicians that I'd met who were very talented and who I wanted to make records with, but who didn't have any record company backing.

"Basically, I was getting very involved with recording at Shore Fire when its owners were suddenly threatened with closure. So, what was my alternative?"

Shore Fire is housed in a large, two-story structure. Originally built in the late 1800s as a Masonic Temple, singers once congregated upstairs to worship. It also operated as a furniture warehouse until 1980, when George Elliott and his son Tom leased

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it for renovation as a recording facility.

The Elliotts did most of the reconstruction themselves, calling in Alan Fierstein of Acoustilog as a consultant. George, who was once employed by AT&T, is an electronics expert. He has since retired, but the younger Elliott, a former Juilliard student, remains a co-owner.

The first floor is a labyrinth of 11 rooms, mostly office space, including two echo chambers. One chamber is tiled for natural reverberation. The other produces a warm sound and is wood-paneled.

On the second floor, Shore Fire's sole studio spreads over a 38 x 45-foot expanse. The ceiling slopes from 26 to 28 feet high. An authentic brick wall remains exposed. The other three walls are covered by 4-, 3- and 2-inch stained pinewood strips, arranged in a herringbone pattern, with about one-and-a-half inches of burlap between each to soak up low frequencies.

In addition to two Sonex-lined vocal booths, edges of the studio have been acoustically deadened, allowing synthetic effects to be added later. But Tallent explains technology is not the major attraction for him at Shore Fire.

"Personally I'm not an equipment freak. In fact, I finally have a nice stereo in my house. I used to have the turntable plugged into a Fender amp. But for bands that like to set up and play live, Shore Fire has a nice big room where they can do that. That's the reputation of this studio. In fact, that's what I liked about it—having lots of room but enough isolation that I could make a record while approaching it as a live kind of situation."

The control room, large enough to hold several people, is equipped with an MCI JH-636 automated console that has eight subgroupings and six sends. There's also a JH multitrack recorder, a set of JBL 4435 speakers and a rack of outboard effects.

Tallent describes his philosophy for the studio as a combined approach of creative know-how and business savvy. "All I really want out of the studio is to know everything is clean, that we have a selection of microphones to get different sounds, that the equipment is there to record it and that there are enough effects that the average situation is going to have a nice choice of different reverbs, plates, chambers and whatever.

"As for every piece of new gear that comes along—that gets real difficult. You buy something and two weeks later it's obsolete. If it comes to the point that the studio has to get it to survive, I guess we'll have to do it. But it seems a dangerous trend to me. It has to be affordable and cost-effective."

Since investing in the studio, Tallent has had Shore Fire entirely rewired and, when we met, was overseeing the pouring of concrete for a drum booth.

"Drum booths are an old concept that went out awhile back. People decided if they set the drums up in a live room that they would get the live sound. But that was before the invention of digital delays and reverbs and before they were all so easy to come by. Now, with a drum booth, you can get a certain amount of control. It's one thing to have a sound and another to have clients be stuck with a sound."

Many clients are local bands recording demos or independent records. Inauspiciously located in the seedy business center of Long Branch, the studio is only three blocks from the beach. It's also a few miles from The Stone Pony in Asbury Park, a favorite haunt of Springsteen, who maintains a home in nearby Rumson.

In the past, club owners and fans have insisted the area is a spawning ground for musicians who keep the decaying towns alive—at least in spirit. Their claims are nothing to scoff at. Besides Springsteen, Jon Bon Jovi, John Eddie and Glen Burtnick are a few of the most recent recording stars who regularly played the area's bar circuit and utilized Shore Fire's facilities at one time or another.

Tallent's position also gives him the advantage of attracting celebrities to Shore Fire. Naturally, people assume Springsteen and the E Street Band make regular recording use of the studio, but Tallent says that is a misconception.

"Bruce has a studio at his home, and he doesn't need to open it to the public. We rehearse at Shore Fire only because it's a big, comfortable room. But, equipment-wise, Bruce has everything he needs right in his backyard."

Between concert dates with Springsteen, Tallent has also been acting as producer. He's worked on material for the as yet unsigned Greg Trooper Band (a New York-based group), and recently he finished producing Steve

Forbert's acclaimed comeback LP, *Streets of This Town*, for Geffen Records.

Tallent describes his approach as a subtle blend of musician and producer. "I try to faithfully represent what they're trying to get out of their music. I have my opinion, but when I go in to make a record I'm not making a Garry Tallent record. I'm not Phil Spector and I don't really want to be. When Phil Spector made records, he made Phil Spector records no matter who the artist was and it was great. There's something to be said for that kind of producer, too. But I like to think I'm going for the performance."

His contribution as co-producer on Marshall Crenshaw's version of "Cryin' Waitin' Hopin'," a song written by Buddy Holly but never released, appeared on the movie soundtrack from last year's smash hit, *La Bamba*. Recorded and mixed at Shore Fire, it earned the studio its first platinum record album and is a session Tallent talks about proudly.

"The song that came out was pretty much a demo that Buddy Holly did before he died and never really got to flesh out. So, we just pretended we were Buddy Holly and the Crickets for one night, trying some things Buddy never got around to doing."

Tallent's fondness for things dating back to other decades is obvious. An avid collector of records—old and new—he owns a 1947 Rockola jukebox that works, and drives a turquoise-blue '57 Thunderbird. His indulgence spills over into recording, even though he admits a preference for mixing with the SSL because he can get a little more "finesse."

"I like old microphones from the '50s," he says. "You'll find a couple of those here. You'll find an old Pultec equalizer. Just things that sound good more than anything else."

"As far as samplers and sequencers, it's not really what I do. I'll use them if it will get the job done. But it all comes down to tubes. There's a warmth in tubes that's not in solid state."

Given his fondness for working with up-and-coming bands, it was natural to inquire if this might lead to his managing artists, too.

"Never. Never. Never. It's just not in my makeup."

Then, as he fidgets in the chair, there's a slight pause.

"Well, I'm not going to say it will never happen. Maybe when I'm 60." ■

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by Bob Owsinski

CSNY

BUILDING AN "AMERICAN DREAM"

In these days of samples, sequencers and high-tech wizardry, it's refreshing to hear a record that utilizes more traditional recording methods without forsaking the many advantages of today's technology. Crosby, Stills, Nash & Young's *American Dream* is such a project. Produced by the band and Niko Bolas, the record was cut for the most part live in the studio, with as few overdubs as possible, employing a combination of digital and analog recording equipment.

Let's take an in-depth look at the album's title track, "American Dream," to see some of the elements that helped make this such an artistically successful project. "American Dream"

was the first cut recorded for the long-awaited CSNY reunion LP. Written by Neil Young several years ago, the song had been attempted by Young's band Crazy Horse a couple of times, but had never quite worked out. All involved agreed it was a perfect track for the new CSNY project.

CSNY is very much a band, and despite the long time away from each other, the foursome still maintains that unconscious communication developed only after years of playing together. (And, of course, they've played with each other in various combinations since their last record, 1970's *Deja Vu*.) Because a band "feel" was something they very much wanted to



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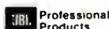


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PLAYBACK

capture, it was decided to record live with a minimum of overdubs.

Even though Young has a superbly equipped studio (Redwood Digital) on his Northern California ranch property, his barn was chosen for recording because of its exquisite ambient sound. Record Plant Mobile #3 was hired in for the job, because both Young and Bolas had done previous projects in this fashion with excellent results, and the Record Plant crew was already familiar with the recording conditions and with Young's and Bolas' operating methods.

The band set up as if they were on stage, using a house P.A. and monitor system and *no* headphones. Leakage was controlled by mic placement, but in most cases was not discouraged, since the feel of the track was paramount and the leakage actually added to the "fatness" of the sound. Bolas is quite enthusiastic about this method, claiming that both the dynamics and cohesiveness of the track improve, since the musicians hear themselves in a natural way. Obviously, it's also a lot easier on the engineering staff when headphone mixes are no longer a consideration.

Lead vocals by Young were recorded live as the track was laid, as were the handclaps. CSNY rarely go past four takes on any given song, preferring to capture the spontaneity of the moment. So the best parts of a given take were later flown together to make one great take while the safety copies were being made. Any required fixes (in this case a vocal line—"all washed up"—and a bass fix) were also flown in at this time.

The band monitored themselves as they would on a concert stage: four old Sunn cabinets facing them, with a vocal and keys mix; a Bag End sidefill on each side with kick, snare and LinnDrum; and three floating Bag End monitor wedges for lead vocals and drums. A touch of Yamaha SPX90 set to the factory Reverb 1 program was added to the vocal for increased ambience.

At the end of the day, safety copies of the master were made on Redwood Digital's two Sony PCM-3324s. A slave reel was also made for the following day's vocal overdubs. All safety copies and fly-ins were made with the auto-correct disabled on the digital machines, as they felt this function in-

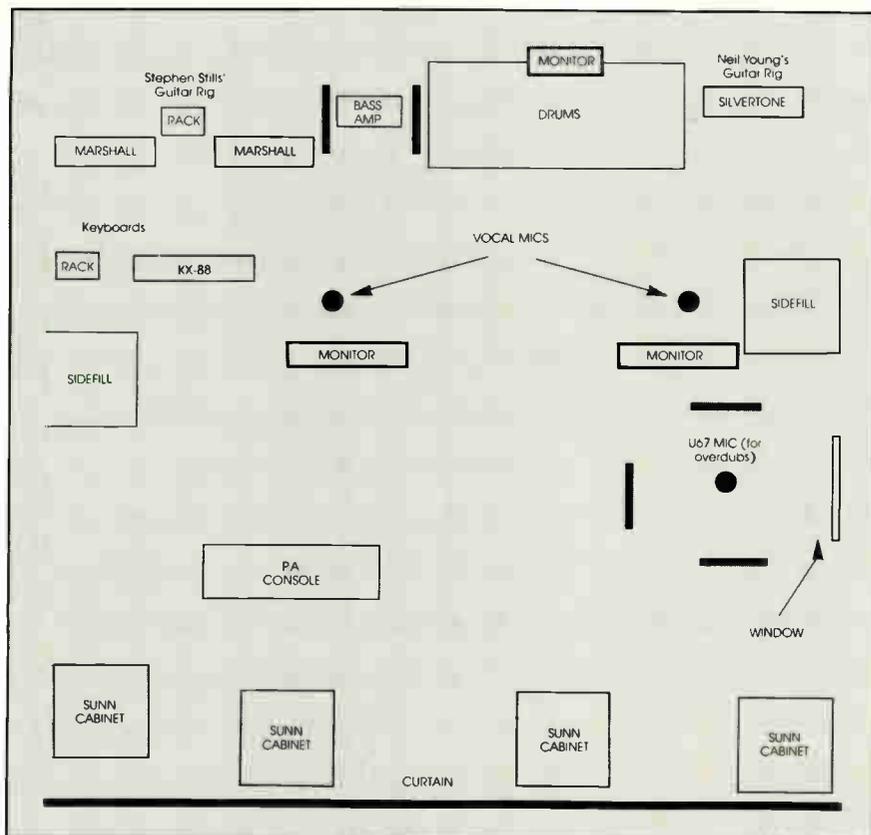
creased the distortion to unacceptable levels.

Keeping with the "live" concept preferred by CSNY, only background vocals and a keyboard part in the chorus were overdubbed on "American Dream." The background vocals were done with the four band members gathered around a Neumann U67 (set on "omni") with each member moving into or away from the mic to create the necessary balance. The background phrases were then tracked six times for fullness. Once again, a safety copy was made of the slave reel containing the overdubs.

The mixing of "American Dream" was done at A&M Recording Studios' "Studio A," utilizing its customized Neve 8068 console (formerly housed at AIR Montserrat). According to Bolas, A&M was selected not only for the good-sounding and well-maintained equipment, but also because of the exceptional staff. "American Dream" was the first song of the album mixed and was completed in just one-and-a-half hours.

The mix was done manually, without automation, using just a few pieces of outboard gear. The console was split into two sections, with the music tracks from the master reel appearing on the left side and the vocal tracks from the slave reel on the right. Four different reverbs were used: an EMT 250 exclusively on the drums, two of A&M's famous live chambers (a long and a short one) and an EMT stereo plate. The long chamber, which was mostly used for the lead vocal, was pre-delayed by a 15-ips slap tape that was VSOed to beat with the track. The delay was sent from the stereo cue send of the console, returned back through two faders, then sent to the live chamber via the aux sends of the delay tape fader channels.

The only special effects utilized were a bit of Yamaha REV7, set to a tremolo program, used on the background vocals in the "It don't matter now" part, and a Lexicon PCM42 delay on the lead vocal on the B section of the second verse. No gating was used, as all unwanted leakage was erased directly on the digital machines. Any unnecessary parts were also erased, effectively creating any required mutes before mixing actually began. Likewise, no compression was employed except for a touch of a stereo tube Fairchild patched across the stereo bus, used more for the sound quality



than for the compression.

The song was mixed via a Sony PCM-1630 with Apogee converters. At first, a Studer 1/2-inch, 2-track was run simultaneously, but later discontinued during mixing once the mixing team realized they had never played back the analog tape. The 1630 was sent a fairly hot signal, with the meters registering in the red with each snare hit and the music falling just a bit lower in level.

Several interesting mixing philosophies were employed during "American Dream." First, the mixing team of Bolas, Graham Nash, Bob "Trigger" Vogt and Tim Mulligan approached the mix with the idea of "making a CD instead of a record." This was accomplished by constantly monitoring through the 1630 so that any coloration brought on by the digital machine would be compensated for immediately. Also somewhat unique was the fact that the tune was mixed in mono over both speakers (customized Yamaha NS-10s), since the mixing team felt the level balances would be far more accurate.

The mix was started from the overhead tracks first, with the other drum tracks mixed in next. Very little room mic was used. Ironically, most of the leakage from the live vocal track was kept in the mix since it was found to

A layout of the equipment setup in Neil Young's barn.

add more body.

Generally speaking, the Bolas/Young production combination (who have come to be known as the "Volume Dealers") operates on two principles: cut as many tracks as possible at the same time, because that's when the track will feel the best, with a better balance between bass and drums as a by-product; and use a combination of tube gear and digital storage, which they call "Digitube."

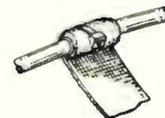
Having spent a number of years as an assistant to famed producer Val Garay in L.A., Bolas has developed a number of strong beliefs about engineering. "To get the best performance, you've got to make the musicians feel comfortable, like they were when they were 15 years old back in their garage," he says. "To be equal with your players you should be good enough at what you do so that they never know you're there." ■

Bob Owsinski is a Los Angeles-based musician/producer/engineer. He formerly held a teaching position at Berklee College of Music and currently serves as a marketing consultant to numerous pro audio and MI manufacturers.

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by Philip De Lancie

A GLIMMER OF HOPE

INDUSTRY LEADERS MEET TO DISCUSS DAT IMPASSE

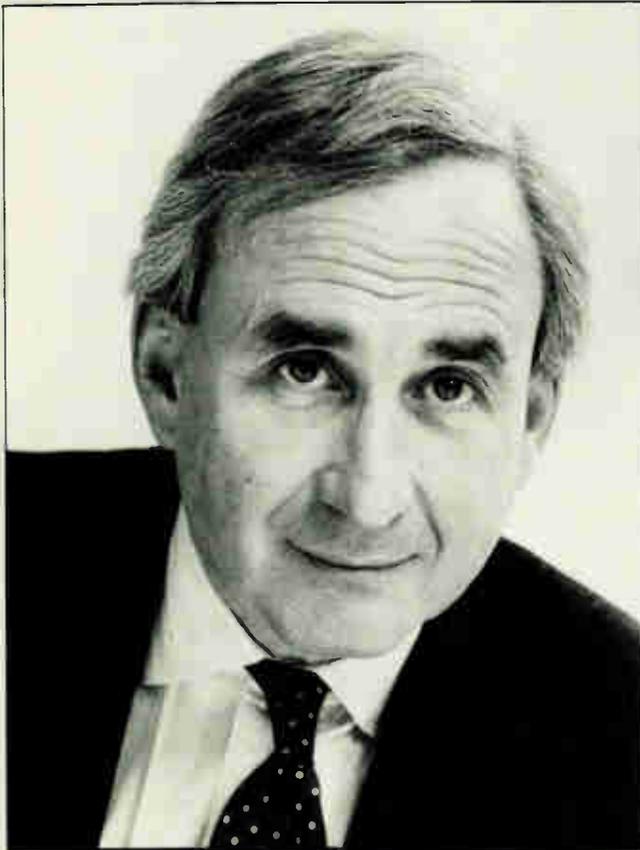
If fate is kind to the human race, 1988 may be remembered as a year of reconciliation. Though the trend was far from universal, it was encouraging to see a fragile movement toward peaceful conflict resolution emerge in cease-fires and negotiations around the globe. It's too early to say how long the mood will hold, but hope-

fully it shows that those who lead have begun to view dialog rather than confrontation as the preferred path toward their goals.

Perhaps inspired by events on the world stage, leaders in our own little world of the entertainment industry seem to have tuned in to this nascent spirit of accommodation as well. After years of antagonism over home taping and DAT, relations between the hardware and software branches of the family deteriorated into an icy standoff, with the record industry ready to sue hardware manufacturers at the first sign of DAT machine importation (see "After-Mix," November 1988). Officially, the situation remains in a stalemate as of this writing, but behind the scenes there are signs of movement that raise hopes of a negotiated settlement. The clearest of these indications is a meeting that took place in London, November 30, between representatives of leading Japanese and European consumer electronics companies and representatives of the International Federation of Phonogram and Videogram Producers (IFPI), including the Recording Industry Association of America (RIAA).

Among the Japanese hardware manufacturers, who participated as individual companies rather than as members of the Electronics Industry Association of Japan (EIAJ), were Sony, Toshiba, Hitachi and Matsushita. European companies included Philips and

Jay Berman,
president of
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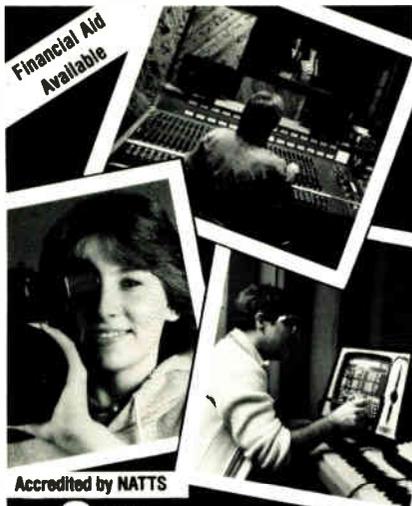
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AFTER · MIX

Grundig. On the software side, the American banner was carried by Jay Berman, president of the RIAA. As president-elect, Berman attended a December 1986 EIAJ/IFPI/RIAA meeting in Vancouver that did little to reconcile the groups' conflicting viewpoints. Reached recently at his office in the nation's capitol, Berman explained how this latest get-together differed from the last, and what its implications might be for the future of DAT specifically and home recording in general.

Mix: Last fall the RIAA view on DAT was that before any progress could be made on specific solutions to the DAT deadlock, the hardware manufacturers must acknowledge that home taping is a real problem which must be dealt with. Did you get such an acknowledgement in London?

Jay Berman: Certainly we did not get it from the EIAJ, because they were not represented at the meeting. What I think we did get is the sense that the manufacturers are hopefully prepared to come to grips with the problem.

Mix: And "coming to grips" was left somewhat undefined?

Berman: It wasn't left undefined, because I proposed that we actually form a joint working group that would operate from a common pool of information and resources. That group would be charged with reporting back to a group of officials with a suggested remedy. The European hardware manufacturers accepted that idea. The Japanese, while indicating support, said that they would have to be authorized to do that, first by EIAJ and secondly by the Japanese government. So we are in the position now of waiting to hear from the Japanese as to whether or not they would participate in this joint working group.

Mix: Did they give you an idea of how soon they would get back to you?

Berman: No, they didn't.

Mix: Are you confident that the EIAJ members will continue to hold off on their U.S. consumer DAT introduction while this new initiative develops?

Berman: I'm not in a position to answer that question. I don't know the dynamics on the hardware manufacturers' side, so I can't even speculate. But I would hope that while the dialog is going on they wouldn't poi-

son the atmosphere by having the machines shipped here, because, if they do, I am going to end up suing them. I wouldn't think that would create an environment particularly conducive to reaching a negotiated settlement. So my hope is that the manufacturers will not ship the machines here, that we won't have to sue and that we can really open up a meaningful dialog.

Mix: But there was no statement from those manufacturers represented at the London meeting that they intended to hold off until they got back to you about your proposal.

Berman: No, there was not.

Mix: You said you sense that these companies are now willing to view home taping as a problem. Do you view that as something of a milestone?

Berman: I was encouraged by it. I thought it was a very, very useful meeting. It certainly took us way beyond where we were when we met in Vancouver. We expressed to the manufacturers the notion that we are prepared to come to some kind of agreement; that we are very serious about it. I am really hopeful that the London meeting will lead to some form of interaction, as opposed to each of the various interests separately trying to come up with proposals. If we all got into the same mix, and we were all working from the same set of assumptions, I am confident it would not take an inordinate amount of time to agree to a solution. My proposal actually included the notion that the group have a specified date by which to report back. Our goal is to reach a negotiated agreement with the hardware manufacturers in 1989.

Mix: So the current situation is that the Japanese DAT makers are considering whether they are interested in developing and working from a common set of assumptions?

Berman: Right.

Mix: Assuming that they do come back and indicate a readiness to participate in your proposed working group, what would be the steps from that point on?

Berman: My own idea—and this is not anything that has been proposed within the group—is that six months would be an appropriate time for the working group to conduct its initial business. That means meeting, talking about what the possible solutions are and then looking into those that seem most appealing. That would be done by a combination of engineers, law-



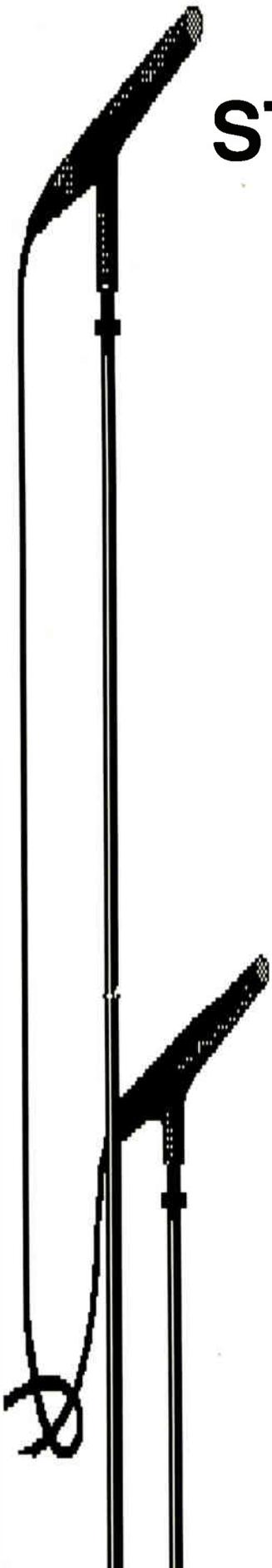
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yers and business people, so we would have a full range of expertise. They would report back to what I hope would be an official group, because at some point you have to go beyond just individual "volunteer" companies. Then, that official group would make some kind of decision authorizing the working group to go forward down a particular avenue.

Mix: Were there specific discussions regarding what solutions or categories of solutions might be considered by the working group?

Berman: Yes. We talked about technological solutions and we talked about royalties. We agreed that everything would be within the domain of the working group.

Mix: So all possibilities will be on the table.

Berman: Yes.

Mix: Is there a particular approach that you personally feel would best meet the needs of all concerned?

Berman: We have said that conceptually we are interested in something called Uni-Copy, which would permit a buyer of prerecorded music to make

a single copy of a protected work. It's just a concept we are exploring, so there is not yet any actual technological specification for it. It would work by having a nonvolatile memory record a subcode on a CD or prerecord-

We have said that conceptually we are interested in something called Uni-Copy, which would permit a buyer of prerecorded music to make a single copy of a protected work.

ed DAT. The recorder would then shut off if that subcode were read again by the same machine.

Mix: That would require the installation of some sort of record capability in CD players.

Berman: That's correct. And what we

are talking about would be totally prospective. In other words, every piece of recorded music that is out there now would be copyable. The system would only go into effect at some agreed-upon time.

Mix: How would Uni-Copy differ from the Solo Copy idea put forward by Philips?

Berman: The difference is that the Philips system permits you to make as many copies from an original as you want, while preventing you from making a copy of a copy. There has already been some work done on that system. I think the schematics of that have already been worked out. But we have some questions in terms of the extent to which you can defeat the system by passing through the analog mode.

Mix: So Solo Copy deals only with digital-to-digital copying, while Uni-Copy is envisioned as something more restrictive?

Berman: We are not proposing to deal with analog-to-analog or digital-to-analog copying. This would have no effect on people making analog cassette copies of CDs. But we are not only concerned with the making of direct digital copies. We are also con-

BACK ISSUES

<ul style="list-style-type: none"> <input type="checkbox"/> 1986 June, Remote Recording & Sound Reinforcement Listings. Roadability. Russ Titelman. CD-ROM & CD-I. By Cooder. 1986 July — SOLD OUT 1986 August — SOLD OUT <input type="checkbox"/> 1986 September, Southern California Studios. Film Sound. Telecommunications. Production Music Libraries. David Byrne's <i>True Stories</i>. 1986 October — SOLD OUT <input type="checkbox"/> 1986 November, New Products Directory. CD I Supplement. Kenny Loggins Tour Sound. Daryl Hall. Grounding Primer. Rupert Neve. 1986 December — SOLD OUT 1987 January — SOLD OUT <input type="checkbox"/> 1987 February, Independent Engineers & Producers. International Recording Supplement. APRS Studio Directory. Bruce Lundvall. DMM for CD. Kitaro. <input type="checkbox"/> 1987 March, Southeast Studios. Digital Recording Supplement. Tom Jung. CD Mastering Forum. Richard Thompson. <input type="checkbox"/> 1987 April, Video Production & Post-Production Facilities. Location Mic Techniques. Adrian Belew. Synchronizer Survey. Pee-wee's Playhouse. <input type="checkbox"/> 1987 May, Northeast Studios. Stevie Wonder & Nile Rodgers Record by Satellite. Programmable Signal Processors. GRP Records. Digital Video Interactive. George Martin. <input type="checkbox"/> 1987 June, Remote Recording & Sound Reinforcement Listings. Touring Consoles Video's Stephen Johnson. Women in Sound Reinforcement. Paul Simon Live in Zimbabwe. 	<ul style="list-style-type: none"> 1987 July — SOLD OUT 1987 August — SOLD OUT <input type="checkbox"/> 1987 September, Southern California Studios. Recording in Hawaii. The Doors. Analog 2 tracks. Phil Spector. <input type="checkbox"/> 1987 October, New Products Directory. Producers' Forum. John Hiatt. Tape Recorder Maintenance. Laurie Anderson. <input type="checkbox"/> 1987 November, North Central and Canadian Studios. George Harrison. Pioneers and Trends in Film Sound. Localization. Maurice Jarre. 1987 December — SOLD OUT <input type="checkbox"/> 1988 January, Northwest Studios. Music Software Programs. On the Road with Pink Floyd. CD Video. Mick Jagger. <input type="checkbox"/> 1988 February, Independent Engineers & Producers. International Recording. Automation & Control Systems. Remixing with Alan Parsons. <input type="checkbox"/> 1988 March, Southeast Studios. Optical Storage Methods. Stax Records. Studio Monitors. Branford Marsalis. <input type="checkbox"/> 1988 April, Video Production & Post-Production Facilities. Sound Effects for Video. Saul Zaentz. RCA Studios. Jon Astley. <input type="checkbox"/> 1988 May, Northeast Studios. Sound at the Winter Olympics. Lee Herschberg. New Age Music Production. Brian and Edward Holland. <input type="checkbox"/> 1988 June, Remote Recording & Sound Reinforcement Directory. Sound at the Grammy Awards. Joni Mitchell. Tina Turner Live From Rio. Jimmy Webb. 	<ul style="list-style-type: none"> <input type="checkbox"/> 1988 July, Recording Schools Directory and Southwest Studios. Education Supplement. Interactive Production Update. Talking Heads. <input type="checkbox"/> 1988 August, Studio Designers & Suppliers. Australian Recording Supplement. Lucasfilm's Skywalker Ranch. Bobby McFerrin. <input type="checkbox"/> 1988 September, Southern California & Hawaiian Studios. Huey Lewis. LA Recording Supplement. Second Generation CD Mastering. <input type="checkbox"/> 1988 October, North Central Studios. John Lennon Movie. Digital Audio Meets Stereo TV. Read-Write Optical Storage. Andy Summers. 	<ul style="list-style-type: none"> <input type="checkbox"/> 1988 November, New Products Directory. HyperMedia Update. 48 Track Digital. Sound for <i>Tucker</i>. Donald Fagen. <input type="checkbox"/> 1988 December, Mastering, Pressing & Duplication Facilities. Premastering Tips. "Bird" Parker. Realities of Fiber Optics. <input type="checkbox"/> 1989 January, Northwest Studios. Santana. Music Production Software. TEC Wrap Up. <input type="checkbox"/> 1989 February, Southeast Studios. The New South, A Special Supplement. Emory Gordy, Jr. DAT Technology, Part 2. <input type="checkbox"/> 1989 March, Independent Engineers & Producers. European Production Industry CSNY. Microphone Specifications.
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AFTER · MIX

cerned about the making of digital copies from a digital source by passing through the analog mode. And this is not oriented only toward DAT, because at the meeting we went beyond DAT to talk about digital copying as a general issue. DAT happens to be the issue in terms of a technology that is around now. But right behind DAT is recordable CD, and right behind that is erasable CD, and that poses many of the same, if not worse, potential problems.

Mix: What were the RIAA's goals when it initially set out to deal with the home taping issue, and how far of a departure from those goals does Uni-Copy represent?

Berman: Our initial goal was to be compensated for the use of our product under any circumstances. When you look at the fact that there are 360 million blank tapes sold every year in the U.S. alone, it doesn't take a vivid imagination to know what most of those are used for. Now, what we have said with Uni-Copy is that if you buy a product and you want to make a copy, the system will permit you to make a copy. That most certainly is a compromise for us.

Mix: And do you feel that this compromise has been crucial in getting the process to move forward?

Berman: I really can't say what the crucial ingredient is, other than maybe a general recognition by both hardware and software industries that the time has come to try to reach an agreement.

• • •

In an unfortunate confirmation that an expected shakeout in CD manufacturing is really here, Shape Optimedia, the CD subsidiary of Maine's Shape Inc., has ceased operation and is likely to be auctioned off in pieces. Shape Inc. had previously filed for Chapter 11 bankruptcy and has been divesting several of its subsidiary operations in an effort to concentrate its resources on core businesses.

For those who survive the shakeout, the range of products designed to aid manufacturers in quality control continues to grow. From Malmo, Sweden, Audio Development has unveiled CD-CATS SA 2, a unit designed to test CD compliance with the CD RED-book standards. Measurement electronics combine with a CD player and an IBM

PC AT-compatible computer to create the system, which performs spot checks, start-to-finish testing or testing at user-defined points. More than 30 parameters can be logged, analyzed and plotted.

Kenwood, USA of Long Beach, CA, has added a line of test gear for DAT to its testing and measuring instruments series. Included are the DA-5730, which generates signals to evaluate demodulators, the DA-5750, which decodes formatted signals with error and ID display, and the DB-5740 R-DAT jitter analyzer. . . In the realm of analog cassette QC, Loranger Manufacturing and Micropoint have joined forces to develop a computer-based quality assurance system. Software designed by Micropoint allows Loranger to control, record and analyze daily electroacoustical data from each real-time duplication slave. The integration of data collection into the duplication process gives Loranger technicians improved preventive maintenance capability. . . Electro Sound is offering a series of working seminars on quality and production control for users of its duplication equipment at its headquarters in Sunnyvale, CA. Topics include electronic and mechanical alignment, test gear and troubleshooting.

In other cassette-related news, TDK, in a move that's sure to give Jay Berman nightmares, has announced a new series of cassettes in lengths specifically designed for recording CDs. And BASF has developed a new dual-layer chromium dioxide formulation dubbed "Super Chrome" for premium quality, high-speed duplication. BASF has also announced the development of duplicator stocks designed for use with both existing high-speed video duplication systems: BASF TMD for the Otari/DuPont process, and BASF Sprinter for Sony's system. Either of these products might be relevant to high-speed DAT duplication as well, should the demand ever arise. . . Tennessee-based Audio Animation, developer of the Muse digital transfer console, has relocated its corporate and manufacturing facilities from Andersonville to Knoxville.

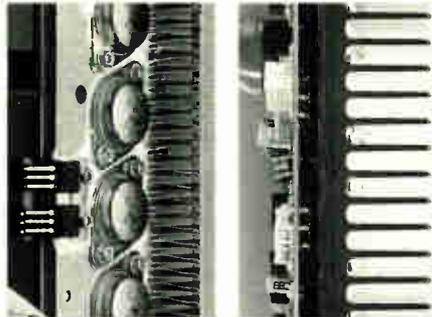
Phil De Lancie, a mastering engineer at Fantasy Studios in Berkeley, CA, is our resident voice on formats, trends and technologies in the world of pre-recorded music mastering and manufacturing.

Warning: To Avoid Risk Of Shock,

Ignore This Amp-To-Amp Confrontation.

Let's be frank. We're out to change your idea of what — and who — makes a professional power amplifier. So if you just bought a Crown MacroTech, turn the page — this comparison won't be a polite one. But it will stick to the facts.

A look inside these two amps will give you a better idea of why BGW amps like the GTB Grand Touring Amplifier are built like no others in the world. And raise some questions about Crown MacroTechs.



Left: The MacroTech uses mostly air to dissipate heat, not metal. The closely spaced fins are vulnerable to airborne dust and dirt.

Right: BGW uses ten pounds of aluminum to absorb thermal transients, extending power transistor life.

TAKING THE HEAT

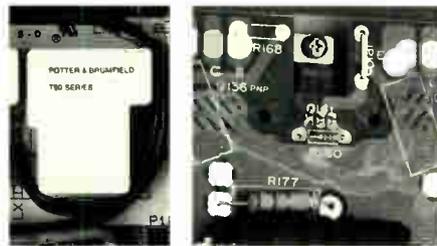
If the MacroTech heat exchanger reminds you of an air conditioner, you've grasped its design. This approach works, at least until dust and dirt clog the fins. But as soon as the air flow slows or stops, temperature rises. Soon after that, the Crown shuts off — it could even fail.

The GTB uses massive extruded aluminum heat sinks with widely spaced fins. The

mass of metal absorbs thermal transients without straining the fan. And without quick changes in transistor temperature. That's important: Transient musical loads put the worst kind of stress on power transistors. The effects of thermal cycling fatigue may not show up until after the warranty, but they can destroy lesser amps. Meanwhile, BGWs keep right on delivering clean, reliable power.

REAL SPEAKER PROTECTION

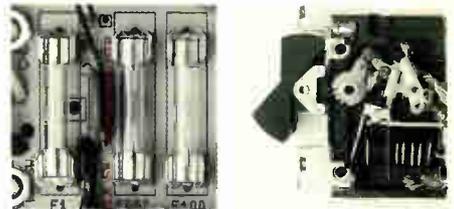
Most amps today are direct coupled, so a blown output transistor (the most common failure) connects the power supply directly to the speakers. Earlier MacroTechs had no protection against DC. Now Crown has learned their lesson — or have they? The sensing circuit and relay they now use shuts off the power transformer, but allows the filter capacitors to discharge stored DC energy directly into your drivers — risking real damage.



Left: Crown uses a slow-acting, less reliable relay. It can allow the filter capacitors to discharge stored energy directly into your drivers.

Right: BGW's modular power output section protects your speakers against DC damage with an instantaneous Thyristor Crow Bar. And the module is easily replaced in the unlikely event of failure.

BGW pioneered DC speaker protection in 1971. We stopped using relays years ago, when they no longer met our reliability standards for BGW amps. The GTB, like all BGWs over 200 Watts, uses solid-state Thyristor Crow Bars to keep DC from ever reaching your valuable speaker cones or compression drivers.



Left: Time is money, and with Crown's MacroTech you can lose plenty of both: You have to pull it out of the rack every time a fuse blows.

Right: The GTB's power switch is also a rock-actuated magnetic circuit breaker. You can reset it in a second if power lines hiccup.

MAKE YOUR OWN COMPARISON

Before you buy or spec your next power amp, call us at **800-468-AMPS** (213-973-8090 in CA). We'll send you tech info on BGW amps and the name of your nearest dealer. He can arrange a demo of any BGW model against any amp you choose. Then you'll be able to appreciate the advantages of BGW engineering with your ears, as well as your eyes.



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by John Mroz

GTN LIBRARIAN

THE ULTIMATE AUDIO/VIDEOTAPE INVENTORY SYSTEM?

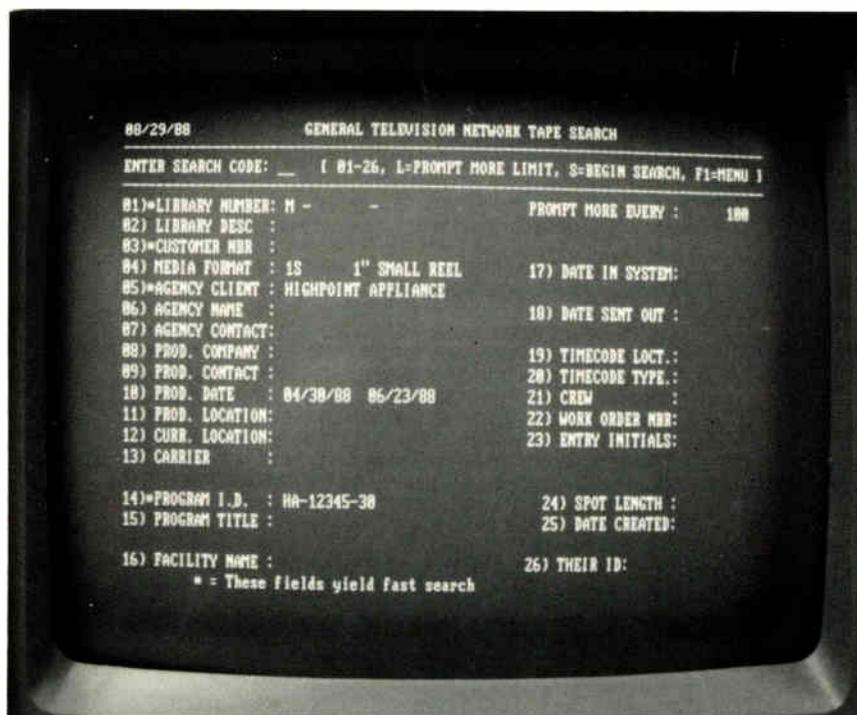
A

Support Services Manager at the General Television Network (GTN), one of the Midwest's busiest audio/video production/post-production companies, part of my responsibility is the supervision of the library system and its staff. Richard McDonald, facilities librarian, along with an assistant, coordinates the daily activities of the library. GTN catalogs, stores, and retrieves about 300 audio and videotapes each day.

We have cataloged nearly 25,000 tapes, 14,000 of which currently are stored in our climate-controlled library. Keeping track of the tapes' com-

ings and goings can be a big headache. For years we tracked tapes by using a card catalog filing system similar to that in a public library. But as the volume of our business increased, the paper system proved to be inadequate. We needed a storage and retrieval system that was the equal of GTN's sophisticated production equipment. After all, both our staff and clients had come to rely on the very latest in audio and visual technology—so why should we continue to use a 19th-century cataloging system?

A computerized system made the most sense, but as is often the case,



existing software could not meet our needs. So we developed our own. It used to be that books required only three pieces of information: title, author and subject. But as today's librarians know, information has become a valuable commodity. Users of information need vast quantities of data that can be manipulated and analyzed to allow them to make informed decisions. Likewise, a great deal of cross-referenced information is needed to store and retrieve audio and visual tapes. Our task was to store work-history tape data, complete with dates and places.

The detailed information is important, because producers, editors, duplicators, engineers and librarians all need to know different types of information about the contents of a tape. All too often edit sessions are delayed, audio must be re-recorded and money is lost because tapes are misplaced as a result of poor cataloging.

We wanted a system that would solve these and related problems, a flexible system that would help our

editing, duplication, shipping, field production and studio production departments handle tapes. After years of using a card catalog system, we all had opinions about an ideal system, and the department heads met to design a library system that would serve all users' needs. During our discussions, several points were made again and again:

- The system should provide access to tapes in seconds rather than minutes.
- Tapes should be cataloged in great detail.
- Library data should be readily available in a number of locations around the facility.
- Tapes should be accessible to the user who has limited knowledge of a particular tape.
- Hard copies of all available data on each tape in the system, as well as shipping labels, should be able to be printed upon request.

In short, we wanted a system that would save us and our clients time

and money, so we developed the software that would do just that. Our system's database includes just about everything a producer would need to know about a tape. Each data element is cross-referenced so that even with very limited information we can locate tapes immediately in our library or wherever else they may be at the time.

For each tape there is: a library number; a description of the tape's contents; comments about its contents; a customer number; tape format; the name of the agency's client; the name of the agency; the agency contact person; the production company; the production company contact; the production date; the production locations; the current location of the tape; the last person to handle the tape; the date it entered the library; the date it left; the time code location; the time code type; the names of crew members; the work order number; the name of the person entering it in the library; and even the reference numbers it was assigned by other production facilities.



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- Technics SVM-1100** —New 18 Bit Technology
- Sony TCD-D10** —Amazing Portable DAT, under 4 pounds
- Technics SV-MD1** —Ultra-Compact lightweight DAT Recorder with Digital output

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Our system also has other valuable features. It enables us to provide clients with complete lists of all the element reels on which GTN has worked. Recently this capability proved invaluable when General Motors wanted a list of all the element reels from four recent shoots. One job alone accounted for 127 reels. In a matter of minutes McDonald was able to locate all of them and send the information to print . . . and print, and print, 25 pages detailing all the information GM ever wanted to know about its element reels, and more. In another case, W.B. Doner Advertising requested a print-out of all its tapes stored in GTN's library in order to compare our list with their computerized videotape inventory.

GTN is a big place—some 40,000 square feet. Questions about videotapes are generated throughout the facility, so three library terminals were installed in convenient locations. In addition to the one in the library itself, a terminal is in the production/scheduling office where requests come in from around the nation to duplicate and ship tapes. Often callers have only limited knowledge of the tapes they want, so having extensive data at our fingertips allows the staff to address client questions in a matter of seconds. It also enables us to deliver tapes more quickly because the system also prints shipping labels.

The third terminal is located in the technical area, where tapes are constantly being requested during edit sessions. Sometimes additional tapes are needed to complete an edit and have to be located at the last minute, an easy task with the GTN Librarian.

Are computerized retrieval systems like ours the wave of the future? We think so. GTN copyrighted the software and is offering it to others through the International Teleproduction Society (ITS).

The system does something else we like. Now that the library system is accessible to all GTN personnel, the library staff is not tied to the facility anymore. So when business calls us away, we can leave without making elaborate contingency plans and can keep the library in good working order. ■

John Mroz is Support Services Manager of General Television Network, located in Oak Park, Michigan.



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—FROM PAGE 43, OLD WORLD

soles. We have to meet dates, and they say, "Oh no, we found out how we can get the crosstalk 10 dB better," or whatever, but there's no need for it—the crosstalk is good enough.

Mix: Unlike the computer industry, your products tend to remain current for a number of years before you discontinue them. How do you decide when to design a new microphone?

Rowehl: We design or redesign microphones whenever we feel there is the possibility of making a better microphone. Then the microphones are handed over to people we know who are working in the business worldwide. We call them the "Golden Ears," and there are about ten of them. They try them and give us the results, and the majority of microphones that we design are not manufactured because of user comments. I can tell you, for instance, that we make circuitry with and without transformers, and there is one of these Golden Ears here in Berlin who can detect the number of transformers in the circuitry. We didn't believe it, because you can't measure it, but he can detect them with about 90% accuracy. The Golden

Ears help us a lot with improving the microphones; if they say that they like a microphone, then we feel it is okay.

So the lifetime almost always exceeds 20 years. We are very careful in looking into the next step for microphones, and a new model is in use for at least one year before it goes public to be sure that it gives good results for a number of applications.

Mix: You said that during the war Mr. Neumann refused to make spy microphones?

Rowehl: Yes, and that is still true. We have never made microphones for hidden applications. On the other hand, we do not decide the contents of the freely spoken word: we cannot decide how Mr. Brezhnev or Mr. Gorbachev or the pope or the people in South Africa are using our microphones, and we know we are not in a position to make any decision in this regard.

Mix: Neumann tube microphones are still very much in demand; you could undoubtedly sell them if you made them again. Why don't you?

Rowehl: We are always asked for the sound of the tube microphones. Our manufacturing was always intended to make a microphone causing *less* coloration to the sound

it was capturing. For some time this was the tube microphone, but the transistor concept gave better technical results, and we could not make Mr. Neumann go into tube microphones again; he wanted to be in the technical forefront. So today we feel that you can have far better transistorized microphones and give them the sound of the old tube microphones. The main difference is that if you overload tube circuitry, the distortion comes step by step; the harmonics build gradually. With the transistor, the field for no distortion is greater, but when it runs into distortion it comes heavily. And in the digital field, when distortion comes, nothing usable is left.

Mix: But isn't there also a qualitative difference in that tubes tend to produce more even harmonic distortion?

Rowehl: Yes, so we tried to make a transistorized amplifier that caused the same sort of harmonic distortion of the tube, but this was not the solution. We should try to minimize any harmonic distortion; we should not add any harmonics or color the sound. We should just concentrate on making the sound as clear as possible.

—Larry Oppenheimer

Three-fourths of the microphone design team (seated, L to R): Detlef Scheuerlein, Hans Nehring, Bernhard Muller, with sales manager Dirk Rowehl (standing). Head designer Stephan Peus was in the U.S. at the time.



PHOTO: LARRY OPPENHEIMER

—FROM PAGE 24

must be amazed, as these toys truly out-Japanese the Japanese. Not “pro,” but neither is most of the market.

3: EURO-TECH

There is some very serious thinking going on over there, and there has been for quite some time. Neve. Neumann. Quantec. AKG. B&K.

The dollar is worth almost nothing in Europe’s technology-producing countries right now, yet some of these products are worth so much to us over here that we buy them anyway, with *lots* of our dollars. There must be a reason.

There is: sound. It seems that European products do a much better job of delivering the sound that our American ears really want than the Japanese devices do. There must be something in the way the Germans and other Europeans hear, and how they think about what they hear, that we like.

There are amazing numbers of *current* state-of-the-art Japanese products that have already been put online and then removed to studio “museums,” while there are actually American and European products that are still online after ten years or more.

I hear a clarity in some of the top-end European stuff that is what I think it should *all* sound like. I hear algorithms that are carefully thought out and sound absolutely amazing. I hear *no* noise or grit at all.

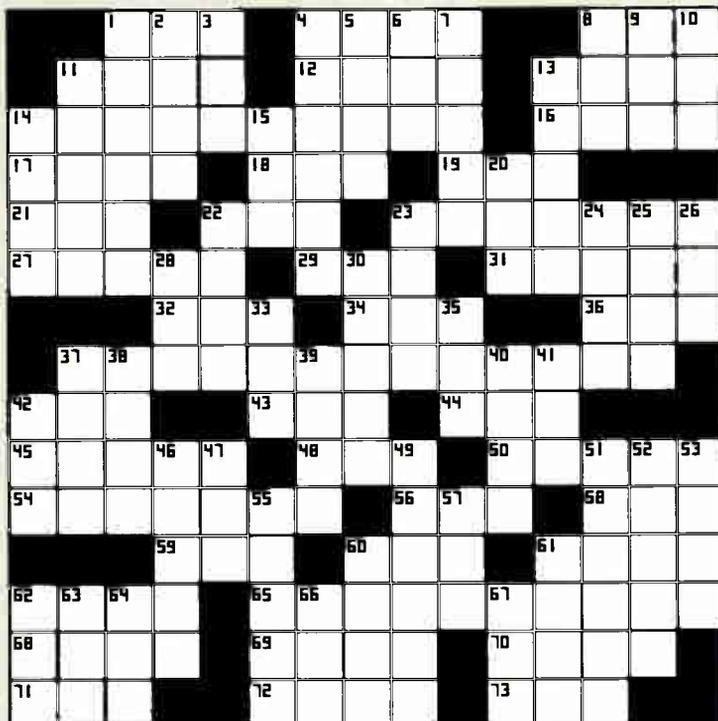
I do not praise this European stuff because I import some of it; I import some of it because it is praiseworthy.

Marshall is actually going to put the original Time Modulator back into production, by popular demand, and that thing is 14 years old! Some European design concepts sound very good to American ears. I designed that product, and I used concepts and technologies that I learned in Switzerland and Germany.

The elite European leading edge DSP products are attractive because we just don’t do it here. There are two sides to this—it is a bit embarrassing that we have lost it in America, but at least we know where to find it when we want it. ■

Stephen St. Croix operates an independently financed private studio, where he often books days just to listen to things.

MIX WORDS



©1989 By Armand St. Martin

Edited by Gregg Hoffman

Sound Wars

ACROSS

- 1. Genetic material
- 4. Certain console knobs
- 8. With 11 D, a four-way pot, or a fighter plane control
- 11. Predictor
- 12. Dutch cheese
- 13. ___ earth elements
- 14. D-day, or how long it takes a note to reach full volume
- 16. War god
- 17. Like Ananias
- 18. Sea bird
- 19. Grain beard
- 21. Half of a WWII pom-pom gun
- 22. Brian ___
- 23. Gun activator, or a MIDI command
- 27. Twists an envelope
- 29. Synth circuit for deep sounds
- 31. Type of cloth
- 32. Bony prefix
- 34. Tape speed
- 36. Dined
- 37. Military reaction, or a measure of speaker output
- 42. Hurt
- 43. Conger
- 44. Priestly garment
- 45. Prepare tea
- 48. Ms. Lupino
- 50. Horror film responses
- 54. Riot weapon or mic type
- 56. Body of water
- 58. Egyptian king
- 59. ___ dynasty
- 60. Snake
- 61. Lots
- 62. Tale
- 65. Guerilla activity, or opposition to electron flow
- 68. ___ Bator
- 69. Kind of lens
- 70. Foot part
- 71. Tom Hanks film
- 72. Summary
- 73. R.E. ___

- 4. Gas, in UK
- 5. Norse god
- 6. Hat
- 7. Daub
- 8. Jostle
- 9. Raw metal
- 10. Affirmative
- 11. See 8A
- 13. Distance a gun can fire, or notes a singer can reach
- 14. Word of regret
- 15. Range of understanding
- 20. Humor
- 22. Being
- 23. Does better
- 24. Mardi ___
- 25. Deco designer
- 26. “Comin’ through the ___”
- 28. Ooh la la!
- 30. Word with battle, or ___ effect
- 33. Numerical prefix
- 35. Resort

- 37. Core
- 38. Spread
- 39. Bring to a halt
- 40. Scandinavian girl
- 41. Sports org.
- 42. Donkey
- 46. Revolutionary era name
- 47. Sports org.
- 49. Help found in 41D
- 51. Posture
- 52. Hit, or an interjecting overbub
- 53. Eye problem
- 55. Bring down a flying PA
- 57. Smaller albums
- 60. Safe phrase
- 61. Lion’s pride?
- 62. ___ group; undersea hunters, or similarly assigned channels
- 63. The champ
- 64. Something to do with a spoon
- 66. Silkworm
- 67. “___ There Was You”

Solution to February Mix Words



DOWN

- 1. Capture or record, again
- 2. Come close to
- 3. Unwanted electrical bridge

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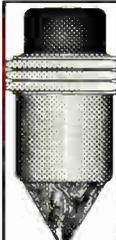
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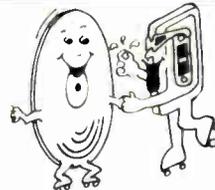
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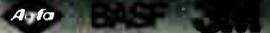
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SOUND · ON · STAGE

—FROM PAGE 104, SOUND ON STAGE

ten years), Humboldt County Fair, Napa County Fair and the holistic Health & Harmony Festival.

Frontline mixing consoles for GGS's two main speaker systems are a Soundcraft 8000 40x8x2 for front-of-house, and Soundcraft 500 40x12 for the stage. The Soundcraft 8000 is a relatively recent purchase, and Lind says, "We really like the 8000. It is compact and sounds good." One of their speaker systems uses 16 proprietary, 4-way, front-loaded cabinets packed with JBL components and one Renkus-Heinz constant-Q horn. The 4-way enclosures are powered by Carver PM 1.5 amplifiers and BSS 360 crossovers. The second, newer system is a small Apogee AE-5 system that is augmented on the low end with some proprietary, dual 15-inch cabinets. BGW 750 and 250 amplifiers power the GGS proprietary monitor enclosures. GGS's "B team" mixing boards are a Soundcraft 800 18x8x2 and Sound-

craft 400 26x4x2 for house, and two Studiomaster 20x8 monitor desks. A small, two-box club system makes up the third P.A., loaded with the same components as the main 4-way cabinets. Lind described their power distribution: "Our main AC distro is a 400-amp unit. Power is one of the most important aspects of a system. We believe in over-supplying our amps and speakers; each of our amp racks has a 100-amp AC distro that stars off of the main 400-amp distro."

Note: Some of the information in this column and in "On the Road" is subject to change, and is based on information provided by private businesses. ■

Author Mark Herman runs Hi-Tech Audio Systems, Inc., a company that specializes in sound reinforcement mixing console rentals.

Address all correspondence and photos to: Mix Publications, Sound Reinforcement Editor, 6400 Hollis St. #12, Emeryville, CA 94608.

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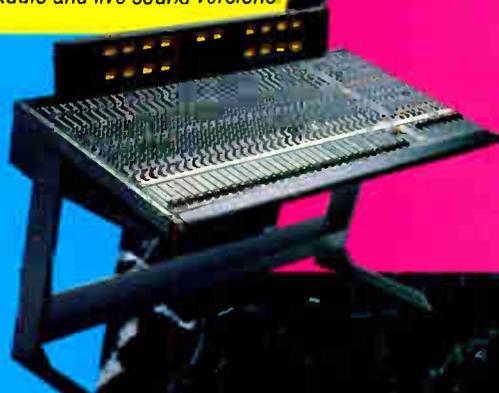
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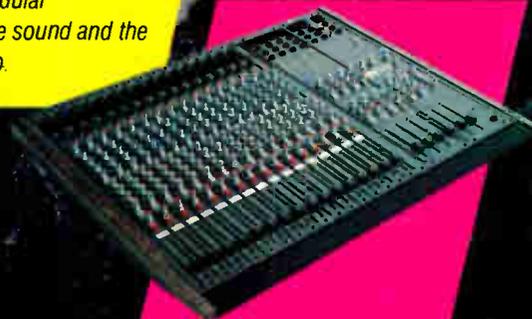
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