

DAT Technology Explained • Sound at Disney World

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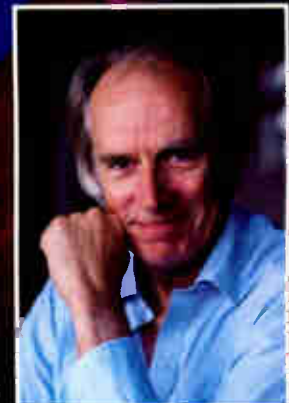
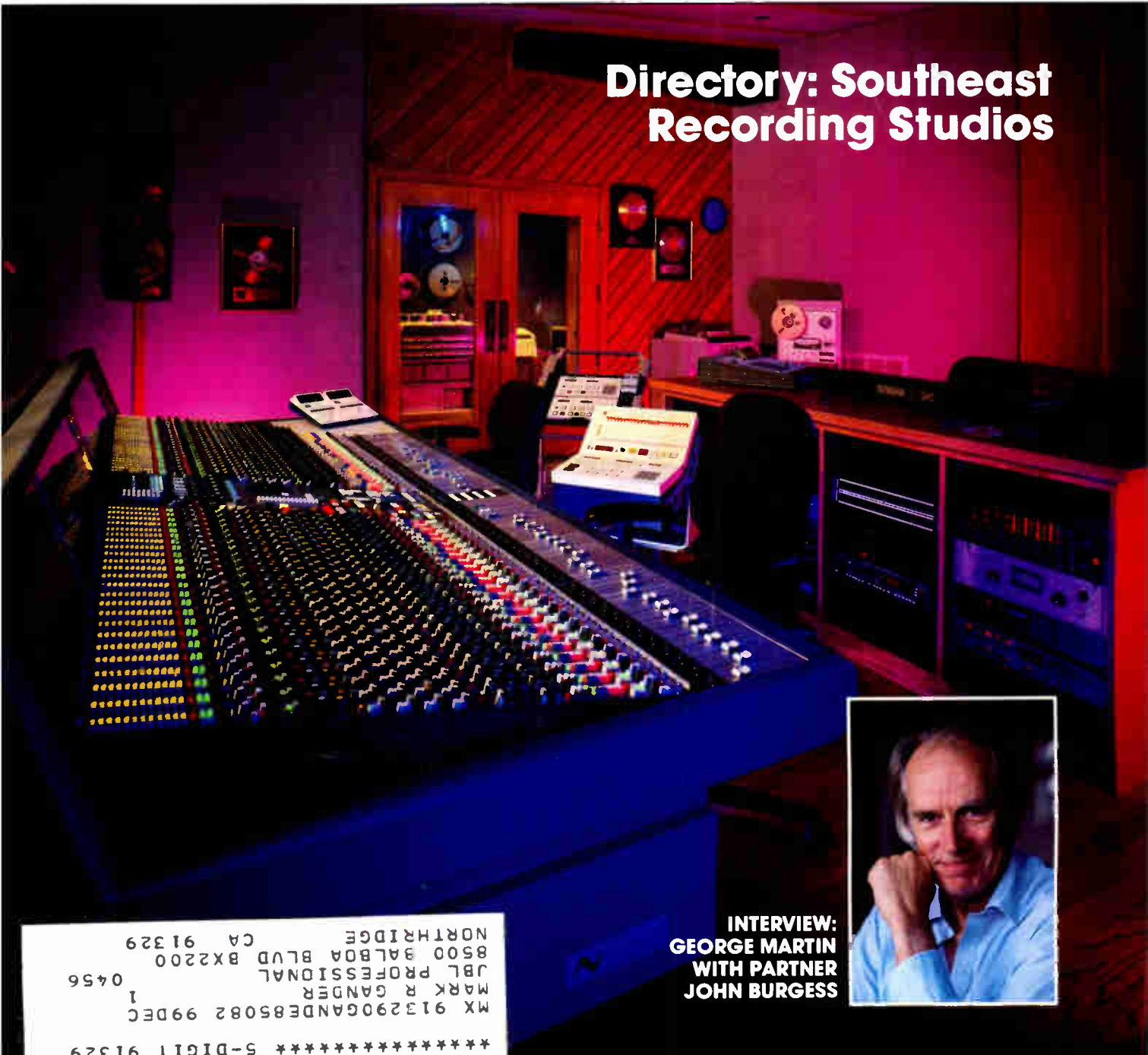
MIX

Digital Audio Workstations at the Crossroads

SPECIAL SUPPLEMENT: The New South

THE RECORDING INDUSTRY MAGAZINE

Directory: Southeast Recording Studios



**INTERVIEW:
GEORGE MARTIN
WITH PARTNER
JOHN BURGESS**

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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...

Studer proprietary digital processing circuits and uncompromising analog input/output electronics for flawless sonic resolution.

Studer proprietary Adaptive Run Processing circuitry for unsurpassed playback performance.

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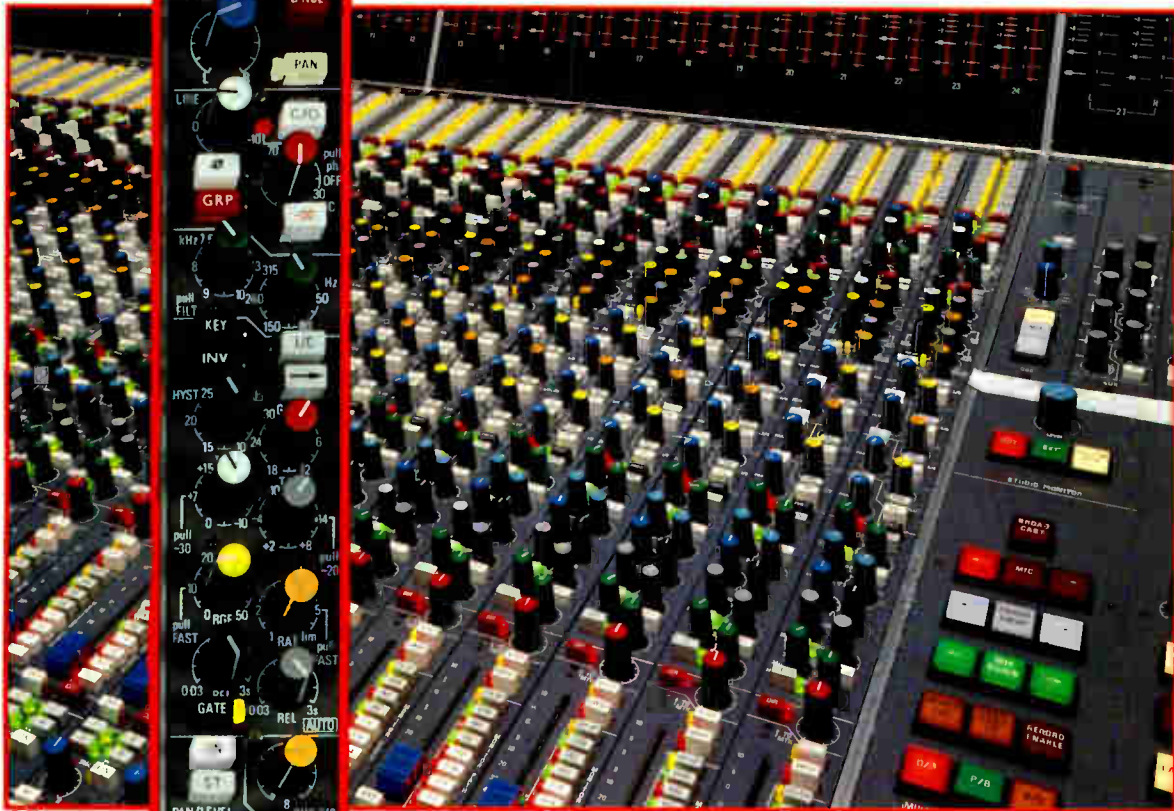
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MIX

FEBRUARY 1989

THE RECORDING INDUSTRY MAGAZINE

VOL. 13, NO. 2



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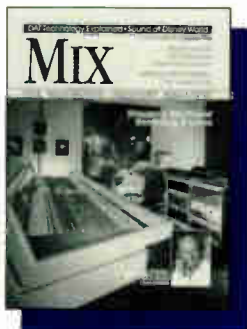
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FROM THE EDITOR

Founded 1977 by
David M. Schwartz and Penny Riker Jacob



Cover: Memphis Sound Productions has recently upgraded to a Neve V Series console with Necam automation. Otari 24-track, 1/4-inch and 1/2-inch recorders are located in a separate machine room. Photo: Bill Carrier/API Photographers. Inset photo: George Martin by Hideo Oida.

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Readers have been asking a lot of questions since we announced the acquisition of *Mix* by Act III Publishing—"Who is Act III?" "Why is *Mix* selling to them?" "How will this affect *Mix*?"

Act III was formed about three years ago by Norman Lear, the highly respected television producer. His plan is to organize a diverse communications organization including such businesses as television stations, movie theaters, film production and publishing ventures in related fields.

The publishing division of Act III has been growing swiftly over the past two years, and is now comprised of the magazines *Broadcast Management of Engineering (BME)*, *Channels*, *Corporate Video Decisions*, *World Broadcast News*, *Marketing & Media Decisions*, *TV Facts Figures and Film* and *Television Business International*. Act III was looking to round out their coverage of the technical fields with a professional audio magazine when they approached us earlier this year.

As longtime *Mix* readers know, the professional audio business and its publications are much less the "mom and pop" operations they once were. Today's industry is sophisticated, competitive and requires mighty resources to deal with the breadth and scope of international media production in the '90s. Sensing these challenges ahead, we were in the market for a partner who could complement our resources and share our vision.

The people at Act III impressed us greatly with their intelligence, sensitivity and abilities. They said they like *Mix* the way it is. They don't want to change what we are doing, but they feel they can help us reach our goals while we help them create the kind of well-rounded publishing group they want to build. After 12 years of independent operation, the time is right for us to join forces with a powerful international team.

We are very excited about the potential of *Mix* and Act III. We feel this will be a time of growth and development of new ideas. We also feel that Act III's other publications will give *Mix* a better perspective on the continually interdependent media production fields. And our intent will remain to give you the best magazine we possibly can, with the personal style you have come to expect from us.

Keep reading,

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.



Second Generation 24-Channel Multitrack PCM-3324A

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"

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.TM

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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CURRENT

SPARS ELECTS OFFICERS

Bruce Merley, president of Clinton Recording Studios in New York City, became the new president of The Society of Professional Audio Recording Services (SPARS) during the recent AES Convention. New officers and the board of directors were elected at a meeting of the general membership, held at Hitsville Recording Studios.

Merley has worked extensively in arts management, holding positions with the State University of New York-Binghamton, the Performing Arts Association of New York State, Yale University and The Fine Arts Museums of San Francisco. He returned to the East Coast in 1980 to found KMC Records Corp. Three years later he and partner Ed Rak founded Clinton Recording Studios on NYC's Upper West Side. Merley has previously served as first vice president of SPARS and has been an active member since 1982.

The new SPARS officers and board of directors are Bruce Merley, president (Clinton Recording, NYC); David Porter, first vice president (Music Annex, San Francisco); Dick Trump, regional VP/treasurer (Triad Productions, Des Moines); Dwight Cook, regional VP/secretary (Cook Sound and Picture Works, Houston); and Guy Costa, chairman of the board (The Gordy Company, L.A.).

HDTV MOVING FORWARD

A recent report commissioned by the Electronic Industry Association (EIA) predicts that high-definition television (HDTV) will be found in 25% of U.S. households by the end of the century. And to keep consumers and manufacturers up to date on the emerging industry, EIA has established a unique and timely HDTV Information Center.

Peter F. McCloskey, chairman of EIA's Advanced Television Committee, comments, "With HDTV soon becoming a reality, we felt it was necessary to create an authoritative, one-stop information resource that could quickly respond to the growing number of queries EIA receives from the media, Congress and the general public concerning this promising new technology."

Specific activities of the HDTV Information Center include tracking regulatory and legislative proposals concerning HDTV, providing data on U.S. manufacturing capabilities of HDTV products, identifying expert speakers in the field, providing technical information through on-staff engineers, commissioning market studies and collecting general information on the status of HDTV within the U.S.

The HDTV Information Center is located at 1722 I St. NW, Ste. 200, Washington, DC 20006; tel. (202) 457-4992.

U.S./SOVIET MUSIC VIDEO

A five-minute music video called "A Bridge of Trust," and a 15-minute documentary on its making, debuted in Chicago this past October. What makes the new video noteworthy is that it was created as a joint venture between Russian and U.S. students.

Initiated by Northwestern University's Institute for Modern Communications, The Bridge Organization was formed to establish the first media exchange program with a Soviet film academy. A team of 15 American students traveled to Leningrad and Moscow this past July to film on location, and in October the Russian students came to Chicago and Evansville, Ill. The visuals back a song co-written by the U.S. and Soviet band Collective Vision.

To insure state-of-the-art quality, Editel/Chicago donated a full package of post-production services, including an award-winning computer-animation design team. Editel also provided a Montage Picture Processor, video editing, AudioFile sound editing and film-to-tape transfer, and hosted two seminars to brief students on technologies and techniques.

Editel president Bob Coleman says, "We are delighted with the opportunity to donate our expertise to this move toward international understanding through music and video."

TEC AWARDS OPEN FOR NOMINATIONS

The 1989 Technical Excellence and Creativity Awards, to be held October 19, 1989, in New York City, are opening the floor for nominations in the creative and institutional fields (no products, please).

Mix subscribers are eligible to nominate deserving artists in the following categories: sound reinforcement engineer, film/video/broadcast production engineer, film/video/broadcast post-production engineer, mastering engineer, record producer, recording engineer, sound reinforcement company, remote recording facility, recording school/program, acoustics/studio design company, mastering facility and recording studio.

Submit name and credits by February 17 to Karen Dunn, TEC Awards, 6400 Hollis St. #12, Emeryville, CA 94608. ■

Correction

The caption on page 42 of our January issue should have identified Jack Maxson as accepting the TEC Award for Showco. We apologize for the error.

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.

pd

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

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INDUSTRY NOTES

Newly elected officers at SMPTE are **Maurice L. French**, president; **Blaine Baker**, executive vice president; **Frank J. Haney**, editorial vice president; and **L. John Spring**, secretary/treasurer. SMPTE also created the **Fuji Gold Medal**, a new award to recognize engineering accomplishments in image orientation. The medal will be presented for the first time at the 131st Technical Conference to be held in L.A. this year. . . **Randolph P. Savicky**, formerly of *Pro Sound News*, has formed **RPS Communications**, a marketing, consulting and public relations company exclusively for the audio and video industries. . . **New England Digital**, in conjunction with **Harman International**, its European distributor, has formed a dedicated sales and marketing group within Harman, led by NED director of marketing **Mark Terry**. This group will focus exclusively on the sale of NED workstations in Europe. . . **Trident Audio Developments, Ltd.** of London, England, has reached an agreement with **Digital Creations** of Plainview, NY, to use Digital Creation's moving fader automation systems in all their consoles requiring fader automation. . . Recent appointments at **Sony Magnetic Products Company** include **Andrew Mougis** as vice president of sales for the professional tape division and **Kenneth F. Wiedeman** as director of marketing for the company. . . **Phil Wagner**, Eastern regional sales manager for **Neve**, has been selected as "Salesman of the Year" by his company. . . **Jack Schaeffer** has been named president of **One Pass** in San Francisco. . . **Soundmaster USA** recently opened a New York technical support office: 120 West 88th Street, New York, NY 10024; (212) 787-5832, FAX: (212) 787-8888. . . Emmy Award-winning TV producer **Jim Washburn** has been named general manager of **Disney/MGM Studios** in central Florida. . . **Electro-Voice** has constructed a new 28,000-sq.ft., three-story research and development center. It houses over 50 engineers, technical assistants and support staff. . . **Carver Corporation** has appointed **Mark Friedman** as sen-

ior vice president and director of sales, marketing and product development . . . **Robert R. Swetland** has been named marketing manager for **EECO/Convergence**, Santa Ana, CA. . . Emmy-winning audio mixer **Russ Terrana** has joined **Complete Post** in Hollywood, CA. . . **Signature Music Library** recently introduced the premier issue of their quarterly newsletter, *The Signature Beat*, developed to provide production music library users with information on production techniques, and how to most effectively use music in their industrial and commercial productions. Contact Signature Music, PO Box 98, Buchanan, MI 49107; (800) 888-7151. . . **Marbeth Richmond** has been named account manager for the Western region advertiser sales division of **Westwood One, Inc.** . . . **Don Balousek** has been promoted to general manager of the motion picture library for **Producers Color Service, Inc.** . . . **Bruce Auerbach** has joined **Saban Productions** as vice president of merchandising for the new in-house division. Other appointments and promotions include: **Alan R. Glasser**, vice president of legal and business affairs; **Andrew Dimitroff**, music director; **Sam Johnson**, director of creative services, and **Geanie Zelig**, director of music marketing. . . **Academy of Recording Sciences**, a Phoenix school for audio recording and production, has changed its name to **The Conservatory of Recording Arts & Sciences**. . . **Steve Durr** of **Steven E. Durr & Associates**, Nashville, was recently hired as audio consultant for **KET Television**, Lexington, KY, **AD Productions**, Milwaukee, and the **University of Tennessee-Knoxville** basketball arena. . . **Kenjiro Takayanagi**, television pioneer, developer of the two-head helical-scan VTR and supreme adviser at **JVC**, was made an honorary member of **The Society of Motion Picture and Television Engineers**, the group's highest honor. Also at JVC, **Michael Gutman** has been appointed national sales and marketing manager at **JVC Company of America**, Elmwood Park, NJ. . .

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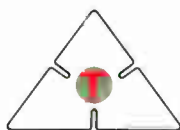
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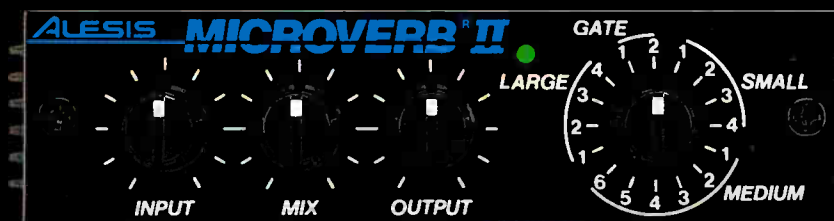
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SESSIONS AND STUDIO NEWS

SOUTHEAST

Solo artist **Rainy** recorded and mixed her debut LP for Menagerie Records at Atlanta's **New Age Sight & Sound**. The project was produced by **Sam Jolly**, engineered by **Mitch Dorf** and mixed by **William Allgood**. . . **Marvin Winans** was a recent client at **Master Sound Studios** in Atlanta, producing the first gospel solo album by his wife, **Vickie Winans**. **Ron Christopher** engineered. . . At **Lamon Sound Studios** in Charlotte, NC, **Billy Scott** was working on a promotional track for the new Charlotte Hornets NBA franchise, with **Andy Bickel** producing, **Bill Connor** engineering and **David Moody** mixing. . . **Molly Hatchett** was in at **Parc Studios** in Winter Park, FL, tracking and mixing demos for an upcoming album for CBS. **Andy DeGanahl** and **Duane Roland** produced, with DeGanahl engineering the project. . . Atlanta's **Soundscape Studios** played host to A&M artists **38 Special**, who completed their new album with producer/engineer **Rodney Mills**. . . Also in Atlanta, **Cheshire Sound Studios** saw **Shotgun Rationale** cutting basics for their first album, with **Maureen Tucker** producing. **George Pappas** engineered with **Tom Pee** assisting. . . Among those artists at Nashville's **Music Mill** was **George Jones**, who was cutting tracks and mixing his CBS album with producer **Billy Sherrill** and engineers **Jim Cotton** and **Paul Goldberg**. . . **New Grass Revival** was in Nashville's **Sound Emporium** with producer **Wendy Waldman** and engineer **Dennis Richey** cutting tracks for a new album on Capitol. . . In Charleston, SC, **On Line Audio** recently completed several tracks of **Lotus Feet's** album project with executive producer **Beau Ray Flemming**, engineered by **Robert Graves** and mixed by **Greg Larkins**. . . In Miami, **Criteria Recording Studios** reports that producer **Emilio Es-**

tefan was in working on several cuts from the upcoming **Jose Luis Rodriguez LP**, with **Mike Couzzi** at the console, assisted by **Dana Horowitz**. . . **Cecil Null** was recently in at **Sound Trax Recording** in Johnson City, TN, to work on two sides for a future release. . .

NORTHEAST

At **Syncro Sound** in Boston, MA, Road-racer recording artists **Wrecking Crew** just completed their first album, with **Peter Schenkman** and **Rick McNeely** handling production and engineering for **Taryn Productions**. . . **Selcer Sound** in Brighton, MA, reports that singer/songwriter **Bob Franke** completed an album for Flying Fish Records with engineer/producer **Darlene Wilson**. . . Warner Bros. recording artists **Force MDs** recently recorded demo tracks at **Round Sound Recording Studio** in Cresco, PA. **Tommy Lewis, Jr.** engineered the sessions, and songwriter **Gerry Hubbard**, formerly with **Prince**, produced. . . **Al Jarreau** recently laid down vocals for "Never Explain Love," a song featured on the soundtrack for **Spike Lee's** new film, *Do The Right Thing*. Former **Chic** keyboardist **Raymond Jones** produced the sessions with **Larry DeCarmine** engineering at **Right Track Studios** in New York. . . At the **Carriage House Studios** in Stamford, CT, the **Violent Femmes** completed their new release for Slash Records with **Warren Bruleigh** at the console. . . **Joe Ferry** was at **Acme Studios** in Mamaroneck, NY, with engineer **Peter Denenberg** to produce **Dr. John** for S.O.S. Records' Christmas LP. . . **Ray Jackson** was recording tracks at **EARS** in East Orange, NJ, for his next Sutra LP, with **Mike Theodore** programming and **Carl Davis** engineering. . . Recent activity at NYC's **Prime Cuts** included **Robert Clivilles** and **David Cole** remixing tracks by **Luther Van-**

dross, **Seduction** and **Robbie Neville**, all edited at Prime Cuts by **Louie Rivera**. . . Popular New York band **The Swing** has completed two self-produced demos at **Iris Sound** in Royersford, PA, with engineering by **David Ivory**. . . Drummer extraordinaire **Jack DeJohnette** was at **Dreamland Recording** in Bearsville, NY, with **Herbie Hancock** and **Pat Metheny** to record his LP for MCA Records. **Tom Mark** was engineering with **Harvey Sorgen** assisting. . . Among the recent clients working at **Calliope Productions** in NYC were **Star Star**, who cut and mixed a hard rock LP for Rave Records. **Chris Irwin** was at the board. . . Composer/arranger **Josh Selman** was at **Crystal Sound Recording** to score a new film called *The Money Juggler*. The three-machine lock-to-video was handled by the Adams-Smith Zeta-3 synchronizers. Engineering the project were **Larry Buksbaum** and **Steve Vavagiakis**. . . Songwriter/musician **Bret Reilly** completed a demo project at **Sleepy Hollow Sound** in Dobbs Ferry, NY, with producer **Robin Danar**. . . At **Trod Nossel Recording Studios** in Wallingford, CT, TNA artists **Cub Koda & The Bone Gods** completed mixes on several songs with engineer/producer **Rebel Montez**. . . New York's **Power Play Studios** had producer **Marley Marl** in mixing **Chaka Khan's** new single with engineer **Bryan Marin** and assistant **Rob Sutton**. . . Legendary jazz flutist **Herbie Mann** was at **Studio 900** in Manhattan cutting his latest LP for Gaia Records. **Tony Battaglia** was at the board, with **Julio Pena** assisting. . . Staff engineer **Paul Goodman** was on hand to record **Joe Jackson's** latest album, *Will Power*, at **RCA Studios** in NYC. **Mike Frondelli** assisted on the project, an instrumental suite that combines classical elements with rock and jazz colorings. . . Also in New York, **Angel Lebron** was working on new material for Sutra Records at **I.N.S.**

Recording. Tracks and mixing were both handled by **Hugh French**. . . The **Beastie Boys** were recently at Manhattan's **Krypton Studios** working on their upcoming Capitol Records release. . . Producers **Cliff Massie** and **Rob Carridi** were at **Cove City Sound Studios** in Glen Cove, NY, to mix the new **Donna Marie** single, "Runaway," for Covert Records. **Mike Lorrelo** was at the controls, assisted by **Tom Yezzi**. . . **Nu Cliche** recorded its debut EP at **Mission Control Studios** in Westford, MA, with producer **Joe Viglione** and engineer **Hideki Sunada**. . . C&W band **The Dixie Doughboys** recorded before a live audience in **Quad Recording's** Studio A in NYC. **Lou Gonzalez-McLean** produced the event, which was recorded by **Brian Young** and assisted by **Steve Zoyes**. . . **Kim Brown** of **Rebel Red** has been at NYC's **Baby Monster Studios** working on new material with producer **Steve Burgh**. . .

NORTH CENTRAL

Hot Tuna, **Femme Fatale** and **Black Oak Arkansas** with **Jim Dandy** have just completed live-to-24-track and direct-to-digital dates from the soundstage at Wichita's **Big Dog Studio**, **John Salem** engineering. . . Paisely Park recording artist **George Clinton** has been producing tracks with engineer **Randy Poole** for funk rapper **Louis** in the Synclavier/MIDI room at **Studio A** in Dearborn Heights, MI. . . In LaPorte, IN, **Brian Roseman** was engineering sessions for gospel artist **Mark Stoddard** at **B.L.R. Studios**. . . The rockabilly sounds of **Hi-Fi and the Roadburners** heated up the walls at Chicago's **Soto Sound** recently, recording a demo to present to major labels and local clubs. The sessions were engineered by **Jerry Soto**. . . In other news from Chicago, **Tone Zone Recording** reports that gospel vocalist **Darius Brooks** was working on his upcoming album release with producer/keyboardist **Percy Bady**. **Roger Heiss** engineered. . . **Master View Recording** in Otsego, MI, reports completion of an album project for **Ontray**, produced by **Steve Gagnon** and engineered by **Rich Dekker** and **Paul Dams**. . . RCA London artist **Gina Foster** was working on three songs for her new album at **Paisley Park Studios** in Minneapolis, MN. **Rick Neigher** was producing, **Susan Rogers** was engineering and **David Friedlander** assisting on the project. . . Singer/songwriter **Liam** has been tracking his debut LP for Eklipse records at Chicago's **Seagrape Recording Studios**. **Dave Trumfio** is engineering. . .

NORTHWEST

At **Ironwood Studio** in Seattle, engineers **Jay Follette** and **Paul Scoles** were busy working with jazz artist **Rusty Sabella** on a new album project. . . **Prairie Prince** and **David Killingsworth** of **The Tubes** were working on a solo project at **Alpha & Omega Recording** in San Francisco. The sessions were engineered by **Anne Maria Scott** with **Ulrich Wilde** assisting. . . **Linda Ronstadt** was at San Francisco's **Russian Hill Recording** with **Phillip Glass** working on vocals for Glass' opera, *Music For 1000 Airplanes*, an album to be released in 1989. **Kurt Muncasci** produced the sessions and **Jack Leahy** engineered, with **Michael Ahearn** assisting. . . Among the acts recently brought in by producers **Norman Kerner** and **Marc Baum** to record at Sebastopol's **Mesa Recording** are **Danny Sorrentino**, **Beatgirl** and **Dr. John**, **The Night Tripper**. . . Local rockers **No Rules** were in **Studio Center San Jose, Inc.**, working on their debut album, with **Jerry McReynolds** engineering and **Matthew Howe** producing. . . **The Beatnigs** were recently heard recording their 12-inch single, "Television," for Alternative Tentacles at San Francisco's **Hyde Street Studios**. **Andy Murdock** engineered. . . **Zero** were tracking their second album at **Prairie Sun Studios** in Sonoma County. Producing was **Brian Risner** and **Zero** drummer **Greg Anton**. . . Recent activity at **Spectrum Sound Studios** in Portland, OR, includes completion of a digital mix of **Oregon's** latest release for CBS Records. **Tom Lazarus** engineered and **Mike Moore** assisted on the group's 17th album. . . In San Francisco, **Poolside Studios** completed production of *China Lake*, a feature film for Cairo Cinemafilm. Engineering was **David E. Nelson**. . . Across the bay in Richmond, new tracks from **Michael Cooper** for his forthcoming album, engineered by **Darrin Harris** and produced by Cooper, were taking place at **Starlight Sound**. . . **Faith No More** was back at Sausalito's **Studio D** to work on their second album for Slash Records. **Jim "Watts" Vereecke** was handling the engineering, with production by **Matthew Wallace**. . .

SOUTHWEST

Among the artists recently using **Arlyn Studios** in Austin, TX, were **Syd Straw**, **Lou Ann Barton**, **Willie Nelson** and **Little Joe y la Familia**. Also, producer/engineer **Mike Stewart** was in working

with **Shoulders**, a local Austin band. . . Engineers **Nick Thorpe** and **Vales Crossley** worked with **Barry Manilow** at **Soundworks Recording Studios** in Las Vegas, cutting tracks for his upcoming European tour. . .

SOUTHERN CALIFORNIA

Recording artists **All** were in finishing their new EP, *Allroy for Prez*, at **3rd Wave Recording** in Torrance, CA, with producer **Bill Stevenson** and engineer **Richard Andrews**. . . The recent reggae sounds of **The Superiors** were recorded and mixed at **Pacifique Recording Studios** in North Hollywood. Engineering was **Dennis Moody**, and producing for Elf King Lore Records was **Keidi Howard**. . . Also at Pacifique, actress and singer **Tina Yothers**, who plays Jennifer on *Family Ties*, is cutting tracks with engineer/producer **Ken Deranteriasian**. . . **Pete Moore** (formerly with **Smokey Robinson** and **the Miracles**) has been using **Red Zone Studios** in Burbank to record artists for his new label, Satellite Records. Recent sessions include Spanish star **Nidia Caro**, rock rappers **Shakeena** and **Series A** and jazz saxophonist **Ben Clatworthy**. **Bobby Barth**, **Wade Marcus** and **Pete Moore** produced, and **Steve Shepherd** engineered. . . At **The Enterprise** in Burbank, producer **Tom Bell** and engineers **Paul Ericksen** and **Martin Horenburg** used one of that facility's three Synclavier systems to record tracks for **James Ingram's** upcoming album for Atlantic. . . At **Mad Dog Studios** in Venice, Emmy Award-winner **Liz Lachman** was cutting vocals with producer **Cliff Downs** and engineer **Don Tittle**. . . At **Studio Masters** in LA, producer **Richard Perry** is working on a '50s album for Warner Bros. Records. He and engineer **Dave Schober** have been doing vocal sessions with **The Manhattan Transfer**, **El DeBarge** and **Randy Travis**. . . **Larry Robinson** and **Gerry Brown** were in at Hollywood's **Conway Recording Studios** doing additional production and 12-inch remix work on the new **Glenn Medeiros** single for Amherst Records. Gerry ran the Neve V Series console with **Rob Von Arx**, **Richard McKernan** and **Marny Riley** assisting. . . **Stagg Street Studio** in Van Nuys recently played host to British '70s rockers **Sweet**, with **Richard Bosworth** engineering and **Scott Gould** assisting. . . **Barbra Streisand** was finishing up a new album at **Lion Share Recording Stu-**

—CONTINUED ON PAGE 120

Before After



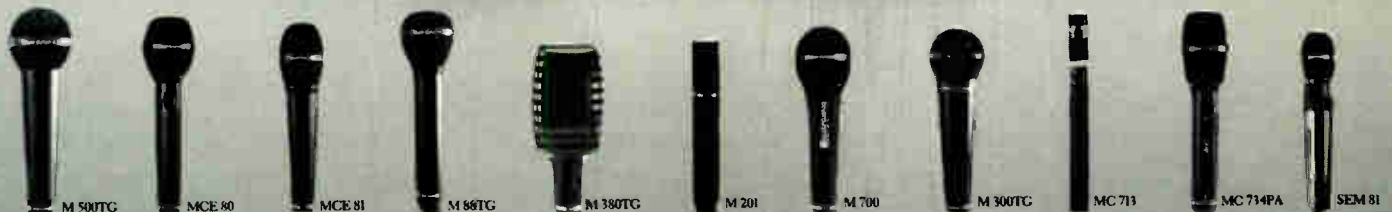
Before a microphone can qualify as a great road mic, it has to be a great mic, period. Above all, it must deliver the natural sound of voices and instruments accurately.

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by Ken C. Pohlmann

DAT TECHNOLOGY

PART 2

As a consumer product, DAT has had tough sledding indeed. Faced by high prices, political (i.e., economic) opposition, continued popularity of the analog cassette and the promise of optical recording formats, DAT may never win widespread popularity in the mass market for which it was designed. Ironically, although DAT was never really intended as a studio recorder, it has won instant success in that market. DAT recorders such as the recently announced Nakamichi 1000, available in both consumer and professional models, may appear in more *Mix* covers than living rooms. In this case, the \$10,000 price tag clearly establishes the fact that only a serious recordist would buy one. That bottom line for one of the best recording systems available today is quite high for an amateur, but an incredible deal for a professional.

Unquestionably, in terms of bang for the buck, DAT is the best recording technology now available. Should you buy one? Your first move should be a study of the opportunities and limitations of the technology itself. In that spirit, let's continue our discussion of the DAT format, this month focusing on the elements in the electrical design and the tape format.

DAT was designed from scratch, thus many unique technical solutions were devised. On the other hand, DAT borrows from both rotary head video technology and compact disc technology. The tremendous data density recorded to tape necessitates a number of sophisticated recording techniques in terms of track format. In addition, user features such as subcode overwrite require flexibility in data record-



ing. As with any digital audio system, modulation code and error correction play an important role in determining system performance.

From a hardware point of view, a DAT recorder utilizes many of the same building blocks as a CD player, with the addition of encoding circuits. Elements such as A/D and D/A converters, modulators and demodulators, and error correction encoding and decoding all make an appearance, as shown in Fig. 1. Audio input is re-

At a recent press conference in Tokyo, Niro Nakamichi unveiled both pro and consumer versions of the Nakamichi 1000, his company's first entry into the DAT market.

PHOTO: GEORGE PETERSEN

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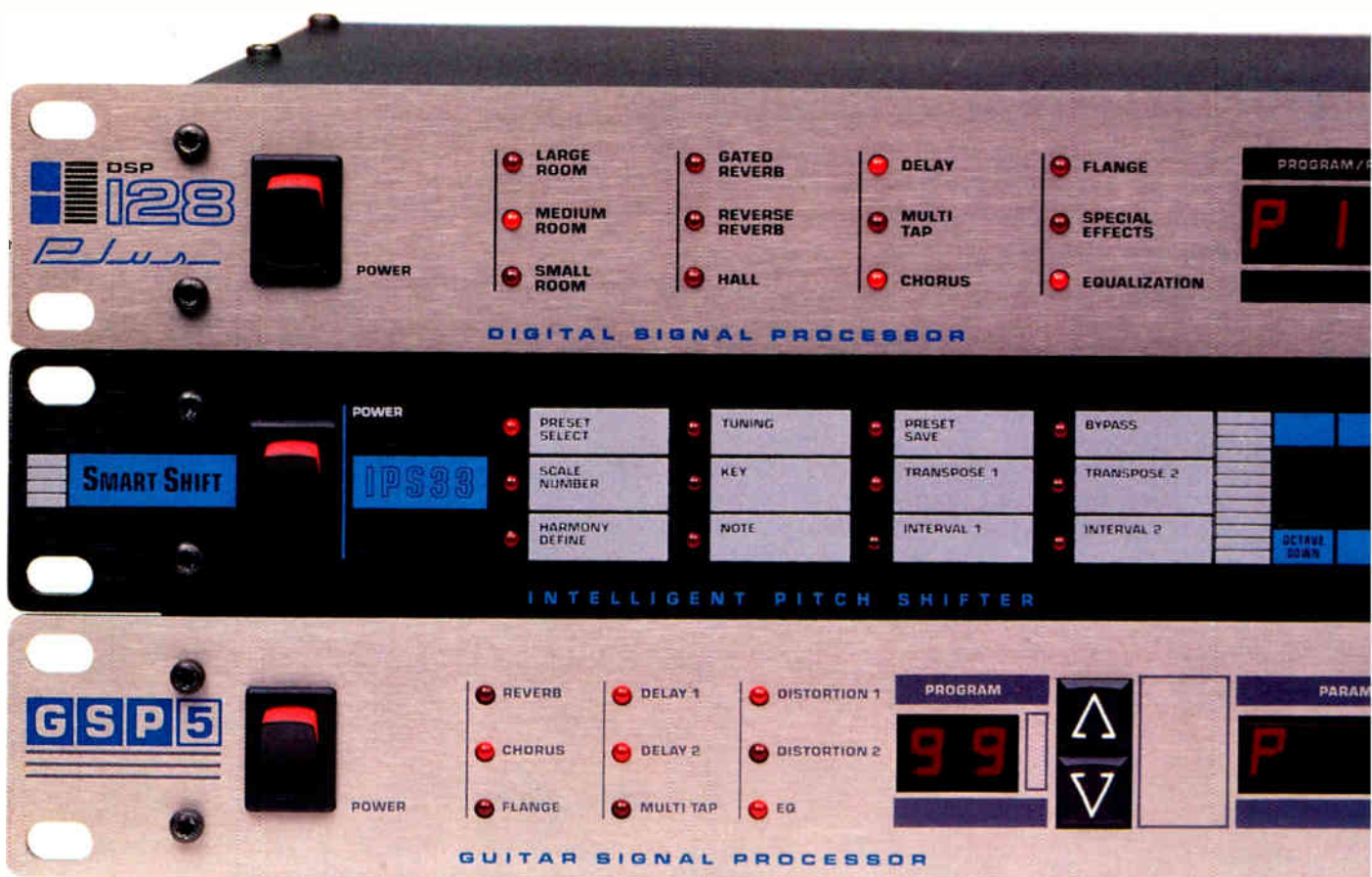
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SIM equalization grew out of Meyer's uncompromising production philosophy, and as such, SIM is applied only to Meyer Sound equipment installations. Instead of attempting to second-guess the tastes of the market, Meyer produces sound systems that most truly represent the character of the signal they receive, leaving artistic control to the artist. With SIM, Meyer offers an equalization tool that leaves complete control of spatial sound dynamics where it belongs—with sound designers, consultants, and mixers.

SIM Clients:

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Stevie Wonder tour, Wembley Arena, London
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Les Miserables, New York, Boston, Los Angeles, London
Lily Tomlin, The Search for Signs of Intelligent Life in the Universe, San Francisco, Washington D.C., Chicago
Jubilee Auditorium, Calgary, permanent installation
1988 Grammy Awards, New York

“Noise and light are not music.” John Meyer

Results-Oriented Measurement.

A SIM engineer from Meyer operates the system, implementing the sound designer's desired effects.

SIM enhances the mixing function, making the spatial sound dynamics visible to the SIM engineer. Placing SIM microphones strategically throughout a space, the engineer first ensures all areas are covered, and then adjusts each area to attain a uniform sound experience through SIM's straightforward system of resolving complex measurement.

SIM equalization even has the ability to erase a room. The sound designer thus can bring back in the room's ambience or enhance it, to whatever degree deemed appropriate. SIM gives the designer qualitative, as well as quantitative, control of a space.

Clarity for the New Sophistication.

The audience is the true beneficiary of SIM equalization, enjoying better intelligibility and a more intimate relationship with the performers.

With SIM, Meyer is helping redefine the parameters of live performance sound quality.

Dynamic sound behaves differently in each spatial context. And while schematic arrangement helps dramatically in predicting sound quality, only through live use and exhaustive testing can an installation be tuned for specific desired characteristics.

Some sound designers still use noise, swept tones and light to set up a soundstage, as if projecting sightlines and frequency response in an empty room delivered the pure experience of music.

Meyer Sound recognizes the importance of both frequency response and phase response alignment and maintaining the *order* of the signal throughout a space. (For example, playing a tape backwards doesn't change frequency response, but changes phase response.) And the only way to gauge phase properly is through measurement.



Bob McCarthy
Senior SIM Engineer
at the 1988 Grammys

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Interactive Process.

SIM equalization involves the sound designer, consultant, mixer and SIM engineer in an interactive process of establishing the subjective sound dynamics of a space. When used with a properly aligned Meyer Sound system, it creates an environment in which both frequency response and phase response are dramatically improved, resulting in superior sound clarity for every member of the audience.

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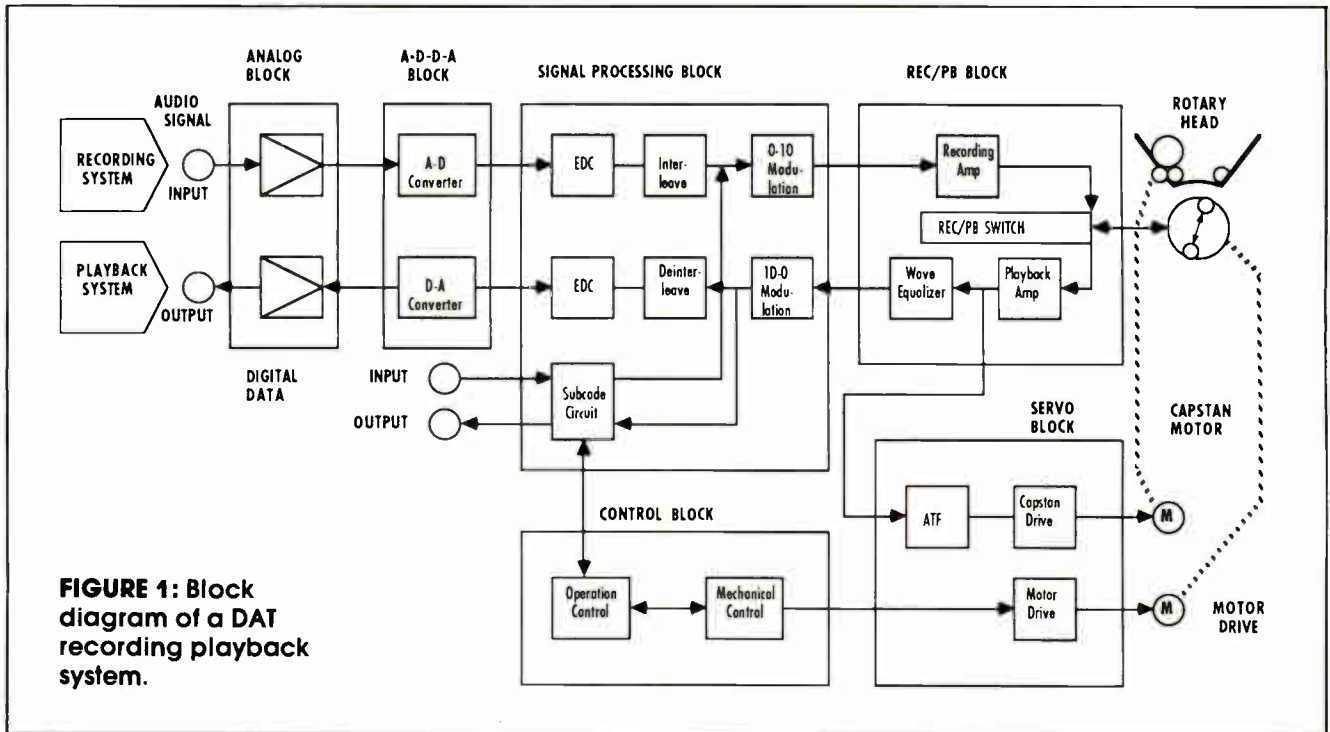
ceived in digital form, or is converted to digital by an A/D converter. Error correction code redundancy is added and interleaving is performed.

As with any helical scan system,

tion of wow and flutter. Error correction is accomplished in the context of de-interleaving. Finally, the audio signal is output as a digital signal, or through D/A converters as an analog signal.

The DAT rotary head permits slow

ly more than six degrees from the tape edge. Despite the slow tape speed of 8.15 millimeters (1/4 inch) per second, a high relative tape speed of about 3 m/sec is obtained, making it possible to record 2.2 gigabytes of information (two hours of audio) on a single tape.

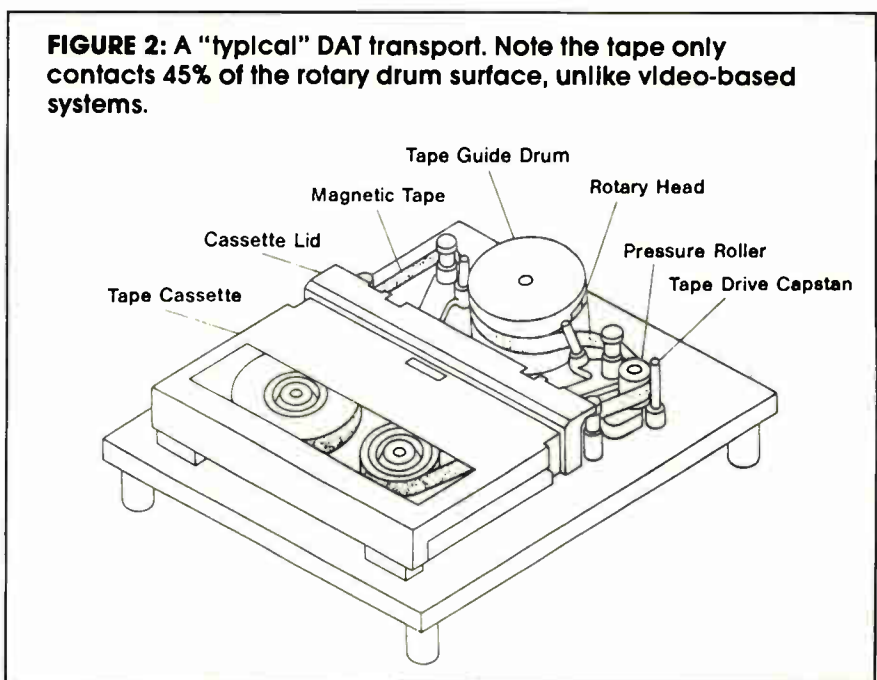


time compression must be used to separate the continuous input analog signal into video fields prior to recording, then to rejoin them upon playback with time expansion to form a continuous audio output signal. To achieve this on the recording side, the output of a buffer memory is clocked faster than the input data was entered, thus achieving the time compression required. Subcode information is added to the bit stream, and data is converted from parallel to serial form. The digital signal is modulated by an eight-to-ten (8/10) modulation (as opposed to eight-to-14 modulation as in the CD format) to aid recording on magnetic tape.

In the playback process the transitions on the tape induce a signal in the head, which regenerates the record waveform. Track-finding signals are derived from the tape and used to automatically adjust tracking. Eight-to-ten demodulation takes place and data is returned to a parallel bit stream. Subcode data is separated and used for operator and servo control. A memory permits de-interleaving as well as time expansion and elimina-

linear tape speed while achieving high bandwidth. Each track is discontinuously recorded as the tape runs past the rapidly spinning tilted head drum, as shown in Fig. 2. This results in diagonal tracks at an angle of slight-

A DAT rotating drum (typically 30 millimeters in diameter) rotates at 2,000 rpm, normally has two heads placed 180 degrees apart and a tape wrap of only 90 degrees. In most cases, the record/playback signal is recorded (or



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played back) 50% of the time, and for the other 50% is interrupted.

Because of low wrap, only a short length of tape is in contact with the head. This permits high-speed transport and search while the head is in contact with the drum, and reduces tape damage. For example, it has been determined that a tape could be re-played more than 200 times before signal deterioration begins. In addition, lower tape tension can be used to promote longer head life. The design allows use of four heads separated by 90 degrees to allow simultaneous monitoring, and tracking stability is said to be better than M-wrap and U-wrap video systems. Four-head designs such as the Nakamichi 1000, for example, provide direct read after write (DRAW), so that the recorded signal can be monitored.

Other diameter drums may be used. Smaller 15-millimeter diameter rotating drums have been developed for optional use in car and portable DAT decks; the tape makes contact with a 180-degree portion of the drum. A 60-millimeter diameter drum, in which

Unquestionably, in terms of bang for the buck, DAT is the best recording technology now available.

the tape wrap angle is only 45 degrees, would facilitate high-speed tape handling while the tape is loaded. Quick access would thus be provided. In either case, different head diameters produce identical track lengths, thus compatibility among head diameters is ensured.

Because the output from the rotary head is dependent on frequency, and is reduced at lower frequencies, and the rotary head also has a poor low-frequency characteristic, the output

frequency must be converted to a higher frequency. The 2.46 megabits-per-second signal is compressed by a factor of three and converted to a rate of 7.5 megabits per second. This allows discontinuous recording, facilitates a smaller drum diameter and a reduction in the size of the rotary head, and increases the head's S/N ratio.

In addition to the helical scan tracks, a tape contains two longitudinal tracks, one at each edge of the

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tape. They both protect the diagonal tracks against edge damage and provide additional writing areas.

Azimuth recording, sometimes referred to as guardband-less recording, is used in DAT. The drum's two heads are angled differently from each other with respect to the tape; this creates two track types, sometimes referred to as A and B, with differing azimuth angles between successively recorded tracks. This ± 20 -degree azimuth angle means that the A head, for example,

will read an adjacent B track at a greatly attenuated level due to phase cancellation. This reduces crosstalk between adjacent tracks, eliminates the need for a guardband between tracks, and promotes high-density recording. In addition, selection of a channel code with minimal low-frequency content reduces the problem of phase reinforcement at long wavelengths. A greater angle would result in lower crosstalk, but the effective writing speed (calculated as the head-to-tape speed multiplied by the cosine of the azimuth angle) would be reduced as

well. The angle of ± 20 degrees reduces crosstalk to a level comparable to tape noise, yet reduces signal level by

From a hardware point of view, a DAT recorder utilizes many of the same building blocks as a CD player, with the addition of encoding circuits.

only 1 dB as a result of lower writing speed. Moreover, some tolerance to tracking error is assured because, as crosstalk from one track increases, it is offset by a decreasing crosstalk level from the opposite track.

Erasure is accomplished by simply overwriting new data to tape. By reducing the linear speed of the tape relative to the drum rotating speed, successive tracks partially write over previous tracks. Thus the head gaps (20.4 microns) are approximately 50% wider than the tracks (13.59 microns) ultimately recorded to tape. As noted, the resulting crosstalk from adjacent tracks is attenuated by azimuth recording and permits automatic track finding.

Next month, we'll continue our technical discussion of DAT with a closer look at automatic track finding, and the track recording format itself. ■

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

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DIC Digital
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by Stephen St. Croix

ELVIRUS

QUEEN OF THE SHOW

I went to the AES Convention last October. I saw that a lot of you did, too, as you came up to say hello. Thanks. It's nice to know that some of you out there actually went to the trouble to find me to tell me what you think of what I think.

You all looked so nice and healthy. Maybe a few of you even stayed that way.

In the two weeks following the AES Convention, over half the people I do business with were out sick, as usual. For the last five years, after every show, it seems there has been some sort of virus that has knocked out about half the audio manufacturing industry and

about a third of the recording facilities.

Entire companies effectively go down for ten days as it sweeps through them. These people get pretty sick, as many of you are all too aware.

Around here we have taken to calling it AES Disease. I wish to make it clear that the "AES" in AES Disease stands for Almost Everybody's Sick, and in no way do I mean to imply that there is any possible correlation to the Audio Engineering Society. You knew that.

This isn't the only popular virus that we have to watch out for. Computer viruses—even fatal ones—are really here.

If you do anything in this industry, you use computers. If you are a carbon-based life form and can read this column, you are totally dependent on computers, even if you have never seen one.

If you want your plane to land at the right airport, or those traffic lights to ever turn green, or your phone to work, or food to be on the shelves at the grocery store, or gas to be at gas stations, you are relying on a society that cannot function without constant use of computers.

If you want the government and law enforcement agencies to even *be there* the next time you wake up, or if you recognize the *concept* of military defense. . .

I'm not trying to alarm you. I'm just trying to alert you.

Today's systems are sophisticated enough that the analogy to biological viruses is almost perfect. If you are careless and let your computer hang out with other computers that have a virus, it may get sick.

Computers today, every one of them, talk to other computers. You may not think so. A friend told me I was wrong when I said this—he is never on Com-





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Since we moved to larger quarters here in Burbank we've opened *two* new fully equipped showrooms. In the Pro Room are three complete, operating production systems—consoles, monitors, tape machines (including 32 track digital), and signal processing/effects gear. Our second room has three more complete production systems set up to hear and compare. This room caters to the

audio/video needs of musicians and production studios.

Just the Facts, Ma'am

Things change quickly in pro audio. To make sure everyone here knows all the facts about the latest equipment, we've added a Product Specialist to our staff. His *only* job is researching equipment—reading brochures and tech manuals, going to trade shows, talking with manufacturers—and sharing that knowledge with our customers.

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Technical Staff (l to r): Steve Smulian (Service Manager), Paul Hulse (Senior Technician), Rik Shannon (P.O.M.P.), Greg Dougan (Parts Manager), (Not Pictured: Nello Torri)

puServe or any of the other networks, so he can't get a virus.

I'm not so sure that is true. The only way a computer can do anything for you is if it learns how. To learn, it must acquire new software. To do this it must get online through a modem to download from another remote system, or read a disk that was written on another system, or just talk to the computer in the next room through one of the new popular LANs (local area network).

There is nothing you can do to stop a virus from transferring when you download anything that is over a few kilobytes in size.

Although it seems reasonable to think that the clear plastic bags that come on new 3.5-inch disks should do a fine job of stopping the transfer of viruses, it has never actually been *proven*. And besides, the annoying side effect of these bags is a complete lack of transfer of the data you *do* want. Oh, well.

You see, the problem is that our computers offer a unique reality. If someone wants to create a CAD program, a package that can draw speakers or console components, all he or she has to do is *write* about it. When the story is written with enough detail and with the proper grammar, you have it. A CAD is born.

On the other hand, lets say that some cad wants to write a virus. No need for years in medical school. No education in microbiology, no expensive laboratory. No genetic engineering skills. All it takes is a deranged mind, a little home computer and a couple of weeks.

This is new to Earth. You do not need to learn how to solder, weld, glue or paint—you just write about what you want, follow the rules and It Is Created, good or bad.

About the time of this last AES Convention, a lot was going on. The United States government's defense system was infected via Milnet, several areas of the U.S. were down due to college-spread viruses, and private users like you were getting hit daily.

Here is one fine example. A jerk graduate student supposedly wrote a virus to test the security of the computer system. In theory the virus was supposed to lie dormant, or at least very inactive. He just wanted it to infect the system so he could show peo-

ple how his virus could "invade" a supposedly safe system.

It turns out that apparently there was a bug in the virus (I guess he wasn't so hot after all) which caused the virus to multiply very rapidly. As he was running it on his system, it started to infect other university and business computers over the interconnecting network. He tried to stop the virus, but it was so fast it had already seriously spread.

To complicate things further, it began clogging the network lines so badly he couldn't send his warnings out (over that same network) fast enough. The virus caused the computer system at his school to crash, so he had to wait about eight hours before the system was back up to try to stop the virus again. It got on the Arpanet network and brought down hundreds

It digs in and hides itself, and then goes on to actually search out uninfected programs and infect them.

of computers in universities, defense research centers and other sensitive locations. It was everywhere, and more than a few computer systems crashed, causing significant financial loss in downtime. Neat and discreet.

The virus apparently works by replicating. It is designed to fill up the memory and the disks on victim's computers so that the operating systems will slow down dramatically, and eventually crash.

It is my sincere wish that this student gets slammed hard. If not, it will look like it is okay to bring a whole interconnected system down just because of "intellectual curiosity" (as this guy claimed).

If you know a nerdy computer-science graduate student who hasn't gone out on a date in the last two

months, watch out!

When any new deadly virus sweeps the human population, there is always some sick guy who says at least this will stop (fill in the blank). I have already heard this will stop software theft. Right.

All of us using Macintosh systems are running Interferon, Shield and the other virus detectors, and periodically check our systems with Virus Rx or one of the other diagnostic programs. Don't we? If you own a Mac and this paragraph doesn't describe you, you have serious trouble coming.

You might not understand just why this stuff is so bad. Let me tell you. When a virus gets into your system, it doesn't just lie there and cause trouble. It digs in and hides itself, and then goes on to actually search out uninfected programs that you have on your disk and infect them. Then, at a time of its choosing, it can call out to make these infected programs act sick.

This can mean that they crash, or maybe cause your system to slow down and generally act unstable, or perhaps make it impossible to print, or to time MIDI correctly, or maybe just have trouble reading the input from your SMPTE interface box. It might make your automated mix real sloppy and go in and infect your last 20 backup mixes just to show you that it cares.

If you have not been watching for viruses, it is likely that by the time you actually figure out there is something wrong, it is too late. Your system, and the systems of any friends that you have loaned software to, may already be very, very sick. This is why these time delays are written in—so the viruses have a chance to deeply infect you and your friends before they can be discovered. Nice, huh?

These viruses can be caught by *very* casual contact.

Here is a novel plan: *pay* for your software, run virus sniffers, and if you find anybody in your apartment building writing a virus, shoot him. We will each ante up a buck to cover your legal fees. Come to think of it, if the judge has a Mac, you'll probably get off with a warning. ■

The author has given up his biography space for a personal note: remember when almost anything you did for fun was... well, at least not fatal? That was then. Now even your machines are in danger. Be careful.

by Mel Lambert

DIGITAL AUDIO WORKSTATIONS

DEVELOPMENTS AT THE AES CONVENTION

The buzzword on the floor during the four-day AES Convention, held in early November at the Los Angeles Convention Center and Hilton Hotel, was DIGITAL, loud and clear. Everywhere you looked there were new or enhanced digital processing systems, disk-based editors, recorders and full-fledged digital audio workstations. In

stand-alone, multichannel mixer/editor/recorder. I predict that a reexamination of the basic processor engines needed to get the digital audio job done efficiently will lead to the extinction of many current systems.

Of the new or upgraded hardware on show at the AES Convention, the following represents a necessarily

At left: AES exhibitors transformed the L.A. Convention center into a showplace of new technology. Below: NED's PostPro digital multitrack recorder/editor features a dedicated remote controller/locator.



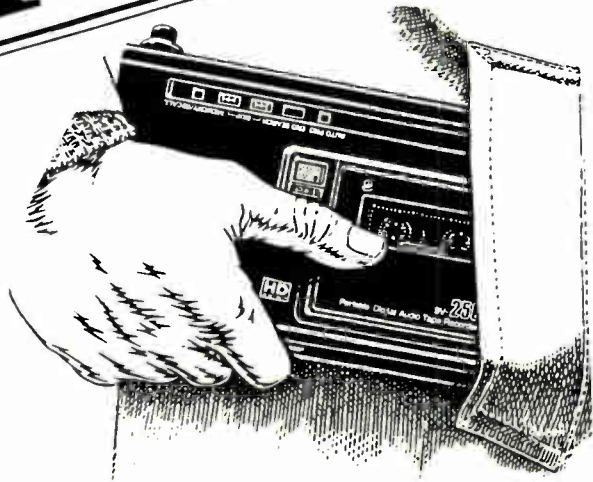
PHOTO: GEORGE PETERSEN

fact, the loose definition that we've all been using to describe a digital audio workstation—in basic terms, a device that brings together via one control surface a variety of interlinked and complementary audio recording, editing and manipulation tasks—is crossing a lot more boundaries than ever before.

The blinding power now offered by a Macintosh II system running managing software for digital real-time EQ and dynamics control, offers more processing bang for your buck than a



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SV-250

Portable

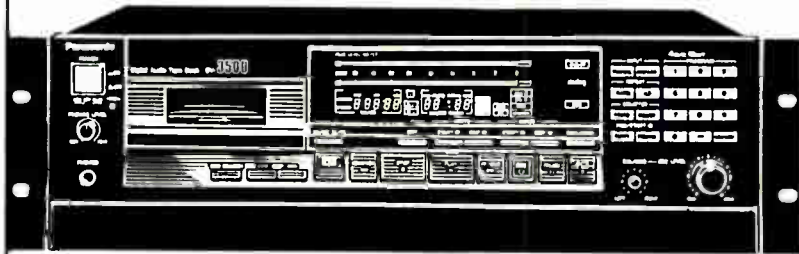
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- Outstanding sound quality with MASH* AD converter
- Heavy duty construction
- Balanced Mic Inputs

SV-3500

Digital Audio Tape Deck

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- Rackmount

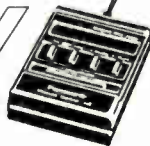


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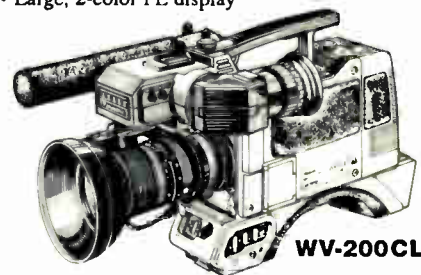
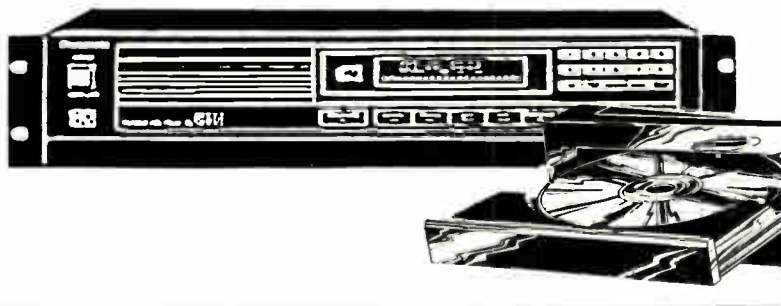
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brief overview of the more innovative items that caught my attention. As with previous reports, the products are arranged in alphabetical order.

AKG Acoustics' digital products division was showing a prototype digital audio editor to specially invited guests in a demo suite at the Hilton. The RAM-based DSE-7000 system comprises the equivalent of an 8-track recorder, editing controller and 10-channel mixer in a stand-alone unit with CRT. Front panel controls mimic the primary functions of conventional channel faders, scrub wheels, recorder modes and CRT cursor controls, plus assignable keys for routing and track assignments. Sampling frequencies of 32 kHz, 44.1 kHz and 48 kHz are available. Each RAM card provides 4.4 minutes of recording capacity from

analog or AES/EBU-format digital inputs, freely allocatable between one to eight "tracks"; three more memory cards can be added to bring the storage capacity up to 17.5 minutes. Future generation editors will offer up to 70 minutes of RAM capacity. No price was announced during the private AES showings.

AMS AudioFile systems are now in use at dozens of facilities around the world, with deliveries of the first five all-digital Logic 1 consoles expected in the first quarter of 1989. New at the AES Convention was a software release for AudioFile that provides ADR and loop editing sequencing (basically automated control of record in/out timings, and the stacking of up to 30 takes), plus enhanced control of external VTRs. The ability to handle eight simultaneous inputs, in contrast to the system's current stereo capabil-

ity, will also be added during the first quarter of 1989.

Analog Digital Synergy was showing a final production version of its Synergy One in-line digital console, which is available in configurations of four to 64 channels. A separate control surface offers conventional aux send, PFL, AFL, pan, 4-band parametric EQ, low-pass and highpass filters, assignment and channel fader. The control surface connects to a separate rack with A/D and D/A modules that accommodate analog plus AES/EBU, SDIF-2 and S/P DIF digital inputs and outputs, at sampling frequencies between 32 and 50 kHz. Cost of a 16-channel version is expected to be around \$160,000; first deliveries are scheduled to begin during early 1989.

Audio Animation unveiled The Muse, a fully automated 2-channel digital console designed for CD mas-



Jack Mullin demos a 1926 Vitaphone recording lathe used for early film sync sound.

PHOTO GEORGE PETERSEN

Analog Lives!

Without a doubt, the big news at the 85th Convention of the Audio Engineering Society involved those ubiquitous digital zeros and ones we've all grown to know and love. And you didn't even need to step inside the cavernous Los Angeles Convention Center to realize this. Barely a stone's throw away, on Figueroa Avenue, were two large billboards, each hawking the latest pro audio digital doodads from Sony and Yamaha for all the world to see.

Amidst all the digital hoopla, this AES show proved that our old

friend analog is still alive and well—perhaps even thriving, despite rumors to the contrary.

The high cost of manufacturing large, all-digital mixers still remains a formidable obstacle to the mass availability of such devices; ironically, this situation has done much to advance the state of the analog console today. As a whole, the audio industry seems quite pleased with the performance of analog mixing consoles, although the concept of the digitally *controlled* analog console is definitely picking up steam.

One example of the possible shape of things to come was pre-

sented by Euphonix, a Palo Alto, California-based firm. Their Crescendo automated audio mixing console offers real-time, dynamic control of all audio controls, including faders, sends, EQ, routing—even talkback and headphone levels—all referenced to standard SMPTE/EBU time code or an internal clock. Equalization response curves can be displayed on a CRT, and a standard RS-232 interface connects the console to a personal computer for onscreen editing and disk storage of mixes.

The system consists of a "Mix Controller," a compact package that *looks* a lot like a standard console, but instead is a computer that digitally controls the analog audio circuitry, located in a modular rack enclosure that can be up to 50 feet away. Crescendo claims some pretty impressive specs, with dynamic range stated as being over 114 dB, and a bandwidth of 10 Hz to 40 kHz (± 0.2 dB). Deliveries are slated to begin this April, and pricing for a mid-sized "Dual 32" system (with 64 full-function faders) is \$49,000.

It's no secret that Dolby's Spectral Recording process may be the hottest thing on the analog recording scene in many years. SR has made a major impact on recorder manufacturers, who continue to develop and refine new analog machines in response to a thriving

—CONTINUED ON PAGE 35

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JUXTAPOSITIONS

tering and DAT preparation. Internal EQ and dynamics changes can be effected either by using conventional front panel rotary controls or via a color CRT display and cursor moves. A 5-band EQ section for each channel features memory settings for bandwidth, center frequency, cut and boost. Settings of compression ratio, threshold, attack and decay times can also be stored and recalled at a rate of 100 per second. Up to 80 minutes of dynamic level, EQ and compression changes can be held in internal memory. The system accepts analog and AES/EBU, plus SDIF-2 digital inputs and outputs, at sampling frequencies between 30 kHz and 100 kHz.

Digidesign unveiled AD IN, a new analog-to-digital conversion system designed to be used in conjunction with the firm's Sound Accelerator D/A card for the Apple Macintosh II and SE. Used together, the devices allow two channels of 16-bit audio to be recorded directly to and replayed from the Mac's hard disk. Controlling software, such as Digidesign's *Sound Designer II* waveform editor and time compressor/expander, allows systems to be configured for CD mastering, effects editing and other audio production tasks. Storage capacity is dependent on the number and size of SCSI drives attached to the host computer. AD IN will be available in the first quarter of 1989, at a projected retail price of around \$995. Digidesign is now marketing AD IN, Sound Accelerator and Sound Designer II in an under-\$3,500 package called Sound Tools.

Digital Audio Research's SoundStation II was being demonstrated with a new 5.25-inch, 600-megabyte WORM (write-once, read-many) optical drive system that holds up to 60 minutes of stereo digital audio. Access times to and from the optical drive are sufficiently fast to allow real-time playback of stereo material; for multitrack playback from the maximum of eight digital tracks available on the system, SoundStation must first transfer the data to its hard drives. Also announced at the AES Convention: a new time-compansion function that allows $\pm 50\%$ shortening or lengthening of audio segments without pitch shifting. I understand that a version of the company's *WordFit* software, designed for automated dialog replacement and

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similar applications, will be made available for SoundStation II within the next six months. Both WordFit and the new time-compansion software are based on similar temporal manipulation algorithms.

Fairlight Instruments attracted a great deal of attention with its hands-on demonstrations of the MFX (Music and Effects) console for the Series III. A total of 24 dedicated sound keys with velocity and position sensing can be set up to handle the triggering of individual audio cues stored on hard

disk. Each cue point—either taken from a keyboard switch closure, or from a MIDI-based sequence—can be assigned a time code label, and then edited using the firm's new *Cue-List* post-production software. The MFX jog wheel, in conjunction with dedicated transport keys, allows precise autolocate and control of external VTR and ATR transports. (Ampex VPR-3 1-inch VTRs can be controlled directly; other units connect via an external TimeLine Lynx VSI synchronizer.)

Included in the Fairlight package is an 8-track hard disk recording program that uses the same hardware as

the rest of the system. Up to seven track-hours of storage time is supported. A non-destructive editing software package—capable of splitting edits among up to 16 separate outputs—should be available in the first half of this year.

As one of the first companies to develop A/D-D/A cards and controller software for the Apple Macintosh Plus, SE and II host computers, Integrated Media Systems has something of a head start on the competition with its Dyaxis system. Various units being demonstrated at the AES Convention allow random-access, 2-track record-



**Euphonix
Crescendo
Mixer**

—FROM PAGE 30

and revitalized market.

With the announcement of its ATR-80/32 (a 2-inch, 32-track deck), Tascam joins Otari and AEG as companies committed to this format, which is now becoming more popular. Tascam also joined the 1/2-inch, 16-track race with the introduction of the MSR-16, a compact, rack-mount recorder with internal dbx Type I noise reduction, priced at approximately \$7,500. At the other end of the spectrum, Tascam made its DASH debut with the DA 800/24, a 24-track digital recorder with a price tag of \$99,000. (Deliveries are expected to begin in the first quarter of this year.) Thanks to advancements in LSI technology, the DA 800/24 draws only 850 watts of power.

Fellow DASH advocates Sony and Studer also unveiled new analog 24-track machines. Priced under \$50,000, Studer's A827 represents a mid-priced entry in its line. At the

same time, the introduction of a software enhancement for the high-end, A820 24 multitrack reaffirms confidence in the future of the analog medium. Studer also announced plans to debut a 48-track DASH recorder at next month's AES Convention in Hamburg.

Certainly the most talked about product at AES was the Sony PCM-3348 DASH multitrack, spotlighted in the November 1988 issue of *Mix*. However, if your budget doesn't include spending \$240,000 on a tape recorder, you might be interested in Sony's APR-24 analog 24-track, which retails at \$45,000 and features a 16-bit microprocessor that integrates transport, audio and synchronization controls; auto-alignment and storage of tape parameters; and an interface for external noise reduction systems. It's also *American-made*, at Sony's Ft. Lauderdale facility.

Of course, digital signal processing gear was everywhere. This stuff

keeps improving all the time, and going down in price, despite rising RAM prices. In this category, one of the biggest hits of the AES show was DigiTech's IPS 33, a fully programmable, intelligent pitch shifting device that generates harmonies in 41 scales, with manual or MIDI control. It sounds great, and at only \$799.95 is well worth checking out. But with all these neat digital gadgets, why were conventioners packing into the Audiotechniques and Summit Audio booths? The answer is tubes, tubes, tubes!

New York City retailer Audiotechniques also distributes the Danish Tube-Tech line of vacuum tube outboard gear, which is based on classic gear and new designs. Summit, of Los Gatos, Calif., builds tube EQs, limiters and preamps, but their new "Warm Interface" (\$950) really grabbed some attention. It's a tube-based, 2-channel processor that controls even-order harmonics to give a warm sound to those harsh, sterile digital and digitized tracks. Maybe there's something to this analog stuff after all.

Keeping within the spirit of its theme—"A Century of Technology in the Service of Artistry"—the 85th AES Convention sponsored The John T. Mullin Collection: The History of Sound Recording, documenting the progress of audio entertainment technology over the past 100 years. Recording pioneer Mullin's collection, displayed throughout the convention, proved to be enlightening, educational and entertaining, and was greatly appreciated by everyone who saw it. Thanks, John, from all of us.

—George Petersen

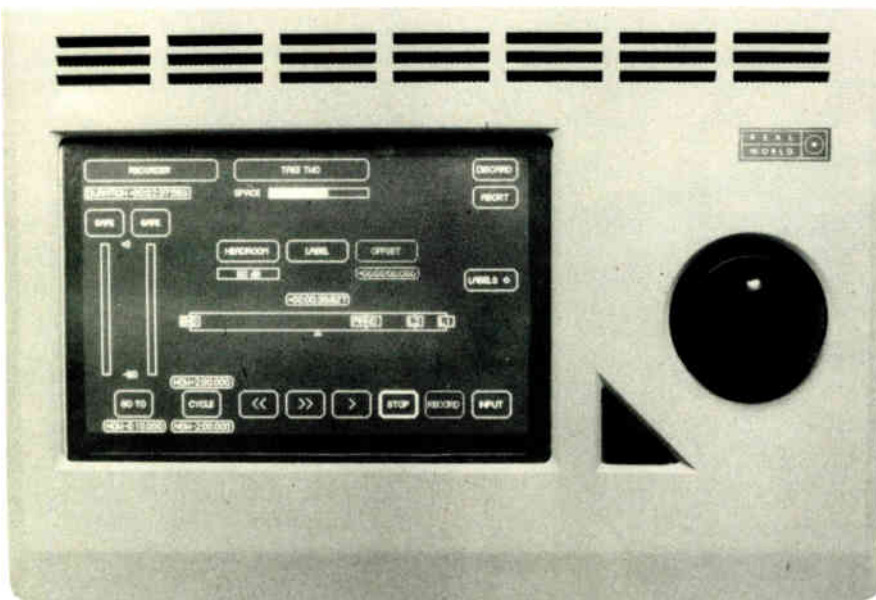
JUXTAPOSITIONS

ing and playback from hard disk, multitrack, offline sound file assembly, and digital format conversion. Processing cards can be configured for 44.1 kHz, 48 kHz or any one of 200 user-selectable frequencies from analog or AES/EBU, SDIF-2, S/P DIF or Sony PCM-601/701-format digital ports. The company supports its own *MacMix* controller software—which

New enhancements for the Lexicon Opus included a new equalization/filter option that provides 12 channels of real-time digital EQ. Comprising plug-in processing modules, an EQ control strip for the work surface, plus controlling software, the option enables four independent equalization bands to be assigned across the 20Hz to 20kHz range. Individual mode keys assign a parametric, notch, high-shelf, low-shelf, highpass or lowpass filter

ic EQ and real-time FIR equalization with zero phase error and up to 3.2-kdB-per-octave slopes. High-definition graphics, onscreen faders and other icons enable parameters to be adjusted using the keyboard, mouse or trackball. Libraries of XLC setups can be stored to floppy or hard disk. Again, high-octave devices like the Quantec XL running Mac-based software such as the Marshall XLC package provide viable companions to hard disk-based recorders and editors, particularly when surgically accurate processing of stereo program material is required.

New England Digital unveiled many new products at the AES Convention, the majority of which are now available in a repackaged configuration that uses an Apple Macintosh II keyboard and graphics-driven controller as the primary workstation. The new Synclavier 3200 represents the company's "level-entry" system, and provides up to 32 megabytes of RAM storage, 32 mono voices, 720 megabytes of hard disk storage and full MIDI control. The new Synclavier 9600 offers 96 megabytes of RAM storage, 96 stereo polyphonic voices, 3 gigabytes of hard disk storage, additive FM synthesis and resynthesis, and is compatible with multiple-user interfaces, including the Mac II, 76-note velocity- and pressure-sensitive keyboard, digital guitar option and the Direct-To-Disk recording/editing systems. Prices begin at \$42k for a basic Synclavier 3600 system (\$95k for a 32-voice/32-megabyte configuration), rising to \$104k for a Synclavier 9600 system. Also unveiled: an enhanced version of NED's PostPro disk-based digital multitrack, which offers onboard time compression, direct digital transfer (input from



Real World Research Audio Tablet

now features full time code control and scrub editing—in addition to Blank Software's *Alchemy*, Soundsmiths' *SoundBase* and Digidesign's Sound Designer II and *Q-Sheet A/V*. Pro-user prices run from \$8,950 for a system with digital/analog ins/outs and 102 megabytes of storage (around 10 minutes of stereo audio at a 44.1kHz sampling frequency), to \$38,950 for a similar system with 1.6 gigabytes (2.5 hours of stereo).

Intelx demonstrated a prototype of its Graphic-DSP digital signal processor, which is designed to enable limiting, compression, expansion, gating and peak-limiting of a digital signal. Analog and AES/EBU or SDIF-2 digital inputs can be accommodated at variable sampling frequencies, while front panel keys and an LCD window facilitate the setting and display of delay, filtering, EQ, attenuation and other parameters. As an outboard for basic hard disk recorders and editing workstations, the Graphic-DSP could prove invaluable for handling real-time signal processing.

characteristic to each section. Cut/boost range is 18 dB, while bandwidth can be varied continuously from 0.1 to 10. Also new from the Convention: a 4-channel digital interface card that handles AES/EBU and S/P DIF signals at 44.056, 44.1 and 48kHz sampling frequencies.

On a related front, Marshall Electronic was showing its blindingly ele-



Digidesign AD IN analog-to-digital converter

gant XLC software for the Quantec XL digital signal processor. Consisting of a graphics-based controller and librarian package for the host Macintosh Plus, SE or II, XLC provides external control of the XL and adds radically expanded room simulation capabilities, complex cross-coupled delays with feedback, dynamic flange, graph-

and output to AES/EBU, Mitsubishi/PD-format, SDIF-2 and S/P DIF), LTC and VITC time code synchronization, and CMX EDL conversion. The company also announced that it has reached an agreement with Lucasfilm's Sprocket Systems Division to develop a "new generation of film and video sound editing products." (Could this

mean the imminent birth of SoundDroid II and EditDroid II?)

Post Logic Systems, a new Canadian company, previewed two new products. The Digital Audio Computer System is a self-contained, expandable processor rack with SCSI hard disk drives that can be used to implement a digital multitrack recorder, or networked in a multiuser editing environment. A companion Digital Audio Control Console incorporates input/output assignment, transport control and digital editing in a desktop format. The systems will be available with analog and digital (AES/EBU and Yamaha DMP7D-format), plus full control of external digital transports and time code interfaces.

Currently in use at several BBC production studios within the UK, Real World Research's Audio Tablet comprises a 2-channel digital editing system operating at 32, 44.1 or 48kHz sampling frequencies, with a standard capacity of 60 minutes of stereo, expandable to six hours. An input/output and hard disk rack accepts analog, AES/EBU and SDIF-2 formats, and connects to a remarkable control surface featuring touch-sensitive, remap-

pable screen displays. Various graphic elements on the control surface are relabeled according to the task for which the Audio Tablet has been configured—currently the system is available with software for 2-channel music and speech editing, with others currently being developed—while a dedicated scrub wheel provides on-line rock and roll edit-point location. A unique combination of pressure sensitivity, a "Confirm" button, an "Undo" function and an audible "click" ensures that each transport, editing and system command is unambiguous and mimics the kind of system response provided by conventional analog-based recorders and editors. All in all, the Audio Tablet holds a great deal of promise, if only because it points the way toward exceedingly user-friendly, intuitive, redefinable control surfaces; anybody who has used a tape machine or time code synchronizer could master operation of such a system in under ten minutes, and be producing viable edits within a half hour. It's the wave of the future. Expected U.S. price of the Audio Tablet is around \$60,000 for a one-hour configuration.

Roland Corporation unveiled two new signal processors, the E-660 Digital Parametric EQ and R-800 Digital Reverb, both of which accept S/P DIF and analog inputs and outputs at 44.1 and 48kHz sampling frequencies. The R-800 features an optional external graphics and LCD display unit that simplifies the control and generation of complex reverb and delay algorithms. In addition to room, hall, plate and garage reverb programs, the unit provides delay, chorus, EQ and expansion in primary or cascade modes. The E-660 features built-in front panel graphics and user controls. It offers 4-band stereo or 8-band mono equalization, with the center frequency of each band continuously variable from 30 Hz to 20 kHz, with 12dB cut/boost and bandwidths of 0.3 to 9.9. Each channel can also be assigned up to 500 ms of pre-delay for phase adjustment. Both units are fully MIDI-compatible.

In addition to the 01 Digital Production Center, which features eight input channels, assignable EQ and dynamics control, plus "transport" controls for two playback and one master disk-based recorders, Solid State Logic was showing software enhancements for

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HarrySound, an audio adjunct to the Quantel Harry video editing system. Using a CRT display, tablet and pen, a user can control the selection of sound files stored on WORM and hard disk drives, "mount" the files as elements across up to six replay channels, and crossfade between various outputs. A built-in 330-megabyte hard drive holds 50 minutes of mono audio; add-on drives triple the capacity. Onscreen fader and timing icons can be manipulated the way they would on an analog system, with all moves being memorized. All non-destructive edits can be laid out in assembly or disposal mode, allowing material to be built up or removed from the composite tracks, with time code-based offsets. Like Audio Tablet, the HarrySound user interface is extremely intuitive and can be mastered in the time it takes to run through the basic system functions.

In addition to its well-known No-NOISE system for removing unwanted noise from audio material, Sonic Solutions was showing the new Sonic System, which includes an Apple Macintosh II, hard drives, controller software and plug-in cards for the Mac. Inputs to and outputs from the system can be AES/EBU or SDIF-2 format, at 44.1 and 48kHz sampling frequencies. The first software release, *CD Pre-Mastering Desktop*, provides digital editing, mixing, and EQ and dynamics control. Cost of the basic Sonic System, complete with the CD software release, is \$44,100. The No-NOISE software is available as an additional option.

The Steinberg Digital Audio Topaz is a rack-mount hard disk recorder and editing system designed to be controlled by a companion Macintosh II. Up to eight units can be connected together for a maximum configuration of 16 channels under full time code synchronization. An optional remote control features two servo-controlled faders and soft keys for real-time gain manipulation. Each unit houses a 360-megabyte hard drive and A/D-D/A cards for 32, 44.1 and 48kHz sampling; capacity is 65 minutes of mono at the latter sampling frequency. The Mac II runs custom software that enables in/out ports, channel level, pan, 3-band EQ, filters, replay speed, pitch and time correction to be controlled from the keyboard or via a mouse.

Studer unveiled the new DE-4003

Digital Editor, which fully controls one record deck and one or two analog/digital replay decks. The unit features AES/EBU and SDIF-2 input/output ports, and internal memory that holds a maximum of 40 seconds of 16-bit stereo audio for edit location. A high-speed sampling frequency converter enables rock and roll scrub editing. Up to three editing profiles,

The next nine months are going to be pivotal for many pro audio companies, and recording and production facilities, as digital random-access editors, component processing hardware and workstations begin to make their mark.

complete with level adjustment and crossfade times can be stored for sequential comparison. The company plans to unveil a digitally controlled analog console at the March European AES Convention in Hamburg, along with a 48-track DASH machine.

Symetrix was demonstrating alpha screen displays and prototype hardware for the revolutionary DPR-100 Digital Processing Recorder; an official product announcement will be made January 15. Configured as a stand-alone, high-speed processor input/output frame with connection to a host Macintosh II for control and signal manipulation, the DPR-100 enables up to eight digital channels to be digitized, mixed and cut-and-splice edited to a pair of analog or digital outputs. Audio sources and destinations can be analog or AES/EBU and SDIF-2 digital formats. Future enhancements

will include real-time EQ, dynamics and time-domain processing, plus full MIDI implementation. No formal pricing has been quoted for the unit.

WaveFrame Corporation unveiled some new upgrades and enhancements for its AudioFrame digital audio workstation, including the UDI-4 Universal Digital Interface module that allows AES/EBU, S/P DIF, SDIF-1 and -2, Mitsubishi/PD and Mitsubishi DUB digital signals to be input and output directly as bidirectional stereo or 4-channel in/out. Sampling frequencies can be accommodated between 32 and 50 kHz; internal processing within the AudioFrame and on the Digital Audio Bus is at 44.1 kHz. Available in January 1989, the UDI-4 is priced at \$8,950.

And finally, Yamaha demonstrated the new DMP7D 8-channel digital mixer, which is identical to the well-known DMP7 unit without its internal A/D and D/A stages. Instead, the console is intended for use with a companion AD808 interface, which contains eight channels of high-quality analog-to-digital converters, and/or the IFU1, IFU2, IFU3 and IFU4 interfaces, providing digital connection to Mitsubishi X-850, AES/EBU and SDIF-2 formats. The DA202 provides two channels of high-quality digital-to-analog conversion for monitoring the DMP7D's master digital outputs. Also on show: the new FMC1 Digital Format Converter that converts a 2-channel Yamaha proprietary output into SDIF-2, S/P DIF and AES/EBU formats; and the SPX1000 Multi-Effects unit, which features Yamaha-format inputs and outputs, MIDI control, 40 factory presets—including hall, reverb, delay, flange, pitch change, noise gate, chorus, freeze, compression and pan—plus 59 user memories.

I don't think you need anything approaching 20/20 vision to see that the next nine months are going to be pivotal for many pro audio companies, and recording and production facilities, as digital random-access editors, component processing hardware and workstations begin to make their mark. See you in next month's column. ■

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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DIGITAL AUDIO WORKSTATIONS

AT THE CROSSROADS OF THE FUTURE

A Profile of Streeterville Studios, Chicago, and Its Commitment to Random-Access Editing and Recording Systems

by Mel Lambert

As many of us are now beginning to realize, the future direction of the professional audio industry is deeply entwined with the development of digital recording, editing and mixing systems.

With systems now in place at major facilities throughout the world, we are faced with some inevitable choices. System configuration and design-approach can be pivotal for long-term survival. Back the wrong horse now, and you could end up spending a great deal of time catching up again.

But just how do we come to terms with selecting a suitable digital audio workstation? At last count, I was aware of some two-dozen competing designs, ranging from relatively simple processing cards for Macintosh- or IBM-based host controllers, right on up to proprietary multichannel mixers with integral, multitrack hard disk recorders. You pay your money, so the adage goes, and you take your chances.

One facility that has made a major commitment to digital technology is Streeterville Studios, a multiple-room post-production and music recording complex located in the heart of downtown Chicago. As part of a long-term



Jimmy Dolan in the "Finishing Suite" with AudioFile. This room integrates the SSL 6000ETR w/5-machine synchronizer and automated parametric EQ via time-coded 1" video to the AudioFile.

upgrade program, the studio recently purchased nine AMS AudioFile digital hard disk recording and editing systems.

"We made the decision to equip each of our production and assembly rooms with a digital audio workstation," states Streeterville president Jimmy Dolan, "so that we could provide the same degree of creativity in every aspect of audio production."

Dolan explains that the facility specializes in six primary areas of activity: "On the general 'entertainment' side, we produce audio for records, film and video, while for the 'media' industry we handle corporate and industrial, plus radio and TV commercials."

As he recalls, "We were witnessing a combination of technical developments within the recording and production industry that would allow facilities to accommodate post-production tasks more efficiently and with more creativity. But in the analog domain we were being held back because of problems of noise and distortion during multiple generations. As a result, we began to look at digital technology to both offer enhanced creativity—in terms of non-destructive editing and instant access to virtually hours of online sound files—along with the ability to keep audio in its healthiest possible state from source production sound to the final audio layback to picture.

"During our early investigative stages we were looking for effective ways of maintaining audio quality to the highest possible state, and also looking at ways of handling diverse sound production tasks in one unit. For us, the choice of technology was critical."

DIGITAL AUDIO WISH LIST

At the top of Dolan's projected wish list for a multifunction digital audio workstation designed to handle a wide variety of audio production tasks were:

- The ability to follow tight synchronization to picture via time code.
- The provision of at least six—better eight— independent digital audio "tracks."
- An intuitive and user-friendly controller interface.
- Rock-and-roll/scrub editing with variable edit-in and -out times.
- The ability to cover diverse audio needs within a multiroom facility.

AudioFile is comprised of a stand-alone workstation control panel and CRT display, linked to a companion



Head of technical operations Steve Kusiciel working on the AudioFile in the "Finishing Suite" with an SSL 6000ETR.

rack of processing units and hard drives. The system simultaneously handles a total of eight digital tracks, each of which can be edited independently within a video frame, using rock and-roll editing to locate in and out edit points. A graphic representation of each digital track on the CRT enables edit sequences to be constructed as the material flows from right to left on the screen; a "Now Line" in the center of the screen establishes the real time position of material being replayed from the hard drives, relative to time code.

Unlike other disk-based editors, Dolan points out, "AudioFile incorporates a 'virtual hard disk' that allows any of the eight audio cues to be output simultaneously, no matter where

they reside on the hard drive. In other systems, the architecture is more akin to a traditional multitrack tape machine: if two or more audio cues reside on any one hard disk, they cannot be output simultaneously without first being re-recorded—in real time—to another disk."

In addition to analog inputs and outputs, AudioFile features digital SDIF-2 (Sony PCM-1630 format), S/P DIF (CD/DAT format) and Sony PCM-701 ins/outs; AES/EBU- and PD-format digital inputs and outputs will also be available in early 1989.

Dolan says that the majority of film and video post sessions at Streeterville involve either conventional editing of mono or stereo information—during which the 8-channel capacity

"We made the decision to equip each of our production and assembly rooms with a digital audio workstation so we could provide the same degree of creativity in every aspect of audio production."

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the different rooms. "This involves setting up a central 'core' room, which houses the hard disk drives, and possibly magneto-optical erasable drives when they become available. Using our in-house routing system, an operator can patch the console outputs—either the stereo master or group sends—to the AudioFile's inputs and then patch the outputs back to the console for monitoring, or routing to their final destinations. We can physically crosspatch the control surface to different storage modules and reconfigure the system to handle more diverse applications.

"A new release of software, which is scheduled to be available early next year, will allow us to record eight simultaneous sources into the system, in contrast to its current stereo record capability. The same software upgrade will also enable networking of sound files between separate AudioFile systems."

Kusiciel explains that one of the nine AudioFile systems currently in use at Streeterville features a storage capacity of 240 track-minutes (assignable as four hours of mono or 120 minutes of stereo), while the remaining eight devices each provide 60 track-minutes. "Although individual systems can be linked via time code to provide additional track capacity, or to transfer analog mixes from system to system, for most current applications a two-hour capacity is more than adequate."

"A typical scenario," Dolan says, "might be that a music track is mixed down into an AudioFile in one room, and then that digital file is copied over into one of the production rooms, where the operator would perform the voice-over work and sweetening to picture.

"That networking ability speaks to the system's versatility and makes it a major advantage, rather than functioning as separate units throughout the complex."

The networking environment also allows sound files to be uploaded and archived in background mode, using an otherwise idle AudioFile system, Kusiciel adds.

Streeterville's Studio Three, "The Finishing Suite," represents an excellent example of the facility's analog/digital hybrid. Studio Three houses a Solid State Logic 6048 E Series with Total Recall and a programmable equalizer, linked via the central patching system to an AMS AudioFile. All



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audio and video transports, plus the SSL computer-automation system and AudioFile, follow a master source of SMPTE time code. "In the near future," Dolan stresses, "AudioFile will also be able to generate time code. That will do away with the need we sometimes have to run a dummy reel of audio tape just to have time code up for the SSL and AudioFile—or we sometimes use a free-running time code generator with preprogrammed offsets."

USER FRIENDLINESS: OPERATOR AND CLIENT EDUCATION

"In terms of direct user friendliness,"

Dolan says, "not all digital systems are the same; some are a great deal easier to use than others. AudioFile is basically the most user-friendly system I've seen. It has buttons and switches that you can press. There's a tactile sense there for the operator, unlike systems that are mouse-driven or that use touch-sensitive screens. Buttons and switches also make it easier for a first-time user to translate existing knowledge more quickly into the system. And that makes it much more effective from a business standpoint."

"There are two primary modes in which we can use the system: Sound Assembly and Cut-and-Splice Editing,"

Kusiciel adds. "From the client's point of view, digital systems open up enormous avenues for creativity and cost-savings. We can produce master commercials, and then quickly add tag lines of call letters to customize them for local markets. The client ends up with first-generation audio, even on the two-hundredth version."

"Just as our operators are going through a learning process," Dolan says, "and becoming familiar with the system's capabilities, so clients are becoming familiar with the tasks that AudioFile can achieve. An approach develops through exposure to the system, including how to prepare for a project, how to reconfigure the budget, how to talk to various post services so that they can work on the project entirely in the digital domain, or how to develop other ways to orchestrate the timings and logistics of sequencing the audio buildup in reference to picture edits."

"We are setting up offline situations as demos for key clients. We have also opened up a first-time-usage arrangement, with AudioFile either serving as the primary system on the session, or running in parallel to the conventional analog signal path. The bottom line is that to use a new system on the audio post session, the producer has to feel secure and knowledgeable; otherwise, the technology becomes a negative factor."

"We can also build up multiple mixes with non-destructive editing capabilities. For rough assembly and preview of sound to picture, the AudioFile is a very, very powerful tool, with a speed advantage of at least three times over conventional analog techniques."

"Producers will develop different production techniques as they become familiar with what digital audio workstations can offer. They can change the way you think about the performances you're getting, or the way the various sound elements are put together."

"No project is too complex for us, and the creative juices flow more readily when you have access to tools as powerful as the current generation of digital audio workstations." ■

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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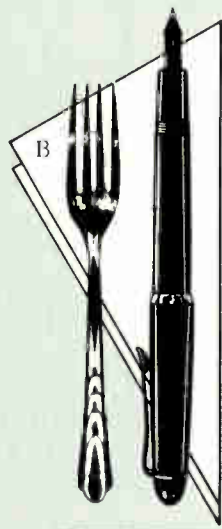
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GEORGE MARTIN & JOHN BURGESS

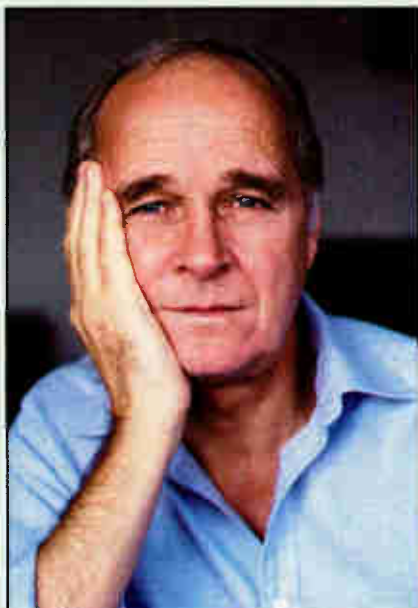
AN INTERVIEW WITH TWO RECORDING MASTERS



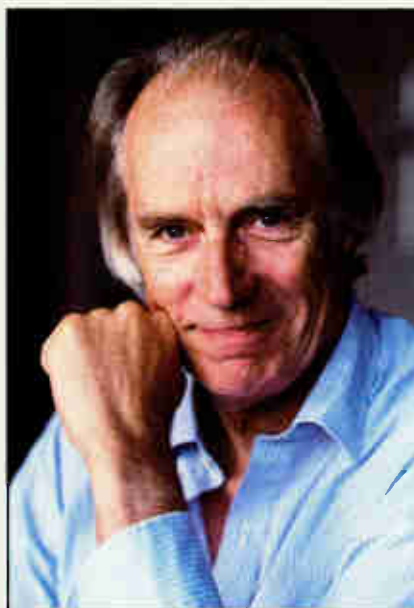
In 1967, at age 20, I sailed for Europe with a scholarship to study at the University of Edinburgh, Scotland. The funding allowed me to pursue my real goal: to meet John Lennon. Through inspired persistence and good fortune, I was invited into his home and he took me along to my first recording session. It was "I Am the Walrus," Abbey Road, George Martin and an evening that led me to become an engineer, disc jockey and chronicler of the music industry.

After more than two decades, I met with George Martin again, who was joined by his longtime friend and partner John Burgess. They both start-

John is managing director of the facilities. After nearly four decades in the studio, they are still active as ever and offer some provocative thoughts about this funny business of making music.



ed their careers at EMI, when records were 78s and tape recording was not yet part of the business. Today, George is chairman of the Chrysalis Facilities Division—AIR Studios in London and Montserrat, and Record Plant in L.A.



Bonzai: What have you been working on recently?

Martin: Well, we started just over a year ago on *Under Milk Wood*, a play for voices by Dylan Thomas, probably Wales' greatest poet. It hasn't been recorded for 35 years, and only recorded twice—once when Dylan Thomas himself gave a reading in New York at the end of 1953, and one of the actors also made a recording. I thought it deserved a new production with modern recording technology. We produced it as a play, creating a picture in sound.

Bonzai: What's the musical content?

Martin: This new version has much

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more than the original. It consists of all the songs fully fleshed out. Dylan Thomas, in fact, dabbled with song. There is evidence that he was going to work with Stravinsky before he died, but he didn't. The only two songs in the original recording were set by a friend of his, Daniel Jones.

Well, here I thought is an opportunity to widen the scope of the play, to make it more available to the everyday man. It has a reputation of being a little highbrow, but it's not at all. It's a wonderful piece of work, full of humor, full of great wordplay, and the songs should be set for contemporary music.

Bonzai: Early in your career you produced hundreds of comedy records, music hall-style songs.

Martin: Yes, and this project took me back to my beginnings. I did a lot of spoken-word records, a lot of musicals. I did children's records and all the Peter Sellers records, and worked with Beyond the Fringe—Jonathan Miller, Dudley Moore, Allen Bennet. I also produced the team of Flanders & Swann, which was a mixture of speech and music. In those days—this was pre-Beatles—I became known as a producer of funny records.

Bonzai: I've read your hilarious descriptions of getting sound effects and the making of *The Bridge on the River Wye*.

Martin: We had to edit out all the k's because of copyrights.

Bonzai: I was wondering if those comedic records and bizarre sounds had an effect on the songs you are better known for today. The production values of your work with the Beatles were certainly very unusual for pop records. Did those early comedy sessions influence your later work?

Martin: They were bound to, I suppose. You do what you do in the way which you think is right. So you build up a technique over the years, and I suppose a lot of that rubbed off in things like *Sgt. Pepper* and *Yellow Submarine*.

Bonzai: Let's find out about this shy guy who sits beside you, John Burgess. John, when did you join EMI?

Burgess: 1951.

Bonzai: Is that where you two met?

Burgess: We didn't actually meet at the beginning, because I was down at the factory. In those days it wasn't

really a record company as such—two or three offices. My first job was to send out records, the big shellac disks that they had in those days. We didn't actually start working together until 1958.

Bonzai: Why have the two of you worked together so long?

Burgess: (Cockney accent) Because we love each other.

Martin: When I left EMI in 1965 I thought I might be leaving behind some young people who were pretty good. I felt it would be smart to take them with me. Ronny Richards and Peter Sullivan came, and I asked John to join our merry band. The four of us set up what is now AIR Studios in London.

Burgess: I remember George saying



John Burgess, George Martin and Mr. Bonzai.

to me, "The reason we're all getting together is that I am getting older, and you guys will have all the success and keep me in the manner to which I am accustomed." As it happened, the Beatles turned out to keep everybody. We all had individual successes, but obviously the biggest money-earner was the Beatles.

Martin: We put everything back into the company; that's how AIR Studios began.

Bonzai: How did you come up with the name?

Martin: AIR stands for Associated Independent Recording. We thought of "AIR" first and then figured out the words to fit it.

Burgess: The studio opened in October 1969. We'll be 20 years old next year.

Bonzai: What about Montserrat?

Martin: That didn't happen until ten years later.

Bonzai: What was the reasoning there?

Martin: Madness. . .

Burgess: No reason at all.

Martin: [Laughs] No, there was a reason. I was working a great deal in the States at the time and always using other people's studios. But I always felt much more comfortable in our own studios. You get used to a way of working. I thought it would be a good idea to have a studio over here.

Burgess: George is always coming up with crazy ideas. Previous to Montserrat, we spent a year and a half. . .

Martin: . . . two years. . .

Burgess: . . . wandering around the

world trying to find a boat big enough to put a studio on. We went to Malta. . .

Martin: . . . Iceland, Yugoslavia, Poland. . .

Burgess: . . . trying to find a boat so that George's dream studio would come to fruition.

Martin: And we did find a marvelous boat; it would have been fantastic. It was 160 feet long, twin screw. . .

Burgess: a Yugoslavian ferry boat. A very good bargain, actually.

Martin: I wish we would have done it.
Bonzai: Doesn't the sea air present problems?

Martin: No more than Montserrat.

Bonzai: Humidity?

Burgess: No, not humidity. In Montserrat we've got sulphur springs, and that causes a problem, not unlike what you would encounter if you had

PHOTO: HIROO OIDA

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a boat.

Martin: You can overcome these things. The only problem with a boat is that it would never really be possible to make a recording while under way. You can isolate most sounds, but you cannot get rid of the low frequencies of a diesel engine in a steel structure. So, you would always have to be at anchor for recording.

It would have been a marvelous oceangoing studio, but oil prices tripled in 1973, and it meant that the overhead of running a diesel-powered ship would increase enormously. I was persuaded to abandon the project, and we built AIR Montserrat.

Bonzai: How's it working out?

Martin: It's a wonderful place.

Bonzai: Only one room?

Martin: Yes, only one room, but that's what we wanted. Basically, the whole point of going there is to have the place to yourself. You don't have people running around.

On the other hand, we've found that in the London studios, people like meeting up with other artists while recording.

Burgess: Paul McCartney enjoys playing on other people's sessions and getting feedback from other musicians.

Bonzai: Is the relationship with Chrysalis the same with both studios?

Martin: No, Chrysalis had a desire to buy part of us, and in the end they bought all of us, so AIR studios in London are owned 100% by Chrysalis. John and I actually don't own any of it, except for our shares in Chrysalis. But we wanted to keep Montserrat for ourselves. Both are known as AIR, owned by different people, but they have an interchange of technique, technology and goodwill. We have engineers that go out to Montserrat quite often, and it is understood that if you make a record at Montserrat, you know damn well that if you want to mix it in London, then you can have the same kind of ambience, room and machines.

Bonzai: And last year Chrysalis bought into Record Plant in Los Angeles.

Martin: That's right. Record Plant is owned by Chrysalis.

Bonzai: And you are chairman of the Facilities Division.

Martin: Chrysalis didn't want to just

buy out the company. They wanted John's and my expertise. John is the managing director of the AIR group of companies and I'm the chairman. I sit on the board and I'm responsible for the facilities part of Chrysalis.

John is the best manager of any recording studio that I know of. He knows recording inside and out, he knows about engineers and how a studio works. He does it all and I sit back and take the glory.

Burgess: Not strictly true.

Bonzai: This idea of compatibility with studios that stretch around the world—trying to work with Elton John must be easier if you have the facilities nearby.

Martin: That's right, absolutely.

Bonzai: Chris Stone mentioned to me that he feels that the English have led the technical side of the industry in America.

Martin: It didn't used to be like that. In the early '50s at Abbey Road, I was always frustrated by the primitive machines we had to work with. Coming to this country and working at Capitol Records, I found 3-track recording. In England we had mono or stereo. Not only that, but you also had limiters and

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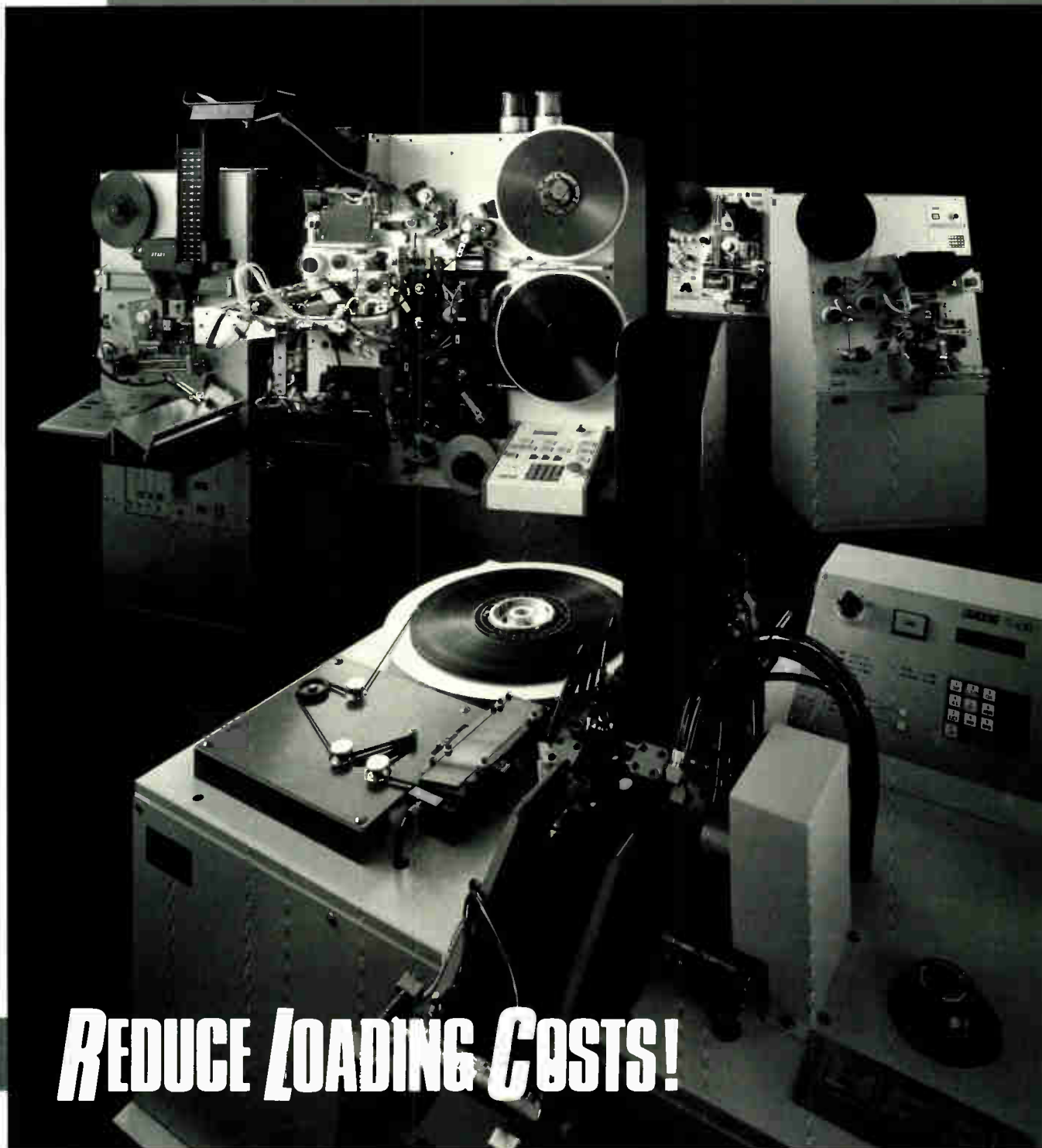
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compressors that we didn't even know about. The general technique of recording here was so much superior to what we had in England. I vowed that we would do something about it. When we set up AIR we tried to make the best studios in the world, and I think we did. We were ahead of Abbey Road and ahead of what you had here.

But it's been a see-saw. The American studios sometimes have been ahead of us, sometimes behind us. It largely comes down to a question of taste. It's not a question of a good machine being made in England, in America or in Japan. You might find a new device being made anywhere and it immediately becomes available worldwide. Everyone is vying to produce a new goody that is better than the last one. The range now is breathtaking. Facilities are better and, if you've got the money, the range is incredible. Now it becomes a question not of who can design the best equipment, but who can afford it. It's an economical dilemma—such wonderful tools, but not everybody can afford them. Of course, worldwide, studios are suffering. There are too many studios, and record companies don't like spending money on studios. There's all the hot air of making first-class, digitally pure sound, but they don't want to pay for it. They want to pay the same money they paid in 1960.

Burgess: Taking inflation into consideration, they probably are paying the same.

Martin: And yet, technology now is so expensive.

Bonzai: In the past few years, a lot of fine low-end equipment has become affordable, and home studios have become popular. The artist can do much of the work at home and then go into the big studio for the final mix. How is that affecting the art as well as the business of recording?

Martin: It's true that the amateur can now make marvelous records.

Burgess: It's not just the amateur, though. Big-name artists are building their own small rooms.

Martin: And they're not so small, some of them.

Burgess: I agree. Some of them are buying top-grade equipment, like the SSL desk, and installing it in their own rooms. They spend three or four months doing their basic tracks, which

they will later bring to the high-tech studios to finish up. They may spend a month or so to finish up at a place like AIR. It's certainly affected the studios in London.

We're finding that some of these artists equip their rooms, build a home studio and then rent out their studios to themselves so they can pay for their own equipment. They are suddenly hit by the fact that they paid an awful lot of money for their equipment, and they can't afford to just use it on their own projects. They have to bring in other people.

Bonzai: This must hurt the traditional commercial facilities.

Burgess: Without a doubt. Phil Collins has a superb studio and he doesn't actually let it out in the commercial market, but he does lend it to friends.

Bonzai: Do you have any predictions for the next five years?

Martin: I think that the strong will survive and the weak will fail; as simple as that. The business is gradually changing and the top-class studios will go on being successful. The hybrid studio, the halfway house between a small studio and a professional one, will have a hard time of it.

Burgess: And they won't be able to afford to keep up with the technology that is happening now.

Martin: Another fact is that there is a tremendous growth now in programming studios, where people build up their own little workshops at home with synths and computers. They are able to make up demos themselves—something I do if I want to get an idea across. Then all they need to finish the record is a really good recording facility. They will come to a big studio with programs and initial tracks.

Bonzai: Do you have your own workshop at home?

Martin: I've got a DX7 and a couple of other things, a very modest setup at home, because I have a very good programming room at AIR.

Bonzai: What about MIDI?

Martin: Well, we've equipped our studios at AIR so you can hook up MIDI with any one room and any other one, and be linked to our programming room. A group can be working in our number one studio, and if the keyboard guy needs to have a particular synth sound, he can go into the programming room and work on that while the other guys are working on another track. Once he has his sound he can go back into number one stu-

A NEW TECHNOLOGY IS CREATING A POWERFUL STORM IN THE WORLD OF SOUND SYNTHESIS

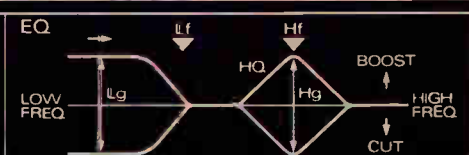
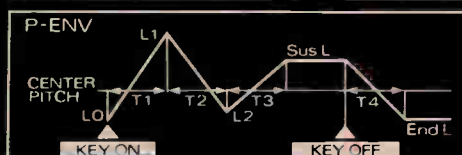
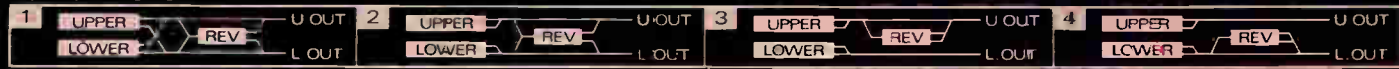
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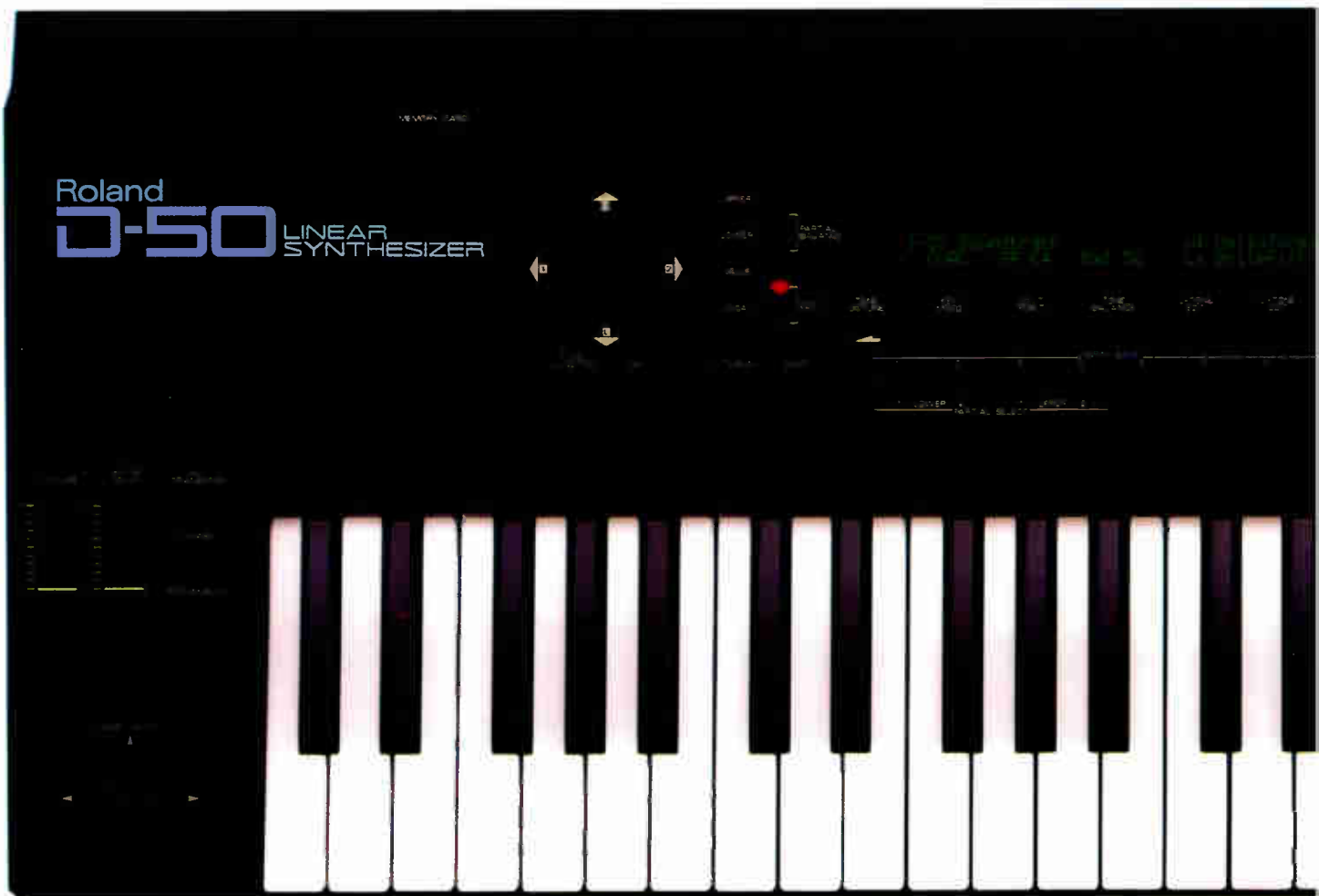
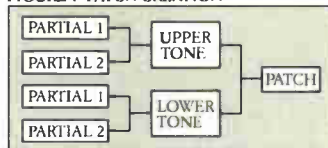
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predictions, analysis and control capabilities. Roland engineers have spent years developing a new highly sophisticated LSI chip, code-named the "LA Chip," that utilizes a linear arithmetic technique to digitally synthesize sounds. The "LA Chip" is the heart of the D-50.

LA Synthesis Explained/LA Synthesis is component synthesis on the highest order. To create complex sounds, the D-50 starts with a very simple premise—build sounds from the ground up by combining different types of sounds together, and then experience the interaction of these sounds on each other. We start with individual elements of sound called Partials. Two Partials are combined to create a Tone, and two Tones are combined to create the Patch. (Figure 1) The D-50 can hold 64 Patches and 128 Tones. Each of the two Tones can be processed individually by on-board signal processing that is sophisticated enough to rival a rack-full of equipment, and includes digital reverb, digital parametric eq,

FIGURE 1 PATCH CREATION



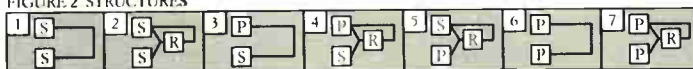
LINEAR SYNTHESIZER

FOUND SYNTHESIS TECHNOLOGY

digital chorus, digital delay and more. But before we go too far, let's get down to the basics, the building blocks of LA Synthesis — Partials.

Synthesizer Partials/What is a Partial? A Partial can be either a digitally synthesized waveform, or a PCM sample. Each of the thirty-two Synth Partials contains all the components usually found in the hardware of an analog synthesizer, presented here as digital software. This includes the Wave Generator (to create a sawtooth or square waveform), the Time Variant Filter, the Time Variant Amplifier, three five-stage Envelope Generators and three digital LFOs. In this way, even though the D-50 is a digital signal, programming the Synth Partial is very similar to programming on an analog synthesizer, (as these components react in the same way as VCO's, VCF's and VCA's on analog synthesizers) while offering sound synthesis capability beyond the most advanced digital synthesizer.

FIGURE 2 STRUCTURES



PCM Sampled Partials/A Partial can also be more than a digitally synthesized signal, it can also be a PCM sample. Resident in the memory (ROM) of the D-50 are over 100 carefully selected 16 bit PCM Sampled Wave Tables which can be used by themselves, combined with Synth Partials or combined with each other. The PCM Partials

are carefully selected, and digitally processed so that they combine well with other Partials. Some of the

sounds include a wide variety of the attack portions of percussive sounds: marimba, vibes, xylophone, ethnic instruments, grand piano hammer attack (with the fundamental removed), a variety of flute and horn breaths, a range of different string plucks and bows, nail files, guitars, and many more. The Wave Table library also includes Loop sounds and long samples, such as: Male and female voices, organs, pianos, wind and brass instruments, and also Harmonic Spectrum sounds, which are created by removing all of the fundamentals of a sound, isolating its harmonic components.



The sounds created by the D-50's PCM Waveform Generator are far superior to wave table samples found in other synthesizers, which are usually only one looped cycle in duration, and are usually no more than 5 milliseconds. In contrast, many of the PCM Partials on the D-50 are up to 256 milliseconds.

Structures/The combination of the Partials' operation modes can be set by selecting one of the seven Structures. (Figure 2) By choosing one of these Structures it is possible to combine two Synth Partials, or two PCM Partials, or a combination of the two in several different relationships. In addition, the Partials can be cross-modulated by the digitally-controlled Ring Modulator, which helps to create the complex harmonic environment for the resulting Tone.

Unlike ring modulators of the past (which tended to be interesting yet unpredictable), the Ring Modulator in the D-50 is designed to track with the keyboard, ensuring the proper harmonic relationships as you go up and down the keyboard.

Built-In Digital Effects/The final routing of the signal before it reaches the output is through the digital effects circuitry. (Figure 3) But, far from being merely an add-on, the D-50's effects are as carefully thought-out as the rest of the instrument, and likewise just as integral to the creation of new and unique sounds. The first effect is the digital Parametric Equalizer, used to contour the equalization curve for the tone before it passes into the digital Chorus, or we should say Choruses,

as the D-50 fields an arsenal of eight chorus circuits—all available simultaneously, configured in any of 16 modifiable presets such as panning chorus, tremolo, flanging and much more. Within each chorus there are parameters set up as to how these choruses

interact for maximum effectiveness. Lastly, the signal passes through the digital Reverb, which can also function as a digital Delay, offering

various room and hall sizes, gated (non-linear) reverb, reverse, stereo panning effects that can be routed to either or both of the stereo outputs. The awesome power of these built-in effects means that the D-50 requires literally no outboard effects processing. And just as important, because all the D-50's effects are processed in the digital realm, they are completely noise free.

A Mother of a MIDI Keyboard/The D-50 is also an excellent mother keyboard for your MIDI system, as it is totally dynamic, offering 61 keys in four different key modes (Whole, Split, Dual and Separate). In the Whole mode the D-50 is 16 voice polyphonic, while in the other modes it functions as two 8 voice synths,

one for each Tone. All mother keyboard functions are programmable per patch including a separate transmit

channel. As the D-50 is truly bi-timbral it can function as two MIDI sound modules as each tone can receive on its own MIDI channel. All D-50 parameters and programs can be saved on Roland's

M-256D MEMORY CARD



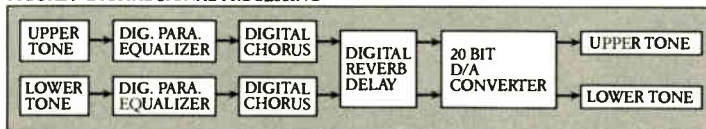
new M-256D memory card which offers 32K bytes of storage in the size of a credit card. All of the D-50 function can be programmed internally, or externally with the use of the optional PG-1000 programmer, which combines

visual clarity and speed for the

programming professional.

Put It All Together/Taken as a whole, the D-50 represents more sound creation potential than most of the leading synthesizers combined. And just as important, it comes at a price that you can afford—\$2,095.00.* Of course, the only real way to find out for yourself is to play the instrument, but we'd like to suggest you do a little more. Go to your dealer, but before you try the D-50, try three or four other synthesizers first—really give them a good going-over. Then spend some time on the D-50. We think you'll find that the world of sounds you knew before, now seems to be black and white—while the D-50 has just exploded you into a universe of color. The new force has taken you by storm. RolandCorp US, 7200 Dominion Circle, Los Angeles, CA 90040 (213) 685 5141.

FIGURE 3 DIGITAL SIGNAL PROCESSING



PG-1000 PROGRAMMER



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dio and play a keyboard there, using the sound from the programming room, because it's all connected through MIDI. It's a useful development that has increased the versatility of the studio.

Bonzai: MIDI, computers, portable technology—more tools in the hands of more artists. But what about the reliance on programming and software and computerized music? Are

gether like that, and you get a near-synth sound, too. But that's not good string work.

Bonzai: When you started out producing, you had to chop classical music into chunks to fit on 78s. Then came the LP, and now we have the CD with even greater playing time. How is this going to affect the approach to recording?

Martin: It seems to me that there have been no creative problems since the long-play record was introduced.

Martin: *“Maybe I’m old-fashioned, but I think the sound of a natural instrument is the best.”*

things getting better, or are we creating a cyborg music industry?

Martin: I think its making music boring. You hear the same sounds over and over again. Maybe I'm old-fashioned, but I think the sound of a natural instrument is the best. One of the dangers of all this technology and this eternal synthesized sound and programming and mechanics is that it is making music a bit sterile. These are wonderful tools if you use them properly, but if you use them to the detriment of real sounds, you get down a cul-de-sac of boring repetitions.

Bonzai: Maybe we're just children in a period of change and adjustment.

Martin: There's a danger, though. The kids are growing up with this facility at their fingertips. They're getting brainwashed to a certain extent. They might like to have some real sounds and get an orchestra and not quite know how to use it. They'd end up making the orchestra sound like a synth. If you're scoring for an orchestra, it's not just translating what you do on a keyboard and putting it into an orchestra. There's something more to it than that.

For example, using a keyboard you tend to make sounds on a synthesizer because you've got five fingers on the hand, and those five fingers put notes together within the reach of the hand. You get bunched chords on a synth—a typical synth sound. Put that on a string orchestra, put your notes to-

We haven't really been inhibited too much. The CD gives us a wider range creatively, but the long-play vinyl did that. Before then it was very inhibiting. John, you remember making pop records in the pre-vinyl days, and you had to make them within a definite time.

Burgess: Usually under two minutes. That was the target we aimed for. In fact, Adam Faith had a hit which was one minute and 34 seconds long. In those days they wanted very short songs. I don't think I ever made anything longer than two minutes during the first few years.

Martin: In classical recordings it was terribly frustrating—chopping up movements and so on. I couldn't believe that a chairman of the company I worked for actually went on record saying that the long-playing record was a flash in the pan and would never mean anything. I thought, what an idiot. Extraordinary.

Bonzai: Last night, John told me that there is one subject that you've talked about quite enough—the Beatles. But I explained that I had a personal memory I wanted to discuss with you. You were the first producer I ever met. Abbey Road was the first studio I saw. And my first session was the night Ringo was tuning in the BBC for a track on “I Am the Walrus.” Later on in Scotland, I was studying *King Lear* and realized the song has lines from Act IV of the play. I don't remember you well—we met—but I was so over-

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fun, and the artists don't seem to enjoy themselves in the studio as much these days.

Martin: There's no fun in taking three days to get a snare drum sound, which some people do. . .

Burgess: But there is a slight trend toward returning to the past. When Anne Dudley did the music for the Phil Collins film *Buster*, she actually went into the studio and recorded everything at one go. There's a slight trend of going back and. . .

Martin: giving a performance.

Burgess: We had two or three ses-

sions recently where everything was put down in one fell swoop.

Martin: I recently produced an album with Andy Leek, a new guy who is brilliant. All the rhythm tracks were done live, and in some cases, with horns at the same time. You get a great feeling in the studio. We didn't put down the definitive vocal, but he was singing along with them. So, everybody felt that they were performing. It does make a difference.

Bonzai: What a revolutionary idea.

Burgess: Let's destroy all the sophisticated equipment and just go back to mono again.

Martin: Musicians should play togeth-

er, but it doesn't happen much these days. I remember a session with a guitar player and a drummer who had never met. I said, "Wait a minute, you guys must know each other—you were on the same album." "No, we've been on the same albums many times, but we never met before." I thought, how crazy can it get?

Burgess: Another effect, from the studio point of view, is that engineers don't have any experience for recording live musicians. All they can do is set up the mics for an overdubbing situation. Gather together four or five musicians—or even worse, a string section—and you have to look hard for a capable engineer.

Bonzai: Is the role of producer changing?

Martin: The role of producer has already changed. There are more engineer-producers now. I'm the old-fashioned type, a producer who is a musician and likes to work with an engineer who's an engineer. I think that the two roles are very difficult to combine. I feel that the guy who concentrates on the art, the production and the music, shouldn't really be bothered with whether the microphone is on the blink or not, or whether the EQ switch is dirty or not.

Similarly, I think the engineer shouldn't be concentrating on his work and have to deal with the tantrums of a drummer who is feeling a pain in his back. There are distinct problems, but if you have these guys working in harmony, it's the best possible team you can get. Having said that, the majority of producers now are in fact engineer/producers. Some of them do it extraordinarily well.

As for the future, people are tending to do more things themselves. I'm afraid that maybe I've had something to do with that, but I think the role of producer has become a bit too important. Because of that, people say "I want to produce. I want to do this myself. Look at my album—I produced it myself!" It's a boast, and I don't think it should be. I think they should say, "Let's get a good producer to help us."

The star is still the writer, and the singer is still the most important part of a record. ■

Mr. Bonzai is a Southern California-based music industry veteran. But he is not, nor has he ever been, a "record business weasel."

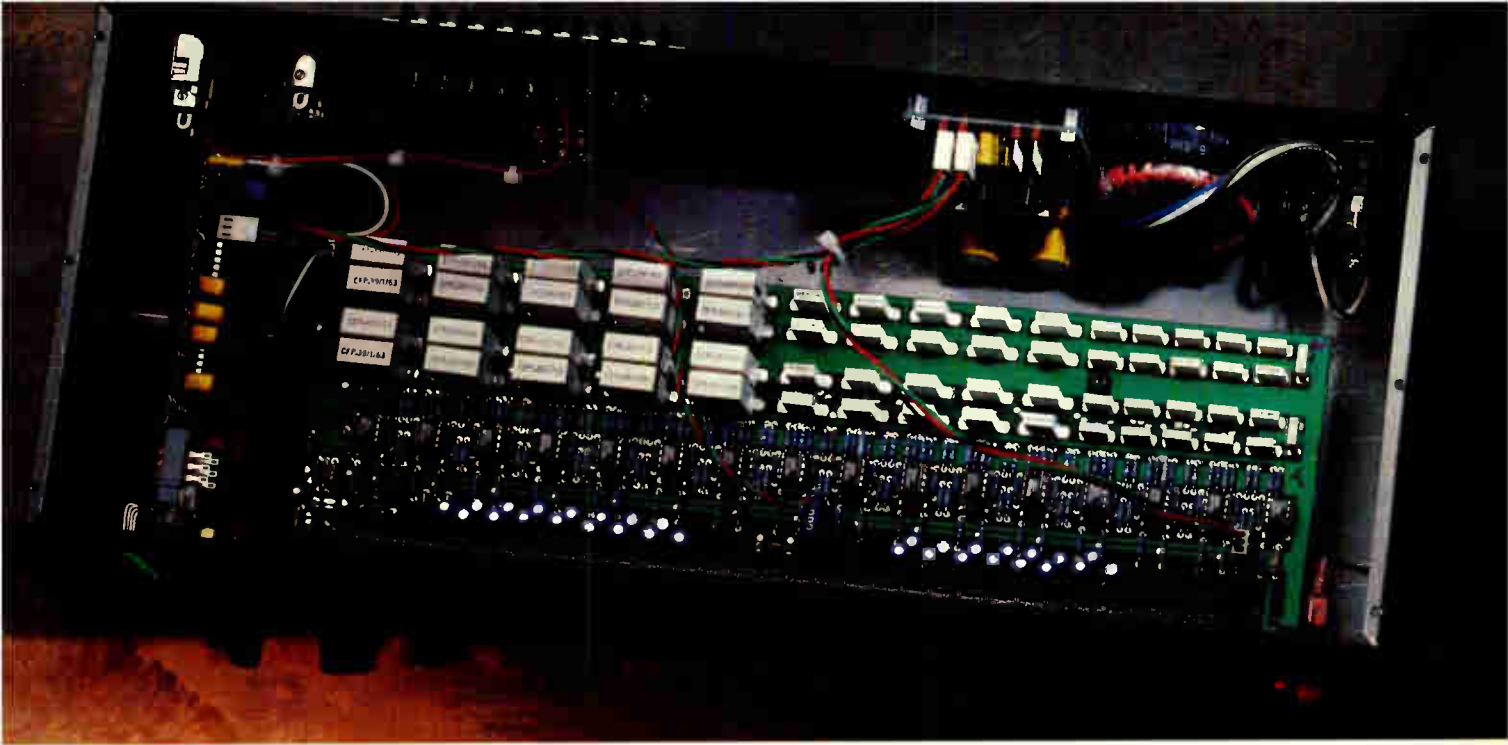


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When you come to the end of a book, the hero usually dies or lives happily ever after. In my case it's more of a slow fade into semi-retirement, along with some new beginnings.

As the synthesizers, drum machines, computers and high-tech recording styles of the '80s came rolling into the studios, I was called for fewer and fewer sessions. Time is money, and percussion shortcuts replaced traditions laid down over the years by me and other professionals. Just as my buddies and I had walked into the studios in the late '50s and taken over, it was now time for the younger players who had paid their dues to take control.

This new group, who had grown up with the new recording technology, was the perfect match for the music industry machine of the '80s—Hollywood meets Silicon Valley. The new musicians found computers to be very friendly, and while I've learned to peck away at my word processor, for the most part the computer is not my strong instrument.

I packed up and moved to Palm Springs. First-class shows come to town and I can sit in now and then.

upbeat

THE HAL BLAINE STORY

by Hal Blaine with David Goggin

THE BEAT GOES ON

It's also close enough for the short commute to L.A. and some steady, slower-paced studio work. My children have grown up and are on their own. The homes, boats, cars, motorcycles that were such a part of my life in Hollywood just don't mean as much anymore.

I was surprised by my first offer to go back on the road. It was with Mason Williams, my old "Classical Gas" pal from the '60s. Rick Cunha, Mason's studio partner, talked him into leaving his farm in Oregon for a tour combining his bluegrass group with symphony orchestras throughout the country. Working during the Pops concert season, our show is lively and action-packed, taking full advantage of Mason's great comedic writing talents. His gifts as a musician and humorist, developed while working on the Smothers Brothers' shows, have found a warm reception wherever we play.

Byron Berline is on fiddle, and the concert violinists are knocked out by his touch. John Hickman, on the five-string banjo, blows the classical musicians away with his speed and dexterity. Jerry Mills on mandolin is another speedster who loves to leave us in the dust, and his quick wit always comes



NEWS

FROM AROUND THE WORLD

HAVE AUDIOFILE, WILL TRAVEL
A new and innovative digital audio post-production service catering to American and European video and film productions has recently opened for business in London. Atlantic Post Productions, the brainchild of freelance sound editor Anthony Faust, is intended to provide services to production companies, facility houses and music and audio sweetening studios.

The service is based around an AMS

AudioFile digital audio workstation (see this month's "Juxtapositions") which is flight-cased. Faust, an editor with an extensive background in sound post-production, has compiled a package that includes a wide variety of formats. A center-track time code ¼-inch recorder allows Nagra- and Stellavox-pulsed tapes to be locked to AudioFile. Other features include VHS and U-matic VCRs, DAT and audio cassette recorders, CD and record decks,



Liverpool's Amazon Installs Neve Desk

Amazon Studios, one of the best-equipped facilities of its type in the UK outside of London, recently completed the installation of a new 48-frame (36 fitted) Neve V3 desk in its tracking room. To complement the console, the studio area has been considerably livened up with the use of wood slat walls and a quarry tile floor. The control room boasts new Westlake monitors with

BGW amps and a full complement of outboard equipment, including a Lexicon 224XL.

In addition to the newly refurbished tracking room, the complex also features a 48-frame SSL console with Total Recall in its mixing room, and a cozy demo studio with a Soundcraft Series 1600 board. Tie-lines among the three rooms allow 1-inch to 2-inch and 2-inch to 2-inch tape copying.

Amazon Studios offers nearby private accommodations for up to five people, as well as a lounge and cafe on the premises. ■



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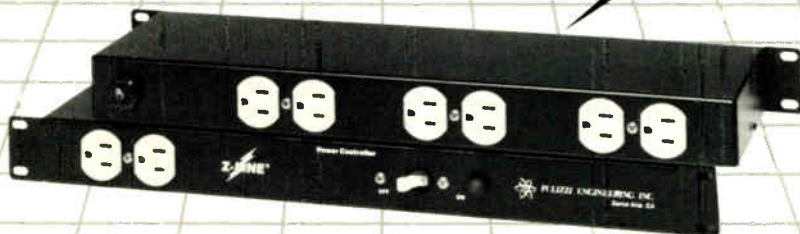
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We are a pretty crusty-looking bunch of bluegrass boys, and the orchestras typically give us the snob brush-off at first. But after they become familiar with Mason's material and arrangements, they join us on stage with hearty enthusiasm.

While we were out on the road, I got a call from David Grisman. He and his band had attracted quite a following for his special brand of bluegrass-oriented music, which he calls "Dawg Music." David told me he wanted to add drums and give it a new twist.

We recorded an album called *Acousticity*, and I was given a free hand to experiment with drums and percussion. It was great to be on an album project again, but I felt it might be my swan song, my last cruise before retirement. Shortly after the album's release, David called to tell me the album was doing well and he wanted me to go out on tour with him.

Back on the road again. This time I was the oldest guy in the group. But I felt like a 20-year-old kid, traveling with David, John Sholle, Rob Wasserman and Jim Buchanan. David's manager, Craig "Clag" Miller, was also our van driver. Clag was the utility genius on these excursions: arranging, producing, road managing, working with the sound and lights, and anything else that needed expert attention. It wasn't as hard as during my early touring days, but it took me back to those long drives on the road. The quality of the music was so fine—"in the pocket," as they say. Everyone was in tune, the timing was perfect and there were no fights about proper tempo. It was a far cry from my days of international touring with stars like John Denver, but it was good to be working and making good music again.

I've also been doing some religious, gospel style concerts with Sam Ocampo, a pianist out of Andrews University in Illinois. (You know the difference between religious music and pop music? In religious music everything is "O, Lord" and in pop music it's "O, Baby.") It takes me back to when I was a kid and the priests used to let me play in the Catholic school drum and bugle corp. I was Hal Belsky, the only Jewish kid in "St.



Hal (right) with Mel Taylor of The Ventures.

Michael's Brigade."

There's something special about playing the smaller circuits. There's an intimacy, the audiences are very attentive and I'm always getting notes passed to me backstage from folks who know my work. The drummers in the small towns go out of their way to get in touch, and it's a nice feeling to be remembered and appreciated by the fans and working musicians across the country.

One thing I haven't talked about is the strange feeling I used to have when I played for 20,000 or 30,000 people. When I sat center stage, surrounded by thousands and thousands of strangers, I would get an image of that one bullet coming from nowhere. Maybe others feel it too—maybe baseball and football players feel it. It comes over you once in a while and it's a weird sensation. It's different when you're playing a small house, with just a few thousand fans.

I'm happy to say that I still get that rush of energy, and a fulfilling sensation comes over me when I go out on stage, or into the studio for some recording. I recently did a session with Snuff Garrett, and the old feelings were just as strong as ever. On the first tune I immediately turned a few things around, did some rearranging and everybody loved it. I can't help but do it, it's just my nature. I've always worked with a formula—look at the chart, block out the verses and the choruses, and try to come up with some hooks. It just comes to me and, thank God, it still seems to be an im-

portant part of making records.

The hook has always been important to me—that repetitive sound that happens in the intro, after the first chorus, maybe just before the end. It's something that makes you take notice, a piece of the song that stands out by itself. My "bump ba bump bam" helped make that Phil Spector sound. My inspiration comes from what I feel, and I've always tried to work with the meaning in the lyrics. "These Boots Were Made for Walking" was a song that had an obviously distinct drum presence. The hook was that diatonic bass beginning, from the high note to the low note. I think it was almost accidental when Chuck Berhoffer came up with it.

These days, as I expected, the jobs are coming less and less frequently and I find myself with more time on my hands. I guess it's natural to start wondering about the meaning of all my years in this business and what I might have done differently. It's nice to browse through my records and reflect on the happy times, but I realize how fast the ride at the top is and how important it is to plan for the future.

I've had ups and downs, as most musicians do in their careers. It gets different as you get older, though. There are the lean times, but they never seem lean when you're a kid and you're struggling and fighting and trying to make the car payments. It's tougher when you get older.

The music has sustained me. There were many nights as a kid when I was

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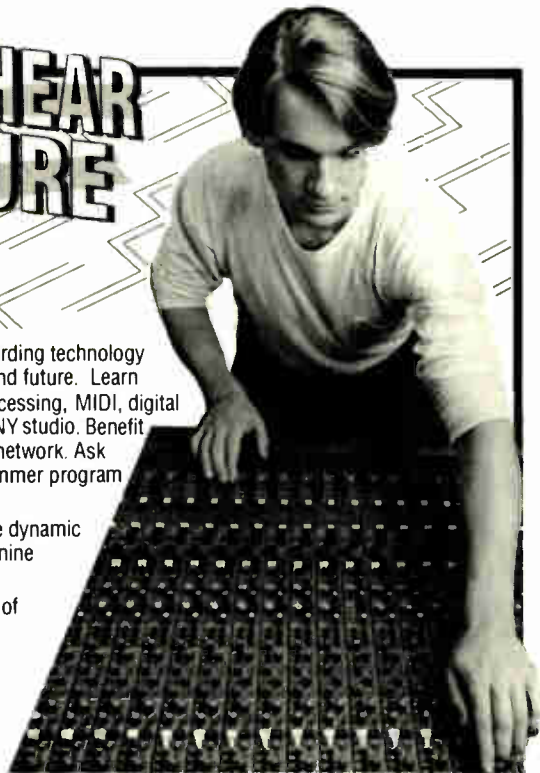
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It gets to me when I realize that my drums are being pumped out all over the world every day.

going through a bout of depression and I just got out the pad and sticks and started whooping it up and enjoying myself. I still do it.

It gets to me when I realize that my drums and my rhythms are being pumped out all over the world every day. Wherever I go, here in the States or overseas, I find people who know my work. I can't believe the fan mail I get from places I've never seen. I've touched strangers, people I will never meet from cultures I will never comprehend. The music has become a part of their lives.

A couple tunes stand out in my mind. One of them is "We've Only Just Begun," a Carpenters song that became a wedding standard, a love song for new lives together. I sometimes play weddings, and I still get a thrill from being a part of the history of that song. John Denver's "Annie's Song" is another.

Some of the great stars I worked with were very appreciative of the contributions of the studio players, and others really didn't pay much attention. Royalties, bonuses or long-range rewards weren't our concern, and this is one of my greatest regrets. When we were hot, we were hot. After things cooled out, we all wished we had stashed away more than memories of the good times.

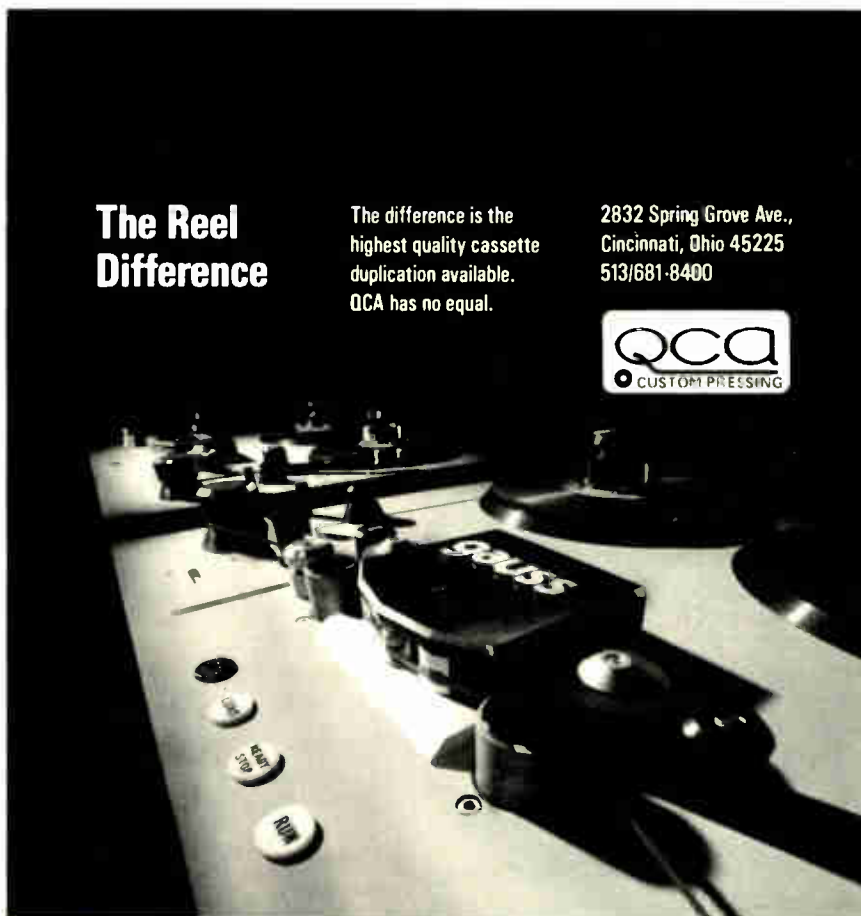
Music is a form of communication that goes beyond words. It's limitless. There are no language barriers. Popular American music has become the popular music of the entire world. What better form is there to promote understanding throughout the human race?

I have this fantasy about the future. I like to imagine somebody climbing into a spaceship and heading off to distant worlds. They pop their favorite music into the CD player, or DAT machine, or whatever device they have, and listen to records I helped make as they shoot off into distant space. ■

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SOUND THINKING

NEWS

FROM AROUND THE WORLD

HAVE AUDIOFILE, WILL TRAVEL
A new and innovative digital audio post-production service catering to American and European video and film productions has recently opened for business in London. Atlantic Post Productions, the brainchild of freelance sound editor Anthony Faust, is intended to provide services to production companies, facility houses and music and audio sweetening studios.

The service is based around an AMS

AudioFile digital audio workstation (see this month's "Juxtapositions") which is flight-cased. Faust, an editor with an extensive background in sound post-production, has compiled a package that includes a wide variety of formats. A center-track time code ¼-inch recorder allows Nagra- and Stellavox-pulsed tapes to be locked to AudioFile. Other features include VHS and U-matic VCRs, DAT and audio cassette recorders, CD and record decks,



Liverpool's Amazon Installs Neve Desk

Amazon Studios, one of the best-equipped facilities of its type in the UK outside of London, recently completed the installation of a new 48-frame (36 fitted) Neve V3 desk in its tracking room. To complement the console, the studio area has been considerably livened up with the use of wood slat walls and a quarry tile floor. The control room boasts new Westlake monitors with

BGW amps and a full complement of outboard equipment, including a Lexicon 224XL.

In addition to the newly refurbished tracking room, the complex also features a 48-frame SSL console with Total Recall in its mixing room, and a cozy demo studio with a Soundcraft Series 1600 board. Tie-lines among the three rooms allow 1-inch to 2-inch and 2-inch to 2-inch tape copying.

Amazon Studios offers nearby private accommodations for up to five people, as well as a lounge and cafe on the premises. ■

audio mixers, a time code generator/reader, and a special device that inserts film-style cue lines over a video picture.

The complete package is triple standard and can operate in all common frame rates. Faust also has his own transfer bay, either digitally inside the AudioFile or off the 1/4-inch master tapes.

Comments Faust, "The simple concept behind the AudioFile-based package is that it can be operated virtually anywhere in the world. My operation is based on AudioFile because I believe it is the best random access editing machine available."

GEORGE MARTIN, DAR SOUNDSTATION II TEAM UP ON UNDER MILK WOOD

Dylan Thomas' timeless sound play of lives and loves in the rural South Wales village of Llareggub was recorded last by the BBC in 1954, soon after the author's death. That recording, featuring Richard Burton, has stood the test of time both in its artistic merit and audio quality. However, late last year, prompted by the enthusiasm of producer George Martin, EMI decided to use state-of-the-art digital technology to try to improve on that '54 masterpiece.

As Martin told *Mix's* Mr. Bonzai in a recent interview, "[the original version] was just a mono recording done on lacquer disc. It was just a reading, and the music was of fairly minimal content. This new version has much more than the original. It consists of all the songs fully fleshed out. We produced it as a play, creating a picture in sound."

A digital audio tape recorder was used to create an original library of some 50 hours of sound effects, including church bells, bird songs, frying breakfasts and even the unmistakable sound of someone urinating into a Welsh policeman's helmet. To enable their insertion at the correct point in the master tape consisting of voice, song and incidental music, selected sound effects were transferred to the Digital Audio Research Sound-Station II.

According to John Jacobs, senior recording engineer at AIR Studios and the man responsible for capturing the sound effects and engineering the recording, the simplicity of the Sound-Station II was critical to the project in that the technical possibilities of the system guided the creative processes in many ways.

Utilizing a cast of great contemporary Welsh voices such as Anthony Hopkins, Harry Secombe and Ruth Madoc, and music by Elton John, Martin hopes that this new version of Thomas' classic will last as long as the original 1954 BBC recording, which is

has taken delivery of a Lyrec P-2000 high-speed tape duplication system, which has been added to its existing duplication line. . . In news from Australia, Daryl Braithwaite was the first artist to use **Platinum's** new Dolby SR system to record his recent album. Other activity at the Victoria based facility includes recording of the soundtrack for the feature film *Rikky and Pete*. . . The Swiss power amplifier manufacturer FM Acoustics Ltd. reports sales of equipment to numerous studios around the world, including **Casablanca Studios** in Massa, Italy, Tokyo's **Amuse Studios**, **Rail Record-**



Atlantic Post Productions' Anthony Faust with his fully transportable AMS AudioFile system.

still valued by many as the definitive *Under Milk Wood*.

INTERNATIONAL STUDIO NEWS

Several top-notch European studios have recently demonstrated their commitment to MIDI technology by ordering Soundtracs PC24 consoles with MIDI automation. They include **AIR**, **Swan Yard**, **Eden** and **Westside Studios** in London, and **Jean-Michel Jarre's** studio in Paris. . . **Rainhill Tape Specialists**, a major Northern England cassette duplication plant,

ing Studios in Konstanz, W. Germany, and **Wool Hall Studios** in Bath, England. . . **Berwick Street Studios** has completed an extensive upgrade with the addition of a Mitsubishi X-850 digital 32-track recorder in November. . . The London-based **Green Room Productions Ltd.** will be opening a U.S. office in New York for remote classical music recording. Founder and managing director Tony Faulkner expects the expansion into the U.S. market to be finalized by the spring of 1989. ■

HR-16 HIGH SAMPLE RATE/16 BIT DRUM MACHINE

ALESIS



100% Real.

It's true. Nothing sounds like the Alesis HR-16 Digital Drum Machine. Except real drums.

16 Bit technology. Incomparable 20kHz frequency response. No wonder the music press calls the HR-16 "staggeringly realistic".* There's plenty of kicks, snares, toms, hi-hats, cymbals... and a bunch of percussion and rhythm toys. 49 sounds altogether. All tuneable and touch sensitive. Each one unique and dripping with personality. Record-quality sounds. 100% real. And, you can combine them endlessly.

Own a drum machine already? Put it in the drum machine museum. Permanently. The HR-16 is the one you wish you had anyway. And it's so affordable you can buy two. You know you want real drums. So go ahead, get the Alesis HR-16. The industry standard. The 100% real choice.

*David Cragger in Home and Studio Recording

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LONDON:
Alesis Corporation • 6, Letchworth
Business Center • Avenue One,
Letchworth, Hertfordshire SG62HR

NEW PRODUCTS

Nakamichi 1000 DAT

The Model 1000 digital audio recording system from Nakamichi (Torrance, CA) offers expandable, field-installable upgrades via modular, plug-in circuit boards. The system comprises separate transport and electronics processing units (sold together or individually). Each processor can control up to two transports or be used as a stand-alone A/D or D/A



converter for use with a DAT or CD player with coaxial or optical digital ports. The 1000 is available in consumer and pro versions, the latter equipped with rack-mount hardware and the ability to make D-to-D copies from 32, 44.1 or 48kHz sources. While both versions come with unbalanced RCA and balanced XLR analog inputs/

outputs, the pro model conforms to +4dBm input/+22dBm output line levels. Nakamichi's proprietary F.A.S.T. transport design boasts smooth handling via stationary tape guides, a "half-load" shuttle position (for moving tape at up to 400 times normal speed without contacting the rotary head) and a 4-head

design for true off-the-tape monitoring. Initial U.S. deliveries are expected to begin next month, with system pricing at approximately \$10,000, including remote control. The transport is sold separately at \$5,400; the processor is \$4,600.

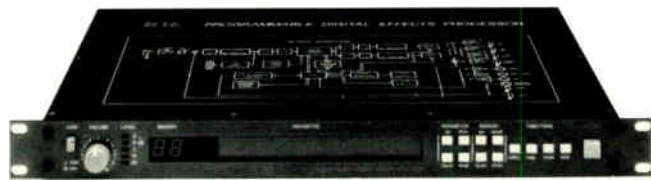
Circle #142 on Reader Service Card

Industrial Strength FX Processor

Priced at \$995, the R-16 digital effects processor from Industrial Strength Industries (Cerritos, CA) is a single rack-space unit providing both programmable digital effects and sampling capability. This 16-bit processor features: a 32-bit numeric coprocessor; full MIDI control of effects parameters and

changes; 99 programmable sounds (30 preset); -10 dB and line-level switchable inputs/outputs, and user-changeable parameters. Help screens are built into the display, which shows all relevant data simultaneously. Software packages for Atari ST and IBM-compatible computers (with spectrum analysis, FFT and 3-D wavefront plots) are also available.

Circle #143 on Reader Service Card



Audiomatrix MIDI Accelerator

New from Audiomatrix (Santa Monica, CA) is the MIDI Accelerator, a compact processor that is said to relieve MIDI data clogging and bottlenecks by converting standard MIDI data to a more efficient code. Some of the conversion takes place continuously, while other processing (for aftertouch, modulation wheel, breath control, foot control) is user-controllable via front panel settings. According to the manufacturer, the MIDI Accelerator conserves music memory storage by a factor of 20, and processing time is stated as one microsecond.

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Mitsubishi X-880

Maintaining full compatibility with X-850 machines, the new X-880 PD-format, digital 32-track from the Mitsubishi Pro Audio Group (San Fernando, CA), makes extensive use of LSI technology to yield a lighter, more compact recorder. Other enhancements include: redesigned autolocator with integral and remotable meter bridge; comprehensive dual-status displays; and a multi-function, pull-down front panel. Among new options available are a plug-in chase synchronizer for

locking to audio or video recorders, a DIF-32 AES/EBU digital interface and an IF-SSL-1 analog remote to facilitate transport control from SSL consoles.

Circle #098 on Reader Service Card



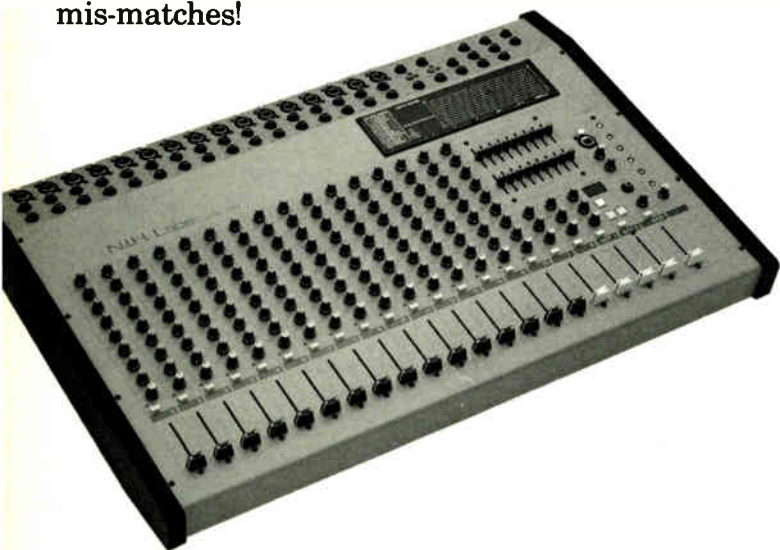
Klark-Teknik Dynamics Processors

Farmingham, New York-based Klark-Teknik Electronics has introduced a line of dynamics processors, all single rack-space units, featuring under-0.05% distortion and electronically balanced inputs and outputs, with optional transformer balancing. The DN500 is a dual-channel compressor/expander limiter that works independently or linked for stereo. Gain reduction and output meters are provided, as are separate compressor and expander section adjustments for threshold, ratio, release attack and bypass. The compressor section also includes controls for knee, envelope switching and stereo/limiter/clipper in and out. The DN510 is a stereo/dual mono noise gate with MIDI output after-envelope delay sends of channel (1-16), note on and key number (1-127). An after-hold period sends note off with matching key-number data. The

PA Gear Pro

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*!**



Professional Electronics

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*!**

ced to GO!

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:

Model	Description	Normal Retail	Direct from I.S.I.	* You Save
PM-1600	16-channel PA mixer	\$4,950.00	\$2,195.00	\$2,755.00
PM-800	8-channel PA mixer	\$2,200.00	\$ 995.00	\$1,205.00
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



Please send me Model(s) _____, I've enclosed cashier's check Money order for _____ (Total) payable to Industrial Strength Industries; bill my Visa Mastercharge AmEx.

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Expiration _____

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Hours: 8 am - 5 pm Pacific Coast Time

DN514 is a quad noise gate featuring two "automatic" attack settings and a sync function allowing users to synchronize parts by linking all four gate release times.

Circle #136 on Reader Service Card

API 4032 Console

The 4032 from API (Springfield, VA) is the company's first new con-



sole in five years. Fully automated with Audio Kinetics' disk-based MasterMix system, the 4032 provides 48 inputs with 32-channel monitoring and up to 14 effects sends per channel (eight of them can be configured into four stereo pairs). The completely separate monitor section offers two stereo cues or four mono cues. Other features include a 600-point patch bay, four separate headphone mixes, +30dBm clip level, movable API EQs and all discrete circuitry (including the API 2520 and Hardy 990 op amps with Jensen transformers).

Circle #137 on Reader Service Card

Sausalito Craftworks OmniRax

Beautifully crafted, low-cost furniture for rack-mount equipment is now available as OmniRax, by Sausalito Craftworks (Sausalito, CA). The large OmniRax (45 inches high) provides 18 rack-spaces

and comes with heavy-duty, locking casters; the 21-inch version has an eight-space capacity (casters optional). Both measure 21 inches wide, 12 to 14 inches deep. Available in natural oak, birch ply or glossy black finish, OmniRax are shipped fully assembled and include screws and nylon washers for mounting equipment. OmniRax retail for \$59.95 to \$139.95, depending upon size and finish, and a "flat top" accessory shelf is optional.

Circle #138 on Reader Service Card

Otari DTR-900B PD Recorder

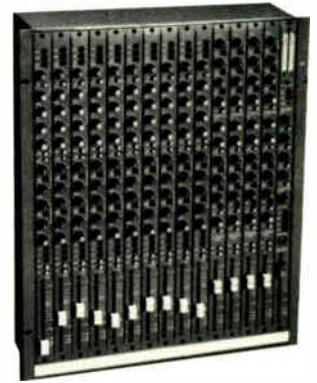
The DTR-900B 32-track digital recorder from Otari Corp. (Foster City, CA) offers new proprietary VLSI technology, redesigned autolocator/remote hardware and software and a power supply upgrade that allows use of optional Apogee filters in the D/A and A/D sections. No price increase is expected for the new model, and most of the B-series' features can be retrofitted to earlier DTR-900 machines. New accessories include a plug-in chase synchronizer module and a ProDigi-to-DASH format converter that allows bi-directional digital transfers between the DTR-900 and any DASH multitrack recorder.

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Aries Modular Rack-Mount Console

Designed for 8-track recording, video, post-production, MIDI work, onstage keyboard/drum use and front-of-house and monitor mixing, the Aries 10-4-8 Mix Rack from Aries America (Torrance, CA) is an all-modular console featuring four group outputs, eight monitor/effects returns (four with 2-band EQ), four pre/post selectable aux sends and 3-band sweepable mid-range EQ with switchable LF and HF



sections. A rack-mount power supply is standard, and options include a meter bridge, -10 or +4dBV operation and expansion capability for up to 24 inputs.

Circle #140 on Reader Service Card

Intelix Studio Psychologist

Intelix of Madison, WI, has unveiled the Psychologist line of microprocessor-controlled, remote matrix mixer/router systems. Designed for studio and live performance use, the system consists of compact belt-pack or stand-mounted controls (tied in to a master rack-mounted mixing

processor), allowing performers to set up their own headphone mixes. The actual mixing takes place with the master processor, which features digital, ladder-type attenuators and a modular card-frame design that allows configurations from 4 x 4 to 32 x 16. The system can also be controlled by a computer with an RS-232 port.

Circle #141 on Reader Service Card

HOT OFF THE SHELF . . .

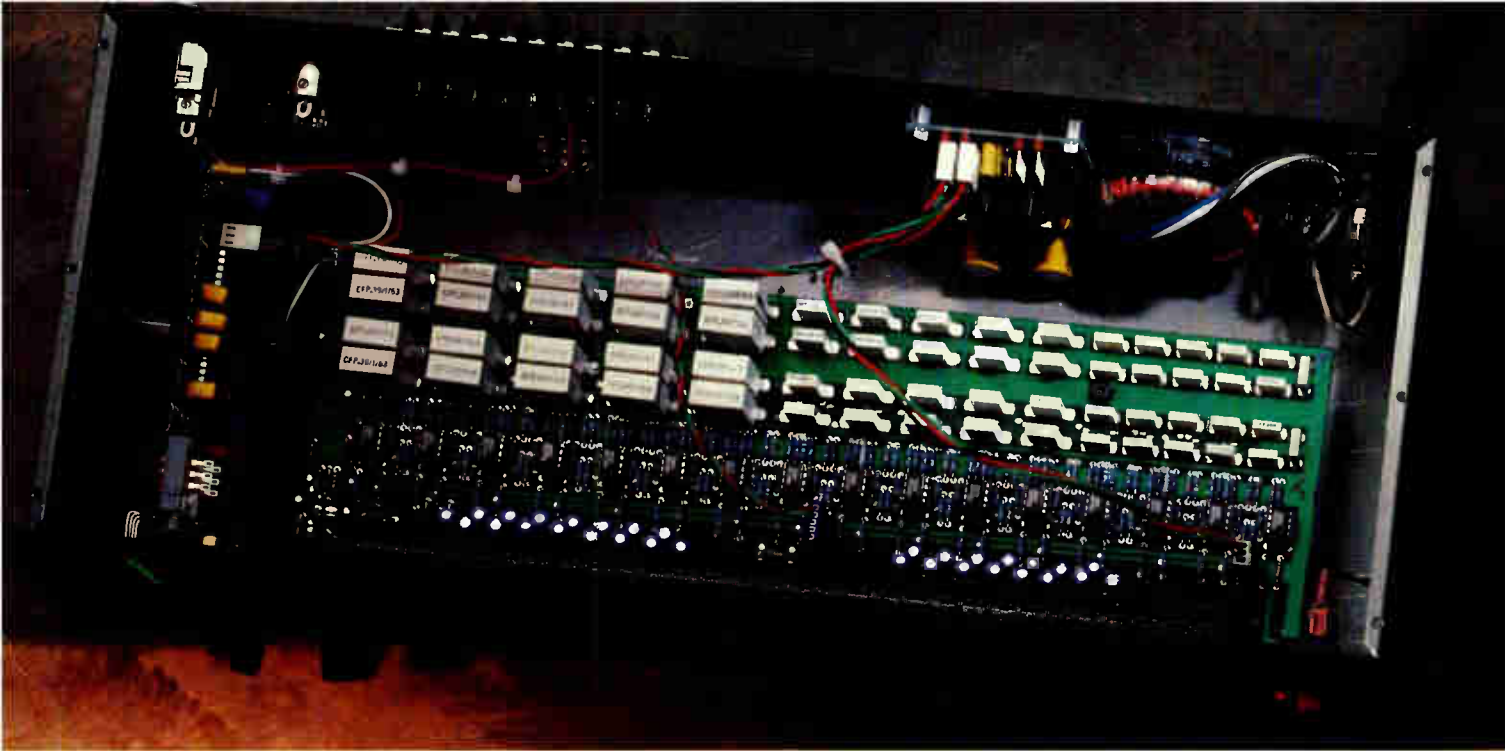
The MIDIsoft Studio MIDI sequencer (\$99 standard version, \$199 advanced edition) is now available in IBM PC-compatible as well as Atari ST versions. Call (206) 827-0750 for more info. . . **Modular Wood Systems** offers a variety of standard and custom modular cabinets, racks, studio consoles and keyboard stands—in plastic laminate or wood lacquer finishes—all available in kit form or installed in your facility. Call (312) 251-6401 for more info. . .

Promusic has added the Focus Music Library to its inventory of recordings on

CD that now includes the Parry, Bookes & Hawkes, Cavendish, Coloursound and Intermede libraries. All are available on annual blanket or per-use licenses. Call (305) 776-2070 for more info. . .

Solid State Logic's G Series Computer Operator's Manual (\$28) is designed for both new users and those with experience on existing SSL computers. The 198-page, ring-bound manual covers operation, event and synchronizer systems, programmable EQ, Total Recall, customizing and using time code with the system. Call (800) 343-0101 or (212) 315-1111

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THE COMPETITION HATES OUR GUTS.

It takes a lot of guts to compare yourself to some of the biggest names in professional audio.

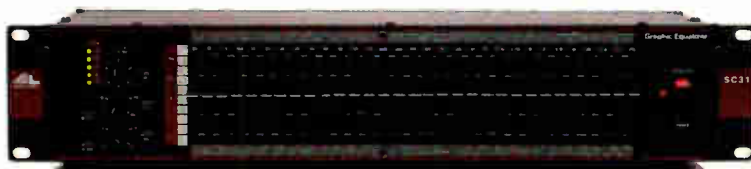
Of course, when you offer the quality and features found inside the Audio Logic SC31 Graphic Equalizer,

it's easy to display more than a little extra intestinal fortitude.

The SC31 is a powerful signal processing tool designed for professional use. It features 31- $\frac{1}{3}$ octave centered bands of equalization with selectable 6 dB or 12 dB of boost and cut. But that's just for starters.

Take a look at the chart. It shows how the SC31 stacks up against the competition in the specs most important to audio engineers and sound contractors.

Maximum output. Dynamic Range.



	Audio Logic SC 31	RANE GE 30	JBL/Urei 5547A	Klark-Teknik DN 300
Noise	Less than -90 dBm	Less than -90 dBm	Less than -90 dBm	Less than -90 dBm
Maximum Output	+27 dBm	+24 dBm	+22 dBm	+22 dBm
Dynamic Range	+117 dBm	+114 dBm	+112 dBm	+112 dBm
Frequency Response	18 Hz to 30 kHz +/-0.5 dB	10 Hz to 40 kHz +0/-3 dB	20 Hz to 20 kHz +1/-2 dB	20 Hz to 20 kHz +/-0.5 dB
Number of Bands	31	30	30	30
THD plus noise	Less than .005% @ +22 dBm @ 1 kHz	Less than .01% @ +4 dBm	Less than .5% @ +22 dBm	Less than .01% @ +4 @ 1 kHz
Suggested Retail Price	\$550.00	\$699.00	\$849.00	\$995.00

Frequency response. Number of bands. Total Harmonic Distortion plus noise. In every category, the SC31 comes out even or on top.

In every category, that is, except price. Because the SC31 gives you all that capability, plus

incomparable sound quality, for considerably less than any other professional graphic equalizer. And that's what galls the competition most of all.

For a hands-on demonstration of the SC31, visit your professional audio dealer or sound contractor. Or write for additional information:

Audio Logic, 5639 So. Riley Lane, Salt Lake City, Utah 84107.

Or call (801) 268-8400.

*All specifications taken from manufacturer's published literature.



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Imagine an artist painting with an infinite palette. That's, in effect, what CASIO's VZ-1 can do for you, the musical artist. Giving you the freedom to play with sounds so rich, so full, they have to be heard.

The CASIO VZ-1 is a 61 key, 16-note polyphonic digital synthesizer that puts all the tools for complex sound construction at your fingertips. It gives you outstanding performance versatility, through initial touch, and user-definable routing for after touch, two control wheels, and optional foot pedal. Its 16-note, 8-part multi-timbral MIDI implementation allows extensive individual control of each sound.

The VZ-1 uses a whole new technology called iPD (interactive Phase Distortion) instead of sampled wave forms, or PCM partials. An open system of 8 multi-waveform oscillators interact in a variety of ways—mix, ring, phase, and external phase modulation. The result: sounds that are rich, full, and unique.

One of the VZ-1's strongest features is its Combination Mode, which lets you combine up to 4 different sounds in a variety of split and layer configurations, including multiple



The VZ-10M is a 2 rack-space version of the VZ-1.

velocity split and positional cross-fade capability. You'll swear you're playing a MIDI stack instead of a single keyboard. As

a MIDI master keyboard, the VZ-1 can be split into 4 "zones," with separate send and receive channels for each note range.

The VZ-1 comes complete with 64 sounds and 64 Operation Memories, plus a free ROM card (RC-100) with an additional 128 of each, for a total of 384 timbres out of the box. Optional ROM cards with additional sounds are also available. And with an optional RAM card (RA-500), you can store up to 64 sounds and 64 Operation Memories of your own.

And finally, to enable you to effectively manage all of its programming power, the VZ-1 has a wide, backlit LCD graphic display, making editing quick and intuitive under any lighting conditions.

If you want the artistic freedom to create a bigger soundscape, escape to a better instrument—a CASIO VZ-1. Now playing at your authorized CASIO Professional Musical Products dealer.



Now, create a bigger soundscape.



PROFESSIONAL MUSICAL PRODUCTS

CASIO
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20 gets you 40. 40 inputs plus 8 subs for tracking, mix down or overdubbing means flexibility and control without re-patching at every step. Thanks to the flexibility of the WR-820B, you can use the monitor section during mixdown to gain 20 extra inputs—over and above the WR-820B's 20 input modules. So 20 really does get you 40!

The WR-820B's performance and construction quality are every bit as remarkable as its design. Premium, high-speed IC's in the gain stages give it an open sound that does full justice to all those incoming signals. And our faders are rated at 300,000 operations—20 times the life of a typical carbon fader. Just *two* examples of RAMSA's integrity in design and component selection.

See your RAMSA dealer for a complete demo. Or contact us for further information at: 6550 Katella Ave., Cypress, CA 90630, 714/895-7200.

RAMSA

Panasonic
Industrial Company



When you come to the end of a book, the hero usually dies or lives happily ever after. In my case it's more of a slow fade into semi-retirement, along with some new beginnings.

As the synthesizers, drum machines, computers and high-tech recording styles of the '80s came rolling into the studios, I was called for fewer and fewer sessions. Time is money, and percussion shortcuts replaced traditions laid down over the years by me and other professionals. Just as my buddies and I had walked into the studios in the late '50s and taken over, it was now time for the younger players who had paid their dues to take control.

This new group, who had grown up with the new recording technology, was the perfect match for the music industry machine of the '80s—Hollywood meets Silicon Valley. The new musicians found computers to be very friendly, and while I've learned to peck away at my word processor, for the most part the computer is not my strong instrument.

I packed up and moved to Palm Springs. First-class shows come to town and I can sit in now and then.

upbeat

THE HAL BLAINE STORY

by Hal Blaine with David Goggin

THE BEAT GOES ON

It's also close enough for the short commute to L.A. and some steady, slower paced studio work. My children have grown up and are on their own. The homes, boats, cars, motorcycles that were such a part of my life in Hollywood just don't mean as much anymore.

I was surprised by my first offer to go back on the road. It was with Mason Williams, my old "Classical Gas" pal from the '60s. Rick Cunha, Mason's studio partner, talked him into leaving his farm in Oregon for a tour combining his bluegrass group with symphony orchestras throughout the country. Working during the Pops concert season, our show is lively and action-packed, taking full advantage of Mason's great comedic writing talents. His gifts as a musician and humorist, developed while working on the Smothers Brothers' shows, have found a warm reception wherever we play.

Byron Berline is on fiddle, and the concert violinists are knocked out by his touch. John Hickman, on the five-string banjo, blows the classical musicians away with his speed and dexterity. Jerry Mills on mandolin is another speedster who loves to leave us in the dust, and his quick wit always comes

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at just the right time to ease the stage tension. Don Waley's wailin' Fender bass and high harmonies complete our hot ensemble. We play concert halls across the country, and it is a gas to be working again with such fine talents.

We are a pretty crusty-looking bunch of bluegrass boys, and the orchestras typically give us the snob brush-off at first. But after they become familiar with Mason's material and arrangements, they join us on stage with hearty enthusiasm.

While we were out on the road, I got a call from David Grisman. He and his band had attracted quite a following for his special brand of bluegrass-oriented music, which he calls "Dawg Music." David told me he wanted to add drums and give it a new twist.

We recorded an album called *Acousticity*, and I was given a free hand to experiment with drums and percussion. It was great to be on an album project again, but I felt it might be my swan song, my last cruise before retirement. Shortly after the album's release, David called to tell me the album was doing well and he wanted me to go out on tour with him.

Back on the road again. This time I was the oldest guy in the group. But I felt like a 20-year-old kid, traveling with David, John Solle, Rob Wasserman and Jim Buchanan. David's manager, Craig "Clag" Miller, was also our van driver. Clag was the utility genius on these excursions: arranging, producing, road managing, working with the sound and lights, and anything else that needed expert attention. It wasn't as hard as during my early touring days, but it took me back to those long drives on the road. The quality of the music was so fine—"in the pocket," as they say. Everyone was in tune, the timing was perfect and there were no fights about proper tempo. It was a far cry from my days of international touring with stars like John Denver, but it was good to be working and making good music again.

I've also been doing some religious, gospel-style concerts with Sam Ocampo, a pianist out of Andrews University in Illinois. (You know the difference between religious music and pop music? In religious music everything is "O, Lord" and in pop music it's "O, Baby.") It takes me back to when I was a kid and the priests used to let me play in the Catholic school drum and bugle corp. I was Hal Bel-sky, the only Jewish kid in "St.



Hal (right) with Mel Taylor of The Ventures.

Michael's Brigade."

There's something special about playing the smaller circuits. There's an intimacy, the audiences are very attentive and I'm always getting notes passed to me backstage from folks who know my work. The drummers in the small towns go out of their way to get in touch, and it's a nice feeling to be remembered and appreciated by the fans and working musicians across the country.

One thing I haven't talked about is the strange feeling I used to have when I played for 20,000 or 30,000 people. When I sat center stage, surrounded by thousands and thousands of strangers, I would get an image of that one bullet coming from nowhere. Maybe others feel it too—maybe baseball and football players feel it. It comes over you once in a while and it's a weird sensation. It's different when you're playing a small house, with just a few thousand fans.

I'm happy to say that I still get that rush of energy, and a fulfilling sensation comes over me when I go out on stage, or into the studio for some recording. I recently did a session with Snuff Garrett, and the old feelings were just as strong as ever. On the first tune I immediately turned a few things around, did some rearranging and everybody loved it. I can't help but do it, it's just my nature. I've always worked with a formula—look at the chart, block out the verses and the choruses, and try to come up with some hooks. It just comes to me and, thank God, it still seems to be an im-

portant part of making records.

The hook has always been important to me—that repetitive sound that happens in the intro, after the first chorus, maybe just before the end. It's something that makes you take notice, a piece of the song that stands out by itself. My "bump ba bump bam" helped make that Phil Spector sound. My inspiration comes from what I feel, and I've always tried to work with the meaning in the lyrics. "These Boots Were Made for Walking" was a song that had an obviously distinct drum presence. The hook was that diatonic bass beginning, from the high note to the low note. I think it was almost accidental when Chuck Berhoffer came up with it.

These days, as I expected, the jobs are coming less and less frequently and I find myself with more time on my hands. I guess it's natural to start wondering about the meaning of all my years in this business and what I might have done differently. It's nice to browse through my records and reflect on the happy times, but I realize how fast the ride at the top is and how important it is to plan for the future.

I've had ups and downs, as most musicians do in their careers. It gets different as you get older, though. There are the lean times, but they never seem lean when you're a kid and you're struggling and fighting and trying to make the car payments. It's tougher when you get older.

The music has sustained me. There were many nights as a kid when I was

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It gets to me when I realize that my drums are being pumped out all over the world every day.

going through a bout of depression and I just got out the pad and sticks and started whooping it up and enjoying myself. I still do it.

It gets to me when I realize that my drums and my rhythms are being pumped out all over the world every day. Wherever I go, here in the States or overseas, I find people who know my work. I can't believe the fan mail I get from places I've never seen. I've touched strangers, people I will never meet from cultures I will never comprehend. The music has become a part of their lives.

A couple tunes stand out in my mind. One of them is "We've Only Just Begun," a Carpenters song that became a wedding standard, a love song for new lives together. I sometimes play weddings, and I still get a thrill from being a part of the history of that song. John Denver's "Annie's Song" is another.

Some of the great stars I worked with were very appreciative of the contributions of the studio players, and others really didn't pay much attention. Royalties, bonuses or long-range rewards weren't our concern, and this is one of my greatest regrets. When we were hot, we were hot. After things cooled out, we all wished we had stashed away more than memories of the good times.

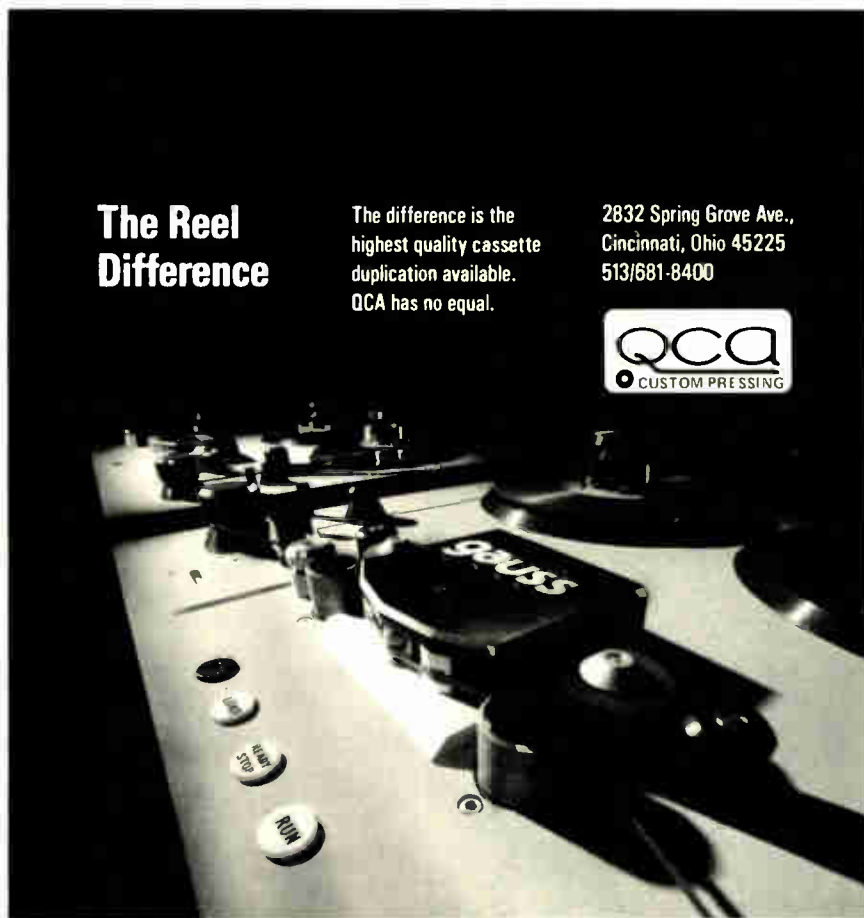
Music is a form of communication that goes beyond words. It's limitless. There are no language barriers. Popular American music has become the popular music of the entire world. What better form is there to promote understanding throughout the human race?

I have this fantasy about the future. I like to imagine somebody climbing into a spaceship and heading off to distant worlds. They pop their favorite music into the CD player, or DAT machine, or whatever device they have, and listen to records I helped make as they shoot off into distant space. ■

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AUX 1



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To endow our new Q Series console with the flexibility and performance needed for progressive sound reinforcement techniques we had to come up with a few new ideas.

Live performance mixes are becoming increasingly complex but creativity is often shackled by a lack of sends for individual effects.

So we've provided an independent direct output from each input channel which can, at the touch of a button, be routed via the Aux 1 control to provide a dedicated, controllable effects send.

This means, for instance, that a 40

input console can provide 40 individual sends in addition to 6 auxiliary buses – more than enough for the most demanding of situations.

And in solving one problem we've opened up a whole new range of possibilities.

Like creating a sound reinforcement console that can be used for multi-track recording.

This is because the Q Series matrix versions also feature 8 conventional effects returns as well as a 3 band parametric EQ section.

And when 4 input modules are

replaced with 4 effects return modules, a 36/8/2 mixer can provide up to 36 individual tape sends, 8 group sends, 24 track return monitoring and 6 auxiliary send buses.

At the touch of a button you can find out more about the new Q Series. Simply dial the appropriate number below to receive a copy of our brochure.



SOUND THINKING

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Circle #047 on Reader Service Card

NEWS

FROM AROUND THE WORLD

HAVE AUDIOFILE, WILL TRAVEL

A new and innovative digital audio post-production service catering to American and European video and film productions has recently opened for business in London. Atlantic Post Productions, the brainchild of freelance sound editor Anthony Faust, is intended to provide services to production companies, facility houses and music and audio sweetening studios.

The service is based around an AMS

AudioFile digital audio workstation (see this month's "Juxtapositions") which is flight-cased. Faust, an editor with an extensive background in sound post-production, has compiled a package that includes a wide variety of formats. A center-track time code ¼-inch recorder allows Nagra- and Stellavox-pulsed tapes to be locked to AudioFile. Other features include VHS and U-matic VCRs, DAT and audio cassette recorders, CD and record decks,



Liverpool's Amazon Installs Neve Desk

Amazon Studios, one of the best-equipped facilities of its type in the UK outside of London, recently completed the installation of a new 48-frame (36 fitted) Neve V3 desk in its tracking room. To complement the console, the studio area has been considerably livened up with the use of wood slat walls and a quarry tile floor. The control room boasts new Westlake monitors with

BGW amps and a full complement of outboard equipment, including a Lexicon 224XL.

In addition to the newly refurbished tracking room, the complex also features a 48-frame SSL console with Total Recall in its mixing room, and a cozy demo studio with a Soundcraft Series 1600 board. Tie-lines among the three rooms allow 1-inch to 2-inch and 2-inch to 2-inch tape copying.

Amazon Studios offers nearby private accommodations for up to five people, as well as a lounge and cafe on the premises. ■

audio mixers, a time code generator/reader, and a special device that inserts film-style cue lines over a video picture.

The complete package is triple standard and can operate in all common frame rates. Faust also has his own transfer bay, either digitally inside the AudioFile or off the 1/4-inch master tapes.

Comments Faust, "The simple concept behind the AudioFile-based package is that it can be operated virtually anywhere in the world. My operation is based on AudioFile because I believe it is the best random access editing machine available."

GEORGE MARTIN, DAR SOUNDSTATION II TEAM UP ON UNDER MILK WOOD

Dylan Thomas' timeless sound play of lives and loves in the rural South Wales village of Llareggub was recorded last by the BBC in 1954, soon after the author's death. That recording, featuring Richard Burton, has stood the test of time both in its artistic merit and audio quality. However, late last year, prompted by the enthusiasm of producer George Martin, EMI decided to use state-of-the-art digital technology to try to improve on that '54 masterpiece.

As Martin told *Mix's* Mr. Bonzai in a recent interview, "[the original version] was just a mono recording done on lacquer disc. It was just a reading, and the music was of fairly minimal content. This new version has much more than the original. It consists of all the songs fully fleshed out. We produced it as a play, creating a picture in sound."

A digital audio tape recorder was used to create an original library of some 50 hours of sound effects, including church bells, bird songs, frying breakfasts and even the unmistakable sound of someone urinating into a Welsh policeman's helmet. To enable their insertion at the correct point in the master tape consisting of voice, song and incidental music, selected sound effects were transferred to the Digital Audio Research SoundStation II.

According to John Jacobs, senior recording engineer at AIR Studios and the man responsible for capturing the sound effects and engineering the recording, the simplicity of the SoundStation II was critical to the project in that the technical possibilities of the system guided the creative processes in many ways.

Utilizing a cast of great contemporary Welsh voices such as Anthony Hopkins, Harry Secombe and Ruth Madooc, and music by Elton John, Martin hopes that this new version of Thomas' classic will last as long as the original 1954 BBC recording, which is

has taken delivery of a Lyrec P-2000 high-speed tape duplication system, which has been added to its existing duplication line. . . In news from Australia, Daryl Braithwaite was the first artist to use **Platinum's** new Dolby SR system to record his recent album. Other activity at the Victoria-based facility includes recording of the soundtrack for the feature film *Rikky and Pete*. . . The Swiss power amplifier manufacturer FM Acoustics Ltd. reports sales of equipment to numerous studios around the world, including **Casablanca Studios** in Massa, Italy, Tokyo's **Amuse Studios**, **Rail Record-**



Atlantic Post Productions' Anthony Faust with his fully transportable AMS AudioFile system.

still valued by many as the definitive *Under Milk Wood*.

INTERNATIONAL STUDIO NEWS

Several top-notch European studios have recently demonstrated their commitment to MIDI technology by ordering Soundtracs PC24 consoles with MIDI automation. They include **AIR**, **Swan Yard**, **Eden** and **Westside Studios** in London, and **Jean-Michel Jarre's** studio in Paris. . . **Rainhill Tape Specialists**, a major Northern England cassette duplication plant,

ing Studios in Konstanz, W. Germany, and **Wool Hall Studios** in Bath, England. . . **Berwick Street Studios** has completed an extensive upgrade with the addition of a Mitsubishi X-850 digital 32-track recorder in November. . . The London-based **Green Room Productions Ltd.** will be opening a U.S. office in New York for remote classical music recording. Founder and managing director Tony Faulkner expects the expansion into the U.S. market to be finalized by the spring of 1989. ■

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Own a drum machine already? Put it in the drum machine museum. Permanently. The HR-16 is the one you wish you had anyway. And it's so affordable you can buy two. You know you want real drums. So go ahead, get the Alesis HR-16. The industry standard. The 100% real choice.

*David Cneger in Home and Studio Recording



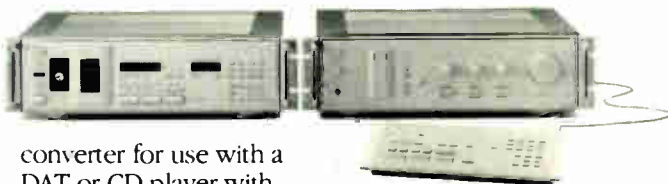
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NEW PRODUCTS

Nakamichi 1000 DAT

The Model 1000 digital audio recording system from Nakamichi (Torrance, CA) offers expandable, field-installable upgrades via modular, plug-in circuit boards. The system comprises separate transport and electronics processing units (sold together or individually). Each processor can control up to two transports or be used as a stand-alone A/D or D/A



converter for use with a DAT or CD player with coaxial or optical digital ports. The 1000 is available in consumer and pro versions, the latter equipped with rack-mount hardware and the ability to make D-to-D copies from 32, 44.1 or 48kHz sources. While both versions come with unbalanced RCA and balanced XLR analog inputs/

outputs, the pro model conforms to +4dBm input/+22dBm output line levels. Nakamichi's proprietary F.A.S.T. transport design boasts smooth handling via stationary tape guides, a "half-load" shuttle position (for moving tape at up to 400 times normal speed without contacting the rotary head) and a 4-head

design for true off-the-tape monitoring. Initial U.S. deliveries are expected to begin next month, with system pricing at approximately \$10,000, including remote control. The transport is sold separately at \$5,400; the processor is \$4,600.

Circle #142 on Reader Service Card

Industrial Strength FX Processor

Priced at \$995, the R-16 digital effects processor from Industrial Strength Industries (Cerritos, CA) is a single rack-space unit providing both programmable digital effects and sampling capability. This 16-bit processor features: a 32-bit numeric coprocessor; full MIDI control of effects parameters and

changes; 99 programmable sounds (30 preset); -10 dB and line-level switchable inputs/outputs, and user-changeable parameters. Help screens are built into the display, which shows all relevant data simultaneously. Software packages for Atari ST and IBM-compatible computers (with spectrum analysis, FFT and 3-D wavefront plots) are also available.

Circle #143 on Reader Service Card



Audiomatrix MIDI Accelerator

New from Audiomatrix (Santa Monica, CA) is the MIDI Accelerator, a compact processor that is said to relieve MIDI data clogging and bottlenecks by converting standard MIDI data to a more efficient code. Some of the conversion takes place continuously, while other processing (for aftertouch, modulation wheel, breath control, foot control) is user-controllable via front panel settings. According to the manufacturer, the MIDI Accelerator conserves music memory storage by a factor of 20, and processing time is stated as one microsecond.

Circle #144 on Reader Service Card



Mitsubishi X-880

Maintaining full compatibility with X-850 machines, the new X-880 PD-format, digital 32-track from the Mitsubishi Pro Audio Group (San Fernando, CA), makes extensive use of LSI technology to yield a lighter, more compact recorder. Other enhancements include: redesigned autolocator with integral and remotable meter bridge; comprehensive dual-status displays; and a multi-function, pull-down front panel. Among new options available are a plug-in chase synchronizer for

locking to audio or video recorders, a DIF-32 AES/EBU digital interface and an IF-SSL-1 analog remote to facilitate transport control from SSL consoles.

Circle #098 on Reader Service Card



Klark-Teknik Dynamics Processors

Farmingham, New York-based Klark-Teknik Electronics has introduced a line of dynamics processors, all single rack-space units, featuring under-0.05% distortion and electronically balanced inputs and outputs, with optional transformer balancing. The DN500 is a dual-channel compressor/expander limiter that works independently or linked for stereo. Gain reduction and output meters are provided, as are separate compressor and expander section adjustments for threshold, ratio, release attack and bypass. The compressor section also includes controls for knee, envelope switching and stereo/limiter/clipper in and out. The DN510 is a stereo/dual mono noise gate with MIDI output after-envelope delay sends of channel (1-16), note on and key number (1-127). An after-hold period sends note off with matching key-number data. The

PA Gear Pro

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*!**



Professional Electronics

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



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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 change 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:

Model	Description	Normal Retail	Direct from I.S.I.	* You Save
PM-1600	16-channel PA mixer	\$4,950.00	\$2,195.00	\$2,755.00
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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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DN514 is a quad noise gate featuring two "automatic" attack settings and a sync function allowing users to synchronize parts by linking all four gate release times.

Circle #136 on Reader Service Card

API 4032 Console

The 4032 from API (Springfield, VA) is the company's first new con-



sole in five years. Fully automated with Audio Kinetics' disk-based MasterMix system, the 4032 provides 48 inputs with 32-channel monitoring and up to 14 effects sends per channel (eight of them can be configured into four stereo pairs). The completely separate monitor section offers two stereo cues or four mono cues. Other features include a 600-point patch bay, four separate headphone mixes, +30dBm clip level, movable API EQs and all discrete circuitry (including the API 2520 and Hardy 990 op amps with Jensen transformers).

Circle #137 on Reader Service Card

Sausalito Craftworks OmniRax

Beautifully crafted, low-cost furniture for rack-mount equipment is now available as OmniRax, by Sausalito Craftworks (Sausalito, CA). The large OmniRax (45 inches high) provides 18 rack-spaces

and comes with heavy-duty, locking casters; the 21-inch version has an eight-space capacity (casters optional). Both measure 21 inches wide, 12 to 14 inches deep. Available in natural oak, birch ply or glossy black finish, OmniRax are shipped fully assembled and include screws and nylon washers for mounting equipment. OmniRax retail for \$59.95 to \$139.95, depending upon size and finish, and a "flat top" accessory shelf is optional.

Circle #138 on Reader Service Card

Otari DTR-900B PD Recorder

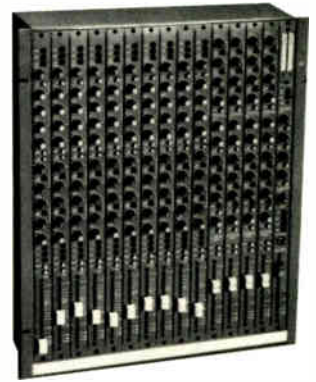
The DTR-900B 32-track digital recorder from Otari Corp. (Foster City, CA) offers new proprietary VLSI technology, redesigned autolocator/remote hardware and software and a power supply upgrade that allows use of optional Apogee filters in the D/A and A/D sections. No price increase is expected for the new model, and most of the B-series' features can be retrofitted to earlier DTR-900 machines. New accessories include a plug-in chase synchronizer module and a ProDigi-to-DASH format converter that allows bi-directional digital transfers between the DTR-900 and any DASH multitrack recorder.

Circle #139 on Reader Service Card



Aries Modular Rack-Mount Console

Designed for 8-track recording, video, post-production, MIDI work, onstage keyboard/drum use and front-of-house and monitor mixing, the Aries 10-4-8 Mix Rack from Aries America (Torrance, CA) is an all-modular console featuring four group outputs, eight monitor/effects returns (four with 2-band EQ), four pre/post selectable aux sends and 3-band sweepable mid-range EQ with switchable LF and HF



sections. A rack-mount power supply is standard, and options include a meter bridge, -10 or +4dBV operation and expansion capability for up to 24 inputs.

Circle #140 on Reader Service Card

Intelix Studio Psychologist

Intelix of Madison, WI, has unveiled the Psychologist line of microprocessor-controlled, remote matrix mixer/router systems. Designed for studio and live performance use, the system consists of compact backpack or stand-mounted controls (tied in to a master rack-mounted mixing

processor), allowing performers to set up their own headphone mixes. The actual mixing takes place with the master processor, which features digital, ladder-type attenuators and a modular card-frame design that allows configurations from 4 x 4 to 32 x 16. The system can also be controlled by a computer with an RS-232 port.

Circle #141 on Reader Service Card

HOT OFF THE SHELF . . .

The MIDIsoft Studio MIDI sequencer (\$99 standard version, \$199 advanced edition) is now available in IBM PC-compatible as well as Atari ST versions. Call (206) 827-0750 for more info. . . **Modular Wood Systems** offers a variety of standard and custom modular cabinets, racks, studio consoles and keyboard stands—in plastic laminate or wood lacquer finishes—all available in kit form or installed in your facility. Call (312) 251-6401 for more info. . .

Promusic has added the Focus Music Library to its inventory of recordings on

CD that now includes the Parry, Bookes & Hawkes, Cavendish, Coloursound and Intermede libraries. All are available on annual blanket or per-use licenses. Call (305) 776-2070 for more info. . . **Solid State Logic's G Series Computer Operator's Manual** (\$28) is designed for both new users and those with experience on existing SSL computers. The 198-page, ring-bound manual covers operation, event and synchronizer systems, programmable EQ, Total Recall, customizing and using time code with the system. Call (800) 343-0101 or (212) 315-1111

Circle #145 on Reader Service Card

Listen to what engineers in 47% of all recording studios have already heard.* And what they haven't.



What we're going to tell you about the new NS10M Studio reference monitor may sound familiar, and for good reason.

The NS10M Studio is based on our legendary NS10M which, judging from its popularity in recording studios, delivers the near-field acoustic imaging that most engineers have demanded.

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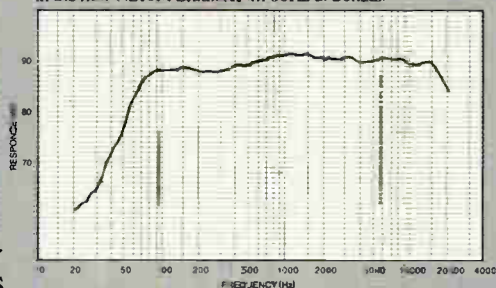
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by Tim Tully

THE BIAMP LEGEND

The Biamp Legend, one of a series of new American-made mixing boards, is an in-line system available in sizes from 8 to 32 inputs with from 4 to 24 group outputs. Biamp maintains the Legend is intended for multitrack recording, and many of its features support that contention well. The Legend's pricing ranges from \$6,999 for the 12 x 8 model 1280, to \$13,999 for the 32 x 24 model 3224, and consoles can be ordered in a "short-loaded" form, allowing users to add additional input/output modules to meet growing production needs.

Each of the first 16 modules serves both input and output functions, which results in an extremely compact space-saving design—an important consideration, particularly for remote and location recording applications. For example, the 32 x 24 version is only 54.5 inches wide.

Boasting 5532 and TL072 op-amps

throughout its design (including a 4-transistor, high slew, discrete mic pre-amp), the Legend does not seem to color its output to any noticeable degree, except to say that it sounds warm and natural. It's also quiet (-128 dBv EIN), as would be expected from these ICs, and has a good deal of headroom.

Among the input controls, a flexible 3-band, semi-parametric equalizer provides a good overall performance. The EQ section can be switched in and out (coinciding with the odd rule of thumb that the good, quiet EQs are usually switchable, while noisy ones are hard-wired in). The high and low EQ modules are true shelf-filters with rolloff characteristics that, while not detailed in the specs, balance a musical sound with a just-sharp-enough slope. The high filter sweeps from 2 to 15 kHz, the low from 30 to 500 Hz, and both offer a ± 18 dB cut and boost.



The mid-range module is a peak filter that sweeps from 100 to 5k Hz, cuts and boosts across a ± 12 dB range, and sounds just a little bit "peaky," and hence more apparent, than its high and low partners. There is also a switch that activates a 12dB/octave slope (adjustable if you're willing to remove the module and make the internal modification) highpass filter. At extreme boost settings, there is some noise from the EQ, but not much.

Other input controls include a mic/line or tape select switch, mic/line trimpot, 48V phantom power, phase reverse and a pad that attenuates mic input by 20 dB and the line input by 25 dB.

The Legend's concentric knob arrangement is also used on the two effects sends and two cue sends dedicated to each channel. Color coding on the effects and cue knobs simplifies finding the right control in a hurry. In mixdown, the signal sent by the effects sends can be chosen from either post-fader, post-EQ or from the monitor circuit—essentially pre-EQ. The cues send either the pre-EQ, tape or mic/line signal, or a group output. The manual outlines simple modifications that will convert effects sends to additional cue sends and vice versa.

The monitor section of the input modules consists of both level and pan pots, and two switches that determine whether the source signal for the monitor is a group output, tape or mic/line input. A third switch determines whether the post-fader or the monitor signal is sent to the stereo mix output. These three switches are central to the numerous ways the input/output modules can be configured, and their settings offer a wealth of signal routing options.

Rounding off the input controls are peak (+18 dB) and signal present (-15 dB) LEDs. A solo switch allows monitoring of a given channel's pre-fader signal, and a channel mute switch interrupts signal flow to everything but the solo and direct out bus.

Since each input module is also an output module, controls for parameters of both functions are found on each module. A problem in learning

the Legend is that the placement of the controls doesn't always offer an immediate, graphic distinction between input versus output controls. This is far from a fatal flaw though, and in fact, the controls' placement is logical once you become familiar with the various routing possibilities they offer. Including more examples of the Legend's possible setups in the manual would go a long way toward softening the necessary learning curve here, and making the mixer more accessible, more quickly.

Immediately to the right of the I/O modules is the stereo mixdown module, with pan and level pots for the four mono effects returns, a mix/control room switch that selects whether the effects returns are routed to the control room monitor or the stereo mix, and a mono-only switch that provides a mono version of the mix for reference.

Below these are a control room level pot and control room monitor source switches that offer the choice of cue 1 and cue 2 outputs, two 2-track tape sources and the stereo or mono mix. Another switch mutes the control room signal by -15 dB to allow conversation without disturbing the mix.

The communications module, farthest to the right, contains a BNC light socket, oscillator level and frequency controls, built-in talkback mic, mic/oscillator assign switches, headphone jack and level pot, and an XLR connector for an external talkback mic. Lastly, a switch allows selection of either a mono mix of group output or effects returns, solo switch and fader for the mono mix.

All the rear panel jacks work with both balanced and unbalanced plugs and have a good, solid feel. The console's external, rack-mount power supply is connected by a sturdy, multi-pin connector. Mic inputs are XLR, as are the stereo and mono mix outputs.

The general construction of the board is quite impressive. The all-metal chassis seems nearly bulletproof—certainly among the most sturdy I've ever seen. The meter bridge includes a 12-segment peak-reading LED meter for each input/output module, two

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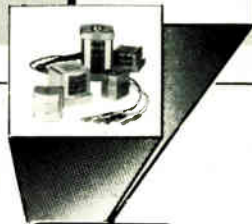
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FIELD TEST

for the stereo mix and one for the mono mix. The meters, referenced from -15 to +4 dBv, use green, orange and red segments for clarity and are large and visible. The I/O modules display either the post-fader input signal, the group output or the tape input signal, depending on the setting of the meter switch. The bridge itself is rock-solid and mounted integrally onto the chassis.

The only physical problem is the small size of the push-switches. They are so small that they tend to sink into the flesh of a fingertip instead of down into the board, necessitating a push with a fingernail. It is also difficult to see whether these switches are up or down without scrooching your eyes down close to the board. The pots, on the other hand, feel smooth and solid and are quite workable. The 100mm input/output faders have a good feel and offer just enough resistance to make small adjustments accurately.

The many ways the Legend can group and route its inputs make it a valuable tool. Aside from the more traditional modes—laying down per-

formances on multitrack and mixing tape tracks to stereo—the Legend can be configured to send signals from both its line and all but two of its tape inputs to the stereo mix. This is especially useful for the MIDI-intensive studio where a combination of multi-

The general construction of the board is quite impressive. The all-metal chassis is among the most sturdy I've ever seen.

track and "live," sequenced signals from MIDI instruments are mixed down together—a situation tending to require a lot of inputs. Setting this up takes a clever and fairly complex use of the monitor system to control the levels and routing of the tape input

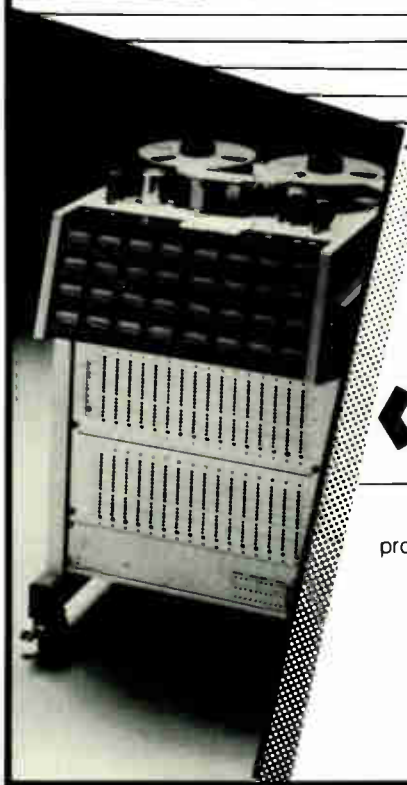
signals. The added possibility of having up to four effects sends per channel makes the board well-qualified for MIDI situations.

The procedure for enabling this configuration is not readily apparent, however. While the people at Biamp were quite helpful to me in outlining some of the ways the board can be configured, this information—including some clear illustrations—would be of value to all concerned if it were outlined more fully in the Legend's manual.

Another possible problem for the smaller studio is that all the Legend's connections appear on its back panel, in contrast to some other designs that place the connector panel on the top of the board. If your studio layout requires putting the mixing board right up against a wall, this could be inconvenient.

Despite the potential connector panel difficulty and its somewhat complex operation, the Legend's configuration flexibility and bottom line—the way the board sounds—is first-rate. Headroom, frequency response and overall sound warmth make the Legend a very strong contender in its price range for any recording application. ■

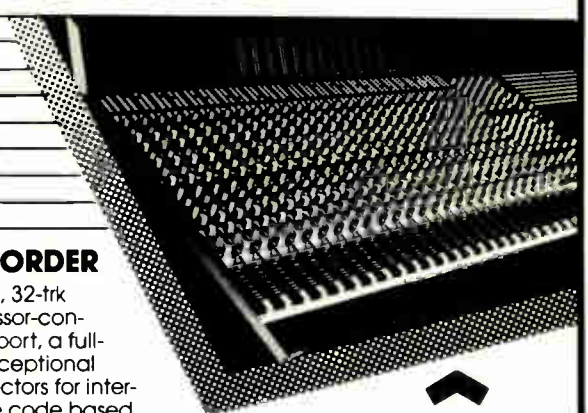
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by George Petersen

PRODUCT CRITIQUES AND COMMENTS

BBC SOUND FX CD LIBRARY
The BBC Sound Effects Library has been available for some years on a monumental, comprehensive set of 50 albums that includes nearly any effect you can imagine, from airplanes to Dr. Who's Tardis time machine. Drawing on such a legacy, I was most interested to examine the Beeb's latest SFX release, an 18-CD set (\$850) of new effects, about 90% of which are digitally recorded. The library is also available as separate volumes, with the first ten discs priced at \$499, the remaining eight priced at \$399.

As one might expect, the audio quality of the CD library is superb, and includes not only stereo effects, but a good selection of binaural sounds as well. Personally, I prefer the versatility offered by binaural effects

—if they're too widely spread for standard stereo use, I can always pan them closer to center. I like having options.

The library offers an amazingly diverse range of effects. Some, such as "ring-tailed lemur with insects in background, Malagasy," may seem to be extremely specific on the surface, but could prove to be useful. In that particular case, it's a great general-purpose jungle effect, which, at 34 seconds in length, would be perfect for one of those "Crazy AI" used car, hi-fi or furniture commercials.

One entire disc is devoted to exterior atmospheres (all ranging from three to six minutes), and other discs in the set also provide long atmospheric cuts: How about using four minutes of "refrigerator" to cover up that horrid camera noise during your

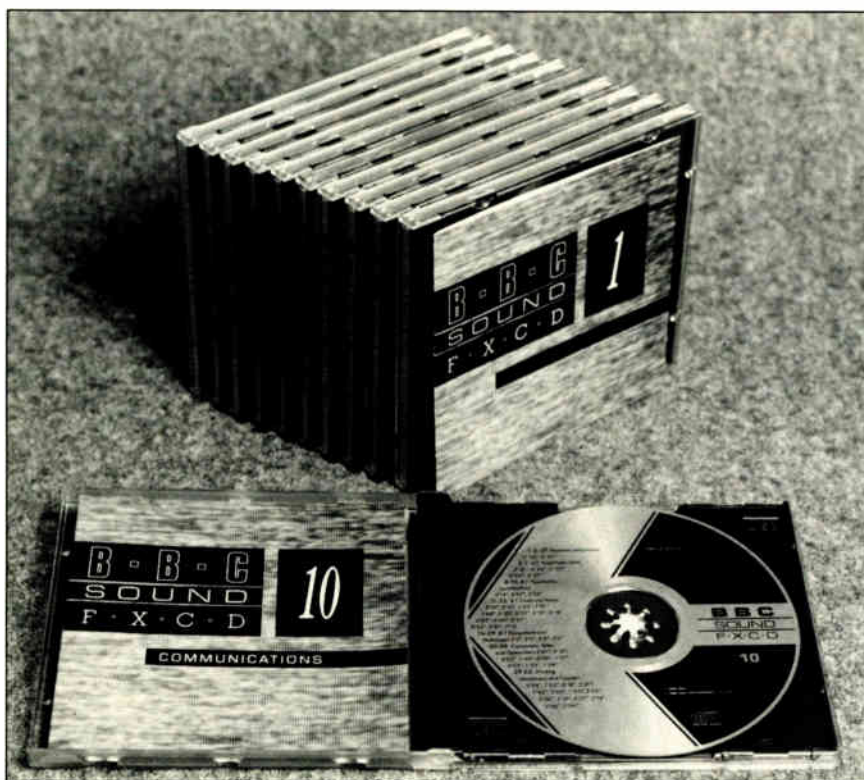


PHOTO: GEORGE PETERSEN

last interior shoot?

Of course, one of this library's strongest points is providing British sounds, such as telephone rings, busy signals and the like—don't look for any of the usual USA "Ma Bell" sounds here. Much of the library, however, contains sounds that are not specific to any culture. During the production of the soundtrack LP for the San Francisco Mime Troupe's *The Mozamgola Caper* (please no jokes about miking mimes—the group stopped doing pantomime years ago and does musicals nowadays), I needed the sound of a *huge* crowd during a scene where the leader of an African nation makes an impassioned plea for the end of social and political apartheid. After recording the speech dry in the studio, I added a touch of reverb, several long, discrete echoes to simulate speaker tower delays, and brought "sports crowds: goal scored" into the mix. Of course, this required parking my CD player at a point just after I heard the thump of the ball being kicked. The cheering crowd swelled gradually and then decayed naturally. The result was amazing.

The library includes a 16-page, cross-referenced index, and each CD has an insert card that lists the contents of each disc, with track number, length in seconds and a brief description of each sound. For instance, the documentation for the "bicycles" section details that you're not hearing just any bicycle, but a 1936 Raleigh Sports model; the "computers" section includes Amstrad, Juki and Epson printers; and "car wash" specifies the wash phase of an automatic unit, recorded binaurally from the interior of a Renault 5.

Distributed in the U.S. by Gefen Systems, 5068 San Feliciano Drive, Woodland Hills, CA 91364, tel. (818) 884-6294.

JOHN HARDY M-1 MICROPHONE PREAMP

Advancements in digital and analog recording systems have brought the entire recording chain under intense scrutiny. Microphone selection and placement, cabling systems and mic

preamplifiers are critical elements of any recording, but perhaps even more so when the project involves minimalist mic techniques, where the microphone output is connected to the recorder via a simple signal path with few interruptions in between. In such cases, the performance of the mic preamp is crucial, and those users who eschew standard, onboard console preamps in favor of external, high-performance devices are not easy to please.

With that thought in mind, John Hardy developed the M-1 series, offering from one to four preamps in a single rack-space package, priced from \$750 to \$2,562, depending on options selected. The least expensive stereo model is priced at \$1,050. Each channel features a top-of-the-line Jensen



JE-16B input transformer, a discrete 990 op amp and a DC servo circuit, which eliminates all coupling and gain pot capacitors. A number of available options, such as silver- or gold-plated XLR inputs/outputs, various metering choices, and transformerless or Jensen JE-11BM transformer-coupled outputs, allow users to customize the unit to their own particular needs and preferences.

The first thing I noticed about the M-1 was the 215-ounce (over 13 pounds) heft of the 4-channel unit I tested, which is quite substantial for a single-rack device. The box feels like it could survive a direct hit by an artillery round and, obviously, Mr. Hardy has put a lot of thought into both the rugged design and ergonomics of this preamp. The front panel switches on each channel (48V phantom power, high/low gain range, phase reverse and selectable VU/peak meter ballis-

tics) are of the backlit LED type, which glow brighter when selected, and are a welcome touch, especially when working in the dim settings that are often encountered in remote recording and studio applications.

The rotary gain potentiometer is smooth-acting and, while not large, is quite easy to use. It's the non-stepped type, which I prefer in such applications. An internal switch allows operation at any voltage from 100 to 240 VAC, an important consideration for continent-hopping engineers. The rear panel includes ground lift switches for each channel, a chassis ground/signal ground/iso selector and either gold- or silver-plated XLR inputs and outputs.

Actually, I was unable to discern an audible difference between the gold

and silver versions. Of course, I was testing a new M-1, with no corrosion on the silver contacts; the user would have to decide whether the extra expense for gold contacts is justified. Gold plating is noncorrosive, yet eventually wears off after many connections and reconnections, so I wouldn't recommend paying extra for equipment with gold-plated connectors if your gear is subject to a lot of setups and teardowns.

Operationally, I was quite impressed with the M-1's audio quality. I used the unit on a remote digital recording of a solo piano recital, and vocals and stringed instruments on an album of children's music. With its wide frequency range and sharp transients, piano provides a formidable test of any mic preamp, and I was pleased with the M-1's performance. Reproduction was faithful to the original, and, aside from the obvious increase in level, the

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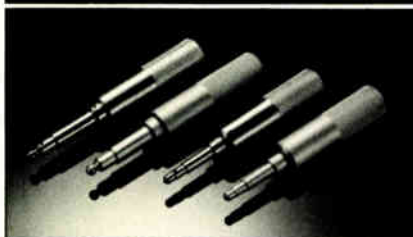
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AUDITIONS

preamp output really reflected the mic input, with excellent clarity and transparency.

With the luxury of having both transformer and transformerless versions of the unit at my disposal, I was able to make A/B comparisons of the two. The decision of which type to purchase may be quite difficult for the prospective buyer but, fortunately, both are excellent. I preferred the sound of the transformerless unit (with the direct out from the 990) for the piano piece, while I gave the transformer-coupled version the nod for the vocals and frets project. Ultimately, the decision should be based on your requirements (i.e., whether you need balanced or unbalanced outputs) and personal preferences.

The John Hardy Company, Box AA631, Evanston, IL 60204, tel. (312) 864-8060.

DENON ANECHOIC ORCHESTRAL MUSIC RECORDING

Every once in a while, someone comes out with a product that makes us all scratch our heads and wonder why no one had thought of it before. Denon's *Anechoic Orchestral Music Recording* (release #PG-6006) is one such product. As its name implies, this is a CD of symphonic selections performed in a reverberation-free environment by the Osaka Philharmonic Orchestra, with Masahiko Enkoji conducting. The last commercially available anechoic recording was a chamber music disc put out by the BBC some 19 years ago, so Denon's release of the first anechoic CD is something of an audio milestone.

Denon technicians erected a temporary anechoic chamber on stage at the Mino Civic Hall, and close-miked the orchestra with B&K Type 4003 and 4006, Schoeps CMC-54U, AKG C-451E and Shure SM-81 mics. These were fed through custom Denon low-noise preamps to a Mitsubishi X-850 digital 32-track recorder.

One unexpected problem that arose during the recording was the crowding of 100 musicians into a sealed box with no air conditioning during mid-July weather. This dilemma was solved by setting large blocks of ice at various locations around the chamber. Since the conductor and orchestra would undoubtedly have trouble performing in a reflection-free setting, each player

was supplied headphones fed from a Yamaha REV7 reverb to create a more natural listening environment. I'm just glad I wasn't the guy who had to do the monitor mix for this gig.

The resulting disc is a phenomenal accomplishment and an invaluable tool to the acoustician, audio architect, sound reinforcement engineer or anyone who needs an unprocessed reference source for evaluating P.A. speakers or the acoustical character of rooms. I auditioned the disc in a variety of environments, ranging from hard, boxy auditoriums to plush, absorptive listening rooms, and was immediately impressed by its usefulness. This disc is ideally suited for checking out digital reverberators, and these tracks may soon become a standard fixture in audio showrooms everywhere.

At this point, if you're still not sold on the value of this \$49.95 evaporated 24K gold CD, then you should also know that the *Anechoic Orchestral Music Recording* also contains simulated re-creations of the reverb in three famous halls; orchestral combinations with various instruments isolated; Mozart and Bruckner selections, each recorded using five different mic techniques for comparison; and a se-



lection of test signals, including sine waves, frequency sweeps, tone bursts, pulses, white noise, pink noise, and 1/3- and full-octave frequency bands. Besides, the disc is a lot cheaper than hiring an orchestra the next time you ring out a room.

Available directly from Laura Tyson at Denon America, Inc., 222 New Road, Parsippany, NJ 07054, tel. (201) 882-7467. ■

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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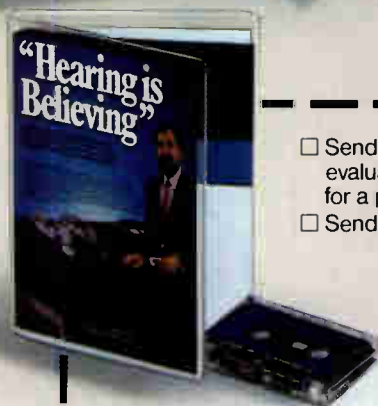


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Mix 2/89

by Mark Herman

SOUND REINFORCEMENT NEWS

Good news! *Mix* has decided to further emphasize sound reinforcement editorial. In upcoming issues expect to see a substantial increase in regular monthly coverage devoted to live pro audio events, products, personnel and common problems encountered in concert, theatrical, industrial and commercial sound reinforcement.

Big Buyout: In early December **Maryland Sound Industries** purchased **Stanal Sound** in North Hollywood, CA. One of Stanal's big accounts is **Neil Diamond**, who went out on tour in December with a JBL Concert Series system. Other Stanal clients were the **Pointer Sisters**, **Universal Theatre**, **Greek Theatre** and **Wilern Theater**. MSI plans to keep its new acquisition located in California.

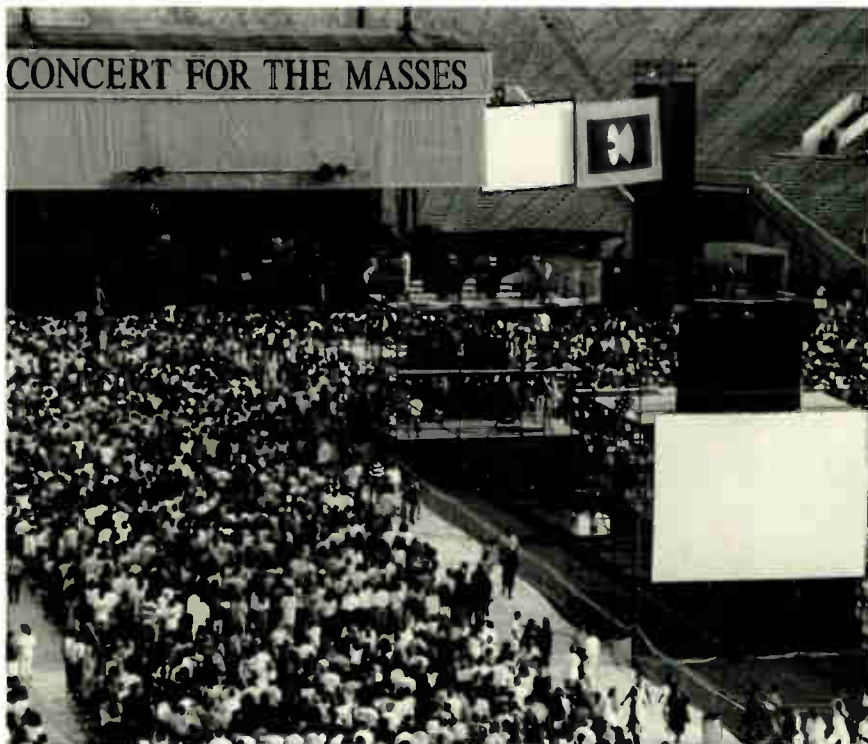
On the subject of touring, spokesperson **Ronnie Smith** said, "We're slowing down just a little bit, which gives us a chance to do maintenance on the returning systems. In England, though, we are going full swing with our three Britannia Row systems. They are very busy over there."

Act-wise, here's what MSI is up to: **Whitney Houston** returned from the Orient and Australia; **Steve Miller** (see "On The Road") was out in November and December; **Stevie Wonder** was scheduled to tour South America in January; one of the more successful tours out this fall was the **Anita Baker/Luther Vandross** show; and **Kenny G.** and **Frankie Valli** continued touring. MSI also handled the National Tree Lighting Ceremony in December and the Presidential Inauguration in January, as well as dates at the **Kennedy Center** in Washington, DC.

Bernhard Brown of Dallas, TX, is a production house handling sound, lights and staging. Named after the

two owners, general partner **Dan Brown** and his limited partner **Van Bernhard**, Bernhard Brown has been in business for three years. Spokesperson **Bill Millet** said, "Our focus is live sound reinforcement and lighting. We work a lot of outdoor festivals with multiple stages, as well as many national one-offs for the major production companies here in Dallas. Also, we seem to pick up the regional leg of various tours requiring production in Texas and the Southwest. Our

Baron's Ball that was originally scheduled outdoors until rain forced organizers to move the entire production overnight to an indoor building; four days of food and entertainment at the **Texas Taste Festival** at City Hall Plaza in Dallas; the **Mexfest Festival**; and the **Andouille Festival** in New Orleans. Short regional tour legs in '88 were with **Menudo**, **Michael Murphy**, **T. Graham Brown**, **R.E.O.**, **Speedwagon**, **Jose Feliciano**, **Lee Greenwood** and **Little Feat**. One of



One of the largest Meyer Sound systems ever utilized was assembled last summer at the Rose Bowl in Pasadena, CA, for the Concert for the Masses featuring headliner Depeche Mode. 130 MSL-3s and 60 USW subwoofers were provided by A-1 Audio (Los Angeles), Audio Lease (London) and Stage Sound (Phoenix) to provide coverage for 70,000.

industrial work is confined to a few local Dallas clients." Recent festival work included the multistage **Cattle**

Bernhard Brown's biggest events in '88 featured **Miami Sound Machine** at **Texas Stadium**, which required 40

TMS-3s and 16 TWS-124 cabinets.

Occasionally Bernhard Brown gets a national tour. Just recently they concluded a nine-week North American tour with **Ministry** (see "On The Road" Jan. '89). Last year they toured

with **Larry Carlton** (see "On The Road") and are gearing up for another tour in March.

For main P.A., Bernhard Brown has a total of 40 Turbosound TMS 3s and 16 TWS-124s, and anticipates the pur-

chase of 16 more TMS-3s soon. Additional P.A. equipment is an all JBL loaded proprietary 3-box system with 16 single 18-inch boxes, eight double 15-inch boxes, and 16 mid-highs with a 12-inch speaker and 2-inch horn.

ON THE ROAD

SOUND COMPANIES, EQUIPMENT, ARTISTS & PERSONNEL ON TOUR

Artist Sound Company Tour Dates & Region	House Console #1 House Console #2 Monitor Console #1 Monitor Console #2 House Crossover	Main Speakers Other Speakers Subwoofers Monitor Speakers Monitor Speakers	Main Amplifiers Other Amplifiers Sub Amplifiers Monitor Amplifiers Monitor Amplifiers	Engineers: (B) = band (H) = house (M) = monitor (T) = technician (a) = assistant
Bon Jovi Showco Oct-Dec Europe Dec-Jan Japan	Harrison HM-5 32x16x2 Soundcraft Series 4 40x16x2 Harrison SM-5 32x16 (with 16-ch. extender) Showco	(80) Prism ---- (16) Prism Subwoofer Showco 600	Crown PSA-2, MT1200 ---- Crown MA2400 Crown MT1200	Mike Renault (B, H) Rocky Holman (B, M) Jeff McGinnis (aH) Ron Reeves (aM) Leon Hopkins (T) Eddie Harbin (T) Todd Garret
Larry Carlton Bernhard Brown March-June N. America	Yamaha PM3000 40x8x2 ---- TAC Scorpion 40x12 ---- BSS 360	(16) Turbosound TMS-3 ---- (4) Turbosound TSW-124 EAW/BB 2x12	Crest 8001 ---- Crest 8001 Carver 2.0	Hal Sacks (B, H) David Cheramie (M) Jeff Palmer (T)
Frank Sinatra, Sammy Davis & Liza Minnelli A-1 Audio May-Nov U.S. Jan-March U.S.	Yamaha PM3000 40x8x2 Yamaha 2404 24x4x2 (from house console) ---- Meyer	(16) Meyer MSL-3 (4) Meyer UPA-1 (6) Meyer USW Meyer UM-1 Meyer MSL-3 sidefill	Crest 4001 Crest 4001 Crest 4001 Crest 4001 Crest 4001	Allan Richardson (B, H) Dan Casting Connie Fernstrom
Ozzy Osbourne Electrotec Nov-Feb N. America	Soundcraft Series 4 40x16x2 ---- Soundcraft Series 4 40x24 ---- BSS 312	(78) Lab Q ---- (24) Lab Q Sub Electrotec Custom Series II Lab Q sidefill	Crown MA1200, UREI 6400 Crown MA1200 Crown MA1200 Crown MA1200	John Godenzi (B, H) George Barnes (M) Bob Trano (aH) Mark Toooh
The Oak Ridge Boys Carlo Sound Ongoing N. America	Harrison Alive 32x8x2 ---- Soundcraft 800B 32x12 ---- EAW MX 800	(32) EAW KF850 ---- (16) EAW SB850 EAW SM222, 155 EAW KF600 sidefill	Phase Linear 700, 400 ---- Phase Linear 700 Phase Linear 700, 400 Phase Linear 700	Jim Krueger (H) Marco Hunt (M) Thad Edwards
Steve Miller Maryland Sound Ind. Nov-Dec N. America	Yamaha PM3000 40x8x2 ---- Ramsa 840 40x18 ---- MSI HS 301	(16) MS-10 ---- (16) MS-10B MSI Custom	Crest 7001, Ramsa 9220 Crest 8001 Crest 3501	Steve Weiss (B, H) Jim Risgin (M) Dave Lohr (aH)
Stryper dB Sound Inc. Oct-Sept '89 International	Yamaha PM3000 40x8x2 (dB modified with patch bay) Ramsa 840 40x18 ---- E-V MTX-4 (dB modified)	(16) dB HD 4-way (14) dB HD 3-way (14) dB HD Bass E-V 212 E-V MT-4 sidefill	Crown PSA-2 Crown PSA-2 Crown Delta Omega Crown PSA-2, MA1200 Crest 8001	John Lebetzki (H) Dave Rizzo (M) Jim Yakibuski Jim Homan

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SOUND · ON · STAGE

Crest 8001s are used to power the P.A. "We moved over to the Crest 8001 for the extra headroom," explained Millet. House mixing consoles are all Yamaha: a PM3000 40C, a 32-channel PM2000 and a 2404. Floor monitors are a proprietary JBL loaded wedge with two 12-inch speakers and a 1-inch horn. Over 30 wedges are powered by QSC 3800 and 3500 amplifiers, along with some recently purchased Carver 2.0s. Monitor consoles are a TAC Scorpion 40x12 and a Soundcraft 400B 32x8. Bernhard Brown also owns a full lighting system and trucks for tour transportation.

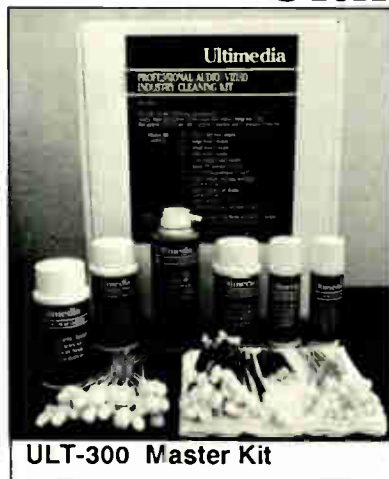
One of Bernhard Brown's clients is the new **Starplex Amphitheatre** in Dallas. To cover its lawn area the Starplex Amphitheatre sound system has 16 Turbosound TMS-3s, powered by QSC 3800 and 3500 amplifiers. The system is leased to Starplex with an engineer for every show, who is responsible for interfacing with the production that acts bring in. Bernhard Brown is basically the in-house sound company and provides local production when needed. They also have a small P.A. system leased full-time to the 1,000-seat **Arcadia Theatre** in Dallas, which is host to many national one-offs.

AES Brief: The recent **85th Audio Engineering Society (AES)** show at the **Los Angeles Convention Center** and **Hilton Hotel** showcased many new live sound and studio products. An entire magazine issue would be necessary to cover all the different speakers, amps, consoles and signal processing devices displayed. I spent four full days checking out just the sound reinforcement exhibits and still didn't get to see all the products I wanted. If you like pro audio electronics, the AES Convention is the place to go, whether it is in L.A. or New York. Of course the bar at the host Hilton Hotel was one of the livelier spots after the exhibits closed. The air was buzzing with lots of laughs, lies, networking and deals.

At the show, speaker manufacturer **Turbosound** introduced what I would call an "application-specific" product, the TFM-2, a bi-amped 3-way floor monitor cabinet, designed primarily for very high SPL uses such as drum monitor, lead guitar and screaming lead vocals. Recently I heard it in action, and believe me, the TFM-2 can

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WATCH THIS SPACE!

for expanded coverage of sound reinforcement news!

Starting in March, *Mix* will double the space devoted to live-sound support services, including:

- Troubleshooting tips from the pros
- New products page
- Monthly features
- More industry news and tour updates

really crank out the decibels considering the size of the enclosure. Check it out if possible, but remember to bring your earplugs.

Greg Smith of **On Stage Audio** (Elk Grove Village, IL) reported, "We've been busy with industrial events all over the nation and it looks like it will remain that way for a while." In the past several months, out-of-state travels included dates in California, Georgia, Florida, Wisconsin and Louisiana. Recently they worked four days at the **San Jose Convention Center** in California's high-tech Silicon Valley. While many audio people were attending the AES Convention in early November, On Stage Audio was working nearby. "We spent two weeks setting up for the **Anheuser-Busch Distributors Gala**, which featured many big Hollywood and Broadway stars at the **Shrine** in Los Angeles. We worked in conjunction with **Best Audio** and supplied a Yamaha PM3000 house console, 22 wireless microphones and a complete monitor system with a Ramsa 840 console." Smith commented on the large stock of wireless units, "We seem to be renting quite a few of the Vega wireless mics and we're very happy with them." In its local Chicago area, OSA coordinated and worked a huge New Year's Eve bash at the **Hamilton Hotel** (Itasca, IL) that included sound and lighting as well as indoor pyrotechnics and lasers.

Asked about the differences between industrial and concert sound, Smith replied, "A lot of people think they can go right in and do an industrial show, but it is a whole different ball game. For example, IBM does not like to have it real loud in front, but still demands good coverage in the back. Because of that we get into extensive delay systems. Also, much of it is attitude-related; one must have a cooperative corporate attitude."

As in any industry, certain companies find their own unique niche and fill it very well. One such company is **Black Audio Devices** of Ventura, CA (805-653-5557). Started four years ago by owner **Bruce Black**, this nuts-and-bolts business is dedicated to the hardware end of audio. Many of you know there is nothing quite as irritating as when the boom on a mic stand keeps slowly drooping because of worn-out parts. Such things as hard-

to-find AKG, Beyer- and Atlas-compatible boom and stand parts, as well as blank rack panels, screws, clamps, thread strips, special tools, cable keepers and other odds and ends, are Black Audio Devices' specialties. They have a reputation for fast delivery and quality stainless steel parts.

GROSS... Concert tours consistently reporting the highest gross ticket sales in the fall of '88 were **The Grateful Dead** (Ultra Sound), **George Michael** (Showco), **Aerosmith** (Showco), **Def Leppard** (Electrotec) and **Eric Clapton** (Showco).

Bits and Pieces: Selectro Especta installed 12 specially coated Apogee 3x3 speaker cabinets at **Aztec Stadium** in Mexico City. The two previous sound systems reportedly rotted out due to the heavy air pollution in Mexico's largest city... San Francisco-area sound reinforcement mixing console rental company **Hi-Tech Audio** (owned by yours truly) purchased two Yamaha PM3000 40-channel house consoles... The **Brest Planetarium** in Jacksonville, FL, is the 16th largest planetarium in the U.S. Recently a new all-JBL 18,000-watt sound system capable of 128dB linear SPL was installed there. The system includes 24 subwoofers and six custom enclosures with 11 speakers each. A Soundcraft 600 console handles the subwoofer mix and the six discrete channels necessary for the special effects and music... **Metroplex Covenant Church** in Colleyville, TX, purchased a 32-channel Soundcraft 500... New York City's **Lewis Feldman Audio** installed a 30,000-watt JBL Club sound system in Manhattan's **Red Zone Club** and another smaller system at **The Strand** dance club in Rehoboth Beach, DE... **The Celebrity Theater** in Phoenix, AZ, reported the installation of a new main sound system composed of Eastern Acoustic Work's new KF600 cabinets. Crest 4001 and 8001 amplifiers will power the EAW boxes that cover the unusual theater-in-the-round setup. ■

Author Mark Herman owns Hi-Tech Audio, a sound reinforcement company specializing in console rentals.

If you want to make the news, call (415) 726-2428 or send press releases & photo to: Mix Publications, Sound Reinforcement News, 6400 Hollis St. #12, Emeryville, CA 94608.

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by Craig Anderton

SCSI

BREAKING THE SAMPLING SPEED LIMIT

Some changes that at first appear to be evolutionary can instead turn out to have a revolutionary impact on the way we work or do business. For example, for computer owners, a hard disk may appear to be an evolutionary product since it is simply a faster way of fulfilling a function that already exists—stuffing data into memory. However, the bottom line is that a hard disk will allow you to run some software that would be cumbersome or even impossible to run if you had to depend on floppy disks.

Macintosh hard disk owners can gain the benefits of a fully loaded system, including lots of useful desk accessories, that would be impossible to squeeze on an 800K floppy. These desk accessories and system enhancements dramatically upgrade the computer's power, so much so that new and more productive work patterns become possible. And there's always the advantage that most copy-protected programs allow you to install one or two copies onto a hard disk, thus eliminating the tedious insertion of a "key disk" every time you boot the program (or when you reboot the program, should it lock up or freeze).

Now a revolutionary change in evolutionary clothing has appeared in the world of sampling: SCSI, the Small Computer System Interface. This interface is optimized for shuttling large amounts of data between a computer and associated SCSI peripherals (for example, a hard disk or CD-ROM); however, that peripheral could just as easily be a sampler equipped with SCSI. In fact, since samplers are basically computers anyway, a SCSI port can be used to transfer samples between a sampler and SCSI hard disk (or disks).

As of this writing, the Emulator III and Ensoniq Performance Sampler

(EPS) both have SCSI interfaces available. Akai's S1000 is promising SCSI shortly, and new entries from Dynacord and other manufacturers will supposedly include SCSI as well. I'm convinced this is a trend that will only accelerate in the future.

Why is SCSI so important? Because the increase in performance it brings is dramatic. With the EPS, I've been using SCSI with an external 45MB hard disk to save and load samples. Loading a fully packed floppy with eight different sounds takes over a minute; via SCSI, the same procedure takes under seven seconds, cutting loading time by almost 90%. Since the EPS can also load while playing, I can run through sounds while sequencing the EPS; because it takes only a sec-

SCSI brings speed and convenience to the process of sample editing and storage.

ond or two to load an individual sound, the process of auditioning different sounds for a track is now fast and painless.

One problem that must be overcome is managing the huge amount of data on a hard disk. Fortunately, the EPS provides user-definable macros that can transport you instantly to

—CONTINUED ON PAGE 162

6-INPUTS, 4-TRACKS LESS THAN \$450.00.



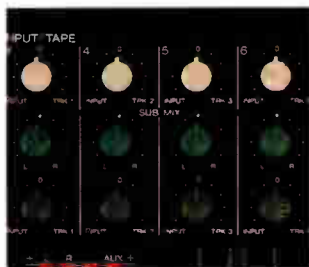
✓ 6-Input Stereo Mixer with 4-Track Cassette Recorder.

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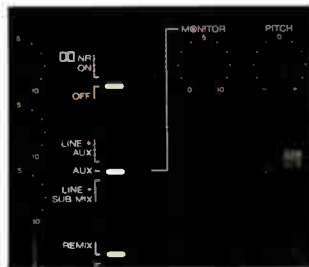
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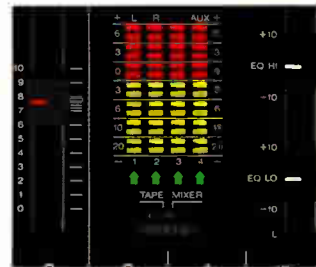
Sub-Mix Section. The X-26 sub-mix section allows you to adjust pan and gain for either tape or source on each of four channels. You'll find many uses for this 4 x 2 sub-mixer, which is very useful for overdubbing.



Mixing Flexibility. Six inputs, Master and Monitor Stereo Outputs, Stereo Effects Receive and Tape Sync Out give you plenty of mixing flexibility. Stereo Effects return is an especially nice feature for all mixing applications.



Monitoring Flexibility. With the X-26, you can monitor the main stereo buss, the aux buss (effects send) and the sub-mix buss. You can monitor the logical combinations, too.



Metering Flexibility. The X-26 allows you to switch the 4 meters between Tape (Tracks 1-4) and Mixer (Stereo L + R and AUX Send). You'll be able to see everything from input to output. What's more, multi-color LEDs also indicate tape mode and recording status.

X-26

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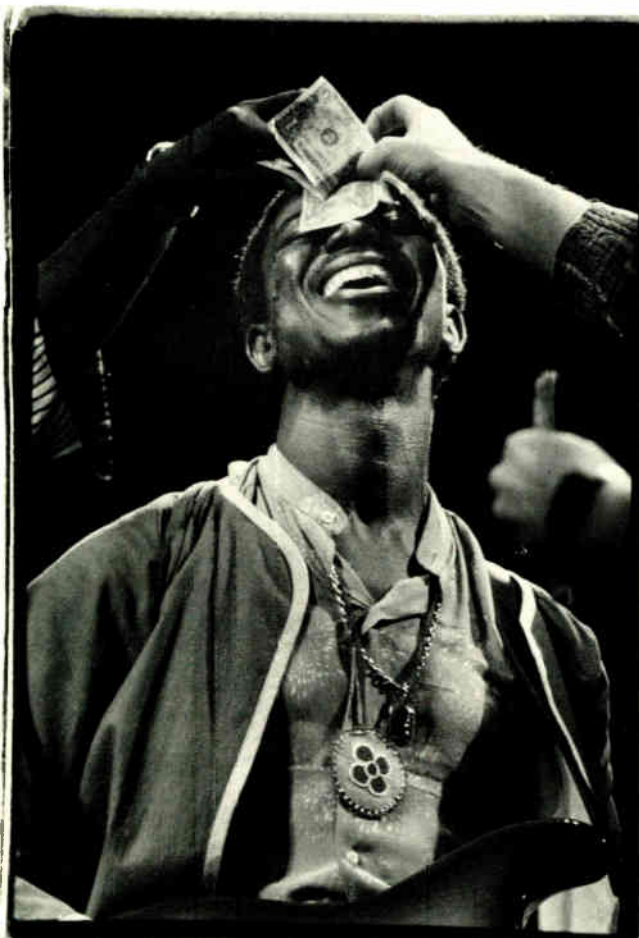
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World Radio History

Fans plaster dollars on King Sunny at a California concert, showing their appreciation, Yoruba-style.



KING SUNNY ADE'S JUJU CRUSADE

by Hank Bordowitz

King Sunny Ade is doing something most American bands wouldn't dream of. He and his 20-piece band, the African Beats, are touring America, just the musicians and a soundperson. Everyone breaks down and takes care of his own equipment; no roadies, no crew.

"Actually," smiles the King of Juju music, "that's what we are used to doing. Nobody likes to have anyone take care of the instruments for anyone else. But now with the P.A.,

and we have back lines going out all the time. . ."

Tripping over the back lines are the least of Ade's troubles, however. He has been stranded in the States due to transportation problems, causing Ade and his manager to put everyone up for an extra week in New York-area hotels, one of the most expensive areas of the world to be stranded. Still, Ade takes it all philosophically. He is a musical emissary, among the best-known African musicians in the United States, with perhaps a dozen tours over the last 15 years.

"Of the other music that is going on, our music is different," Ade contends. "So we just want to play it around the whole world

and at home."

Ade became popular among Third World music aficionados when he was signed to Island Records early in the decade. Destined to be the next Third World musical messiah, a role vacated by the death of Bob Marley, Ade was already immeasurably popular in Nigeria and well-known in Europe. Now it was America's turn to be taken in by his juju.

It is particularly infectious music, with ten drummers drumming, lots of guitars and a big bass bottom. The drums and the vocals retain close ties to the traditional Yoruba juju music. The guitars give it a pop/rock/jazz bite. Ade has also added a couple touches that are only odd when you think about them; a pedal steel guitar and, more recently, synthesizers.

"If you want to carry Yoruba music and play it out," Ade concedes, "there is no single Western instrument that's going to be there. You have to find at least 40 people to play it as it's supposed to be instead of 22. When a drummer wants to sound like the patterns, like in the chorus, there must be six drummers playing at the same time. Now, when we want to play a drum, instead of six players, we can easily use an effect in the chorus.

"When you listen to my pedal steel player, you know that it's a pedal steel, but it doesn't sound like country music. It's juju music.

"Actually, we didn't use pedal steel before. When

we came over here, we saw the pedal steel. Before, we used a guitar with a slide. We slide in an African way. We don't actually want to go along with any other music in the world. We want to differentiate our own kind of music. That's why the pedal steel player has a normal time to come in, and he plays a danceable sound—not really to back the song, not really to take a solo. He has to play his own kind of solo on a danceable step, according to African music.

"I always wanted to introduce the pedal steel. Then I introduced the keyboard. My ancestors had already introduced the accordion. I just don't like to have an accordion on me. The people who play the accordion used to stand still at a microphone. With my kind of music, you have to dance around, you have to jump up. You can't jump up with an accordion on your chest! That's why I introduced a DX7. And within a DX7 you can find so many sounds. It's good if you can play flute direct, but you can play it on the keyboard and it's more or less the same. The man who would be playing the flute is playing the keyboard. So this is where those groups that are trying to fuse it with Western instruments play it in an African way."

Alas, Third World musical heroism has not been in the cards so far for Ade. After three records that were probably more widely distributed as promos and press copies

—CONTINUED ON PAGE 98

JOHN TESH BUCKS THE TUBE

by Mr. Bonzai

On *A Thousand Summers*, John Tesh boldly scores the Tour de France, musically careening along with cyclists who are angling so low their leg hairs are sweeping the cobblestones. He pumps his Synclavier up to match their brute endurance. He breathes a sympathetic chord as a rider groans in the agony of hitting the road—literally.

Tesh, a fine pianist/synthesist who is best known for being a co-host of *Entertainment Tonight*, covers a lot of ground on his album, from majestic material suitable for

broadcast framing to jazzy funk. And on one cut, "That Ole Demon Meanness," you'd swear King Kong himself was beating the kettle drums—they rumble and shimmer from the lower depths.

"We got that kick drum effect by sampling the sound of a boulder being dropped in a tank of water," explains Tesh at his little Hollywood studio hideaway. This is where he goes each day after a breezy morning of taping *Entertainment Tonight*. "The snare is a broom handle smacking the wall," he adds.

Tesh and I brown-bagged it after I had listened several times to his new album, *Tour de France*, on the classy Private Music label. I cranked

—CONTINUED ON PAGE 99



John Tesh

"NUMBER ONE WITH A BULLET" DEMOS WITH A DIFFERENCE

by Randy Alberts

Demo tapes have made it to final master many times. The common format is a compilation album featuring several unsigned songsters collaborating for their collective record company exposure. Even Jules Shear once went solo with his own album of home demos called *Demoitis*. (And Pete Townshend has put out *two* LPs of demos.) Though often poorly produced, these compilations have allowed listeners the rare chance to hear a song the way the songwriter originally conceived it.

What sets *Number One With A Bullet* apart from previous compilation albums is what happened to these songs *after* the demo process: each song went on the reach Number One.

Another unique characteristic of this record is one of the reasons for its release: to give something

back to those who wrote the songs, and eventually to songwriters everywhere. Those with demos on the album will receive public recognition, and Cypress Records will donate a portion of the album's profit to the National Academy of Songwriters (NAS), an organization that has supported many a songwriting career.

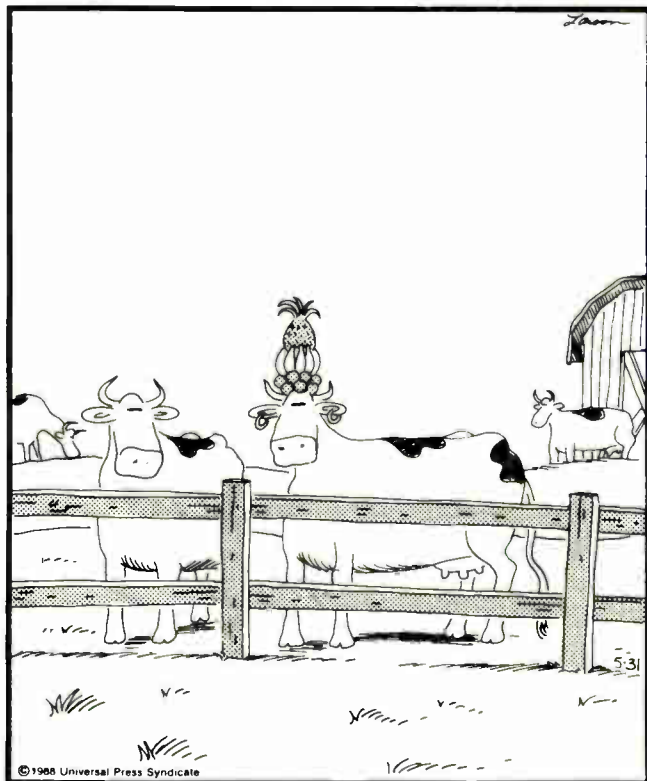
Number One executive producer Michael Solomon, who is personally donating part of his album points to NAS, is one of the leading campaigners for songwriters. "Musicians who aren't recording artists are definitely lacking recognition," says Solomon. "In a way, they are the Gershwins and Berlins of the '80s and '90s, and the public doesn't know who they are! I am in awe of songwriters, and hopefully this record will give them the exposure they deserve."

The collection includes "Walk Like An Egyptian" by Liam Sternberg, "Automatic" by Mark Goldenberg and Brock Walsh, "Crazy For You" by Jon Lind and John Bettis,

—CONTINUED ON PAGE 99

THE FAR SIDE

By GARY LARSON



Cowmen Miranda

MUSIC · NOTES

—FROM PAGE 96, ADE

than for sale, Island Records dropped him and retrenched into more conventional acts like U2. Still, Ade managed to take it in stride.

Then last year, after four years without any new music in the U.S., PolyGram released Ade's *Return of the Juju King*, a compilation of three of his Nigerian recordings. These are different from the music released previously in America. Certainly, the percolating percussion, complex multiple guitar lines and harmonies are there, but the music is less polished, a bit more raw and harder-edged. This becomes a little easier to understand when you realize that Ade releases three albums a year for a Nigerian audience who would think he had disappeared if he were gone from the record stands for more than five months.

In the fall of '88 he released *Live Live Juju*, his first American live album, on Ryko. The digital recording uses mics placed at discrete, measured points of the hall. According to the liner notes, "Stereo imaging is created by phase discrimination rather than

monopanning. The introduction of accurately phased vectors literally re-creates the ambience microphone's perception point (front/center)... The percussive nature of this performance uses 100% of linear 16-bit digital's dynamic range capabilities." In simpler terms, close your eyes, and it's a lot like being in the audience, without the remixed dynamic of many live recordings.

But Ade's recordings are almost always remarkable. Considering that there are frequently 30 people playing, the integrity of each instrument in the mix is remarkable. Each talking drum, each timbale has its own discernible voice. This was true even when they were working with more primitive equipment than is currently available. Now, Nigerian studios are relatively modern. Twenty years ago, when Ade was getting started, they might as well have been Robert Johnson for the nature of the equipment.

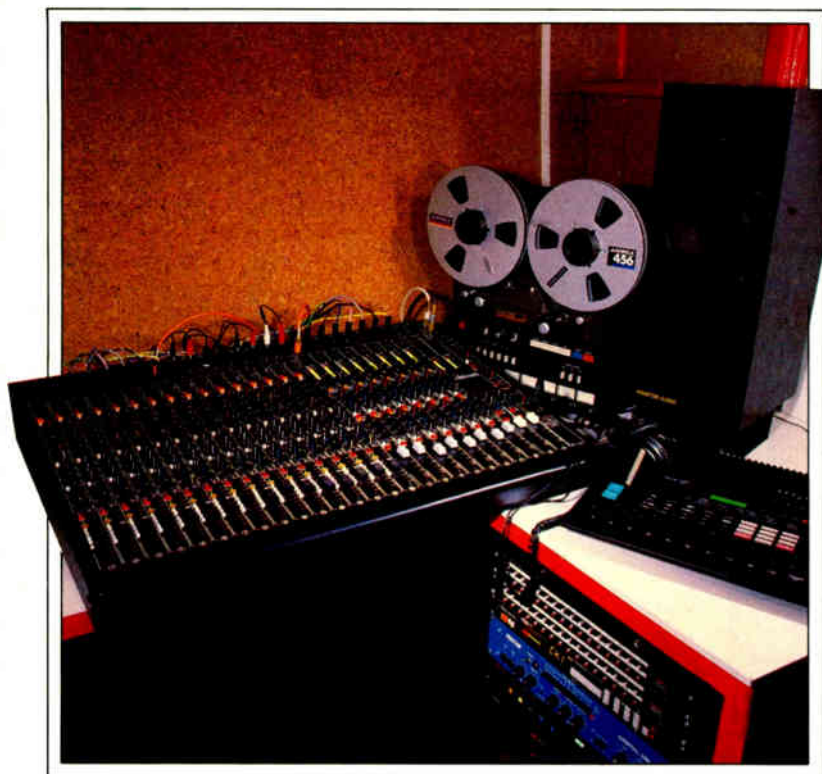
"All along, I've been interested in listening to music," Ade offers, "to every single instrument. I wanted to hear all my instruments, and I wanted to hear them clean. Now we can record every one of us. Before, you had to know everything you wanted to play,

because the stereo was not multitrack. If you made a mistake, you'd have to start again. We had to make sure we fined the players very heavily, or we could lose all the money, the whole royalty! You had to be ready.

"We would write every song on paper, paste it on the wall in the studio. All you had to see was the cue. When they cued you, one, two, three, four, the red light went on and you'd start. It was you and your guitar, you and your microphone. When they stopped you, they stopped you. If there was a mistake, we didn't really fight each other, because anyone can make a mistake. But we didn't want you to make a mistake three times. Do it three times, you were out of that recording. That means you are not part of us. If you had problems, you should not go to the studio.

"Nowadays, it is easier, because you have multitrack. If the multitrack is 24, 30 people can go at the same time. You get four people on one track, three on another, and the rest will go on their own track. Then those three or four can go in again.

"Sometimes the studio can only fit 15 people at the same time. So we take all the other musicians out of the



The Studiomaster Mixdown consoles are specifically for today's smaller studios; studios which are using more and more sequenced instruments, and need many inputs for them.

The 16.4.8 and 16.8.16 Mixdown consoles have 26 and 34 inputs at stereo mixdown, respectively. Put into perspective, other similarly priced 16.4.2 and 16.8.2 consoles would need to be in 24.4.2 or 32.8.2 formats before they could match this capability.

The main benefits of this are that re-patching during a session is considerably reduced, if not eliminated, and a smaller multitrack tape machine can be used! This is because only the "live" instruments need to go on tape, since MIDI sequenced drum machines, keyboards and effects can simply be monitored during the recording, then added at the stereo mixdown.

Few consoles rival the Mixdown's features, and fewer still match specifications like a T.E.N. of -129dB and cross talk between subgroups (at 1kHz) of -88dB. And with these features and specifications, none can match the price.

Key features of Mixdown include balanced inputs, 3 band sweep EQ, 6 auxiliaries, 'auxiliary line inputs' on 16.4.8, 16 on 16.8.16), upper AL inputs have 2-band EQ, DIRECT OUTS, 48V Phantom Power, effects AND fold-back sends on subgroups/AL inputs, fader reverse, stereo out return, 100mm faders, expandable inputs to 40.

For detailed colour literature, contact Jim Giordano, Paul Reeve or Tony Allen at STUDIOMASTER INC. 1340-G Dynamics Street, Anaheim, CA-92806 Tel. (714) 524 2227 Fax: (714) 524 5096

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studio, and they'll play as if they were with us. They don't see us, but we feel as if we are on the stage. Later on, we can redub it if we need to."

Ade is cosmopolitan enough to recognize that even this is not the state of the art. He has recorded in New York and Los Angeles and worked with Stevie Wonder on his last Island release, *Aura*, in 1984. On that recording the final product was mixed down to one of the early Beta digital machines.

"He ended up using videotape," offers his American manager, Paul Trautman. "I assume he did it with a digital recorder, using the videotape to store the digital information, then he played it back into something more elaborate."

"Actually, it was so funny," Ade muses. "We recorded it on a videocassette, then he played it back on his own kind of digital recording."

"The difference is," laughs Trautman, "videotape is \$8.98, and recording tape is . . ."

He laughs just thinking about it. Such are the economic joys of managing a Third World musical messiah. ■

—FROM PAGE 97, *TESH*

it up in the car and rallied around town with his soundtrack, which earned him an Emmy for backing up the CBS Sports coverage of the cycling event. He's also cut a video for the title music, which juxtaposes bike footage with Tesh at his Synclavier. "The music was successful as a broadcast soundtrack, but it was really written to stand on its own," he explains.

Actually, Tesh started out as a musician and has never forgotten his goal. "I majored in music in college, played in bar bands for years and worked as a deejay for extra cash. I was heard by a major radio station, hired as an announcer and stepped gradually up the broadcasting ladder to television and CBS Sports."

It was while covering the *Tour de France* that Tesh was given the opportunity to compose music for the broadcasts. He earned another Emmy for his Pan American Games scoring. From CBS he moved on to hosting *E.T.*, a comfortable gig that permits funding his musical dreams.

His studio houses a NEOTEK console, a Sony digital multitrack, the Synclavier, Prophet-VS, Emulator II+, Kurzweil 250, Oberheim DPX-1, Roland MKS-20 and two Roland D-50s.

When asked if he had any old synth relics, he enthusiastically replies: "I still use my old Voyetra-8, but it radiates so much energy that it screws up the Synclavier and cuts out the phones. I like it because you can get such an incredibly fat analog sound."

Tour de France is getting healthy radio play across the country. "Some people ignored my album because they assumed I'd be singing duets with Mary Hart or playing with Robin Leach, but those who have listened seem to have been pleasantly surprised," Tesh says. "This is really what I've been working for all these years. A TV show spills out on your carpet and is gone the next day, but an album can make some history."

Tesh himself did much of the engineering on the album, along with Ross Palone and Calvin Loser. Save for live sax by Gary Herbig of *Dirty Dancing* fame and tasty guitar by Terence Elliot, the entire album is samples and synthesizers. To gather the samples, Tesh uses a portable DAT recorder and an Electro-Voice 416 shotgun mic.

Being the composer of the music and the announcer proved to be a winning combination. "Most announcers can't really work with the music, but because I wrote it I knew exactly where to come in, where to lay back and how to make it effective."

In addition to his on-camera anchor duties, Tesh has the opportunity to conduct interviews for *E.T.* "What can I say? It's a great job and I have a lot of freedom. If there are people I appreciate, say Eric Clapton or Huey Lewis, I can go out and do the interviews. Being a host for *E.T.* is a liability, though—some people refuse to think of me as a musician, because this is a business where dual identities are confusing. But the TV career allows me to do what I really want, which is to make records and soundtracks. I've got two more years on my contract with *E.T.* After that, I hope that I can do music full time." ■

—FROM PAGE 97, "BULLET"

"Nightshift" by Dennis Lambert, Franne Gold and Walter Orange, "We Built This City (Part 1)" by Martin Page and Bernie Taupin, "Next Time (I Fall In Love)" by Bobby Caldwell and Paul Gordon, "Neutron Dance" by Allee Willis and Danny Sembello, and "True Colors" and "So Emotional," both penned by the team of Billy Steinberg

—CONTINUED ON PAGE 134



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by Bruce Nazarian

MILLIE SCOTT

MY FIRST ALL-TAPELESS RECORDING SESSION

Those of you who've read my "In Sync" columns in past issues of *Mix* know I'm a fan of contemporary recording technology. I'm heavily into digital recording, the creative use of MIDI sequencers and the whole gamut of new recording techniques. So when I saw the chance to record an entire album using the latest in digital recording systems, I took it.

Earlier this year, I produced Island Records' new Millie Scott album, *I Can Make It Good For You*, which was released this summer. On Millie's previous LP, *Love Me Right*, I had used "virtual tracking" quite a bit. That is, I would record my Synclavier's sequenced music tracks on the 24-track master as reference tracks, but when I mixed the songs I would run the sequence again, locked to the original SMPTE code, using only the live vocals and live overdubbed tracks from the 24-track tape. This way, I could keep the music "first generation," avoiding noise and tape saturation from the 24-track master.

But the new album was going to be different from the start. I had just acquired the Synclavier's companion system—the Direct-to-Disk Digital Multi-track Recorder. Since I knew I would once again be using my Synclavier extensively, I decided it made perfect sense to use the Direct-to-Disk to record the live overdubs instead



of using an analog 24-track machine. This way I could record the entire LP without ever using analog tape.

Tapeless Recording! or, Dancing with Mr. D-to-D

Together, the Synclavier and Direct-to-Disk system comprise what New England Digital has trademarked as The Tapeless Studio. The Direct-to-Disk's tapeless recording concept is an outgrowth of NED's "Sample-to-Disk" technology, pioneered in the early '80s as the Synclavier's mono sampling enhancement.

Sample to-Disk involves real-time conversion of sound into digital samples, stored immediately on a Winchester hard disk drive. The stored sample can then be digitally "read" by the computer and played back as sound. Sample-to-Disk is identical to the "Sample-to-Memory" process now used by lots of digital samplers, with one difference: instead of storing samples in RAM (Random Access Memory), Sample-to-Disk stores its information on a hard disk drive. Unlike RAM sampling, where your sample's length is based on how much RAM you have, disk-based sampling time is limited only by the amount of unfragmented disk space available.

Just as multitrack analog recorders are made up of "stacks" of individual tape tracks, the Direct-to-Disk system (I'll call it D-to-D, for short) is comprised of multiples of individual disk tracks, each with its own hard drive for storage. Like analog recorders, D-to-Ds can be configured in 4-track multiples, from four to 32. The D-to-D's recording time is determined by the capacity of its hard drives: depending on the configuration, each track may record anywhere from 13 to almost 60 minutes of audio.

There's no need to use up disk space for periods of silence during recordings. One hour of disk time may actually accommodate much longer programs.

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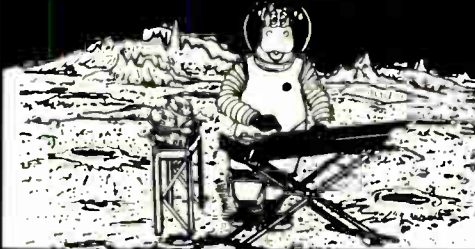
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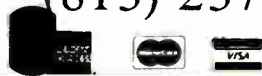
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PLAYBACK

moved! Anyone who has labored through hours of "flying in tracks" will immediately appreciate the significance of this.

How It Works

The D-to-D consists of a hardware rack (computer, hard drives, voice cards, backup tape drives and an "STM" analog-to-digital converter module) and software. The D-to-D's software installs into the Synclavier's operating system, activating additional display screens. You can use the keyboard's control buttons to "punch in" as with a multitrack machine remote, or you can use the mouse and terminal display screens to control the recording functions in a manner similar to that of a Macintosh (an easy jump for Mac users like me). The D-to-D is also available as a "stand-alone" unit without the Synclavier.

Audio is fed to the D-to-D's audio inputs from the recording console or directly from mic preamps; recording can take place simultaneously on as many tracks as the system has inputs. Although the default sampling rate is 50 kHz, you can sample at any rate you choose, all the way up to 100 kHz (more than twice the sampling rate used for compact discs). Higher sampling rates mean better bandwidth of the sample, but since you are using up disk space more quickly, higher sampling rates also mean less recording time. The track-time figures above are for a 50 kHz sampling rate.

Connections

Getting the system up and running is fairly straightforward. The Direct-to-Disk's rack easily connects to the Synclavier's, needing only a connection to its SCSI (Small Computer System Interface) port. All other connections—audio inputs and outputs and meter bridge connections—are made directly to the D-to-D. Once connected, the D-to-D becomes part of the total package, and the two units work together as one. Sequences played on the Synclavier tell the D-to-D what portions of what tracks to play and when to play them.

Details

My current D-to-D has eight tracks of 25 minutes each. I knew I'd be working on four- or five-minute songs, so lengthy recording time was no con-

sideration. Eight D-to-D tracks were enough to let me record in a manner similar to my normal analog style (I rarely used more than eight tracks of the 24-track for vocals and other live tracks, anyway).

Getting used to the D-to-D's workings is not hard, and most engineers should be able to get the hang of it in short order. After a few passes through the tape (oops—sequence!), I felt comfortable enough to start putting the system through its paces.

The first real treat came when I started cutting Millie's vocals. As any engineer or producer knows, cutting in a vocal overdub is an exacting task. Timing your punches is crucial; so is keeping track of the "feel" of various performances, so composites of the best tracks can be built. In this critical area, the Direct-to-Disk is a hands-down winner—its reaction time is virtually instantaneous. Punch in, and you are recording. Punch out, and you stop recording immediately. It's a nice change from analog tape, where the record mode may take some milliseconds to disengage, making punch-outs potentially tricky. And unlike analog, the D-to-D performs a digital crossfade every time it punches, ensuring click-free drop-ins. If you are working on really tight timings, you can even program the D-to-D to punch in and out automatically at specified points. These points can be specified by SMPTE, minutes and seconds, or measures and beats, accurate to sub-frame or millisecond. Believe me, it's a treat to automate your punches on the sequencer. Suddenly, you can concentrate on the singer and the song, not the speed or accuracy of your reactions.

Instant Rewind/Play!

When a Mark Start location is set at any point in the sequence, hitting the Start button instantly commences playback from that location. Even if you are at the end of a five-minute song and your mark point is close to the beginning, hitting Start immediately triggers playback from the programmed start point. Once you experience "instant rewind," you won't be anxious to return to tape. Though it may take a few run-throughs to get used to, it makes for better continuity of vocal takes, since the singer's "attitude" isn't disturbed during tape rewind. Millie's vocals took less time to record and had a much more consis-



Producer Bruce Nazarian with his Synclavier and Direct-to-Disk system.

tent feel.

To record Millie's lead vocals (and most every other vocal track) I used a Neumann TLM170 condenser mic

through a Focusrite ISA115 preamp/EQ, with Monster Cable ProLink 1 for all the interconnections between mic, Focusrite and D-to-D. The first time I

heard a vocal playback, I had to look back into the studio, certain that Millie was singing live.

Overdubbing with the D-to-D

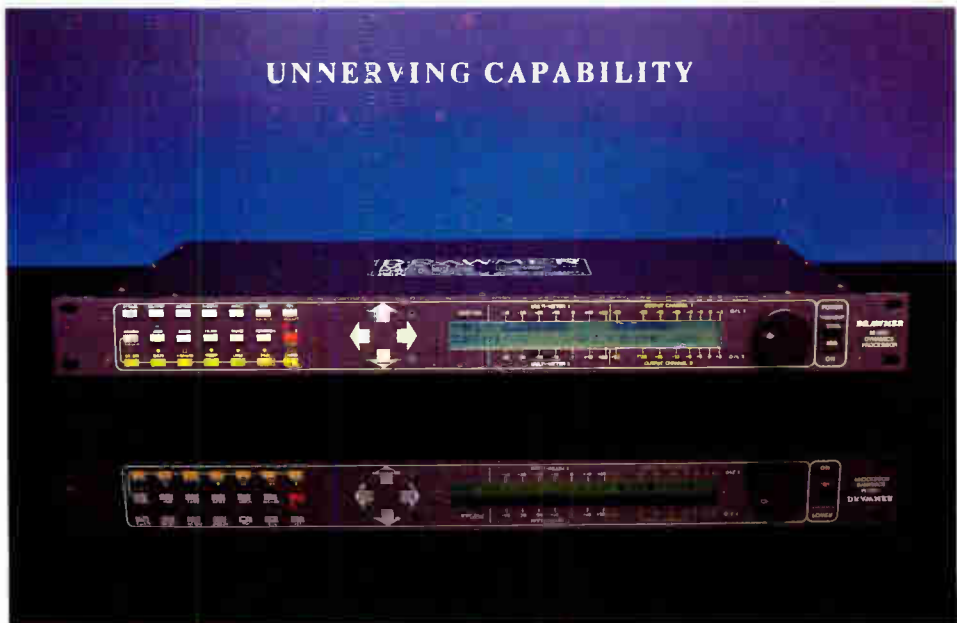
The D-to-D's eight tracks, as I mentioned, were enough to allow my usual analog recording style. I used several tracks to record multiple lead vocal takes, and combined the best pieces from each take into the final vocal composite. Working in analog, you have two choices at this point: keep all takes, mark the good pieces and composite the original tracks by selective muting when you mix; or, composite the good pieces on one track after you finish recording the lead vocal. The first way eats up tracks; the second way means that at least some part of your final vocal isn't first-generation. With the D-to-D, just use the computer to bounce your tracks together digitally.

Digital Editing and Cueing

I used the computer's editing power to mark the good takes (create "cues") and play them back as a composite. If I wanted to hear a different perform-

—CONTINUED ON NEXT PAGE

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PLAYBACK

ance, I could just change the "cue" definitions, and the computer would automatically play the revised composite. Never did I have to concentrate on muting faders in order to audition a composite vocal.

Some Digital Tricks

A recording mode called "allocate" makes for efficient use of disk space. If, say, you had a 30-second sax solo, you could record it about 50 times on 25 minutes of disk space; each take would use the 30 seconds needed to

subsequent choruses. After recording all the parts, the cue events for an entire song's background vocals can be programmed in just a few minutes—saving hours once spent manually "flying in" the parts onto tape. And with SMPTE time code triggering the cues, adjustments of the events are precise down to the millisecond. If you know the song's tempo, or if it was Synclavier-sequenced to begin with, the process is amazingly simple and fast.

The Mix

Recalling the sequence and the associ-

Making a record has never been so rewarding for me, both in terms of its sound and flexibility.

record it and no more. As each take is recorded, the D-to-D creates a new cue defining that take. In addition to knowing *where* each cue take is stored on the disk ("disk time"), the D-to-D keeps track of *when* the cue should be played ("sync time"). I used the allocate mode while recording some sax solos, and was able to record 26 sequential takes of an eight-bar sax solo, saving them all until I chose the final "keeper." Here, two tracks of D-to-D provided more recording space than a typical 48-track slave configuration. If you were doing voice-overs for a jingle, for instance, the allocate mode would let you keep *lots* of alternate passes, with instant access to each.

Fear of "Flying"?

The tapeless equivalent of "flying in" background vocals is the D-to-D's "cue playback" mode. Programming the D-to-D to play cues means that instead of flying parts around the tape, you need only define where you want the part to be played, and the computer will play it.

To illustrate: if I have a vocal I need in every chorus, I have only to record it once, anywhere on the disk, and define it as a cue. The cue tells the D-to-D computer where, and how long, the chorus is. Placing a cue event onto a track of the sequencer will tell the D-to-D when to play the cue in

ated D-to-D song (or "project," as it's called) takes a few minutes at most. Looping sections of the song in order to fine-tune the mix is easy. Just set a loop on the Synclavier sequencer, and the live tracks follow right along. Cue events, which trigger the playback of D-to-D cues, are played just like notes in the sequencer.

As a dedicated digital recordist, I was curious to see how New England Digital would address the problem of interfacing their standard with the rest of the digital world. Happily, development of a Mitsubishi/D-to-D digital interface is now in the works, and interface cards for the AES/EBU and perhaps the Sony 3324 are due for development as well. With these digital ports, tracks from any digitally recorded project can be loaded, edited and transferred completely within the digital domain.

Yeah, But What About . . .

True, my Synclavier and D-to-D together comprise the bulk of my investment in studio gear, but the rate of return has been healthy. Making a record has never been so rewarding for me, both in terms of its sound and flexibility. ■

Bruce Nazarian runs New York-based Gnome Productions and writes occasionally for Mix and other audio magazines.

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Hans Gout: PolyGram is the record company of Philips. And Philips is by far the biggest electronics company in Europe, a very important multinational. Philips has a laboratory in Holland that is among the best in the world, and, as you know, they invented the laser-based optical media reading for the compact disc. Then in 1979 they started talking to Sony, who was at that time a bit better in error correction. So Philips had the laser technology, and Sony added to it the error correction technology, and together they invented the CD. In 1980 they made an agreement on the standard, which is terribly important, because without one standard you don't have a chance at having a worldwide success. The marketing phase started one year later.

I first saw the CD in 1979. There was no commercial player at that time. There was a player on the table with a cubic foot of installations under the table. We were all extremely pleased and very enthusiastic about the sound quality. So when they came to me in 1981 and said, "You've got this Unilever marketing experience; would you like to come to PolyGram's head office in Holland and coordinate the introduction of the CD?" I was most happy to do that. And that's how it started.

PolyGram is one of the three largest record companies in the world along with CBS and Warner. As Philips' daughter, PolyGram had to take the lead in introducing the software part of the CD system to the world. I handled that for PolyGram, working closely with Philips, and then we had Warner join us, and later CBS and eventually the others. In hindsight it was easy, because we had on our side the enormous advantage of the sound quality of the CD compared to the LP. So we had a product with very obvious and very clear advantages. Our marketing approach was to emphasize the product's advantages and, on top of that, to develop packaging that was different from what the consumer was accustomed to. When I started, everybody said to put it in a paper sleeve and it would be okay. And I said that a product which is claimed to have magnificent quality and an eternal life should not be in a paper bag. So we took about six months and 20 people and developed the jewel box, which

was accepted by PolyGram, Philips, Sony and Sony's record company, CBS Japan. At that time, we were the only four players in the game.

Mix: Having developed a strategy and a package, you were then in the position of trying to sell your competitors on this new product. What kind of response did you encounter?

Gout: The record industry is basically rather conservative. The feeling in the industry in 1981 was: "Why do we need this new sound carrier? We've got the LP and we've got the cassette, so why do we need the compact disc?" So we said that the reason we need the CD is that the sound quality for the consumer, and therefore the value for the consumer, is so much greater that there is absolutely no doubt that we have to introduce this beautiful

"The increase in CD sales and player sales is phenomenal; much greater than we thought it would be."

product and we have to make it work. So I spoke with these companies, and they did not react very quickly. At that time though, PolyGram was discussing a merger with Warner, which never happened. But we had discussions, and during these talks we discussed the CD. And Warner became very enthusiastic about it, so they were our first ally. Because we had already worked out the marketing, they accepted our marketing plans. Then CBS came over, and the others eventually followed.

Mix: What was the plan for actually introducing the product to consumers?

Gout: One of the basics of our marketing concept was that you must introduce the complete system of the player plus the discs. It needed a lot of orchestration to introduce the two together, because Sony was ready with

their players at the end of 1982, but they had very few discs. Our PolyGram factory in Hannover, Germany, started manufacturing discs in August 1982. So we made a deal with them to send our 300,000-or-so discs to Japan for the introduction of the system in Japan in October 1982, but they had to stay away from Europe until the spring of 1983, when we would be ready to introduce our systems there. The Japanese agreed. So we introduced it in Japan in the autumn of 1982. Then we introduced it in a few European countries in the spring of 1983. We wanted to wait with the introduction in the United States because there was not enough hardware or software. But we were forced, for all sorts of reasons, to also start in the U.S. So we started a bit hesitantly there in August and September 1983. That didn't work very well, and it took another year before it took off in the U.S.

A body that was extremely helpful and important in the eventual success in the U.S. was the Compact Disc Group, with my friend Emil Petrone. There again, we needed a system introduction where the player manufacturers work very closely with the disc manufacturers. So the CD Group was formed with about 30 companies to discuss the introduction plans for the U.S. That was really very important. The fact that there has not been a group like the CD Group for the introduction of CD-Video has made that much more difficult.

Mix: So the approach taken with the CD should ideally be used as a model for future new music product introductions.

Gout: Yes, I would hope that what we did will be seen as a model. The man who really did it all for the CD is Jan Timmer, who became president of PolyGram in 1981. And his vision, right from the start, was that the CD was only the beginning of the optical media revolution. We already knew in 1981 that after CD-Audio would be CD-V, and after that there would be CD-Interactive, which will be launched in the U.S. in 1990. That will give you the possibility of video and computer data, which means that you will have the most incredible video games and all sorts of self-help and educational programs. Then in 1992, there will be CD-Video Interactive (CD-VI), with completely interactive full-motion video. So in the 1990s, the optical disc will become the entertainment center

in the home, with CD-quality audio and digital video, which will be much better than what we can see today. Right from the start, in 1981, we had this vision that the CD was the beginning of the creation of the home entertainment center of 1995.

Mix: How do you keep the various members of the CD family from working at cross-purposes? Specifically, what is the appropriate role in the marketplace for 3-inch singles, 5-inch singles and CD-V?

Gout: My personal opinion is that the 3-inch CD is not necessary. The difference in costs for the polycarbonate, the packaging and all that is not that big. And you have the issue of the space that you take in stores. It is very difficult, at least in America, to make space available for a different configuration. If you were to stick to a four-title maxi-single in the 5-inch format, it would be much easier for the trade to put it in the space that is already available. But let the market decide. If a lot of people think that the 3-inch single is better than the 5-inch, then that is what should be manufactured.

As for CD Video, my view is that what the music consumer is buying is

an artist's image. I welcome CD-V, because the image of the artist on the screen can be as important or more important than the things he sings. So I think CD-V is important for hit material, and I would like it to succeed. But player prices and many other circumstances in the market will play a role there.

Mix: How would you compare the CD phenomenon to earlier events in audio history, such as the introduction of stereo LPs?

Gout: There is just no comparison, thank God, between the introduction of the CD and any of the previous introductions in the whole consumer electronics field. The introduction of the CD has been much quicker than for video recorders, for TV or for color TV. We have had an enormous surprise on our hands, and we are absolutely delighted with it. In 1981 we had great hopes because we knew that the product was very good, but the result has been overwhelming, much more positive than we ever thought.

Mix: So you don't accept the notion that the growth of the CD has been losing steam, both in terms of the number of households with players

and the percentage of overall pre-recorded music sales.

Gout: I'm sorry, but it is not true. The increase in CD sales and in player sales is phenomenal, and is much greater than we thought it would be. It is still going extremely strong. The market doubled for a few years, and you cannot expect that doubling to go on, because that is absolutely impossible marketing-wise. What you see is that the market doubles for a couple of years, and then the market will grow 60%, and the next year 40%, and eventually you will arrive at a point sometime in the early 1990s when the replacement buying becomes as important as the new buying. So it is a totally logical growth.

If you look at the total of LP sales and CD sales, we were saying even in 1983 that if the CD had 50% of that part of the market in 1990 or '91, we would be more than happy. What we have seen is that the CD has overtaken the LP in 1987 already, which is absolutely incredible. We did expect a decline in cassette sales, which has not happened yet. They have still gone up. But we think that they are at the top, and that they will gradually de-



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Pegasus Flies, Thanks to Creative Financing

Butch Trucks is an inspiration for entrepreneurs. About eight years ago, the former Allman Brothers drummer decided to build a studio. He wrote a heavy-duty business plan (projecting his primary income to come from album recording), networked endlessly in his home state, Florida, particularly in Tallahassee—site of the studio-to-be—and raised \$2.2 million to build a recording complex capable of handling music, video and film

—CONTINUED ON PAGE 117

PURCHASING POWER!

The South Rises Again

by Linda Jacobson

In our industry, three interrelated forces drive the equipment acquisitions that must be made regularly: rapidly changing technology; the ever-shifting needs and tastes of clients; and the necessity to compete within the marketplace. If equipment acquisitions in a single year are any indication of success in this business, then the recording industry throughout the Southeast is doing better than ever.

Of the 31 Southern studios *Mix* recently contacted, 13 invested in digital audio technology in 1988 (including tape recorders, disk-based recording editing systems and DAT or PCM machines) and 15 outfitted themselves with new consoles or console automation. Thirteen purchases of digital audio technology will occur in the next 18 to 24 months, at studios adding to their inventory or first getting into digital. Not everyone bought digital, but every studio bought *something*, whether analog tape machines, MIDI synth modules, racks of reverbs and other outboard boxes, monitoring systems or video gear.

SHOPPING PLANS

None of the studios apportion *specific* monetary amounts to buying new gear every year. They simply watch where technology's headed—trying to look 18 to 24 months ahead (or "pretending" to do so, as Jon Marett of Atlanta's Soundscape Studios frankly admits)—then determine if clients will want to

use the technology or, conversely, if the technology's cost will be supported by a sufficient client base.

Despite a general lack of budgeting formality, Southeast studio heads figure they put anywhere from 5% to 40% of annual profits into equipment buys, most falling around the 10% range.

When planning to buy new gear,



some studios look for technology that isn't fully mature. Hank Williams of Nashville's MasterMix picked up an AMS AudioFile digital audio system last May, admitting he bought it "ahead of its time." Now he's awaiting the release of PQ subcode software for the system. "You have to plan ahead," says Williams, "because things become obsolete," such as MasterMix's cutting lathe, currently gathering dust. "We know [the new technology] is coming, so we figure how much it'll cost and when it'll be finished." Williams adds that he and his staff spent 16 months testing consoles two years ago before choosing the all-new, automated Calrec UA 8000 console.

Other studios buy equipment because equipment buys credibility. Located far from L.A., New York and Chicago, these studios want reputations as major players in the recording industry. Soundscape (Atlanta) not only purchased an SSL 4040E with G Series electronics last year, but bought out another local studio to acquire a Neve 8068 board. The money to do so came from the two local businessmen who financed Soundscape's creation. Studio owner Jon Marett points out that his investors "understand that in order for us to compete in the arena we want to compete in, we must have a major-league console, which we didn't have in the first few years of operation."

Others feel you can't just make one purchase, because each piece of equipment affects the entire signal chain. "My philosophy is to make extensive [equipment] changes every five years," says John Abbott, manager of Nashville's Eleven-Eleven Sound, a 32-track digital recording facility and music publishing company sold in late '88 by owner/founder Larry Butler to Frank DiLeo, the personal manager of Michael Jackson. "But you don't buy a recorder or console and stop there; you improve the signal processing gear, and the way you edit, and continue all the way on down the signal path," says Abbott, who continues to run the studio under its new ownership. Last year Eleven-Eleven bought a Neve V Series console to complement its digital audio recording technology.

Other studios—such as Compass Point, the resort studio in Nassau, the

◀ **This Neve V Series board is the newest item at Compass Point Studios in the Bahamas, where Mick Jagger worked in '88.**



"You've got to be on the cutting edge of the high end to maintain the business, so you've got to continuously upgrade," says Robert Porter, president of Nashville's Emerald Entertainment Group. "We continually listen to our clients and try to maintain upgrades compatible with what we feel are the best overall suggestions." Thanks to client input, last year Emerald Sound Studios bought an SSL G Series computer system, two Timeline Lynx time-code synchronization modules and a Sony PCM-2000 DAT machine, and completed new lounge facilities with a full kitchen—all paid for "from in-house equipment reserves." Three years ago, Emerald was completely redesigned and equipped in a move financed by parent company Moore Recording Corporation. Most of Emerald's clients are major recording artists from Nashville and L.A., along with national radio production companies that produce and air programs from the studio's broadcast facility and stereo satellite uplink/downlink (currently the only one in Nashville).

Bahamas (arguably part of the American Southeast)—buy equipment upon demand. Client demand, that is.

PAYING FOR EQUIPMENT

The American-as-apple-pie adage, "Never use your own money if you don't have to," can be heard throughout the Southeast. For example, Cross-town Recorders in Memphis bought Studer 2-track and MCI 24-track machines, with help from a friendly, interested loan officer at the Community Bank of Germantown—who provided them with an interest rate of a floating half-point above prime.

But in Georgia, Soundscape's Marett points out, "It's difficult to find a sympathetic [banker's] ear for financing recording. I don't think the banking industry here is quite as onto [the recording industry] as in Nashville or L.A." Likewise in Memphis, according to Tim Goodwin of Memphis Sound, owners of a new Neve V Series console: "Say you want to spend \$75,000 on a tape machine. That scares banks to death. They don't have any concept

of what it's really worth or what to do if you default on your loan. There have been seminars in Memphis sponsored by NARAS® and other music support organizations, where they bring bankers and business people together and say, "This is a valid business. You need to know how it works so you can become involved with it." But they haven't gotten there yet."

One alternative to visiting standard lending institutions is to approach private, local investors. In Nashville, three individuals own 16th Avenue Sound, which purchased a 24-track Studer A820 machine last year. Studio manager Barry Sanders says, "When we need a major piece of equipment I analyze the anticipated uses for it and determine if it's going to generate revenue and if so, how much, then try to balance all that out for [the investors] on paper. For something like a \$75,000 tape machine, the entire process [from analysis to product delivery] takes between 60 and 90 days."

Occasionally, money also comes from family—related by blood or by

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Nashville's Eleven-Eleven Sound was recently sold. The new owner is Frank DiLeo, who is Michael Jackson's personal manager.

paper. The Franklin, Tenn.-based Castle (which houses music publishing, production and recording businesses) purchased a 56-input SSL G Series console and a Studer A820 24-track last September, using existing capital. According to Jozef Nuyens, "I grew up in Europe and moved here when I was 19, and we still apply the European philosophy of, 'Use savings instead of creating debt and trying to make money to cover the debt.' We make the business as efficient as possible so it can create its own capital." Nuyens and his father own the business; the son runs all three companies. The money that created and equipped the Castle came from savings from other family businesses, unrelated to music. The production and publishing companies at the Castle generated the funds to pay for the

new recording gear.

Compass Point in the Bahamas (where there's no such beast as "income tax") purchased a Neve V Series board using funds from their operating capital. They can do so because their parent company is Island Records. Studio manager Eric Stark makes smaller purchases—"outboard gear, keyboards, a DAT machine"—with cash on-hand, without authorization, but goes through the record company for big-ticket items. "That way, they can be our financiers."

Finally, money also comes from the ones asking for it in the first place: the equipment manufacturers. Memphis Sound's Tim Goodwin explains, "A lot of major companies like Studer, Neve, Otari, SSL and New England Digital—the ones making things that sell for hundreds of thousands of dol-

Who's Buying What—and How?

We called a couple dozen Southeastern audio facilities to learn what equipment they recently bought ("Last Purchase"), the source of the money used to pay for the items ("Financing?"), and what's next on their "equipment wish lists" ("Next").

ALABAMA & LOUISIANA

•**Fame Recording Studio**, Muscle Shoals, AL

Last Purchase: Neve 8232 board.

Financing? Yes.

Next: Nothing for next year.

•**Muscle Shoals Sound**, Sheffield, AL

Last Purchase: (3) Studer A820 24-track recorders.

Financing? No; purchased by parent company.

Next: Necam 96 automation for Neve 8088 board.

•**Cook Sound Studios**, Fort Payne, AL
Last Purchase: "Vintage" EMT-250 digital reverb.

Financing? No.

Next: Rebuild control room.

•**Pace Recording Service**, New Orleans

Last Purchase: Portable, 24-channel Biamp Legend board for on-location job.

Financing? No; the job paid for it!

Next: (4) DAT machines—(1) portable Panasonic, (3) desktop Sony models.

—compiled by Linda Jacobson

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lars—are all making lease-purchase deals, or helping to get financing through banks. They take care of that, and all the studio has to do is pass a credit check.”

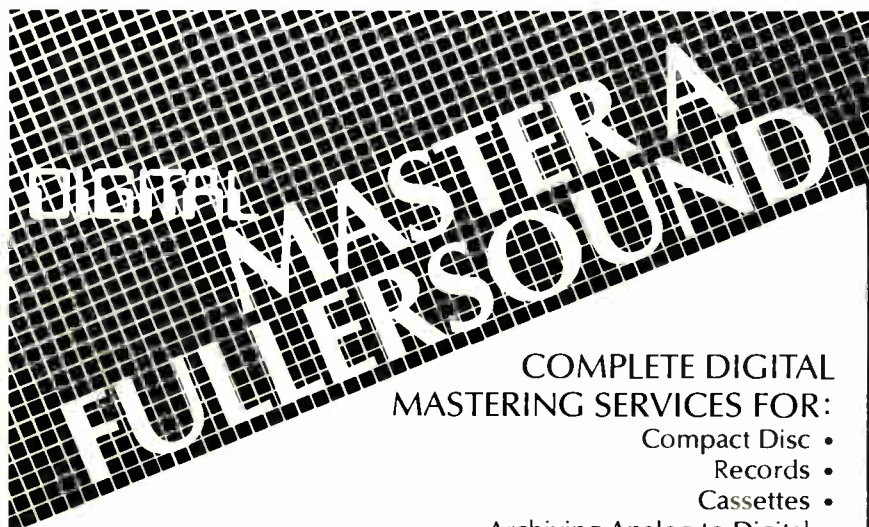
Indeed, this year Crosstown in Memphis acquired (in addition to the Studer and MCI ATRs) a Neve 8232 console with MasterMix automation—thanks to financing offered by Neve’s parent company, Siemens Corp. Studio owner James Craft acknowledges, “The Siemens financing had a fixed [interest] rate of 10.9% when we got it. I checked with a lot of leasing companies; they wanted 13% to 15%. That’s real hard to swallow when you’re

“Manufacturers financing their own purchases is a real smart thing.”

making a purchase that big. Manufacturers financing their own purchases is a real smart thing. They want to work with us; they don’t want to take a \$150,000 loss. And I don’t want them to.”

Tim Goodwin concurs: “The fact that Neve has Siemens to work out their own deals makes it possible for us to get [a Neve V Series console] without getting a headache to pay for it.”

Other studios who purchased their new gear through the good graces of sellers’ financing include Nashville’s MasterMix (AMS AudioFile) and Eleven-Eleven Sound (Neve V Series).



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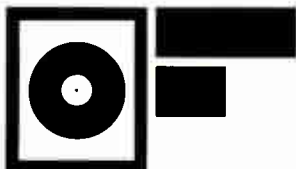
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Who’s Buying What—and How?

TENNESSEE

•**Cotton Row Recording**, Memphis
Last Purchase: Sony 2500 DAT machine.

Financing? No.

Next: Upgrade studio to digital (possibly Sony multitrack w/SSL board); will sell current console and tape machines.

•**Disc Mastering**, Nashville

Last Purchase: Sony DAE-3000 digital editing system.

Financing? Yes.

Next: Probably R-DAT machine.

•**The Reflections**, Nashville

Last Purchase: (2) Neve 8232 boards.

Financing? Yes, Siemens Corp.

Next: Probably Neve automation system.

•**Woodland Sound Studios**, Nashville

Last Purchase: Massenburg automation for Neve 8078.

Financing? Yes.

Next: Probably new, large console for Studio B.

•**Nashville Record Production**,

Nashville

Last Purchase: CompuSonics 2002 digital editing system.

Financing? Yes, CompuSonics’ amortized payment plan.

Next: Hopefully, a raise for employees; then, some type of digital system for mastering.

•**Masterfonics**, Nashville

Last Purchase: Mitsubishi X-86C and Sony 3402 digital 2-tracks; Sony DFX-2400 sampling frequency converter.

Financing? Yes, lease-to-own.

Next: Mitsubishi high-speed X-86HS 2-track; or digital Sony 48-track.

•**Digital Recorders**, Nashville

Last Purchase: Sony digital 48-track recorder.

Financing? Yes, via Sony.

Next: Digital 2-track recorder.

—FROM PAGE 112, PEGASUS

projects. Pegasus Studios opened last May.

"It's been a lo-o-o-n-g struggle," admits Trucks, who had planned to build a small studio until he talked with folks at Florida State University's School of Music (which has a record label but no place to record) and state government workers who told Trucks about the Hollywood film industry's plans to infiltrate Florida. "I lived this thing for seven years before we finally opened the doors," says Trucks, "including three or four years up front, developing the business plan, the building design and floor plan, working with an architect" and using advice from George Augspurger.

During that time, Trucks managed to meet people from a commercial real estate development firm, the St. Petersburg-based Talquin Corporation. Trucks' plan so impressed Talquin that they offered to buy property and construct a building (cost: \$1.4 million).

"I sold this on my reputation, my contacts and the glamour of it."

Trucks also learned about an SBA loan program from the ITT Small Business Finance Corp., "went through their [paperwork] rigamarole, which I don't suggest anyone do," and was awarded a \$400,000 equipment loan for a console (SSL) and tape machines (Mitsubishi digital multitrack). Then, via Florida's department of community affairs, he received a \$150,000 "minor equipment loan."

Finally, Trucks put together a limited partnership through which he raised initial operating capital totaling \$250,000. This partnership was formed around a general partner, Trucks Entertainment, which kicked in \$90k and raised another \$160k through limited-partnership contributions from mostly local investors. "I sold this on my reputation, my

contacts in the business and the glamour of it," explains Trucks. "Most investors down here invest in real estate, motels and 7-Elevens. I come in with a recording studio [plan] and talk about bringing in major artists, and found plenty of investors that would put in five, ten, 20 thousand [dollars] just on the chance that it might happen."

Although Trucks' story sounds like a venture capitalist's dream, it has its nightmarish aspects. "We had a big problem because we were six months late opening [due to construction delays]. We had no income but we had to dip severely into our working capital to pay loans, payroll and basic overhead." Now that Pegasus is doing well (having recorded Dickey Betts' latest LP for Epic, and currently handling the Florida State Lottery commercials), Trucks would like to purchase some more gear including an analog multitrack, "but the next step is to build up our cash reserve."

—Linda Jacobson

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Who's Buying What—and How?

GEORGIA

•**Crawford Post-Production**, Atlanta
Last Purchase: Ampex and Sony D2 digital video systems; Ampex switcher.

Financing? Yes; "Never use your own money if you don't have to."

Next: D2 video switcher, HDTV system, entire new room.

•**Cheshire Sound Studios**, Atlanta
Last Purchase: SSL 6000E board.

Financing? Yes, via local bank.

Next: "Another SSL 6000E this quarter, if I can find one."

•**Doppler Studios**, Atlanta

Last Purchase: Built & equipped 2nd, large, Augspurger-designed studio.

Financing? No.

Next: More remodeling; disk-based digital audio workstation.

SOUTHERN COMFORT: NEW & IMPROVED?

It seems three conditions have contributed most to the South's current strength: the increased interest from national labels in regional music (not just country, but pop, R&B, contemporary Christian and gospel); the lower cost of recording in the South; and

Banks in Nashville maintain depart- ments that deal only with music industry accounts.

the fact that local awareness of the music industry is on the rise.

Nashville, says John Abbott of Eleven-Eleven, is seeing a lot of music industry action, particularly in "big corporate buy outs of publishing companies." Nashville's banks, including First American and Commerce Union, maintain departments that deal only with music industry accounts. Accord-

Who's Buying What—and How?

VIRGINIA & NORTH CAROLINA

•**Bias Recording**, Springfield, VA
Last Purchase: Custom API 4032 console (built at Bias).

Financing? Yes, via Bias' in-house leasing company.

Next: Digital multitrack or several digital 2-track recorders, or more effects boxes; "It depends on the state of the art."

•**Perfect Pitch Recording**, Statesville, NC

Last Purchase: Sony PCM-F1 system.

Financing? No; "Banks don't understand recording studios."

Next: Digital 24-track, to be paid for with large down payment and stockholder loan.

•**Reflection Studios**, Charlotte, NC

Last Purchase: Panasonic SV-3500 DAT machine.

Financing? No.

Next: 56-input Sony 3056 board.

ingly, the attitude of studio clients has changed: "Seven to ten years ago, a lot of [music business] in Nashville went to L.A.," recalls Hank Williams of MasterMix. "Now they're staying more

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Who's Buying What—and How?

FLORIDA

•**New River Studio**, Ft. Lauderdale
Last Purchase: Meyer 833 subwoofer and power amp; Tannoy SGM-1000 monitors; Roland D-550 and Yamaha TX802 synth modules.

Financing? No.

Next: 1-inch video layback machine (via financing); ¾-inch U-matic.

•**Fuller Sound**, Miami

Last Purchase: WA02 Sony 1630 and DMR-4000 for mastering.

Financing? No.

Next: Probably nothing in next year,

but keep open mind.

•**Miami Sound Studio**, Miami
Last Purchase: (2) Alesis MIDlverb 2.0s; Yamaha RE-1 digital reverb.

Financing? No.

Next: Mitsubishi digital multitrack and 2-track recorders.

•**Criteria Recording**, Miami

Last Purchase: (2) SSL 6048E boards & Mitsubishi digital multitrack.

Financing? Yes, via local bank.

Next: 2nd digital multitrack or 1-inch Type C video machine.

in town." Barry Sanders of Nashville's 16th Avenue Sound attributes the success of his relatively new room (which attracts some New York and Chicago clients) to the rates, attractively low when placed next to those of comparable Yankee facilities.

Likewise, rates are relatively low in other Southeastern cities. James Craft of Crosstown says in Memphis, "There's been a resurgence in the past two years, as far as an awareness of the music industry and what it's meant to this town over the past 30 years."

In Atlanta, Jon Maret (Soundscape) reports, "There seem to be a lot of new music projects and local bands starting to get deals, such as the band we're working with, Drivin' and Cryin' on Island Records. And overall, there seems to be more of a presence of major labels here in town than there used to be." ■

Mix assistant editor Linda Jacobson never lends money, but often and regularly lends an ear, a fact that dozens of recording studios profiled in these pages can attest to.

—FROM PAGE 12, SESSIONS

dios in Los Angeles. **Phil Ramone** produced, and co-owner **John Arrias** engineered the sessions. . . Also in LA. was **Rod Stewart**, who was mixing his new single "Lethal Dose of Love" at **Skip Saylor Recording**. **Chris Lord-Alge** engineered and **Chris Puram** assisted. . . At **41-B Studios** in Westlake Village, **Bourgeois Tagg** finished work on their next record with producer **Peter Wolf**. . . **David Crosby** and **Graham Nash** were in **Westlake Audio's** Studio E mixing their current project with engineers **Stanley Johnson** and **Jim McMahon**. . .

STUDIO NEWS

Designed to serve the Chicago-area advertising community, **Audio Recording Unlimited** has opened its doors. The new facility is equipped with the latest digital and analog equipment, including a Lexicon Opus digital audio studio. . . Hollywood's **Record Plant** has expanded its film and TV scoring operation on the Paramount Pictures lot to include full ADR services. Engineer **Linda Corbin** has been named to direct the new operation. . . **Lion Share Recording Studios** purchased one of TimeLine's new Keyboard Control Units for digital editing with their two Mitsubishi X-86 recorders. . .

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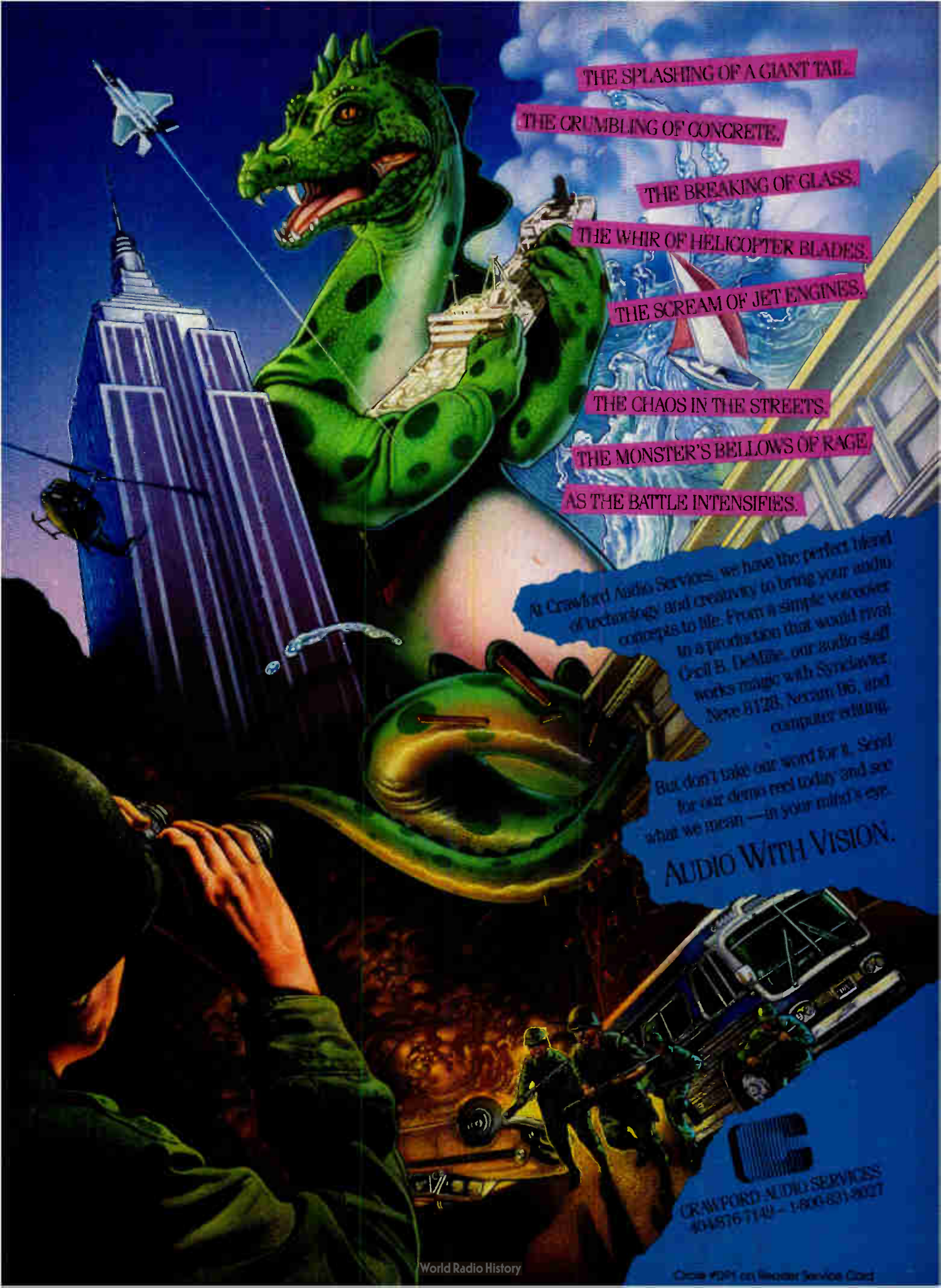
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THE SIGHTS & SOUNDS OF WALT DISNEY WORLD



by Gregory A. DeTogne

In maintaining their reputation as the masters of visual and aural extravaganza, the powers that be at Walt Disney World have taken a few new conceptual turns that, in some cases, have literally hit with the impact of a stick of dynamite...



Earlier in this century, when Mickey was just a glimmer on Uncle Walt's sketchpad, there were no publicists or other marketing types around to promote the concept of Disney "magic." In fact, the only magic ol' Walt was probably concerned with at the time was how to come up with enough frogskins to cover the production costs of his now-classic cartoon, *Steamboat Willie*.

How times change. We all know what happened to Walt and Mickey, and how the money they made transformed sections of Anaheim, California, and swampy central Florida into the standards by which all other amusement parks are judged. In fact, even without falling victim to marketing hype, it can fairly be said that both Disneyland and Walt Disney World

are indeed "worlds" in themselves, daily serving up generous helpings of fantasy, illusion and the spectacular to an eager public.

DON DORSEY, EXTRAVAGANZA CHOREOGRAPHER

Obviously, sight and sound are major players at both Disneyland and Walt Disney World. An average day at either park may kick off with a parade and

end with a late-night laser light show, carefully choreographed with dazzling pyrotechnics and a full orchestral score. A man who knows the entire process intimately is Don Dorsey, a SoCal native who began working for the Disney organization as an electronic music consultant in 1975.

Dorsey's first major project on behalf of Mickey and friends was called "America on Parade." A Bicentennial



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hoopla complete with musical floats and actors strutting around dressed like giant dolls, the act was staged both at Disneyland and Walt Disney World. In 1982, he arranged music for the Epcot Center's first "Lagoon Show," a display of fireworks held every evening in the center of the park, and shortly thereafter, he and a partner created a show called "New World Fantasy," which combined one of Dorsey's musical scores with laser technology and fireworks. Continuing in the genre of laser-fueled sight-and-sound spectacles, Dorsey became a moving force behind Epcot's "Laser-Phonic Fantasy," which ran from '84 until '87, and "IllumiNations," one of his most ambitious undertakings to date.

A \$10-million extravaganza, "IllumiNations" utilizes an adaptation of Dorsey's original synthesized score from "Laser-Phonic Fantasy," as recorded by the Toronto Symphony Orchestra.

"We wanted a natural orchestral feel for 'IllumiNations,' so we took my classical arrangements, and had them rescored and re-recorded," Dorsey relates. "The Toronto Symphony was recorded on a Mitsubishi 32-track digital machine. We took the resulting



A few miles from Disney World, the Disney/MGM lot offers state-of-the-art production facilities.

tape to Walt Disney World Studio D, which is located under The Magic Kingdom theme park, about three miles from Epcot Center. There, we mixed it on a Neve console and sent it back to the Epcot Center via fiber-optic links. Next we went over to the Epcot Center and listened to it on the audio system that the show was going to be played back on. Then we went

back, optimized the mix and laid it onto 2-track digital before it was transferred into a Synclavier Direct-to-Disk system, where we did all our overlaps and head-ins, and laid in our time codes. From there, we transferred it back to a running show tape and we were off."

Dorsey has found the use of the Direct-to-Disk system beneficial to

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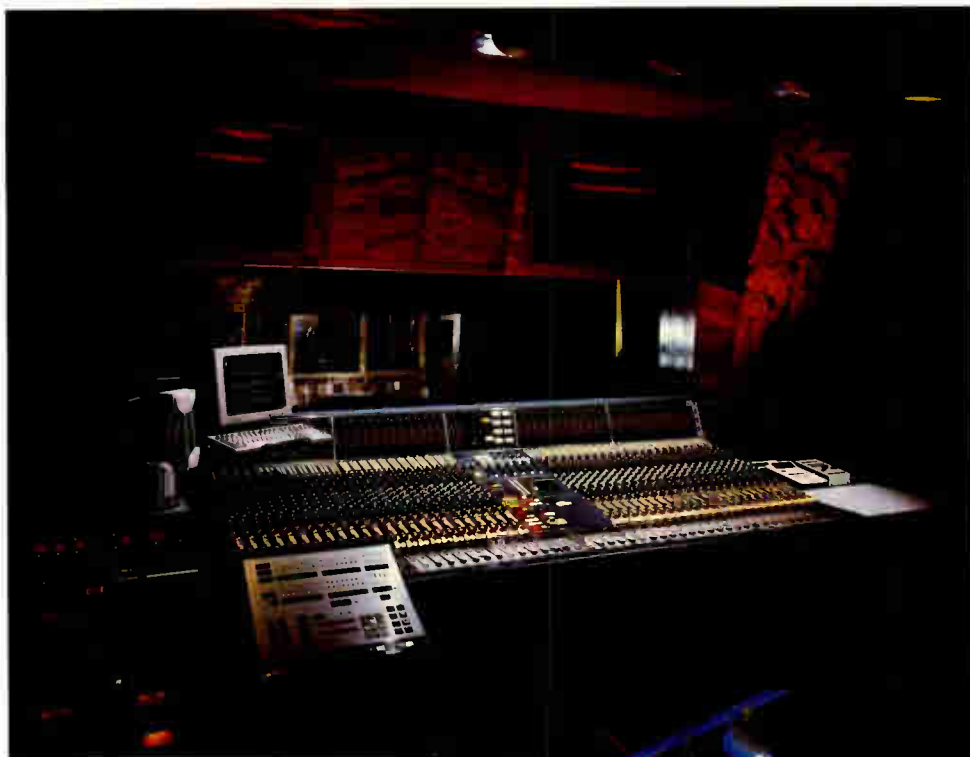
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more than his Disney musical scores. "I first used the Direct-to-Disk system to edit and produce the score for a show called 'Fantasy in the Sky,' Disneyland's nightly fireworks festival during the summer of '88," he recalls. "By the time I got to working on 'IllumiNations' shortly thereafter, I was using it to not only edit the musical score, but to control the timing of the fireworks and fountains used in the program."

Before Dorsey brought this portion of the show into the digital domain, the job was handled by recording voice commands for firing and fountain cues, a method prone to timing errors because of human and technological limits. "With the Direct-to-Disk system, we could edit the musical score, synchronize four different time code tracks and control our fireworks and fountain cues all from one master source," Dorsey adds. "By giving us digital control over the music and all the individual time codes, we could make timing adjustments with ease and subframe accuracy."

Anyone who knows Dorsey for his chart-topping synthesized classical rendering *Beethoven or Bust* (Telarc CD-80153) is aware of his flair for



Camouflaged speaker towers on a pair of islands deliver crisp sound for fireworks spectacles.

creatively using explosive sounds that go well beyond fireworks. It's by no accident then, that "IllumiNations" is also a showcase for real dynamite blasts. "During one section of the program, when Tchaikovsky's *1812 Overture* is played, the audience is hearing actual dynamite blasts. The

firing commands for these blasts are digitally backtimed to correspond with your distance from the explosion. The result is that people react as if real cannons were there—now that's show-biz!"

Away from his role with Uncle Walt and his solo recording efforts with

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Telarc, Dorsey has also found time to begin creating an all-digital sound effects library designed for the film and television markets. Appropriately enough, the library's first installment will be a volume filled entirely with gunshots.

SOUND IN THE MAGIC KINGDOM

Travel the short distance from Walt Disney World's Epcot Center to the theme park setting of The Magic Kingdom, and you'll find that sight and sound continue to play a large role in the Disney World entertainment process. As the park is laid out, a man-made lake is centrally located between

the entrance to The Magic Kingdom and the Polynesian and Grand Floridian Hotels. To gain entrance to the park, visitors must cross this lake via ferry, or ride on an adjacent monorail.

Resting peacefully in the lake are two islands, which go by the names Castaway Cay and Wave Machine Island (also known as Islands 4 and 6). Although they remain largely unnoticed by most, they are the sites of a newly constructed sound system that provides background music for special events viewed in this area of the park.

For the most part, the "special events" requiring the system's use

A TECHNICAL GLANCE AT DISNEY/MGM STUDIOS

Composed of three soundstages, a post-production facility, three production office buildings, an on-site costuming department, scene shops, and a back lot featuring an authentic New York City street and a generic residential street, the new Disney/MGM Studios in Lake Buena Vista lie just a few miles from Walt Disney World. Offering producers and technicians a facility for shooting television programs, feature films, commercials and music videos, the studio is being utilized by the Disney Channel, Disney's Touchstone Pictures and Buena Vista Television for a variety of programs, including the syndicated TV series *Superboy*, the *Disney Sunday Movie* and *Splash, Two*.

Designed by Milt Forman to handle either film or video shoots, the first of the three soundstages contains 14,000 square feet of production space. Also designed by Forman, soundstages 2 and 3 measure 7,500 square feet apiece, and occupy the same building, allowing them to be combined to create a 15,000-square-foot stage by removing a common soundproof wall. Stage 1 has an audience capacity of 300, while stages 2 and 3 each have a 250-person capacity.

Each stage can be tied into a mobile production truck, while fiber-optic lines are also at hand to link the control center with Walt Disney World's satellite uplink, and to the post-production facility.

The stages are equipped with identical equipment rosters, which include four Ikegami HK-323S cameras coupled with Fujinon 20 x 7 lenses, and one HK-323P outfitted with a Fujinon 18 x 8.5 lens. All are mounted on Vinton Fulmar pedestals with Mark VII heads. Five Sony BVH-3000 1-inch Type C VTRs are offered as well, along with five Sony BVU-959 U-Matics with time code burn-in capabilities, five DVR-10 D2 composite digital VTRs, two BVW-75 1/2-inch Betacam decks and two Panasonic VHS VCRs. A Grass Valley 300 production switcher with a 2-channel Kaleidoscope digital effects system and Ultimatte V keyers was selected, while additional graphics can be created with the help of an Abekas A-42 2-channel still-store and Chyron 4200 character generator. Recording duties are neatly managed by a Sony/MCI 8-track unit and a Sony APR-5003 2-track with center-track time code. Audio mixing duties are handled by a 40-input Solid State Logic SL-6000 console.

To simplify remote hookup and editing, virtually every location throughout the studio property is connected by a conduit master control.

This spring, the Disney/MGM Studios will also begin functioning as part of the Walt Disney World theme park, with tours and other attractions being offered. ■

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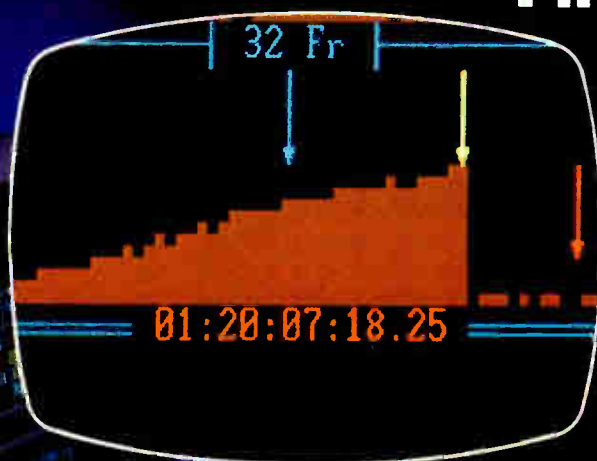
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are the 10 p.m. fireworks displays shown every evening during the extended hours of the summer season. Launched from a concrete bunker located on Castaway Cay, the fireworks are synched with the background music, which ranges in program style from pop to patriotic. Voice announcements are made over the system during the fireworks, but the main program material is music.

The need for this new system resulted from a change in the area of coverage originally served by its predecessors. What makes the system so unique is the way in which it handles the area of coverage, with throws ranging from 900 to 1,200 feet; how it overcomes the noise problems presented by the fireworks display; and its ability to remain resilient in the sometimes unforgiving Florida climate and hurricane season.

As of this writing, the system is laid out into three 3-way arrays. Under development is a fourth array, covering an area by the Polynesian Hotel and the main ticket and transportation center. At the low end in each array, twin 18-inch JBL 2240 drivers are coupled to Community pattern-control horns. Central in each array are two Community M4 mid-range compression loudspeakers coupled to 40 x 20 fiberglass mid-range pattern-control horns with mouth extensions. For high frequencies, dual titanium drivers with 2-inch exits were selected, mated once again with fiberglass pattern-control horns.

The towers constructed to distribute the arrays across Islands 4 and 6 stand just under 21 feet high. To withstand hurricane forces, they employ a cross-braced angle iron design, 6 feet across at the front and rear, and 7½ feet across on both sides. Three-quarter-inch anchor bolts secure them onto concrete pads 18 inches thick and 8½ feet across, while networks of catwalks and platforms have also been provided for easy service. To prevent moisture from eating away at the drivers, and to serve as a means of discreetly blending the towers into the natural environment, green, acoustically transparent fabric was applied to the front three sides of each structure. As configured at present, two of the towers are located on Island 4 (Castaway Cay), while the other completed tower and the one under construction reside on Island 6 (Wave Machine Island).

Four power amps are used for each

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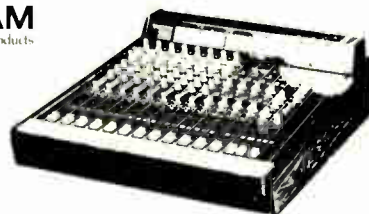
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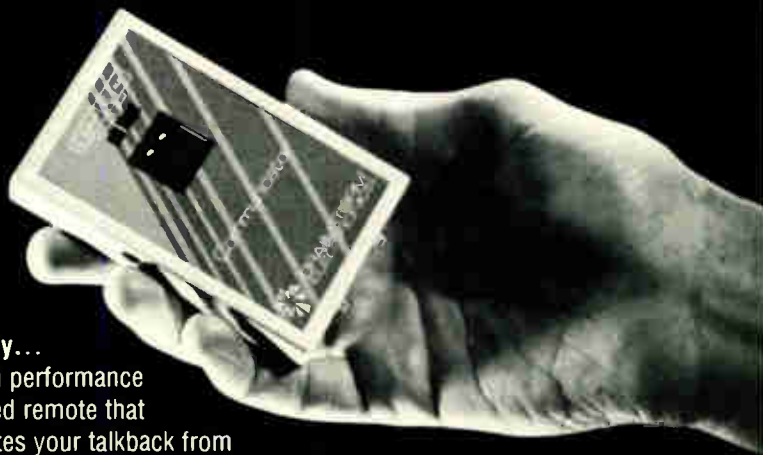
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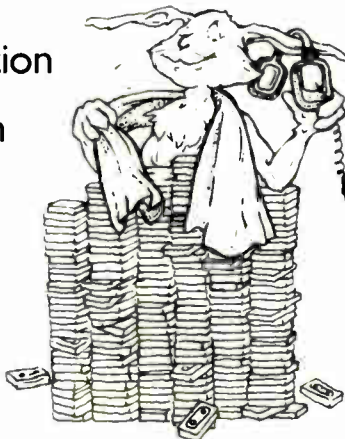
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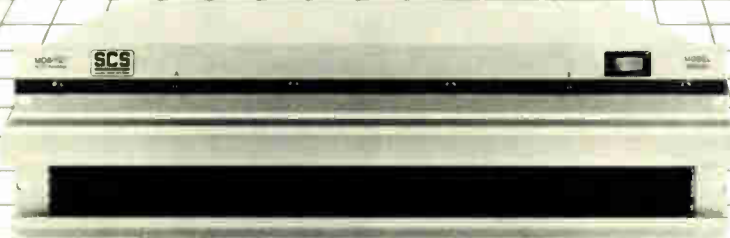
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loudspeaker array: the low-frequency elements each receive 1,000 watts of power from two bridged, mono amps, and the two M4s each have a single side of a stereo amp, as do the high-frequency drivers. "By using the same amps throughout the system, we obtained the most power for our dollar," Disney engineer David Cawley believes. "And from a maintenance standpoint, we'll save future headaches by keeping everything uniform."

According to Cawley's calculations, each array is capable of producing 145 dB at one meter, which is largely responsible for the system's ability to overcome the noise presented by the fireworks. "If you wanted to, you could hear this system from miles away, no doubt about it," he adds. "But we don't run it at peak levels. Initially, we wanted to obtain averages of 90 to 95 dB at the shoreline around the hotels, and as it turned out, that's proven to be a good level."

Cawley and fellow Disney engineer Bill Tomlinson additionally found that they wound up with more coverage than they anticipated. "It was kind of by accident, but we did wind up with more coverage than we set out to obtain," Tomlinson admits. "How that happened was due in part to the design of the Grand Floridian Hotel. The way the structure is built, it has an open courtyard area surrounded on two sides by walls. We were always curious as to what our sound pressure levels would be in that area, and as it turned out, the sound coming across the water at 95 dB hit the far wall, and reflected back into the courtyard at a fairly healthy level, and produced an acoustical illusion that there was a separate sound system just for that area. It was a nice side effect."

Construction of the sound system at Walt Disney World Islands 4 and 6 began in May 1988, and was nearing its final phase of completion at the end of December 1988. Tomlinson and Cawley both note that there has been a marked difference in the performance of this system over its forerunners. "So far, everyone—even the visitors—have been pleased with its performance," Tomlinson is happy to report. "It has not only the power, but all the necessary articulation, intelligibility and low distortion characteristics that make for a pleasurable listening experience." ■

Greg DeTogne is a freelance writer based in the Chicago area.

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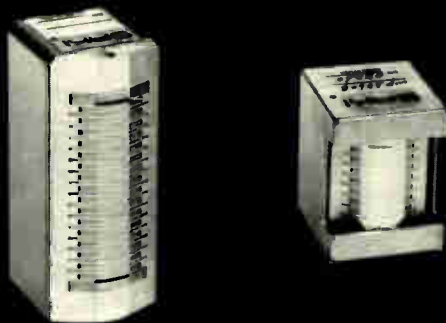


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— FROM PAGE 99, "BULLET"

and Tom Kelly.

Somewhat surprising is the similarity on most songs between demo and final cut, both in terms of timbre and arrangement. With few exceptions the melody lines, bridge sections and chord progressions are intact, and some synth parts are surely indistinguishable. Perhaps the songwriter's notion of "Look What They've Done To My Song" is changing, and producers are looking more to a song's writer for direction.

"This is something I see happening more and more," says Solomon. "The artist's producer is trying to get that elusive demo mood by going right to the source of the song."

According to Billy Steinberg, a songwriter's participation in post-demo production is more random. Besides writing "So Emotional" and "True Colors," Steinberg and Tom Kelly have also written "Alone" for Heart and "Like A Virgin" for Madonna. "I see no set way of doing things once a song is accepted by the record company," says Steinberg. "Sometimes we have nothing to do with the recording session, but on 'Alone,' which followed our demo very closely, we were there throughout the production and gave our input when asked, including Tom's background vocals. With 'True Colors,' we didn't hear Cyndi's version until it hit the charts, and it took a while to get used to her very different, personal reading of that song. It's obviously a very emotionally charged moment the first time you hear your song done differently than you had originally conceived it."

Like many other songwriters today who are producing demos in home studios, Steinberg and Kelly wonder if their versions of these Number One songs aren't better than the final product the public has come to identify as the original. "People often ask us how we feel about the artist's version of our songs," says Steinberg, who does demos with Kelly in Kelly's fully outfitted 24-track home studio. "There are two sides to that coin: if someone does an awful job of the arrangement or production, then it's very easy to say we could've done better. On the other hand, if the record is great and ends up going Number One, it's probably been handled far better than we could have ever done it." ■

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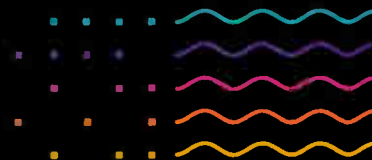
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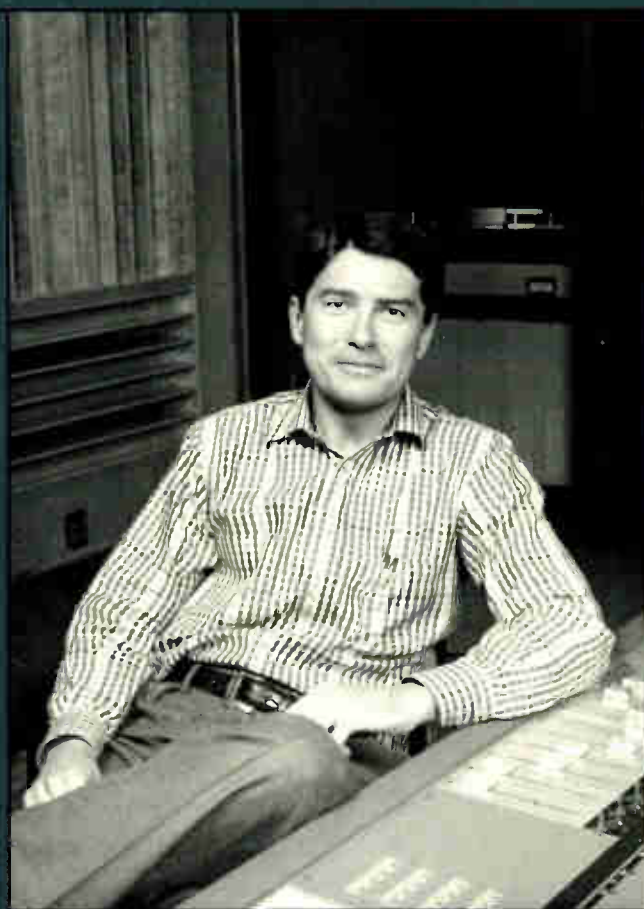
by Tony Thomas

RIDING THE TIDE

AN INTERVIEW WITH JOHN FRY,
OWNER OF ARDENT RECORDINGS, INC.

Memphis is a city built on the foundation of music. With a legacy that includes the blues of W.C. Handy, the gut-burning funk of Booker T. & the MGs, the gospel-drenched sound of the Staple Singers, the blue-eyed soul of the Blue Boys, and the mellow grooves of Isaac Hayes, Memphis has rightfully earned the title of "soul central." No one listening to music in the '60s and '70s could claim to be untouched by the Memphis sound.

Although the Tennessee city of Nashville has claimed the title of Music City, Memphis was the home of Elvis Presley, the king of pop/rock music, whose Graceland mansion is the city's most popular tourist attraction. Presley brought the R&B flavor of Memphis



to Nashville and celebrated the Memphis sound by recording an album there in 1969. Memphis still thrives as a major music center with the demise of Slick/Walt Records and the music industry recession of the late '60s and early '70s. Many of the city's most talented musicians and producers made the move to brighter lights and bigger skies.

John Fry
(above);
Studio C at
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Unfortunately, recording studios are not quite as mobile. Anchored by leases, mortgages and mountains of heavy and expensive equipment, a recording studio is left to ride the wave of recession. One survivor who has been through the ups and downs of the Memphis scene and lived to tell about it is John Fry, owner of Ardent Recordings, Inc. Founded as a "state of the art" 4-track studio in 1966, Ardent has become a full-service audio/video production complex with three 32-track digital studios and video production and post-production facilities.

Although Ardent cut its teeth recording and mixing such Memphis legends as the Staple Singers, Sam & Dave, Isaac Hayes and the Box Tops, the studio is now at the forefront of Memphis' recent resurgence as a bona fide music center. Artists who have made Ardent their musical home recently include ZZ Top, R.E.M., Steve Earle, Joe Cocker, Phil Driscoll, Omar & the Howlers, The Replacements, Alex Chilton, the Fabulous Thunderbirds, Johnny Winter, Mavis Staples

and George Thorogood. Over the past few years alone, Ardent has been responsible for albums with total unit sales exceeding 12 million copies. Although Fry swears he got into the studio business because he "couldn't find honest work," it became clear as we talked that he really loves the recording business.

Mix: How have you coped with the changes in the Memphis recording scene?

Fry: Up until about six years ago, most of our business was dependent upon the people making phonograph records. At that time we decided to take our business to a different level. We went through the typical studio

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evolution equipment-wise. When we were confronted with the choice of replacing our older analog machines with new analog machines, we stuck our necks out and decided to make the move to digital. We installed 32-track machines in each of our three studios, and we also retrofitted our consoles. We have one SSL 6000E, one Neve V Series and a Mitsubishi Westar.

Our studio also got involved with computerized music early on. We bought a Fairlight Series II early on and have since acquired a Series III. As a result, our guys got a great deal of experience on that type of equipment long before anyone else in this part of the country. They have been able to integrate that technology very naturally into their production work.

We have also made inroads into independent production. We even had a label back in the early '70s that was distributed by Stax. The biggest act on that label was a group called Big Star with Alan Chilton. Their album became the darling of the critics, which doesn't mean it made any money. Still, we have recently moved back into the production and artist development end of things.

Mix: How does your production company operate?

Fry: We have a guy who travels in a sales capacity for the studio, who also makes contacts with A&R departments of major record companies regarding production opportunities with artists from this area. Keeping an active presence with the A&R community is important to us because it is easy for them to forget we're here in Memphis. In the year he has done this, a couple of artists we've developed have been signed to major labels, and a couple of others look like promising candidates for record deals.

It's funny that we are just getting involved again with that part of the business, because at one time, in the South, the professional rental studio was an oddity. Just about every recording studio was formed to serve the needs of a production company. Now that we've been doing it for a while with some success with artists John Kilzer on Geffen and Tora Tora on A&M, we plan to make it a bigger part of our business. I don't see conflict with production and publishing activities and maintaining a high standard of quality in our recording business. In fact, there is a real synergy that has taken place because of that.

Mix: Does having your own production company present any studio scheduling problems?

Fry: Having a production company gives you some control over the work that goes on in the studio from a scheduling viewpoint. Studio utilization has been a problem in the studio business because you can have a high demand for a studio during prime time, and yet have empty studios at other times. If you have production work over which you have some degree of scheduling control, you can bring your utilization to a higher level. If you can get involved with projects that will earn royalties, it won't be too long until the tail begins to wag the dog. There is a lot of profit potential in that area.

Mix: What made you decide to get into the video business?

Fry: About six years ago, we saw a market gap in that area and felt that it would be a good way to diversify our business and make it less dependent on the health of the record industry. In addition, it has brought us into contact with new people in the advertising community. Many have since become users of our audio production services. In many cases, we can produce a finished commercial for them, including all aspects of audio and video production.

Mix: Has diversification been the key to Ardent's success?

Fry: Even though our major label work has increased a great deal in the last few years, if you are going to be in the studio business in Memphis and want it to grow to any size, you can't become too specialized. If we have three studios, we have to have some variation in capabilities so that we can accommodate people whose budgets may be limited. We have to be involved in the advertising commercial production business. Recently, we've done the Coppertone radio campaign and work for the Tennessee state tourism board. Also, we have done a fair amount of contemporary gospel artists such as Mylon LeFevre, Phil Driscoll, the Blackwood Brothers and DeGarmo & Key. The bottom line is that, in a market like Memphis, you can't get too big for your britches. ■

Tony Thomas is managing director of Target Communications International, a full-service ad agency, broadcast production firm and MIDI-based Southern California recording studio.

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by Robyn Flans

EMORY GORDY, JR.

A LONG AND WINDING ROAD

In the last few years some new names have popped up in the Nashville ranks of production. James Stroud, a drummer who in the early '70s began working in production in Mississippi, Colorado and L.A., is only now becoming a name to reckon with in Nashville circles. Barry Beckett, who made his name as a member of the Muscle Shoals Sound group, and Josh Leo and

Wendy Waldman, both L.A. transplants, recently have infiltrated the Nashville production scene as well.

Emory Gordy, Jr. is another name that is certainly not new to album liner notes, although for him the title of producer has only recently come to the forefront. By the time he got to L.A. in 1970 he had chalked up some impressive credits in his hometown of Atlanta, Georgia, with the Classics IV, Joe South, Billy Joe Royal and Tommy Roe. Once in L.A., he was signed as a writer with Liberace's organization, where he engineered and produced recordings for Liberace and Debbie Reynolds.

He considers Neil Diamond's *Hot August Night* the break that launched his successful L.A. session career as a bass player, which included recording with such acts as Elvis Presley, Billy Joel and Tom Petty, his subsequent membership in Emmylou Harris' original Hot Band, a stint with John Denver (which he left when Rodney Crowell offered him a portion of the production), and then the eventual burnout that followed.

In April 1983, Gordy was intent on retiring when some demos he had produced for Vince Gill landed Gill a record deal with RCA. Tony Brown, with RCA at the time, talked Gordy into producing the project.

"I did a Fogelberg album after that and a couple of other things as a musician, and then I figured that's it. About six months later, Tony Brown called me up and told me Jimmy Bowen was taking over MCA/Nashville, and would I be interested in talking



PHOTO: ION SIEVERT

to him about being a staff producer for MCA? I was a little reluctant about taking the job, so when I met with Bowen, I asked for more money than I thought I could get. He accepted it and there I was, a producer working for a record company," Gordy laughs. "I figured I'd sign a three-year contract and go to the Jimmy Bowen School of Music for three years. It was educational, to say the least. I learned a lot of things I shouldn't do and a whole bunch of things I should do.

"I learned that some of the stuff being done was more politically expedient than musically creative. Bowen had set up a system at MCA that sometimes seemed a little too stiff; for instance, not being able to choose certain engineers you wanted to work with and things like that. Bowen wanted to mold me and Tony Brown, and whoever else was working with him, in his own image, and I dutifully did

what he wanted me to do for the most part. But there were some things that rubbed me wrong. He wanted us to have two and three and four projects running at one time, and I didn't like that. It was geared to be a factory, and that was the reason you couldn't get the engineer or the studio you wanted.

"There were many things that were enjoyable, though," he recalls, among them a Brenda Lee album and three Bill Monroe albums he produced for the label. "Those were wonderful. I had been a fan of Monroe's since childhood. I did him digitally—no earphones, no overdubs—and took advantage of the technical aspect of it, not to change his music, but to make it better. We set them up in a studio in sort of a semicircle where they could literally reach out and touch each other. I wanted to re-create the essence of what they had been doing backstage that nobody ever gets to

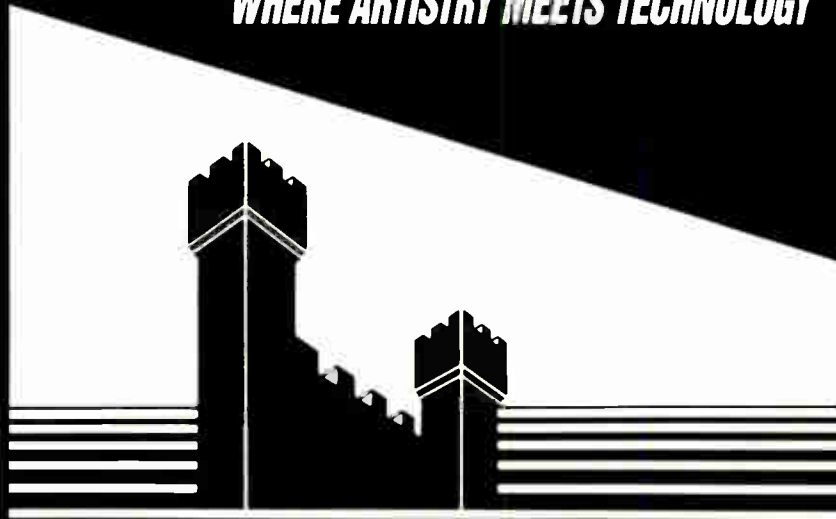
hear, and give them the feeling that there was no technology involved."

Another landmark for Gordy was getting Steve Earle signed to MCA. He had produced some earlier singles for Earle at CBS, but nothing had happened for the artist. Gordy got Tony Brown excited about Earle and both threatened to resign if Earle wasn't signed. The project was a little revolutionary for country music, and yes, Gordy admits there was a question of how loud the drums could be mixed for the format.

"That was difficult because we didn't win the battle," he admits. "We never managed to get him on country radio to any extent except for maybe one Top 10 record, although he was selling more albums than most people who have Number One country records. I think in the end, Tony Brown, Steve, who is very involved in the production of his stuff, and I de-

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cided that we would tone it down slightly, but not to the extent that we had to sacrifice something.

"One consideration was that the lyrics had to be heard. That meant getting the vocal out there, but we also had to arrange it so the vocal was heard automatically. My theory in mixing is that if the arrangement is correct, it doesn't take a lot of putting it together. If you have to start struggling with this instrument and that, finding a place for them and moving faders drastically up and down, then the arrangement is not correct. Often, if the arrangement is just right, you can throw the faders up and they'll be in line straight across—you don't have to make a move. I'm coming from a school as a musician and arranger."

Being a musician has made Gordy more sensitive to a lot of aspects of production. "I can take into consideration how long they can play a song without going nuts, when to take a break, when to have them come in and listen and when to leave them

alone," Gordy says.

"I try to get as much pre-production done as possible, which means first of all, finding the right key. I hate when someone brings in a demo in D and wants it performed in A flat. As a musician, I spent many frustrating hours undoing the demo to get it to fit the vocalist. I like to go in with the artist to do little demos, rather than frustrate the musicians by figuring it out during the session. I think the key is astute pre-production, with the flexibility to change it on the spot."

While he has pretty much retired from playing, he says he now plans to play more on his productions, unlike his period at MCA:

"Bowen had me convinced that playing bass and producing at the same time was the worst thing in the world I could do. I recently did *Signatures II* for RCA, which is a record of songwriters who are artists, and I played on all but four tracks because of economics. In the process of playing, I realized I was a lot more sensitive to the arrangement and what was wrong with it than when I was sitting

back as a producer and analyzing it. As a player, it's a visceral feeling; there's a kinetic thing that happens with your fingers that bypasses some of the calculating portion of your brain. It goes straight from the heart to the fingers."

Needless to say, Gordy plans to continue as an independent without label affiliation.

"I got a call the other day and they said, 'This song is too long.' I had to go in and edit it down and speed it up in order to reach the time. It turned out the whole criteria was based on the fact they only had four-minute carts at the radio station, which is not a consideration. Production will have to be independent because it doesn't work any other way for me, simply because of the mentality of record companies right now." ■

Robyn Flans is a Los Angeles-based freelance writer. The author of three books on rock music, she also contributes to Mix, Modern Drummer, Pulse, Words & Music and other publications.

NEVE SOUTHEAST STUDIO DIRECTORY

Cook Sound, Fort Payne, AL—Neve 8058
Fame Recording, Muscle Shoals, AL—Neve 8232
Muscle Shoals Sound, Muscle Shoals, AL—Neve 8068
Compass Point Studios, Nassau, Bahamas—Neve V Series
Walt Disney World, Lake Buena Vista, FL—Neve 8128
Fullersound, Miami, FL, Neve DTC
Limelight Studios, Miami, FL—Neve V Series w N96
Miami Sound Studios, Miami, FL—Neve 8028
Middle Ear Studios, Miami, FL—Neve V Series w N96
WPBT, Miami, FL—Neve 542
New River Studios, Ft. Lauderdale, FL—Neve 8108 w N96
Crawford Communications, Atlanta, GA—Neve 8128 w N96
Soundscape Studios, Atlanta, GA—Neve 8058
Jimmy Swaggart Ministries, Baton Rouge, LA—Neve V Series w N96, Neve 8128 x 2, Neve 54 x 4, 5116
Minnesota Public Radio—Neve V Series
American Multimedia, Burlington, NC—Neve 8108

Mark Five Productions, Greenville, SC—Neve 8058
Ardent Recording, Memphis, TN—Neve V Series
Crosstown Recorders, Memphis, TN—Neve 8232
Memphis Sound, Memphis, TN—Neve V Series
Digital Recorders, Nashville, TN—Neve Necam
Disc Mastering, Nashville, TN—Neve DTC
Eleven-Eleven Sound, Nashville, TN—Neve V Series
Groundstar, Nashville, TN—Neve 8128 w N96
Music City Music Hall, Nashville, TN—Neve 8038
Nashville Record Prod., Nashville, TN—Neve DM
Opryland USA, Nashville, TN—Neve 5432
The Reflections, Nashville, TN—Neve 8232 x 2
Sound Emporium, Nashville, TN—Neve 8128 w N96
Mel Tillis Enterprises, Nashville, TN—Neve 8058
Woodland Sound, Nashville, TN—Neve 8078, 8038
Goodnite Audio, Dallas, TX—Neve 8128 w N96
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SOUTHEAST STUDIOS

Information in the following directory section is based on questionnaires mailed earlier this year and was supplied by those facilities listed. Mix claims no responsibility for the accuracy of this information. Personnel, equipment, locations and rates may change, so please verify critical information with the companies directly.



Oleative Recording is a 24-track studio in Nashville serving music production and advertising clients. Equipment includes a Schieman Sonosonik Studer tape machines and a Yamaha C7 grand piano with a forte MIDI modification. The facility is also the home of Don Williams Music, producer of radio and TV commercials, and Brent Maher Productions, producing the Judds and Michael Johnson. Photo: Bob Grannis.

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Mix listings procedure: every month, Mix mails questionnaires to recording studios and/or other vital facilities and services for the recording, sound and video production industries. There is a nominal charge to list a Briefcase Listing (name, address, contact) and an Extended Listing (equipment, credits, specialization and photo or logo). If you would like to be listed in a Mix Directory, write or call the Mix Directories Department, 5400 Hollis Street #12, Emeryville, CA 94608; toll free 800-544-0871.

Upcoming Directory Deadlines:

Northeast Recording Studios: **February 15, 1989**
 Remote Recording/Sound Reinforcement: **March 15, 1989**
 Recording Schools, Programs & Seminars: **April 17, 1989**
 Studios of Australia, Japan & the Pacific Rim: **April 14, 1989**



Services & Equipment Offered:

Facility Manager: Priscilla Gardiner. **Engineers:** Dale Everingham, Jim Gardiner. **Dimensions:** Control Room: 275 sq. ft., Studio: 350 sq. ft., Attic: 800 sq. ft. **Consoles:** MCI JH-636 32x24 w/DiskMix automation, Sound Workshop 34C 32x28x24 w/automation, Yamaha DMP7 8x2. **Audio Recorders:** (2) MCI JH-24, Otari MTR-10 2-Trk 1/2" & 1/4", Sony PCM-F1. **Signal Processing:** Lexicon 224X, Prime Time II, PCM42, Roland SDE-3000, Publison Infernal 90, Yamaha REV7, (4) MIDlverb II. **Other Outboard Gear:** Scamp rack, Vocal Stresser, Drawmer gates, UREI LA-2A, LA-3A, 1176,

Spectra Sonics 610, Publison Vocal Exciter. **Monitors:** Bryston, Yamaha, Toa, Auratones. **Synths/Computers:** Kurzweil 250 w/sampling, E-mu SP-12 Drum Machine, Yamaha TX816 (8 modules), Oberheim Matrix-12, Garfield Master Beat, Macintosh w/Performer software, Emax SE w/hard disk. **Video Equipment:** Q.Lock 4.10-E w/Eclipse editor, JVC 8250 3/4" U-VCR, Sony projection system w/ 100" diag. screen, Sony color monitor. **Extras:** Original music composition, in-house production services, CD sound effects library.

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Services & Equipment Offered:

Facility Manager: Albert Jolson. **Engineers:** Glenn Rieuf, Jr., Mark Capps. **Console:** Sphere Eclipse C w/ Allison 65K automation. **Recorders:** Ampex MM1200 16 & 24-Trk, Tascam MS16 16-Trk, Otari 5050 8-Trk, Studer A80 4-Trk & 2-Trk 1/2", Scully 280 3 & 4-Trk, Studer B67 2-Trk, Ampex ATR-100 2-Trk, Ampex AG440B 2-Trk (2) Sony PCM-2500 R-DAT recorder, (3) Sony FX1010 Cassette Rec., Nakamichi MR-1 Cassette, Studer 810 2-Trk w/CTTC, Nagra IV-S. **Outboard Gear:** Lexicon 224, 200, PCM70 (2), Super Prime Time, 93 Prime Time, Yamaha REV5, SPX90, Valley People Kepex II (2), DSP (2), Commander (2), Gain Brain (2), Eventide Harmonizers: H910,

H949, H3000, Roland DEP-5, AMS RMX-16 Reverb, Sontec MEP-250C, BB 15 AM-10 EQ, BTX 4100 & 4500 SMPTE Gen & Sync, dbx 160 Limiter (2), Teletronix LA-2A (2), UREI 1176 (2), & Summit Audio Tube Limiter, USAudio Gatex Gate (8), Dolby 361 (4) w/ A4 cards (4) & SR cards (2), Symetrix Limiter (2), MEP-250C EQ, API 5502 EQ (2). **Studio Equipment:** Baldwin SD10 9 1/2' Grand Piano, Kawai Baby Grand MIDI Piano, Hammond B-3 organ, Hohner D6 Clavinet, Wurlitzer 200 Elec. Piano, Fender/Rhodes Elec. Piano, Emulator II & WD, Linn 9000, Akai S900 Sampler, Roland GM70 Guitar Converter w/ Gibson Les Paul Guitar, Apple Mac Plus & Mac II, Commodore 64 computers

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w/ MIDI software, Roland MKB-1000 MIDI Kbd. Cont., Roland Super Jupiter MKS-80 w/Programmer MPG-80, Roland DDR30 Digital Drums, Roland MX-1, Roland D-550 Linear Synth, Yamaha MIDI rack w/ TFI modules (8), Oberheim Matrix-6R, Roland PAD-8 Octapad, Kawai KMC-16R MIDI controller, Southworth Systems Jam Box, J.L. Cooper MSD16/20. **Monitors:** Westlake TM-1 & BBAMN15-10, Yamaha NS-10M, JBL 4311, JBL 4320, B&W DM100, E-V Sentry 100, Auratones. **Microphones:** Neumann, AKG, E-V, Sennheiser, Sony, Shure, Audio-Technica, Countryman.

◀ 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	MIDI MIDI Production
APPV Audio Post-Production for Video	APPF Audio Post-Production for Film
VP Video Production	SDS Studio Design/Supply
TD Tape Duplicating	CDP Record/CD Pressing
CDM Record/CD Mastering	RLR Remote/Location Recording
SR Sound Reinforcement	

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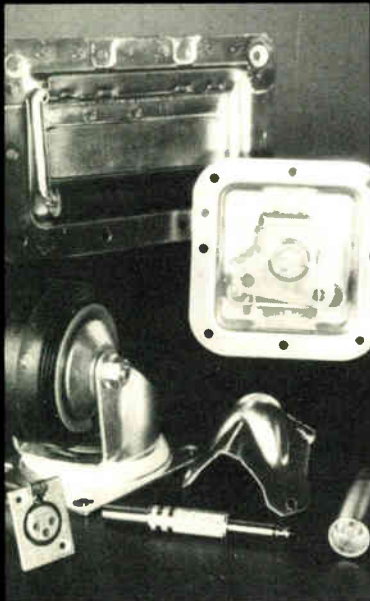
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24+ TRACK

STUDIOS

[24+] **ADVENT PRODUCTIONS**; also *REMOTE RECORDING*; 2518 Southview Dr.; Lexington, KY 40503-2250; (606) 278-5852. Owner: RSD Enterprises. Studio Manager: Don C. Morgan.

[24+] **ALIVE RECORDINGS**; 1251 Virginia Ave.; Harrisonburg, VA 22801-2497; (703) 434-6703. Owner: Mennonite Board of Missions. Studio Manager: Abe Rittenhouse.



ALLEN-MARTIN PRODUCTIONS
Louisville, KY

[24+] **ALLEN-MARTIN PRODUCTIONS**; also *REMOTE RECORDING*; 9701 Taylorsville Rd.; Louisville, KY 40299; (502) 267-9658. Studio Manager: Nick Stevens. Specialization & Credits: Synclavier studio: full Synclavier system with vocal booth linked to main 24-track studio via MIDI and audio. Main 24-track studio; 30 x 40 x 20 room with Steinway grand piano; large control room with new Sony MPX 3000 fully automated 44-input console; complete MIDI studio with computer sequencing and digital sampling; extensive mic collection with several vintage mics; and audio-to-video sync (multi-cam remote capabilities and 30 x 30 x 30 cyclorama with two editing suites). Our production team is experienced in all phases of production management from pre-pro through finish. Staff specialist can assist in album production (musicians on staff), pressing and duplication, music video productions, film scoring, post scoring and mixing, film and video sweetening. Staff script and songwriters. Single division clients include: Coca-Cola Inc., AMC, Nationwide Insurance, Chevron, Valvoline, Hyatt International, GE, Budget Rent-a-Car, Exxon, Standard Publishing, McDonald's, Wendy's, Kentucky Fried Chicken and independent labels. This comprehensive facility, located on a private Kentucky estate, offers a warm, creative atmosphere. Our award-winning staff of 14 is here to complete any facet of your project with a professional attitude and all the extras you need: complete kitchen, large conference room, 15 minutes from major airport, limo service available.

[24+] **ALPHA AUDIO**; also *REMOTE RECORDING*; 2049 W. Broad St.; Richmond, VA 23220; (804) 358-3852. Owner: Alpha Recording Corporation. Studio Manager: Carlos Chafin. Engineers: Joe Sheets, Joe Horner, Bevin Armistead, Paul Bruski, David Brooks. Dimensions: Room 1: studio 65 x 35 x 20, control room 12 x 14 x 8. Room 2: studio 8 x 12 x 8, control room 12 x 9 x 9. Room 3: studio 8 x 12 x 8, control room 8 x 12 x 8. Room 4: studio 18 x 20 x 9, control room 12 x 14 x 8. Mixing Consoles: Sphere Eclipse C. 44 x 34, Quad Eight Ventura 28 x 14, Quad Eight 2, 4, 8, 12 x 12. Audio Recorders: Studer A800 24-track, Otari MTR-90 24-track, Otari MTR-20 2-track, Otari MTR-10 2-track. (2) New England Digital Direct-to-Disk 8-track digital recorder. Cassette Recorders/Duplicators: Yamaha C200, Otari DP-4050. Noise Reduction Equipment: Dolby Synchronization Systems: (2) Boss/2 automated audio editing system, (2) Adams-Smith synchronizer. Echo, Reverb, & Delay Systems: (2) EMT 140, Yamaha REV-1, (6) Yamaha REV7, AKG BX-20, Lexicon. Other Outboard Equip-

ment: UREI compressor, dbx compressor, Orban compressor, Pultec equalizer, Lang equalizer, Orban equalizer, UREI equalizer, Studer CD player, Technics CD player, Carver CD player, custom 8-channel headphone mixers for studio 1. Microphones: (100) Neumann, AKG, Shure, RCA, Sony, Electro-Voice. Mint condition tube mics: Neumann U47, Neumann U67, Sony Monitor Amplifiers: UREI, Crown, JBL, BGW. Monitor Speakers: UREI, Yamaha NS-10, Auratone. Musical Instruments: Hammond B-3 organ w/Leslie tone cabinet, Hohner clavinet, congas, Coral electric sitar, Rogers drums, Ludwig drums, Gretsch drums, Music Man and Fender amps, Kurzweil 250 w/all current software options, Synclavier, Yamaha DX7, KX88, TX816, Ensoniq Mirage, Sequential Circuits Prophet-5 and Prophet-2002 digital sampler. Video Equipment: JVC 3/4" VCR. Rates: Rate card available upon request.

[24+] **AMR STUDIOS (A DIVISION OF JAVELINA, INC.)**; 808 19th Ave. S.; Nashville, TN 37203; (615) 320-5985. Owner: Warren Peterson, Vicki Hicks Peterson. Studio Manager: Warren Peterson, Vicki Hicks Peterson.



ARCADIA PRODUCTIONS & RECORDING STUDIO
Atlanta, GA

[24+] **ARCADIA PRODUCTIONS & RECORDING STUDIO**; 425 Windsor Pkwy.; Atlanta, GA 30342; (404) 255-3284. Owner: Sammy Knox. Studio Manager: Sammy Knox. Engineers: Sammy Knox, Laura Thorburn, Axel Black, Dave Pensado, Rick Shepard. Dimensions: Studio 24 x 16, control room 22 x 16. Mixing Consoles: Trident Series 24 44 x 24. Audio Recorders: Studer Mkill 24-track, Tascam 48 8-track, Otari MX-5050 2-track, Sony PCM-601 ESD 2-track digital. Cassette Recorders/Duplicators: Yamaha K-1020 2-track, Nakamichi Noise Reduction Equipment: (2) Tascam DX-4D dbx. Synchronization Systems: Synchronous Technologies SMPLE system, Synchance MTS1, SMPTE City. Echo, Reverb, & Delay Systems: (3) Roland SRV-2000, CompuEffectron, DeltaLab ADM 1024 Effectron II, (2) Lexicon PCM70, (2) DeltaLab CE-1700, (2) Yamaha SPX90. Other Outboard Equipment: Aphex Type C Aural Exciter, (2) dbx 160, (2) dbx 166, (4) D&R gate, (3) D&R parametric EQ, D&R Holland disc amp, (4) APSI EQ module. Microphones: (2) AKG 414, (2) Neumann U87, (2) Sennheiser 441, (8) Shure SM57, (2) Shure SM58, (2) Beyer CK-704a, Neumann U47. Monitor Amplifiers: (2) Adcom GFA-555, Soundcraftsmen RA5502, (2) Carver 1500. Monitor Speakers: Tannoy SRM-10B, Yamaha NS-10M, Visonik Little David 6000. Hartman control monitors. Musical Instruments: (2) Emulator Emax, (2) Roland D-50, Akai S900, Emulator SP-12, Oberheim Matrix-6R, Casio CZ-101, Ensoniq ESQ-1, Yamaha TX802, (2) Fender Deluxe reverb (1963), Simmons drum pads, Simmons TMI, Yamaha DX7II, MX8 MIDI routing patching system. Other MIDI Equipment: IBM PC XT 20-meg hard drive, Voyetra sequencer plus Mkill 1.1, Voyetra Patchmaster, ProLib patch librarian, Mac Plus 60MB HD, Mark of the Unicorn sequencing, Sound Designer sound editing, Turbosynth. Rates: \$25 to \$65/hr.



ARDENT RECORDINGS INC.
Memphis, TN

[24+] **ARDENT RECORDINGS INC.**; 2000 Madison Ave.; Memphis, TN 38104; (901) 725-0855. Owner: John Fry. Studio Manager: Jody Stephens. Engineers: Joe Hardy, Tom Laune, John Hampton, Paul Ebersold. Dimensions: Room 1: studio 25 x 40, control room 16 x 25. Room 2: studio 24 x 17, control room 25 x 20. Room 3: studio 25 x 35, control room 18 x 25. Mixing Consoles: Solid State Logic 6000E 40 x 32, Mitsubishi Westar 44 x 24. Neve V Series 40 x 48. Audio Recorders: Mitsubishi X-850 digital 32-track, (2) Mitsubishi X-800 digital 32-track, Otari MTR-90 24-track, (2) MCI JH-24 24-track, Mitsubishi X-86 digital 2-track, (2) MCI JH-110 2-track, (3) Mitsubishi X-80 2-track. Echo, Reverb, & Delay Systems: Lexicon 224XL, Quantec, (6) Yamaha REV7, (2) Publison Inferna Machine, Lexicon Prime Time, (2) Eventide Harmonizer, (3) Roland SDE-3000, DeltaLab Effectron, ADR Scamp ADT, Marshall Time Modulator, (3) EMT, AMS RMX-16, AMS DMX-16, Bel BD-8, (3) live chamber. Other Outboard Equipment: (2) Fairchild limiter, (2) UA 176 limiter, UA 1176, (4) dbx 160, (6) dbx 165, Kepex, (3) Scamp Rack w/gates, compressors, de-essers, Dynamic noise filter, Auto Panner, (2) Valley People Intelligent de-esser, Dr. Click Microphones: Neumann M249, U67, U87, KM84, KM86, B&K, Sanken, AKG C-422 stereo, C-414, C-451, D-12, Crown P2M, E-V RE20, RE15, Sennheiser, MD-421, MD-441, Shure SM81, SM57, Beyer 201, also Sony and RCA Monitor Amplifiers: Crown, BGW. Monitor Speakers: Audicon, JBL 4350, KEF, Yamaha NS-10M, Auratone. Musical Instruments: (2) Fairlight Series III, Yamaha DX7, Yamaha TX-rack, (2) Roland Super Jupiter, Roland piano synthesizer, Minimoog w/MIDI, Memorymoog, Steinway grand piano, Yamaha grand piano, Chickering grand piano, Fender Rhodes, Hohner clavinet, Hammond M-3 organ, (2) Gretsch drums. Video Equipment: Complete 1" and Beta SP videotape, 16mm and 35mm film production and editing. Rates: Available on request. Specialization & Credits: Some recent clients include ZZ Top, R.E.M., The Fabulous Thunderbirds, Steve Earle, John Kilzer, The Replacements, George Thorogood, Rock City Angels, Johnny Winter, Mavis Staple, Velvet Elvis, Omar and the Howlers, Michael Anderson, Alex Chilton, etc.

[24+] **AUDIO ANIMATIONS**; 1022 Windy Hill Rd., Ste. 1, Smyrna, GA 30080; (404) 434-7637. Owner: Roger Kennerly, Pat Storey. Studio Manager: Sheila Storey.

[24+] **AUDIO, INC.**; 1917 Cleveland Ave.; Charlotte, NC 28203; (704) 376-3818. Owner: Frank and Sandi Rogers. Studio Manager: Frank and Sandi Rogers.

[24+] **BENNETT HOUSE STUDIOS, THE**; 134 4th Ave. North; Franklin, TN 37064; (615) 790-8696. Owner: Bob Montgomery. Studio Manager: Gene Eichelberger, office mgr. Debra Bradley. Engineers: Gene Eichelberger, Mike Clute, Clarke Schleicher, J.T. Cantwell, Shawn McLean, Todd Moore, freelancers welcome. Dimensions: Room 1: studio 44 x 18, control room 20 x 26. Room 2: studio 9 x 12, control room 20 x 26. Mixing Consoles: Trident A Range 28 x 24, Trident Bud Wyatt Series 80. Audio Recorders: (2) MCI transformerless 24-track, (2) Studer B67 2-track, Ampex ATR-100 2-track 1/2", (2) Studer 800 24-track, Sony PCM-F1 2-track digital. Cassette Recorders/Duplicators: Sony, (3) Sharp, Studer. Synchronization Systems: (3) Lynx SMPTE lockup available. Echo, Reverb, & Delay Systems: EMT 250, (2) Lawson plate, Lexicon 200, Yamaha REV7, AMSDDL, Eventide 949, Lexicon 224X w/LARC. Other Outboard Equipment: Various gates, EQs, delays, CD players. Microphones: Neumann M249 tube, Neumann 87, Neumann 414, Neumann 421, Neumann 224, AKG Tube, Sanken, etc. Monitor Amplifiers: Yamaha Monitor Speakers: JBL 4411, John Meyer monitors, Yamaha NS-10, E-V Serry 100, Braun 3-way, Auratone. Musical Instruments: New England Digital polyphonic Synclavier, Baldwin 7" grand piano, Eddy Reynolds Rhodes. Video Equipment: Sony 5850 3/4" VTR w/sync. Rates: Call for rates. Specialization & Credits: The Bennett House Studios offer a unique recording experience designed for creature comfort. In addition to having two top-quality studios both with 48-track capabilities, there is a fully furnished three-bedroom, two-story historic home that

24+ TRACK

STUDIOS

we offer clients to stay in during master projects. Our beautiful home provides a spacious, creative atmosphere with high ceilings and many rooms. The location is most desirable since we are away from the hustle and bustle of Nashville, yet right in the heart of the small but convenient city of Franklin. We also serve a hot, home-cooked meal daily (except weekends) for four people or more at your request for a slight charge. There is also our staff, who will help make your stay a memorable one, if not just productive and enjoyable.

[24+] **BIAS RECORDING COMPANY, INC.**; also *REMOTE RECORDING*; 5400 Carolina Pl.; Springfile, VA 22151; (703) 941-3333. Owner: Bill McElroy, Bob Dawson. Studio Manager: Gloria Dawson. Engineers: Bob Dawson, Bill McElroy, Jim Robeson, Andy Berner. Dimensions: Room 1 studio 16 x 25, 20 x 30, control room 12 x 16. Room 2 studio 16 x 25, control room 12 x 16. Mixing Consoles: API 4032 40 x 32 w/Audio Kinetics MasterMix automation, API modified 2488 24 x 8 w/Allison Faded automation. Audio Recorders: Ampex MM-1200 24-track (Studio A), Ampex MM-1200 24-track (Studio B), (7) Studer B67 2-track, Studer A67 2-track. Cassette Recorders/Duplicators: (4) Nakamichi MR-1, (2) Technics M-280. Noise Reduction Equipment: Dolby A-M-24 noise reduction (both studios). Echo, Reverb, & Delay Systems: (2) Lexicon Model 200, Lexicon 224, (2) EMT 162, (2) Lexicon PCM-70, Lexicon PCM60, Lexicon Prime Time, (2) Eventide Harmonizer. Other Outboard Equipment: UREI 1176 stereo, UREI 1176LN, digital metronome, Sony PCM-F1 digital audio processor, Sony Super Beta Hi-Fi, Sony Betamax, Nakamichi DMP-100 digital mastering processor. Microphones: Neumann U87, Neumann KM86, Neumann U47, Neumann U48, Neumann U67, AKG C-451, AKG C-452, AKG C-414, AKG C-460. Shure SM57, Sennheiser 421-D. Monitor Amplifiers: Briston (Studio A), Crown (Studio B). Monitor Speakers: Auratone, Sierra/Hidley. Musical Instruments: Yamaha C5 grand piano (Studio A), Yamaha C3 grand piano (Studio B), Hammond C-3 w/Leslie, Fender Rhodes, Hohner clavinet, Slingerland drums, Fibes drums, Fender Precision bass, Yamaha DX7 synthesizer, Oberheim DX drum machine, Fender Twin reverb, (2) Tweed Fender Deluxe, blond Fender Pro. Rates: Studio A: \$100/hr., Studio B: \$75/hr., bulk rate available.



BOUTWELL RECORDING STUDIOS, INC.
Birmingham, AL

[24+] **BOUTWELL RECORDING STUDIOS, INC.**; also *REMOTE RECORDING*; 720 South 23rd St.; Birmingham, AL 35233; (205) 251-8889. Owner: Corporation. Studio Manager: Nancy Boutwell Cotton. Engineers: Mark Harnelson, Charles Harnack. Mixing Consoles: Sony MXP-3036 36 x 24 automated, Soundcraft 800 18 x 16, (2) Soundcraft 200 16 x 8. Audio Recorders: MCI JH-16/24 24-track, Otari MX-70 16-track, (2) Otari MX-5050 8-track, Otari MTR-10TC 2-track, (2) MCI JH-110 2-track, (2) Ampex ATR-700 2-track, Otari MX-55 2-track. Cassette Recorders/Duplicators: Telex 300 open-reel duplicator 1 x 5; various cassette decks by Yamaha, Technics, Sony, Aiva. Synchronization Systems: Cipher Digital Softouch for scoring and sweetening, Southworth Jam Box Echo, Reverb, & Delay Systems: Lexicon PCM60 w/REV3 conversion, Lexicon PCM70 w/REV3 conversion, Yamaha REV7, Yamaha SPX90, (2) Yamaha SPX90II, Lawson stereo plate, AKG BX-20, DellaLab Effectron digital delay, ART 1500, ADA 1500. Ross digital delay. Other Outboard Equipment: UREI limiter/compressor, dbx limiter/compressor, Ashly limiter/compressor, Valley Audio limiter/compressor, (2) Valley Audio auto gate. Microphones: Sony C-48, Neumann U87,

AKG 414EB, Sennheiser MD-421, Sennheiser MD-441, E-V RE20, E-V RE15, C-452, MC-740, M420, M201, PZM, SM81. Monitor Amplifiers: Crown, Yamaha, Peavey, Symetrix. Monitor Speakers: (2) JBL 4333, (4) Yamaha NS-10, (4) JBL 4311, (10) Auratone. Musical Instruments: Kurzweil 250 w/Macintosh sequencing, Yamaha DX7, Akai AX-60, Prophet-5, Yamaha RX11 drum machine, Oberheim drum machine, Yamaha grand piano, Simmons drums, Pearl drum set, Fender bass guitar, Fender and Peavey assorted amplifiers, Hammond organ, roto toms. Other MIDI Equipment: (2) Akai S900 sampler, Akai S612 sampler, Southworth Jam Box/4+ Video Equipment: JVC CR850U, Sony 2860, Sony video monitors. Other: Sony ADS 3000 automation package w/hard and floppy disk storage. Rates: On request. Specialization & Credits: The Boutwell Studio complex is comprised of four complete recording suites. The music studio is equipped with an MCI 24-track recorder and Sony MXP-3000 mixing console with SMPTE-based disk automation. Two recording rooms provide ample space. Instruments for use include piano, drums and a Macintosh-based MIDI sequencing system including digital and sampling synthesizers. Day rates and block bookings are available. Studios A and B are designed as production rooms and are equipped with Otari 8-tracks and 16-input Soundcraft consoles. Studio C is a fully equipped SMPTE-based audio post-production room providing lock of ¼" video to 16- and 2-track audio utilizing the Cipher Digital Softouch controller/synchronizer. In business for over 25 years, Boutwell Recording Studios provides the area with quality services and personnel. We are a full-service studio specializing in advertising and jingle production, winning numerous Addy awards and the coveted Clio.

[24+] **THE CASTLE RECORDING STUDIO**; 1393 Old Hillsboro Rd.; Franklin, TN 37064; (615) 791-0810. Owner: Jozef Nuyens. Studio Manager: Jozef Nuyens.

[24+] **CENTURY III TELEPRODUCTIONS**; 5000 Eggleston Ave.; Orlando, FL 32804; (305) 297-1000. Owner: Ross Cibella. Studio Manager: Oliver Peters.

[24+] **CHESHIRE SOUND STUDIOS**; 2093 Faulkner Rd. NE; Atlanta, GA 30324; (404) 321-3886. Owner: T.G. Wright, Jr. Studio Manager: Wynette Smith.



COMMERCIAL MUSIC RECORDING COMPLEX
Memphis, TN

[24+] **COMMERCIAL MUSIC RECORDING COMPLEX**; Memphis State University; Dept. of Music, MSU; Memphis, TN 38152; (901) 678-2559. Owner: Memphis State University. Studio Manager: Larry Lipman. Engineers: Larry Lipman, Joe Dixon. advanced students in audio degree program. Dimensions: Studio A: 60 x 60 x 20. Studio B: 23 x 16 x 20, control room 20 x 16 x 12, electronic music lab 16 x 10 x 12. Mixing Consoles: MCI JH-636 36 x 24. Audio Recorders: Otari MTR-90II 24-track, Otari 5050 MkII-8 8-track, Otari MTR-12 CT 2-track with SMPTE center-track time-code option, MCI JH-110B 2-track, Sluder/Revov PR99, others. Echo, Reverb, & Delay Systems: Lexicon 224XL, Lexicon M97 Super Prime Time. Other Outboard Equipment: Aphex Type B Aural Exciter, H949 Harmonizer, dbx 160X, Valley People Dyna-Mite, Scamp, Yamaha SPX90. Microphones: Neumann U47, Neumann U87, Neumann KM84, AKG C-414, AKG C-452, Sennheiser MD-421, Shure SM81, Shure SM57, E-V RE20, E-V RE10, Crown PZM. Monitor Amplifiers: BGW, AB Systems. Monitor Speakers: UREI 813A, UREI 811A, Yamaha NS-10, JBL 4401, JBL 4412, Auratones. Musical Instruments: Steinway grand piano, Baldwin grand piano, Yamaha DX7, Roland JX-10, Roland MC-500, Roland MPU-101, PAD 8 Octapad, Roland TR-707, TR-727, Akai S900, Akai ME-300, Moog 3C, Apple Macintosh SE, full complement of studio, orchestral and percussion instrumentation available. Video Equipment: Complete 1" and ¾" Betacam video production/CMX post-production services available; funding has been requested to enable video production suite to be interfaced with recording studios. Rates: The CMUS Complex is operated primarily as an instructional facility and was developed to handle the needs of the university's Commercial Music degree programs

and Highwater record company. Although normally unavailable for commercial use, studio rental is authorized under special circumstances. Availability and rates upon request. Specialization & Credits: Memphis State offers the Bachelor of Music degree in Commercial Music with concentrations in Recording Technology, Music Business, Studio/Live Performance—Jazz, and Composition/Arranging—Jazz. A thorough understanding of fundamental concepts and techniques is stressed within each concentration. Equal emphasis is placed upon developing the student's ability to quickly adapt to new practices, technologies and creative directions. Our faculty has been carefully selected to ensure that students work with instructors who possess a broad knowledge of music industry practices and who are actively involved in today's commercial music industry. The Memphis arts community offers a dynamic, growing environment, providing students with diverse cultural opportunities and a rich assortment of internship possibilities. Scholarship funds are available for exceptional students and many states offer our students financial assistance through the Academic Common Market program. A commitment to personal attention and quality instruction requires that enrollment be limited and based on selective procedures.

[24+] **COTTON ROW RECORDING**; 1503 Madison Ave.; Memphis, TN 38104; (901) 276-8518; (901) 276-8520. Owner: Nikos Lyras, Ward Archer, Jr. Studio Manager: Melanie Hunolt.

[24+] **CRAWFORD POST PRODUCTION, INC.**; 535 Plasmour Dr.; Atlanta, GA 30324; (404) 876-7149. Owner: Jesse Crawford. Studio Manager: Steve Davis. Engineers: Steve Davis, Tom Race, Kathy Gray, Carl Maduri, Greg Crawford, Reid Hall. Dimensions: Room 1: studio 32 x 25 x 14, control room 34 x 27. Room 2: studio 6 x 8, control room 12 x 12. Room 3: studio 9 x 13, control room 21 x 23. Room 4: (Synclavier) studio 8 x 10, control room 10 x 20. Mixing Consoles: Studio 1: Neve 8128 40 x 32 w/Necam 96 automation. Studio 2: Trident Series 70 24 x 16. Studio 3: Sony/MCI JH-600 36 x 24 w/VCA automation. Audio Recorders: Studio 1: (2) Studer A80 MkIV 24-track, Ampex ATR-102 ¼", Otari MTR-12 center track ¼", Ampex ATR-104 4-track ¼", Sluder A80 2-track ½", Studio 2: Otari MTR-90 II 24-track, Otari MTR-12 center track ¼", Ampex ATR-102 2-track, ATR-101 full-track; Studio 3: Otari MTR-90II 24-track, Otari MTR-12 center track ¼", Ampex ATR-102 2-track ¼", ATR-101 full-track ¼". Cassette Recorders/Duplicators: Studio 1: Tascam. Studio 2: Nakamichi MR-1. Studio 3: Nakamichi MR-1. Noise Reduction Equipment: Studios 1, 2 and 3: dbx Type I. Synchronization Systems: Adams-Smith 2600 Series, (5) synchronizer, code reader, code generator, character inserter, controlled by Alpha automation Boss computerized audio editor (Same rig all three studios.) Echo, Reverb, & Delay Systems: Studio 1: (2) Lexicon 224X, AMS RMX-16, (2) Lexicon 200, (2) Lexicon PCM70 reverb, (2) Lexicon PCM42, Lexicon Super Prime Time DDL, Eventide Harmonizer, Yamaha SPX90, PCM60 reverb. Studio 2: Lexicon 200 reverb, Yamaha SPX90. Studio 3: Lexicon PCM70 reverb, Lexicon PCM42 DDL, PCM60 reverb. Other Outboard Equipment: dbx, Neve, Aphex, ADR, Audioarts, UREI, Ursa Major, Klark-Teknik, Teltronix, Valley People. Microphones: Neumann, AKG, Sennheiser, Beyer, Milab, Crown, Shure, Schoeps, Fostex, E-V, Sony. Monitor Amplifiers: Crest, Crown, Haller, AB Systems, BGW. Monitor Speakers: Custom Design, Yamaha NS-10M, Auratone, MDM-4. Musical Instruments: Yamaha C7, LinnDrum, Tama drums, Simmons Drums, Prophet T-8, Rhodes, Marshall amp. Synclavier. (32) polyphonic sampling voices, (8) stereo digital FM synthesis voices, 20 megabytes RAM, 160-megabyte hard disk, 100kHz stereo sample to disk. Other MIDI Equipment: Synclavier MIDI interface. Video Equipment: Studio 1: Sony BVU-800 ¾"; Studio 2: Sony BVU-800 ¾"; Studio 3: Sony BVU-800 ¾". On-patch Ampex VPR-2B 1" C format video. Other: (4) 1" online video edit suites w/ADO, Quantel production studio (Harry, Encore, Paint Box, Mirage), (2) Abekas A-62, Abekas 53-D and A-42, Vidifont, Chyron, computer-generated graphics, Ampex AVA I and AVA III paint box, Bosch FGS-4000, Dubner CBGII, Wavefront 3-D modeling software, Mechanical Concepts motion control system, Sony DVR-1000.

[24+] **CRITERIA RECORDING CO.**; 1755 NE 149th St.; Miami, FL 33181; (305) 947-5611. Owner: Mack Emerman. Studio Manager: Margie Curry. Dimensions: Room A: studio 46 x 67, control room 14 x 17. Room C: studio 25 x 32, control room 15 x 16. Room D: studio 14 x 22, control room 17 x 19. Room E: studio 50 x 50, control room 23 x 26. Mixing Consoles: (2) Solid State Logic 6000E 48 x 32, MCI 532C 32 x 32, (2) MCI 532B 32 x 32, MCI 556D 48 x 32. Audio Recorders: Mitsubishi X-800 32-track, (2) Otari MTR-90 24-track, (2) MCI JH-24 24-track, (2) Mitsubishi X-80 2-track, (2) MCI JH-110B 4-track, (3) MCI JH-110B 2-track. Cassette Recorders/Duplicators: (5) Yamaha K-1020, (5) Yamaha K-540. Noise Reduction Equipment: dbx 900 rack 8 units, (5) Dolby 24 units. Synchronization Systems: Audio Kinetics Q.Lock 3.10, MCI JH-45, Adams-Smith Zeta-3. Echo, Reverb, & Delay Systems: (3) live stereo chamber, (4) Ecoplate, EMT 251, Lexicon 224XL, AMS RMX, AMS DMX 15-80S, (2) Yamaha REV7, (2) Lexicon PCM41, (6) Lexicon PCM42. Other Outboard Equipment: Focusrite EQ modules, Lexicon 480L, Eventide 2016, (4) Drawmer gate system, (2) Yamaha SPX90, (2) Lexicon PCM70, Kexel II, (8) Pultec EQ, (3) UREI LA-2A tube limiter. Microphones: AKG C-24 tube stereo, (4) Neumann U47 tube, (2) Neumann U47 FET, (8) AKG 414, (6) AKG 452EB, (5)

FROM ONE MASTER TO ANOTHER.

The news is out. And it's good news for Nashville! Georgetown Masters, the company known for offering its clients state-of-the-art equipment, has just purchased two PCM-3348 48-track digital recorders from the company known for developing state-of-the-art equipment—Sony.

Georgetown Masters, Inc.
33 Music Square West, Suite 108-B
Nashville, TN 37203
Denny Purcell (615) 254-3233

Sony Professional Audio
2603 Elm Hill Pike, Suite N
Nashville, TN 37214
Mike Porter (615) 883-8140

SONY®

Professional Audio

24+ TRACK

STUDIOS



criteria recording studios

CRITERIA RECORDING CO.
Miami, FL

Beyer 260, (12) Schoeps Collette Series, various capsules, (4) Sennheiser MD-421, (2) Schoeps CMT-501 stereo, (10) Neumann U87, (8) Shure SM57, (2) Shure SM7 Monitor Amplifiers: (7) McIntosh amp, (2) UREI 6500, (2) APT-1 amp Monitor Speakers: (2) Criteria custom tri-amped system, (3) Criteria/ED Long custom monitor, (3) Yamaha NS-10, ADS 810 Musical Instruments: Set of Rogers drums, (2) Baldwin SD10X 9' concert grand piano, Mason Hamlin 9' piano, (2) Fender Rhodes, (2) Hammond B-3 organ Video Equipment: JVC CR8200 3/4" VCR Other: (4) Magna-Tech 35/16 dual dubber, Magna-Tech 3-track recorder, (2) film projector (35/16mm) Rates: By request

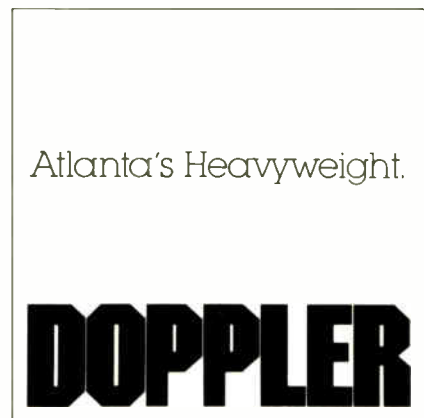


CUE RECORDING STUDIOS, LTD.
Falls Church, VA

[24+] CUE RECORDING STUDIOS, LTD.; 109 Park Ave., Ste. E; Falls Church, VA 22046; (703) 532-9033. Owner: Willard R. Jeffrey III, James Ebert. Studio Manager: Willard R. Jeffrey III. Engineers: James Ebert, Willard Jeffrey III, Joe Gelchion, Scott Causey, Jimmy Dugan. Dimensions: Room 1: studio 32 x 25, control room 25 x 21. Room 2: studio 14 x 11, control room 14 x 13. Room 3: studio 8 x 5, control room 9 x 8. Mixing Consoles: Trident TSM 40 x 32 disk-automated, MCI JH-636 36 x 24 automated console, Allen and Heath CMC 24 x 24 Audio Recorders: Studer A800 MkIII 24-track, MCI JH-24 24-track, Studer A810 2-track, Otari MTR-10 2-track. Cassette Recorders/Duplicators: (2) Nakamichi MR-1, Tascam 122, Technics M-85 Noise Reduction Equipment: dbx 180 2-channel Echo, Reverb, & Delay Systems: (2) Lexicon PCM-70, Lexicon 200, (2) Yamaha REV7, ART digital reverb, EMT 140ST stereo tube plate reverb, (3) DeltaLab Effectron. Other Outboard Equipment: Eventide Ultra-Harmonizer, Aphex Type C Aural Exciter, Roland stereo chorus, (2) UREI LA-4 compressor/limiter, (2) UREI 1176N compressor/limiter, (2) dbx 160 compressor/limiter, (11) Kexep noise gate/expander, BBE aural exciter, Systech stereo phase shifter, (2) UREI 1/2-octave equalizer. Microphones: (2) Neumann U87, Neumann U67 Tube, (2) AKG 414, (4) Electro-Voice RE20, (4) Sennheiser

MD-421, (2) AKG 451, Sennheiser 441, (6) Shure SM57, Beyer M88, Crown PZM Monitor Amplifiers: Crown PSA-2, Briston, Crown D-150. Monitor Speakers: (2) S.O.T.A. CF-750, (2) UREI 813, (2) Westlake BBSM-6, (2) Yamaha NS-10M, (2) JBL 4401, (2) JBL 4413. Musical Instruments: E-mu Emulator II, LinnDrum 9000, E-mu Emulator SP-12, LinnDrum LM-2, Yamaha DX7iIFD, Yamaha DX7, Roland D-20, Roland S-550, KX-88 controller, Roland 707, Roland 727, Roland 909, Ludwig 6-piece studio-tuned kit, Sojin 6' grand piano, Yamaha CP80 electric grand piano. Other MIDI Equipment: Roland Octapad Trigger, Mac Plus w/Performer software, Yamaha MIDI patch bay. Rates: Available upon request.

[24+] DIGITAL A.D.R. & CINE POST, INC.; 502 N. Hudson Ave.; Orlando, FL 32811; (407) 293-3390. Owner: Robert M. Storer. Studio Manager: Chris Coan. Engineers: Chris Coan, Leo Procopio. Dimensions: Room 1: studio 55 x 29, control room 12 x 17. Room 2: studio 12 x 12. Mixing Consoles: Tascam M-520, Tascam M-512 linked to provide 32 x 24 Audio Recorders: NED direct-to-disk 200-track, Otari M-5050 8-track, Sony 854-4 4-track, Tascam 2-track. Cassette Recorders/Duplicators: Tascam 122 Noise Reduction Equipment: dbx 160 Synchronization Systems: Synclavier 32 Poly sampling voices w/SMPTe option, Echo, Reverb, & Delay Systems: Yamaha SPX90, PCM41, Biamp reverb. Other Outboard Equipment: Rockman rack-mount, Ashly EQ, Klark-Teknik Microphones: (2) Neumann U89, E-V RE20, E-V 664, (7) Shure SM57, (5) Beyer M201 NC, (2) Sennheiser ME20, (2) Sennheiser ME88, (2) Milab Monitor Amplifiers: (4) Soundcraftsmen, Crown 1200, (3) Sunn SA10, (2) Ashly Monitor Speakers: (2) Fostex LS3B, (6) Fostex RP1001. (2) Tannoy LGM12B, Intersonic TPL-3. Musical Instruments: Synclavier w/direct-to-disk system, Kurzweil 150, Korg DSS-1, Korg 6000. E-mu Emulator drum machine. Other MIDI Equipment: Synclavier with MIDI options. Video Equipment: JVC 1/2" and 3/4" editing with SMPTe time code, Super Mac II with VideoWorks. Other: Century interlock projectors 35/70mm, 35mm magnetic 6/3-track recorders and reproducers, (3) 35mm Film Edit Suite computer, location screening room for interlocking 35mm dailies, 35mm optical printing and Rotoscope/Tilting stands. Rates: Multiple—call for direct quotes. Specialization & Credits: Digital ADR & Cine Post, Inc. specializes in film post-production with Synclavier SMPTe synchronization to projected film picture on a 12 x 24 screen in 35mm and 70mm formats. Digital ADR features multi-track surround sound mixing of film and video tracks with a maximum of 200 mixable tracks digitally computer-controlled by an NED Synclavier. Cine Post provides complete ADR and Foley services plus 35mm and 70mm production and post-production services, including location interlock-screening in mobile units.



DOPPLER STUDIOS, INC.
Atlanta, GA

[24+] DOPPLER STUDIOS, INC.; 1922 Piedmont Circle; Atlanta, GA 30324; (404) 873-6941. Owner: Pete Caldwell. Studio Manager: Bill Quinn. Engineers: Joe Neil Curt Bush, Granger Beem, Mich Eaton, Steve Schwartzberg, Wayne Murray, Tommy Smeltzer, Fred Foonman. Dimensions: Room 1: studio 35 x 50, control room 26 x 28. Room 2: studio 35 x 50, control room 26 x 28. Room 3: studio 25 x 35, control room 15 x 17. Room 4: studio 15 x 20, control room 10 x 15. Room 5: studio 12 x 5, control room 15 x 13. Mixing Consoles: SSL 4000E 34 x 24, Sphere Eclipse C 40 x 24, Sphere A 28 x 24, Auditrans 110-A 20 x 4, custom 8 x 8. Audio Recorders: (2) Otari MTR-90II 24-track, Otari MTR-90 24-track, 3M M-79 24-track, Otari MTR-10 4-track, (2) Ampex ATR-102 2-track, (9) Otari MTR-10 2-track. Cassette Recorders/Duplicators: Nakamichi MR-1, (11) Nakamichi MR-2 Noise Reduction Equipment: dbx Synchronization Systems: (2) Softouch Systems Echo, Reverb, & Delay Systems: Eventide H3000, TC Electronic 2290, (2) Lexicon 224XL, Lexicon PCM70, Eventide 969 Harmonizer, Lexicon Prime Time II, (5) Yamaha SPX-90II, (2) EMT plate, Marshall Time Modulator, Eventide 1745M. Other Outboard Equipment: (7) dbx 165X limiter/compressor, ADR Vocal Stresser, Aphex Compellor, (2) Allison Kexep II, (2) Allison Gain Brain II, (4) dbx 160 compressor, Orban parametric equalizer, Orban de-esser, UREI 1176LN compressor

Microphones: (8) Neumann U87, (2) Neumann U67, (2) Neumann KM84, (2) Neumann KM85, Neumann U64, (2) Studer SKM5, (4) AKG 414EB, (2) AKG C-452, (4) Sennheiser 441, (8) Sennheiser 421, (2) AKG 414ULS Monitor Amplifiers: (2) UREI 6500, (8) Halfer P500 Monitor Speakers: (6) UREI 813B, (8) EAW MS-30, (2) Yamaha NS-10, (4) JBL 4311, (4) AR-18, (12) Auratone Musical Instruments: Steinway B grand piano, Baldwin baby grand piano, Ludwig drums, Hammond B-3 organ, (3) Fender amp. Video Equipment: Sony BVH-1000A 1" Type C w/TBC, (3) Sony VO-5850 3/4" U-matic, Sony VO-5800 3/4" U-matic. Other: (2) Plycord active cue system. Rates: Upon request.

[24+] EBS, INC.; 1125 Moore Duncan Hwy., PO Box 66; Moore, SC 29369; (803) 574-6104. Owner: Duane Evans, Joseph Evans. Studio Manager: Lyndon Vestal. Engineers: Duane Evans, Denver Wright, Babe Williamson, David Rochester. Dimensions: Studio 50 x 60, control room 24 x 20. Mixing Consoles: MCI JH-600 28 x 24. Audio Recorders: MCI JH-24 24-track, MCI JH-110B 2-track, Ampex 2-track, TEAC 3340 4-track, Recordex CS-4000, GT-4A duplicator w/5 bays, 8.1. MCI JH-110A Cassette Recorders/Duplicators: Nakamichi MR-1, (2) TEAC cassette, (2) Nikko D100-III, Echo, Reverb, & Delay Systems: Yamaha REV-1, Yamaha REV7, Lexicon PCM60, plate, Eventide H949, Electra EP-500, DDL, Master-Room stereo reverb, MXR digital time delay, Lexicon PCM41, Roland SDE-1000 DDL. Other Outboard Equipment: dbx 165, dbx 160, Teletronix LA-3A, UREI 1176, Audioarts stereo parametric EQ, Aphex Type C Aural Exciter, Furman QN-4, Soundcraftsmen SP-4002 signal processor. Microphones: Neumann U47, AKG 414, E-V RE20, AKG D-202, Sennheiser MD-421, Neumann KM84, Shure SM57, Shure SM58, Shure SM53, E-V PL77. Monitor Amplifiers: (3) Crown DC-300A, (2) Crown D-60 Monitor Speakers: UREI 839A, JBL 4331, JBL 4311, JBL 4301, Auratone cubes, Yamaha NS-10M Musical Instruments: Vintage Mason and Hamlin grand, Hammond B-3000, Leslie 722, Polymoog, Micromoo, Yamaha DX7, Tama Techstar electronic drums, Fender Strat, Gibson Les Paul, Fender Precision, congas, assorted rhythm instruments, Korg MR-1, Emax, Mirage sampler, Yamaha DX7iID Video Equipment: Available at extra charge. Rates: \$80/hr., call for day and blackout rates.

[24+] ELEVEN-ELEVEN SOUND; 1111 17th Ave. S.; Nashville, TN 37212; (615) 329-1111. Owner: DiLeo Music Group. Studio Manager: John Abbott. Engineers: John Abbott, Rodney Good, independents. Dimensions: Studio 34 x 36, control room 12 x 14. Mixing Consoles: Neve V Series III 48 x 48. Audio Recorders: Mitsubishi 850 32-track digital, Studer A80 24-track, Mitsubishi X-80A 2-track digital, Studer A80 2-track, Studer B67 2-track, Studer A67 2-track. Echo, Reverb, & Delay Systems: Lexicon 224XL w/LARC, Lexicon 224, EMT 140, EMT 162. Other Outboard Equipment: GML mowing fader automation, Lexicon Prime Time, TC Electronic 2290, Valley People 440 limiter/compressor, Harmonizer Microphones: Neumann 249 tube, 67 tube, 47 FET, 87, KM84, AKG 462, 414, Sennheiser 421, E-V, Sony Monitor Amplifiers: McIntosh 2500, BGW 600, BGW 250, Crown 150 and 60, Sony Monitor Speakers: Sierra Audio w/oak dispersion horns, Yamaha NS-10M. Musical Instruments: Steinway 9' grand w/Forte Music MIDI, Yamaha DX7, Rhodes piano, Wuritzer piano, Hammond B-3, congas. Rates: Available upon request.

[24+] FLOOD ZONE STUDIO; PO Box 7105; Richmond, VA 23221; (804) 644-0935. Owner: M. Wyatt, B. Olsen, S. Payne. Studio Manager: Steve Payne.

[24+] GHL AUDIO ENGINEERING; also REMOTE RECORDING; 2807 Azalea Pl.; Nashville, TN 37204; (615) 269-5183. Owner: Gary Hedden Ltd. Studio Manager: Jim Kaiser.



HAYES RECORDING STUDIOS
Tampa, FL

[24+] HAYES RECORDING STUDIOS; 2406 S. MacDill Ave.; Tampa, FL 33629; (813) 837-6384. Owner: Tech-Coh Communications Corp. Studio Manager: John Uhrig. Engineers:

John Uhrig, independents welcome. Dimensions: Studio 20 x 24 x 12, isolation rooms 8 x 9 and 8 x 10, control room 20 x 15 x 9. Mixing Consoles: Sphere A 32 x 16 custom. Audio Recorders: Ampex MM-1200 24-track, Studer A80RC 2-track 1/2" and 1/4". (2) Ampex 440-B 2-track, Ampex 440-B full-track, Scully 280-B 2-track. Cassette Recorders/Duplicators: Studer A710 Noise Reduction Equipment: dbx 24-channel. Synchronization Systems: Audio Kinetics 3 10 controller and 4 10 brain (SMPT-E), Echo, Reverb, & Delay Systems: Lexicon Model 200, BAE LP 140 plate, DeltaLab DL-2, Eventide H910, MXR II delay system, DeltaLab ADM 2048 Super Time Line. Other Outboard Equipment: (2) dbx 160 compressor, (2) Audioarts 4200 parametric, Orban 516EC de-esser, ADR Vocal Stresser, EXR 3 exciter, UREI 539 room EQs, (8) USAudio GateX, Symetrix SG200 noise gates, UREI 960 digital metro-nome, Technics SP-25 turntables, Countryman direct boxes, Symetrix TL-101 telephone interface, Spectra Sonics 601 limiters, (2) Yamaha SPX90, (2) UREI LA-4. Microphones: Neumann U87, Neumann U48A (tube), AKG 414-P48, AKG 452EB, AKG 451 E, AKG D-202, Beyer M160N, E-V RE20, E-V RE16, E-V 666, Shure SM54, Shure SM58, Sennheiser MD-421, RCA 77-DX, RCA 44-DX, Sony C-37 (tube), Countryman 85, Wahrenbrock PZM, Monitor Amplifiers: Crest P3500, Crest 2501S, McIntosh 2105 (phones), Monitor Speakers: E-V Sentry III, E-V MDM-4, Auratone 5C, E-V Sentry 1A. Musical Instruments: Marshall and Wendall grand pianos, Hammond organ w/Leslie, Deagan electric chimes, Ludwig drums w/Zildjian cymbals, Scholz Rockman X-100B, Fender Twin guitar amps, various percussion, Emulator II+, Oberheim OB-8, RX11 drums. Other MIDI Equipment: Macintosh Plus 1MB computer w/Mark of the Unicorn, Southworth, Opcode and Digidesign hardware/software. All keyboards, sounds, sequencers available upon request. Rates: Available upon request. Flexible packages available.

[24+] **JAY HOWARD PRODUCTION AUDIO, INC.**; 307 Atherton St.; Charlotte, NC 28203; (704) 525-7864. Owner: Jay Howard. Studio Manager: JoAnn Jeffries.



KIVA RECORDING STUDIO
Memphis, TN

[24+] **KIVA RECORDING STUDIO**; 904 Rayner St., Memphis, TN 38114; (901) 278-1888. Owner: Gary Belz. Studio Manager: Evan Rush. Engineers: Evan Rush, Doug Nightwine, Eric Phillips, Pat Taylor. Dimensions: Room 1: studio 30 x 45, control room 27 x 19. Room 2: studio 11.5 x 18, control room 18 x 22. Mixing Consoles: SSL 4000E 40 x 32 w/G Series computer, Harrison MR-3 28 x 24. Audio Recorders: Mitsubishi X-800 32-track digital, Studer A80 MK 24-track analog, Mitsubishi X-86 2-track digital, Studer A80 2-track analog. Cassette Recorders/Duplicators: (2) Yamaha C300, (2) Nakamichi BX300 Noise Reduction Equipment: Dolby Type A 24 channels. Synchronization Systems: Adams-Smith Zeta-3 Echo, Reverb, & Delay Systems: Lexicon 480L w/LARC, Lexicon 224 w/LARC, Lexicon PCM70 w/Vers 3, AMS RMX-16, DMX 15-80S, (3) Yamaha REV5, (2) Yamaha REV7. Other Outboard Equipment: (2) Drawmer DS201, Fairchild G70, (6) Kepex II, (2) Teletronix LA-2A, (2) UREI 1176LN, (2) dbx 160, (2) dbx 165A, Lang PEQ 2 tube EQ, Eventide H949 Harmonizer, (2) Yamaha SPX90 Microphones: Neumann U47, (2) Neumann TLM-170 matched, (2) Neumann U87, Neumann KM84, (3) AKG 414EB, (3) AKG 414ULS, (10) Shure SM57, (4) Sennheiser MD-421, (2) AKG D-112E, Electro-Voice RE20, (4) AKG 460. Monitor Amplifiers: (8) Yamaha P2250, (6) Yamaha PD2500, QSC 3800 Series 3. Monitor Speakers: JBL 4435, Tannoy FSM, Yamaha NS-10M, Auratone, Tannoy SGM-10B Musical Instruments: Baldwin 7' grand piano, Hammond B-3 organ w/Leslie, Farfisa organ, Yamaha DX7IIFD, Roland D-550, Akai MPC-60, Roland Juno-106, Roland D-50, Roland S-50, PPG w/Wave Term, Roland Super JX-10, (2) Akai S900, Yamaha TX16W sampler. Other MIDI Equipment: Korg KMP-68 MIDI patch bay, Akai ME-30 PII MIDI patch bay, Roland MC-800 sequencer, Roland PG-1000 programmer. Other: (2) Akai MG1214 recorders, Roland M160 line mixer. Rates: Available upon request. Specialization & Credits: Directions: Albert King, Rock City Angels, Joe Walsh, Jim Jamison, Latoya Jackson, Barkays, Carl Perkins, War, Dennis Quaid,

Jerry Lee Lewis, Ronnie McDowell, Memphis Horns, Bobby Whitlock, Kevin Paige

[24+] **LAMON SOUND STUDIOS**; also **REMOTE RECORDING**; 6870-A Newell Hickory Grove Rd.; Charlotte, NC 28215; (704) 535-7263. Owner: Moody Music Group, Inc., BBM Enterprises. Studio Manager: Trent Moody. Engineers: Bill Connor, David Moody, Trent Moody, John Ledford, Greg Auch, Carlton Moody. Dimensions: Room 1: studio 20 x 30, control room 20 x 20. Room 2: studio 15 x 20, control room 15 x 25. Mixing Consoles: Soundcraft TS-12 28 x 24, MCI JH-424 24 x 24 w/light meters. Audio Recorders: Sony/MCI JH-24 24-track w/Autolocator III, MCI JH-16 16-track w/Autolocator II, (2) Sony PCM-501 2-track digital "F1", Ampex 440 2-track. Cassette Recorders/Duplicators: (10) Nakamichi MR-2 real-time duplicator, Wollensak 2770 high-speed duplicator. Synchronization Systems: Synchance MTS ONE, SMPTE time code Echo, Reverb, & Delay Systems: Lexicon 200 digital reverb, Lexicon PCM60 digital reverb, Lexicon Prime Time II digital delay, Yamaha REV5 digital reverb/effects, Yamaha SPX90 digital reverb/effects, Eventide H910 Harmonizer with keyboard, AKG BX-100 spring stereo reverb. Other Outboard Equipment: dbx 900 rack system w/902, 903, 904 gates, comp/limiter, de-esser, Aphex Type C Aural Exciter, (3) UREI 1176 compressor/limiter, Orban 622B parametric EQ, Symetrix 525 gate/comp/limiter, Alesis XT digital reverb, Biamp 270A graphic EQ, Korg SDD-3000 digital delay, Rockman distortion generator and stereo chorus, Technics SL-1200 turntable. Microphones: Neumann U89i, (2) AKG 414, (2) AKG 451, (3) Electro-Voice RE20, (4) Electro-Voice RE15, (2) Shure SM81, (9) Shure SM57, (2) Beyer M60, Beyer M260, (2) Audio-Technica AT-11, AKG D-112. Monitor Amplifiers: Yamaha 2001, QSC 1400, (2) Symetrix HA-10. Monitor Speakers: (2) Electro-Voice Sentry Five, JBL 4425, (2) JBL 4401, Yamaha NS-10M, Auratone 5C. Musical Instruments: Yamaha 6' conservatory grand piano, E-mu Emulator III, (2) Wendell jr. drum replacement system, (2) Akai S900 digital sampler, Korg SG 1D sample grand, (2) Yamaha DX7, Roland D-50, Yamaha RX11 drum machine, Oberheim DXM drum machine, Slingerland drums and percussion, Martin D-35 acoustic guitar, Fender Precision bass, Gibson Les Paul electric guitar. Other MIDI Equipment: KMT 60 thru-box, Atari 1040ST computer, Steinberg Pro-24 software. Rates: Block specials available. Please call for information.

[24+] **LIMELITE VIDEO, INC.**; 7355 NW 41 St.; Miami, FL 33166; (305) 593-6911; (800) 634-5024. Owner: Frank Tolin. Engineers: Richard Achor, Mike Hoffmann. Mixing Consoles: Neve V36 36 x 36 w/Necam 96. Audio Recorders: Mitsubishi X-850 32-track, Otari MTR-90H 24-track, Otari MTR-20 2/4-track, Nagra TC 2-track. Cassette Recorders/Duplicators: (2) Nakamichi MR-1 Noise Reduction Equipment: Dolby SR 28 channels. Synchronization Systems: Boss/2 Echo, Reverb, & Delay Systems: Lexicon 224XL, Lexicon 480L, AMS RMX-16, Quantec room simulator, (2) Lexicon PCM42, (2) Lexicon PCM70, (2) Yamaha SPX90II, AMS 15-80S. Other Outboard Equipment: (2) Drawmer gate, Aphex Compellor, (2) dbx 165, Symetrix phone patch, Lexicon 2400 time compressor/expander. Microphones: (4) AKG 414P-48, (4) Neumann TLM-170, (2) Neumann U87A/2, (2) Neumann U47 FET, (2) Neumann KMR82, (2) Neumann KMR81, (4) Neumann KM84, (4) Sennheiser MD-421, (6) Sennheiser MKE-23, Calrec soundfield stereo mic, Neumann SM69 stereo mic. Monitor Amplifiers: Perreaux, JBL, Crown. Monitor Speakers: Ed Long MDM-TA3, Yamaha NS-10, Auratone cubes, Ed Long custom monitors. Musical Instruments: Fairlight CMI III, Yamaha 7' grand piano, Yamaha DX7. Video Equipment: Sony BVH-2800 1" w/two PCM audio channels, Sony U-matic 3/4", Sony video monitors.

[24+] **MARK FIVE - SANDCASTLE**; also **REMOTE RECORDING**; 10 Michael Dr., PO Box 7620, Greenville, SC 29610; (803) 269-1111. Owner: Rick Sandidge. Eddie Howard, Chris Cassels. Studio Manager: Rick Sandidge.

[24+] **MASTER SOUND RECORDING STUDIO**; also **REMOTE RECORDING**; 5249 Challedon Dr.; Virginia Beach, VA 23462; (804) 499-0000, (804) 496-0553. Owner: Robert E. Ullsh. Studio Manager: Robert E. Ullsh. Engineers: Robert Ullsh, Bruce Buehlman, Brent Havens, Grant Rutledge. Dimensions: Room 1: studio 45 x 35 w/two isolation booths (10 x 12 and 10 x 8), control room 22 x 20. Room 2: studio 45 x 35, control room 18 x 12, MIDI room. Mixing Consoles: Amek G2520 40 x 24 x 80 returns with VCA bypass mode and MasterMix automation, Ramsa WRT 820 20 x 16 16-track MIDI program console. Audio Recorders: Sony/MCI JH-24 24-track with Autolocator III, Otari MTR-12H 1/2-track 30 ips 1/2", (2) Tascam 52 1/2-track, Tascam 58 8-track recorder, Sony APR-5003 1/2-track 30 ips, Tascam MS-16 16-track. Cassette Recorders/Duplicators: (2) Tascam Z-7000 cassette recorder. Noise Reduction Equipment: (2) dbx 180A 1/2-track unit. Synchronization Systems: Sony JH-45 SMPTE time code lockup, Southworth Jam Box/4 SMPTE to MIDI, Sony JH-48 video SMPTE lockup w/24-track. Echo, Reverb, & Delay Systems: (2) Lexicon 200 stereo digital reverb, (2) Yamaha SPX90 stereo digital effects processor, Yamaha REV7 stereo digital reverb, Ibanez SDR-1000 stereo digital reverb, Eventide 969 Harmonizer/delay, Lexicon PCM41 digital delay, Lexicon PCM42 digital delay, Lexicon PCM70, (2) DigiTech 128, Korg DRV-3000 digital reverb, ART MultiVerb, Alesis QuadraVerb. Other Outboard Equipment: (2) Drawmer DS-201 noise gate, Orban 424A stereo compressor/limiter, LT Sound CLX-2 ster-

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24+ TRACK

STUDIOS

eo compressor/limiter/exp, Universal Audio 175 tube limiter, Aphex Aural Exciter, Valley People 4-channel noise gate, (2) dbx 160X compressor/limiter, dbx 166 stereo compressor/limiter, Amek 4-band fully parametric EQ, (2) Rane 1/2-octave stereo EQ, BSS 402 stereo compressor/limiter/de-esser, 4-channel noise gate, Aphex 2-channel gate/limiter, Valley People Dyna-Mite Microphones; (2) Neumann TLM-170, (6) AKG 414P-48, AKG TLM-414ULS, (8) AKG C-451-460, AKG "The Tube," AKG D-12E, Neumann U89, AKG D-112, (6) Sennheiser 421, (2) Sennheiser 441, (2) Neumann U47, (17) add'l assorted dynamic microphones. Monitor Amplifiers: Acoustat Trans Nova Twin 200 MOSFET, Kenwood Basic M-2 440 watts, JBL UREI 6290 1,200-watt power amp. Monitor Speakers: (2) JBL/UREI 4435, (2) JBL 4411, (2) Yamaha NS-10, (2) Auratone, (2) Toa, (2) Tannoy PBM-6.5 (2) JBL 4408. Musical Instruments: Yamaha C7 7'6" concert grand piano, Ludwig 7-pc acoustic drum set, Emulator SP-12 drum machine, Emulator II digital sampling keyboard with extensive library, Emulator Emax digital sampling keyboard, Fender Rhodes keyboard, Yamaha DX7, Yamaha FB01, Oberheim Matrix-6, Ensoniq ESQ, 360 Systems Midi Bass, (4) acoustic guitars (6- and 12-string), (5) electric Fender and Hamer guitars and basses, (3) Mesa/Boogie, Laney and Yamaha amplifiers, Martin D-35 Anniversary acoustic guitar, Korg M-1 keyboard, Yamaha 9-piece custom rec. drum set, (2) Alesis HR-16. Other MIDI Equipment: Apple Mac SE with 20-meg hard drive, Southworth Jam Box/3 SMPTE to MIDI controller, (3) Southworth MidiPaint, Performer, Digidesign Sound Designer, Apple IIe w/Syntech sequencing program. Video Equipment: Sony BVU-800 3/4" video recorder, Sony 19" color monitor, Sony JH-45 SMPTE video to 24-track controller. Rates: 24-track \$85/hr., 16-track \$70/hr., video sweetening \$125/hr.



MASTERFONICS
Nashville, TN

[24+] **MASTERFONICS**; 28 Music Square E.; Nashville, TN 37203; (615) 327-4533. Owner: Glenn Meadows Studio Manager; Margaret Meadows Engineers; Chief engineer: Milan Bogdan. Dimensions: Control room 38 x 35. Mixing Consoles: SSL 4000E 48 x 32. Audio Recorders: Otari DTR-900 32-track, Studer B67 2-track, JVC DP900 2-track. Cassette Recorders/Duplicators: TEAC 122 MkII Echo, Reverb, & Delay Systems: (2) Lexicon 224XL, Lexicon 480L, EMT 250, EMT 252. Quantec room simulator, TC Electronic 2290. Other Outboard Equipment: ADR Vocal Stresser V-796XR, Aphex Compellor, (2) dbx 160X, Lexicon PCM70, Valley PR-10 rack w/(2) DSP, (2) Gain Brain II, (6) Kepex, Yamaha SPX90, Neve 32254E compressor/limiter, Publison Infernal IM-90, Sontec DRC-202, Sontec parametric EQ. Microphones: M49, (2) Telefunken 251, AKG 441P-48. Monitor Amplifiers: (2) FM Acoustics FM-1000, FM Acoustics FM-800A. Monitor Speakers: (2) Kineshita/Hidley 2V 20Hz monitor, (4) Yamaha NS-10M, (2) Genelec 530 Triamp, (2) Auratone 5C, (2) Fostex RMS780. Other: Full-service mastering facility. All digital formats can be accommodated. Rates: Upon request.

[24+] **MASTERLINK STUDIOS**; 114 17th Ave., S.; Nashville, TN 37203; (615) 244-5656. See our ad in the BusinessPages! Owner: Albert Jolson Studio Manager; Albert Jolson Engineers; Glenn Rieul, Mark Capps. Dimensions: Studio 38 x 32, control room 15 x 17. Mixing Consoles: Sphere 32 x 32, Tascam 20 x 16. Audio Recorders: Ampex 24-track, Studer 2-track, (2) Scully 2-track, Tascam 16-track, Otari 8-track. Cassette Recorders/Duplicators: (66) KABA real-time duplicator, (5) Otari high-speed, (3) Sony cassette. Noise Reduc-

tion Equipment: (2) Dolby A, (2) Dolby SR, dbx Echo, Reverb, & Delay Systems: Lexicon 20 reverb, (2) Lexicon PCM70, Yamaha SPX90, Roland DEP-5, AMS 16 reverb, Lexicon 224 reverb, Lexicon Super Prime Time, Yamaha REV7. Other Outboard Equipment: Eventide Harmonizer 3000, Valley rack w/Kepex/commander/DSP/Gain Brain, dbx comp/limiter, (2) Symetrix comp/limiter, (2) GateX noise gate, API parametric EQ, (2) Teletronix leveling amp, (2) UREI leveling amp, Summit Audio leveling amp, (2) Aphex Type B Aural Exciter. Microphones: AKG 414, (5) Sennheiser 421, Shure 57, (7) Neumann 87, (3) Neumann 48 tube, (3) Sennheiser 415, (4) Countryman EM401, (3) Sony ECM-22H, Sony ECM-50, Sony C-48, (2) Sennheiser MKH-40P8. Monitor Amplifiers: (2) Crown Monitor Speakers: (2) UREI, (2) Yamaha NS-10, (2) B&W, (2) Electro-Voice, (2) Westlake. Musical Instruments: Baldwin 9' grand, Kawai 6' grand w/MIDI triggers, Roland MKB-1000 MIDI controller, LinnDrum 900, Roland Octapad, Roland DDR-30 digital drums, Akai 900 sampler, Roland D-50, Roland Super Jupiter, Leslie D-50 organ, (3) 5-piece drum set, GM-70 GTR controller. Other MIDI Equipment: (8) Yamaha TX module, Oberheim Matrix-6, E-mu Emulator III. Other: Sony 2500 R-DAT, Panasonic R-DAT, Nakamichi A/D processor



MASTERMIX
Nashville, TN

[24+] **MASTERMIX**; 1808 Division St.; Nashville, TN 37203; (615) 321-5970. Owner: Trio Entertainment Co. Studio Manager: Hank Williams. Engineers: Jeff Giedt. Dimensions: Overdub/sampling room with RPG diffusion, control room 23 x 19 x 11. Mixing Consoles: Calrec AMS automated UA-8000, 64/64 x 32. Audio Recorders: Otari DTR-900 32-track digital, Otari MTR-90 24-track, Otari MTR-10 2-track (1/2" and 1/4"). Sony PCM-1630 digital, AMS AudioFile. Echo, Reverb, & Delay Systems: AMS RMX-16, AMS 15-80, Publison Infernal 90, Lexicon 224XL, Lexicon Super Prime Time, EMT 250/251, Eventide H949, Studer DAD-16. Other Outboard Equipment: Valley People, Trident, Sontec, ITI, dbx, Audio i Design, API, Scamp, UREI, Teletronix, Neve, Fairchild Instruments, BBE. Microphones: Sanken, Calrec, Neumann, AKG and classic tubes. Monitor Amplifiers: Bryston, Lenco, Haller, Yamaha. Monitor Speakers: State-of-the-art Electronic CF 1000, 4-way cone system, Meyer, Fostex, Rogers, Auratone, Yamaha, MasterMix near-fields. Video Equipment: Sony BVU-800. Rates: Please call for hourly and block rates. Specialization & Credits: Stereo disc mastering, CD prep, Sony digital editing.

[24+] **MAXWELL SOUND**; 148 Best Dr.; Athens, GA 30606; (404) 353-1308. Owner: Mark Maxwell Studio Manager; James O'Quinn. Specialization & Credits: Athens, Georgia's only 24-track recording facility. Specializing in original music-to-picture soundtracks. Credits include the Smithsonian Institute's film *Milestones of Flight*, the New Orleans Film Festival winner *Uncertain Faiths*, and the University of Georgia Sports Show.

[24+] **MEGA SOUND STUDIOS, INC.**; 542 E. Main St., PO Box 189; Bailey, NC 27807; (919) 235-3362. Owner: Richard H. Royall, Daniel R. Dixon III. Studio Manager: Richard H. Royall. Engineers: Dan Dixon, Johnny Falzone, Richard H. Royall. Dimensions: Studio 18 x 30, control room 12 x 18. Mixing Consoles: Harrison w/864 autoseg computer 3232 A/B 32 x 32, MCI 416 24 x 24, location mixer, custom 12 x 8. Audio Recorders: MCI JH-114 24-track w/Autolocator III, TEAC 3340S 4-track, Scully 280B 2-track, Revox A-77 2-track, Revox A-77 1/4-track. Cassette Recorders/Duplicators: Sony, Nakamichi, Hitachi. Noise Reduction Equipment: dbx 32 channels Echo, Reverb, & Delay Systems: Lexicon 224XL w/LARC, DelatLab DL-2, Lexicon Prime Time, Yamaha SPX-90II. Other Outboard Equipment: dbx and UREI compressor/limiters, Ashly and Scamp parametric EQs, Scamp EQ gates and expanders, UREI 1/2-octave EQ, Eventide audio analyzer w/Apple computer, Roland Dimension D. Microphones: AKG, E-V, Neumann, RCA, Sennheiser, Shure, Sony Monitor Amplifiers: Crown, McIntosh, Phase Linear, Yamaha. Monitor Speakers: JBL bi-amplified, Yamaha, Auratone. Musical Instruments: Yamaha conservatory grand piano, Hammond B-3

organ, Fender Precision bass guitar, Pearl drums w/cymbals by Paiste and Zildjian, Roland and Yamaha synthesizers, Alesis and Yamaha drum machines, Ibanez electric guitars, Yamaha acoustic guitars. Video Equipment: Full video production services in association with Southeast Video Services. JVC, Sony, Panasonic equipment, Datamax computer animation. Rates: Write or call for rate schedule and brochure. Specialization & Credits: Available AMS 15-80S with loop editing and 2-channel pitch change. AMS RMX-16 digital reverb. MDB 16-bit window recorder, Lexicon PCM70, dbx 160X compressor/limiter, Drawmer dual noise gates, Valley People Dyna-Mite noise gates, Roland SDE-3000 delay, ART 01A digital reverb, Roland RE-201 space echo, USAudio GateX, "Fast Forward."

[24+] **MELODY RECORDING STUDIO**; De Diego #2, Urb. San Francisco; Rio Piedras, PR 00927; (809) 763-3555. Owner: Javier D. Hernandez. Studio Manager: Javier D. Hernandez. Engineers: Rei Pena, Javier Hernandez, Justo Monzon. Dimensions: Studio 25 x 30, control room 20 x 15 (plus two isos). Mixing Consoles: NEOTEK 36 x 26. Audio Recorders: Otari MTR-90 24-track, Otari MTR-12 2-track, Otari MX-5050 2-track. Cassette Recorders/Duplicators: Nakamichi MR-1. Echo, Reverb, & Delay Systems: Lexicon M200, Lexicon PCM70, Lexicon PCM60, Lexicon PCM42, Cornerstone plates, Yamaha REV7. Other Outboard Equipment: LA-4 compressors, Drawmer noise gates, Aphex Aural Exciter, Eventide Ultra-H3000. Microphones: Neumann U87, Neumann U89, Sennheiser MD-441, Sennheiser 421, Crown PZM, AKG 414, Shure SM81. Monitor Amplifiers: (6) Bryston. Monitor Speakers: JBL 4430, Yamaha NS-10, Auratone 5C. Musical Instruments: Steinway grand piano, Kawai EP-308M, Yamaha drum set w/triggers, Simmons SDS-8 w/pads, complete Latin percussion array, Poly-800, Roland Juno-106, DX7IID, SP-1200, MKS-20 piano module, (2) bass guitar, (3) guitar, Emulator II+ HD, D-110. Other MIDI Equipment: Octapads, MD-32 module, J.L. Cooper MIDI palcher, Simmons MTI interface. Rates: \$55-65/hr., depending on how many hours.

[24+] **MEMPHIS SOUND PRODUCTIONS**; 315 Beale St.; Memphis, TN 38103; (901) 525-5500. Owner: J. Fleskes T. Goodwin, J. McDowell. Studio Manager: T. Goodwin. Engineers: Robert L. Jackson (T.D.), John L. Fleskes, Dan Pfeifer, Jim Godsey. Dimensions: Studio 50 x 40, control room 27 x 25. Mixing Consoles: Neve V3 48 x 48 w/Necam 96, Tascam M-50 12 x 8, E-V 100M 10 x 2. Audio Recorders: Otari MTR-90 24-track, Otari MTR-12 2-track, Otari MTR-10 2-track, (2) Studer PR-99 2-track, Nakamichi DMP-100 2-track. Cassette Recorders/Duplicators: Nakamichi CR-7A, Tascam 122. Noise Reduction Equipment: Dolby A 24-channel, (2) dbx 411 Echo, Reverb, & Delay Systems: (2) Lexicon 224XL v. 8.2, Lexicon 224 v. 4.1, Yamaha REV7, (2) Yamaha SPX90II, (2) Lexicon PCM60, (2) Lexicon PCM41, Eventide H949 Harmonizer, Ursal Major 8 x 32, DelatLab Effectron II. Other Outboard Equipment: (8) dbx 903 comp/limit, (6) dbx 904 noise gate, Teletronix LA-2A tube limiter, Valley People Dual Dyna-Mite, Orban 622B para EQ, Aphex Type B Aural Exciter, Valley International HH2xB bump-box, EXR exciter. Microphones: (2) AKG 414B-ULS, AKG "The Tube," (2) Neumann U89, AKG D-12E, (2) AKG 460, (8) Sennheiser MD-421, (7) Shure SM57, AKG 452EB, Audio-Technica RE-20, Shure SM58, Sony C-37A, plus 20 other various mics. Monitor Amplifiers: McIntosh MC-2100, (2) OSC 1400, (4) OSC 3500/53, Yamaha P2200, UREI G250. Monitor Speakers: Steven Durr design, Yamaha NS-10M, Auratone 5C, JBL 4430, JBL 4301B, E-V Sentry 500. Musical Instruments: Yamaha TX816, Yamaha DX7, Ensoniq Mirage, Akai MPC-60 MIDI production center, Korg P-61M, Yamaha grand piano, Hammond B-3 w/Leslies 122 and 147, Ludwig Pearl acoustic drums, Fairlight CM III (upon request), LinnDrum w/MIDI, Fender Twin Reverb II. Other MIDI Equipment: Apple Macintosh Plus w/Dataframe (20-meg drive), Opcode Studio Plus II, DX7 software w/over 5,000 voices, Soundlab software for Mirage and voice storage, Passport software systems (Sony 3/4" and 1/2" video decks). Rates: Call for rates.

[24+] **MIAMI SOUND STUDIO**; 697 NW 28th St.; Miami, FL 33127; (305) 635-4890. Owner: Carlos and Angie Diaz-Granados. Studio Manager: Angie Diaz-Granados. Engineers: Carlos Diaz-Granados Jr., Paul Khouri. Dimensions: Studio 17.5 x 13.75 x 28, control room 17 x 10 x 15. Mixing Consoles: Neve 8028 24 x 16/24. Audio Recorders: Studer A80 24-track, Ampex 440-B 2-track, Scully 2-80 24-track, Studer/Revox 77 2-track, Studer 810 2-track. Echo, Reverb, & Delay Systems: Echo delay tape, (2) EMT 140 echo chamber, Lexicon 200 digital reverb, Lexicon Prime Time 93. Other Outboard Equipment: Eventide Harmonizer, Scamp Rack, UREI Teletronix LA-2A and LA-3A limiters, Pultec equalizer/compressor, Neve limiter/vocal doubler, Electra digital delay, Roland phase shifter, Roland stereo flanger, Simmons Clap Trap, LinnDrum, Simmons electronic drums, Roland Dimension D. Microphones: Neumann U87, Neumann U67, Neumann KM-84, AKG 451, E-V RE20, Sennheiser, Shure 57, Sony C-37P, RCA 77-DX, RCA 44. Monitor Amplifiers: McIntosh 2300, McIntosh 2105, McIntosh 255. Monitor Speakers: JBL 4343 (Gauss), JBL 4311, Auratone, Tannoy SC, Fostex Musical Instruments: Yamaha grand piano, Fender Rhodes, Roland synthesizer, rhythm box harmonizer, Slingerland drums, Synare, Hammond B-3. Rates: Rates upon request. Specialization & Credits: Studio philosophy: simply that our engineers strive to treat every recording as if it were their own aspiration,



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[24+] **MIDLAND RECORDING STUDIOS**; 4041 Laguna; Coral Gables, FL 33146; (305) 444-6222. Owner: Mr. Andy Valdes. Studio Manager: Contact: Will Tartak Engineers: Will Tartak, Felicya Montolio. Dimensions: Room 1: studio 21 x 29, control room 21 x 18. Room 2: studio 7 x 7, control room 18 x 11. Mixing Consoles: Trident Series 80-B 50 x 24, Trident 65 32 x 16. Audio Recorders: Otari MTR-90 24-track w/remote control and autolocator, (2) Otari MTR-12 2-track (1/2" and 1/4") w/remote control, Otari MX-80 24-track w/remote control and CB120 autolocator, Tascam 32 2-track Cassette Recorders/Duplicators: (2) Awa F-990, Technics 45. Synchronization Systems: Adams-Smith Zeta-3 Echo, Reverb, & Delay Systems: AMS RMX-16, Lexicon 480L, (3) Lexicon PCM70, (3) Yamaha SPX90, (2) Lexicon PCM42, AMSDMX 15-80S, Alesis MIDverb II, Roland SDE-3000 DDL, Ibanez DM-2000 DDL. Other Outboard Equipment: (2) Lj/Lab 660 compressor, (4) Drawmer 201 stereo gate, (2) ADR Compex stereo limiter, dbx 162 stereo limiter, dbx 165A limiter, Aphex Type B Aural Exciter, (8) Aphex CX-1 compressor/gate, (4) Aphex EQF-2 equalizer, (4) Valley People Kepex II gate, (2) Valley People Gain Brain II compressor, Valley People DSP de-esser. Microphones: AKG C-24, (2) AKG 451, (2) Neumann U47, Neumann KM84, (2) Sony ECM-55, (6) Shure J157, AKG D-12, (2) Sennheiser 421, (2) Beyr M101, (4) AKG 414, (2) Neumann U47, Neumann KM88, (2) Schoeps CMC5, (2) Sony C-37, Shure SM7, (2) Fostex M-88, (4) Beyr M88 Monitor Amplifiers: Meyer MS1000, (2) Haller P505, (2) Haller P225, (2) UREI 6230 Monitor Speakers: (2) Meyer 833 w/834 subwoofers, (2) Westlake BBSM-6, (4) Fourier, (4) Yamaha NS-10M, (2) JBL 4312, (4) Auratone 5C. Musical Instruments: Steinway 9' grand piano, Fender Rhodes 73, E-mu Emulator II (software 2) Yamaha DX7IID, Roland D-5C, E-mu Emax HD (module) Sequential Circuits Prophet-V, Yamaha KX88 MIDI controller, Roland Juno-106, Yamaha DX7, Korg Poly-6. Other MIDI Equipment: Roland PVC-350 Vocoder, J.L. Cooper MIDI channel filter, J.L. Cooper MSB+ MIDI patcher, Garfield Mini/Doc. Other: Fostex T/20 headphones. Rates: Call for information

[24+] **MIRROR IMAGE SOUND & RECORDING**; also **REMOTE RECORDING**; 619 S. Main St.; Gainesville, FL 32601; (904) 376-8742. Owner: Robert McPeck, Ray Valla. Studio Manager: Buddy Ray

[24+] **THE MONEY PIT**; 622 Hamilton Ave.; Nashville, TN 37203; (615) 256-0311. Owner: Paul Worley, Ed Bayers Sr and Jr. Studio Manager: Jim Burnett

[24+] **MORRISOUND RECORDING**; 12111 N. 56th St; Tampa, FL 33617; (813) 989-2108. Owner: Morrisound Recording Inc. Studio Manager: Tom Morris. Engineers: Tom Morris, Jim Morris, Rick Miller, Scott Burns, Judd Packer. Dimensions: Room 1: studio 32 x 40, control room 25 x 23. Room 2: studio 32 x 15, control room 25 x 23. Mixing Consoles: Sound Workshop Series 34 32 x 24 w/automation, Amek Scorpion 24 x 16. Audio Recorders: Otari MTR-90 24-track w/autolocator, Otari 535B MkIII 8-track, Otari MTR-12 2-track, (2) Otari 5050B MkII 2-track Cassette Recorders/Duplicators: (6) Denon CP-N 33HX, (2) Denon DR-M44HX. Noise Reduction Equipment: (4) dbx 150. Synchronization Systems: BTX Shadow, Adams-Smith Zeta-3, SSI Shadow Controller, Echo, Reverb, & Delay Systems: Lexicon 224XL, Lexicon PCM60, (2) Lexicon PCM70, (2) Lexicon PCM41, Lexicon PCM42, Lexicon Prime Time, Loft 450, Ecoplate, Yamaha REV7, (2) TC Electronic 2240. Other Outboard Equipment: DeltaLab DL5 and Eventide H910 Harmonizers, (2) dbx 165 and (2) UREI LA-4 compressor/limiters, (2) Valley People Dyna-Mite, (2) EXR EX-3 exciter, Ormni Craft noise gates Audioarts stereo parametric equalizer, (2) dbx 166, Eventide H3000 Microphones: (3) Neumann U87, (5) AKG 414, (12) Sennheiser 421, (2) Sennheiser 441, (2) AKG 451, (3) E-V RE20, assortment of: Shure, E-V and Audio-Technica. Monitor Amplifiers: (6) Haller Monitor Speakers: UREI 811A, UREI 813B, JBL

4312, (2) Yamaha NS-10M, E-V Sentry 100, (2) Auratone 5C. Musical Instruments: Yamaha grand piano, Hammond C-3 w/Leslie, Gretsch 5-piece drum set, Yamaha 5-piece drum set, Synclavier II, Emulator II, Emax, Yamaha DX7, Roland D-50, Oberheim DX drum machine, (2) Oberheim OB-8, Ensoniq Mirage, Korg DDD-1 drum machine. Video Equipment: Audio post-production for film or video, Sony VO-5800, (2) JVC CR850U. Rates: Please call.

[24+] **MUSCLE SHOALS SOUND STUDIOS**; 1000 Alabama Ave.; Sheffield, AL 35660; (205) 381-2060; FAX: (205) 381-6813. Owner: Malaco Inc. Studio Manager: Jimmy Johnson

[24+] **MUSIC CITY MUSIC HALL**; 30 Music Square W.; Nashville, TN 37203; (615) 244-1060. Owner: Owen Bradley Studio Manager: Michael Bevington Engineers: Bill Harris, Doug Crider, Bobby Bradley. Dimensions: Studio 50 x 80 x 30, control room 28 x 18 x 10. Mixing Consoles: Neve 8038 32 x 24 w/Allison Research Fadex automation. Audio Recorders: Studer A80 24-track, Studer A80 2-track master recorder, Studer B67 2-track, Sony 501 digital, Sharp SX-D100 DAT Cassette Recorders/Duplicators: (2) Studer B710 Noise Reduction Equipment: Dolby Echo, Reverb, & Delay Systems: Lexicon 224XL, (3) EMT plate, Gotham Audio digital delay, Eventide Harmonizer, Yamaha REV7, Yamaha SPX90. Other Outboard Equipment: (2) ADR Vocal Stresser, Scamp rack, Teltronix compressors, LA-2A limiter, LA-3A limiter, EXR exciter, Eventide Phaser, Pultec Mavec mic preamp, Pultec equalizer Microphones: Neumann U87, Neumann U67, Neumann U47, Neumann U48, Neumann M49, Neumann KM84, Neumann KM56, E-V RE16, E-V RE20, Sony ECM-50, Sony C-500, Sony C-55, RCA 44, RCA 77, Elam 251, AKG 414. Monitor Amplifiers: McIntosh 2100 Monitor Speakers: UREI 813, JBL 4313B, Auratone, Yamaha NS-10M. Musical Instruments: Baldwin 9' grand w/MIDI capabilities, Yamaha PF15 electronic piano, Fender Rhodes stereo, Wuritzer electric piano, Hammond B-3 organ w/Leslie, Honer D-6 clavinet, celeste, Zucker electric harpsichord, Deagan vibes, marimba. Rates: Available upon request

[24+] **MUSIC MILL**; 1710 Roy Acuff Pl.; Nashville, TN 37203; (615) 254-5925. Owner: Harold Shedd, Donnie Canada. Studio Manager: Paul Goldberg Engineers: Jim Cotton, Paul Goldberg, Joe Scafe. Dimensions: Room 1: studio 23 x 19, control room 31 x 36. Room 2: studio 23 x 19. Mixing Consoles: (2) Trident TSM 32 x 32 w/Allison Fadex automation. Audio Recorders: (2) Mitsubishi X-850 32-track digital multi-track, (2) Studer A800 24-track multi-track, (2) Studer A80 2-track 1/2". (3) Studer B67 2-track 1/4", JVC BP-90 2-track digital Cassette Recorders/Duplicators: (2) Studer A710 Synchronization Systems: Mitsubishi X-850 hookup, Echo, Reverb, & Delay Systems: EMT 250, Lexicon 224X w/LARC, (2) EMT 140 plate reverb, (2) BAE L140 plate reverb, Marshall AR-300 tape eliminator. Other Outboard Equipment: Sontec DRC202, (4) Kepex II, (6) Scamp expander/gate, Aphex Type B Aural Exciter, ADR Vocal Stresser, (2) Eventide H949 Harmonizer, (2) Lexicon Prime Time 93, (4) dbx 160X, (4) Teltronix LA-3A, Teltronix LA-2A. Microphones: (3) Sanken C-41, Neumann U49, (5) Neumann U87, (2) Neumann U67, Neumann U47 FET, (2) AKG C-452, (2) AKG C-460, (5) AKG C-414EB, (4) Shure SM57, (2) Shure SM56, (2) Sony ECM-30, Studer SKM-5. Monitor Amplifiers: (4) McIntosh 2300, (4) BGW 250, (2) McIntosh 2205. Monitor Speakers: (2) Super Red w/Mastering Lab crossovers, (2) Yamaha NS-10M, (2) Auratone 5C, JBL 4430. Musical Instruments: Yamaha 57" grand w/Forte Music MIDImod, Dyno My Piano, 73 w/chorus and tri-stereo unit, Wuritzer electric piano, Pearl drum kit, D-6 clavinet, misc. amplifiers. Other MIDI Equipment: Forte Music MIDImod. Other: Revox B-790 DD turntable. Rates: On request

[24+] **MUSIPLEX**; 2091 Faulkner Rd. NE, Atlanta, GA 30324; (404) 321-2701. Owner: T.G. Wright.

[24+] **NEW AGE SIGHT & SOUND**; also **REMOTE RECORDING**; 120 Interstate N. Pkwy. E., #164; Atlanta, GA 30339; (404) 956-7956. Owner: Media Assoc. LTD. —William Allgood, president. Studio Manager: Mitch Dorf. Engineers: William Allgood, Mitch Dorf, Jason Bonnette, Earnie Earnest, Geary Yelton, Joe Wasser. Dimensions: Room 1: studio 50 x 40, control room (LEDE®) 22 x 20. Room 2: studio 20 x 12, control room 12 x 14. Video edit room 18 x 14. MIDI room 20 x 12. Mixing Consoles: Sound Workshop Series 34 50 x 24, Sound Workshop Series 34 28 x 24, Sound Workshop Logex 8 12 x 8, Panasonic WR500 8 x 2. Audio Recorders: Sony PCM-3324 24-track digital, Otari MTR-90 24-track analog, Sony PCM-1610/BVU-800DB 2-track digital, Sony PCM-F1/SL-2000 2-track digital, Sony PCM-501 2-track digital. Cassette Recorders/Duplicators: (10) Nakamichi BX-100 2-track, MCI JH-110B 2-track analog, Sony 854 2/4-track analog. Noise Reduction Equipment: (2) Dolby A. Synchronization Systems: (2) Lynx time-code module. Echo, Reverb, & Delay Systems: Lexicon PCM70, Lexicon Prime Time II, Lexicon PCM41, (2) Yamaha SPX90, Eventide 969, Klark-Teknik DN780. Other Outboard Equipment: Eventide 969 Harmonizer, (2) dbx 900 rack w/905 EQ, 903 comp, 904 gate, (4) GateX noise gate, (4) Symetrix noise gate, (2) Aphex Aural Exciter, (2) dbx 166, (2) dbx 165 A. Microphones: (3) Neumann TLK-170, Neumann SM2 stereo tube, (6) Neumann KM84, (3) AKG 414, (6) Sennheiser 421, (6) Shure SM57, (2) Sony 535-P, (2) Sony 555-P, E-V PL20, (6) Sony Ivalier ECM-30. Monitor Amplifiers: (2) Haller P500, (5) Haller DH220, Haller P225, Haller P230,

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NEW RIVER STUDIO
Fort Lauderdale, FL

[24+] **NEW RIVER STUDIO:** 408 S. Andrews Ave., Fort Lauderdale, FL 33301; (305) 524-4000. Owner: New River Productions Studio Manager: Virginia Cayia Engineers: Dave Barton, Larry Janus, Jim Thomas Dimensions: Studio 36 x 35, control room 35 x 25 Mixing Consoles: Neve 8108 56 x 48 w/Necam 96 Audio Recorders: (2) Studer A800 MkIII 24-track, (2) Studer A80 MkIII 2-track 1/2" and 1/4", Studer B77 1/4" Cassette Recorders/Duplicators: (2) Studer B710, (2) Yamaha K1000 Noise Reduction Equipment: (2) Dolby SP24, (4) Dolby 361 Synchronization Systems: Q Lock 3 1 1/2 synchronizer Echo, Reverb, & Delay Systems: AMS RMX-16 digital reverb, (2) Yamaha SPX900 digital effects, Lexicon 48QL digital effects system, EMT 140S stereo tube plate, Lexicon 97 Super Prime Time, (2) Lexicon PCM42 digital delay, Eventide H910 Harmonizer, (2) Eventide H349 Harmonizer, (2) Teletronix LA-2A, (2) API 550 equalizer, (2) API 550A equalizer, Drawmer DS-201 dual noise gate and many more Other Outboard Equipment: Compressors, limiters, noise gates Microphones: Neumann M49 tube, (2) Neumann KM84, (2) Neumann KM86, (2) Neumann L47, (2) Neumann U89Z, (4) Neu-

mann U87Z, (7) AKG, (6) Beyer, (7) Schoeps, (4) Sennheiser, (13) Shure and many others Monitor Amplifiers: Acoustat Monitor Speakers: (2) Meyer 833, (2) Tannoy SGM-1000, (2) Meyer 834 subwoofer, (2) JBL 4311, (2) JBL 4430 studio monitor Yamaha NS-10M, (2) Auratone 5C Musical Instruments: Yamaha C7D grand piano, Fender Rhodes, Hammond B-3 w/Leslie drum kit, Mesa/Boogie amp Other MIDI Equipment: Mac Plus computer w/Opcode software, Performer software, Yamaha KX88 keyboard controller, Yamaha TX802, Roland D-550, Alesis HR-16 drum machine, 360 Systems Midi Bass and MIDI patcher Video Equipment: JVC 3/4" U-matic, (2) JVC monitor Other: Dyaxis direct-to-hard disk 2-track digital recorder Rates: Upon request Specialization & Credits: We have established contacts with hotels, rental cars, yacht charters, etc., with special rates for our clients We would be happy to structure a package to suit your needs The private studio has a lounge and producer's office It is situated off the New River, only three miles to the beaches and airport Having completed six years in operation, New River has established itself as Florida's premier full-service facility Our staff is top-notch, with state-of-the-art equipment We are proud to have worked with Jimmy Buffett, Miami Sound Machine, Peter Frampton, The Everly Brothers, Sawyer Brown and all the other fine artists We thank you for your support

[24+] **ON LINE AUDIO,** 701 E. Bay St., Ste. 436, Charleston, SC 29403; (803) 724-3506. Owner: Robert H Graves Studio Manager: Gregory O Larkins Engineers: Robert H Graves, Brian Gilbert, Greg Larkins Dimensions: Room 1 studio 25 x 35, control room 17 x 21 Room 2 studio 24 x 35, control room 17 x 10 Mixing Consoles: Soundcraft TS-12 24 x 24, Tascam 520-M 20 x 8 Audio Recorders: Otari MX-80 24-track, Otari MTR 12-TC 2-track w/time code 1/4", Tascam 85-16B 16-track w/full dbx, Tascam 48-OB 8-track 1/2", Revox PR99 2-track 1/4" Cassette Recorders/Duplicators: Nakamichi MR-1, Onkyo TA2056, KABA real-time duplicating system (1 master, 6 slaves) Noise Reduction Equipment: dbx 16-channel noise reduction, dbx 8-channel noise reduction Synchronization Systems: Adams-Smith Zeta-3 Echo, Reverb, & Delay Systems: Lexicon PCM70, ART DR-1, Korg SDD-2000, (2) ADM 1024, ART ProVerb Other Outboard Equipment: (4) Kepex gate, (4) Gain Brain, (2) Commander, dbx 166X comp/limiter (stereo), Yamaha 2020 GC comp/limiter, (2) Rane GE27 31-band EQ, Aphex Aural Exciter, Valley People parametric EQ, Valley People DSP Microphones: (2) AKG 414EB, (2) Neumann KM81, (2) AKG 451, (4) Sennheiser MD-421, (2) Crown GP30 PZM, (4) Shure SM57, (2) Shure SM58, Electro-Voice PL20, (3) Electro-Voice RE16 Monitor Amplifiers: Adcom GFA 550, (2) BGW 250 D, (2) Adcom GFA 535 Monitor Speakers: JBL 4411, Yamaha NS-10M studio, Yamaha NS-10M, Auratone 5C, Fried Q-10 Musical Instruments: Yamaha PF85, Roland D-550, Roland S-550, Roland Super JX, Roland JX-8P, E-mu Emax, Yamaha DX7IID, Minimoog, Korg DW-8000, Yamaha RX11, Yamaha RX5, Roland Octapad Other MIDI Equipment: Macintosh II computer w/2MB RAM and 90MB HD equipped w/Master Tracks Pro 3.0 sequencer software, Commodore 128 Video Equipment: Sony Professional camera, Sony 3/4" portable recorder/player, Sony 3/4" studio recorder/player, Sony high-res monitor Other: Tama G-Star drum kit w/12/djjan cymbals, Fender Precision bass guitar, (5) various electric and acoustic guitars Rates: Very competitive rates quoted upon request Block and day rates available

[24+] **PARALLAX RECORDING STUDIO;** also **REMOTE RECORDING;** 123 E. State St; Ridgeland, MS 39157; (601) 856-7528. Owner: Parallax Records Studio Manager: James A Griffin



PARC STUDIOS
Orlando, FL

[24+] **PARC STUDIOS;** also **REMOTE RECORDING;** Offices: 3016 Dade Ave., Orlando, FL 32804; Studios: 655 Douglas Ave.; Orlando, FL 32714; (407) 788-6431. Owner: Pat Armstrong/Parc Records, Inc. Studio Manager: Andy DeGanahl (for bookings: Pat Armstrong [407] 894-0021) Engineers: Andy DeGanahl Dimensions: Studio 40 x 30, control room 25

x 25. Mixing Consoles: SSL 6000E 56 x 44, Sony 36 x 24. Audio Recorders: Studer A800 24-track, Studer A80 4-track, Studer A80 2-track, (2) dbx 700 w/Sony U-matic 5800 2-track VCR, (2) Otari MX-80 24-track, Otari MTR-10 2-track (mobile), Otari MTR-12 2-track (1/2"), Sony 601, (2) Nakamichi MR-1B. Echo, Reverb, & Delay Systems: AMS RMX-16 reverb, Lexicon 224XL reverb, (2) Lexicon 200 reverb, MICMIX Super C reverb, AMS DMX 15-80 delay, Eventide 969, Lexicon PCM-42, (2) Lexicon PCM41, (2) Lexicon Prime Time 93, Lexicon 480L, Yamaha REV5, (2) Yamaha SPX900, TC 2290, Dynamic DDL Other Outboard Equipment: (2) Drawmer DS-201 dual gate, Drawmer stereo tube compressor, dbx 900 rack w/(2) compressor/(2) de-esser/(4) parametric EQ, Aphex Compeller, Eventide flanger, Eventide phaser, Aphex Aural Exciter, BBE 401, BBE 822, Adams-Smith Zeta-3 synchronizer. Microphones: Neumann U47 tube and FET, Neumann U89, Neumann KM84, AKG 460, AKG 414EB, AKG C-12A, Sennheiser 421, Sennheiser 441, Sanken CU41, B&K 4000 Series, Shure SM57, Shure SM58, Shure SM81, UREI direct boxes. Monitor Amplifiers: (3) Halfer DH500, (3) Halfer DH220 Monitor Speakers: Fostex LS-3, Fostex RM780, Yamaha NS-10, UREI 811, Auratone. Musical Instruments: Yamaha C7 grand piano. Rental of any required instrument with 24-hour notice

[24+] **POLYMIC STUDIOS, INC.;** 225 Oxmoor Cir., #812; Birmingham, AL 35209; (205) 942-3222. Owner: Daniel E Whiteside Studio Manager: Daniel Whiteside Engineers: Mike Panepinto, Daniel Whiteside. Dimensions: Studio 25 x 23, keyboard room 15 x 20, isolation 12 x 8, control room 25 x 23, Synclavier room 35 x 18 Mixing Consoles: Trident 80B.30 x 24, Quantum QM-128 20 x 8 Audio Recorders: Otari MTR-90 24-track, Ampex ATR-800 2-track, Ampex ATR-102 2-track, Ampex ATR-700 2-track Cassette Recorders/Duplicators: Technics and JVC. Echo, Reverb, & Delay Systems: Lexicon 224, Eventide Harmonizer and flanger, Lexicon PCM-41, Lexicon PCM42 DDL, (2) Yamaha REV7, Yamaha SPX90, Roland SRV-2000, Yamaha REV-1 digital reverb, Roland vocoder Other Outboard Equipment: Bercus-Berry 202R, Orban parametric, UREI, Eventide and dbx compressor/limiter, (4) dbx noise gate Microphones: Neumann, Shure, E-V, RCA, Sennheiser, AKG Monitor Amplifiers: BGW and Yamaha Monitor Speakers: JBL 4411, JBL 4311B, JBL 4401, Auratones, (2) Yamaha NS-10M "Studio" Musical Instruments: Synclavier II w/16 synth voices, 16 polyphonic sampling voices, music printing, Yamaha DX7, Yamaha TX816 rack, Roland RD-1000 digital piano, Linn Drum, Yamaha G2 piano, Hammond B-3 w/128 Leslie, Prophet-5, full Yamaha and Pearl drum sets, vibes and a complete array of Latin percussion, assorted guitars and amps Rates: \$60/hr for 24-track, \$50/hr for Synclavier Call for block rates

[24+] **THE PROCESS RECORDING STUDIOS;** also **REMOTE RECORDING;** 3404 West Wendover Ave., Suite E; Greensboro, NC 27407; (919) 855-1941. Owner: The Process Recording Studios Inc. Studio Manager: Karen Greene Engineers: Ron Schrank, Bobby Kelly, Hayden Clement Dimensions: Room 1 studio 40 x 30, control room 22 x 22 Room 2 studio 11 x 11, control room 16 x 14 Room 3 studio 14 x 14, control room 16 x 15 Room 4 control room 14 x 12 Mixing Consoles: Sound Workshop Series 34 56 x 24 w/ARMS II automation, Trident 65 32 x 16, Tascam M-512 12 x 8, Tascam 106 6 x 4 Audio Recorders: New England Digital 8-track digital direct-to-disk system (125 min per track), Studer A80VU 24 24-track, Tascam 58 8-track, Otari MTR-12C 2-track w/CB-109 locator, Otari MTR-10C 2-track, (7) Otari 5050B MkIII cassette 1/2/4-track, Sony PCM-2500 DAT Cassette Recorders/Duplicators: (2) Nakamichi MR-2, (2) Tascam 122, Otari DP-4050C1 high-speed 4-track duplicator, Akai GX-912 Noise Reduction Equipment: dbx Type A available on all recorders Synchronization Systems: Fostex 4030 and 4035 to sync to all recorders including Synclavier, direct-to-disk and WaveFrame. Echo, Reverb, & Delay Systems: (2) Yamaha REV7, Lexicon PCM60, MICMIX XL-305, (2) Yamaha SPX90, DeltaLab ADM 1024, DeltaLab ADM 64, Lexicon LXP-1, Eventide H3000B Ultra-Harmonizer Other Outboard Equipment: (2) dbx 166 limiter, (2) dbx 160X limiter, (2) Ashly SC-500 limiter, (2) Roger Mayer RM-500 noise gate, Symetrix SG-200 noise gate, Orban 526A sibilance controller, Aphex Aural Exciter, Audioarts 4100 parametric equalizer, Soundcraft 2012-A graphic equalizer. Microphones: Neumann, AKG, Sennheiser, E-V, Crown, Beyer, Sony, Shure (over 300 mics) Monitor Amplifiers: Halfer, Crown Micro-Tech, UREI Monitor Speakers: (2) JBL 4430, (4) Fostex RM780, (4) Yamaha NS-10M, (4) Auratone, (2) Toa. Musical Instruments: WaveFrame AudioFrame: 16-voice, 16MB RAM, 300MB HD Sound Store system, 2.5 gigabyte, 8mm tape backup. Synclavier system: 64-voice, optical disk, 20-meg RAM, multiple timbre and six libraries, 8-track direct-to-disk digital recorder, Emulator II w/hard drive and CD-ROM, Akai S900, Yamaha DX7, TX7, Yamaha RX11, Korg DDD-1, Takamine GTM-6 MIDI guitar, 5' grand piano, Fender Rhodes Stage, Crumar Performer, Crumar DS-2, Tama Techstar drums, Rogers acoustic drums, Roland MT-32, Yamaha KX88 Other MIDI Equipment: Atari 1040ST w/Steinberg Pro-24 V. III, software, Apple Macintosh II+ w/Opcode Studio Plus, Digidesign Sound Designer Video Equipment: Panasonic AG-6800, JVC U850 3/4" Rates: 2/8-track: \$65/hr, 24-track automated: \$90/hr, Synclavier suite: \$250/hr, 8-track direct-to-disk: add \$85/hr, video sync: add \$15/hr, WaveFrame: add \$40/hr Day and block rates—no problem, call Karen

[24+] **REAL TO REEL RECORDING STUDIO, INC.**; 4911 N. Henry Blvd.; Stockbridge (Atlanta), GA 30281; (404) 474-4776. Owner: Bill Turpin. Studio Manager: Joe Randolph

[24+] **RECORDING ARTS**; also *REMOTE RECORDING*; Box 121702; Nashville, TN 37212; (615) 321-5479. Owner: Carl Tatz. Studio Manager: Carl Tatz. Engineers: Carl Tatz, Larry Lee. Dimensions: Room 1: studio 16 x 14, control room 12 x 25. Room 2: studio 14 x 13. Room 3: studio 10 x 6. Room 4: studio 15 x 20. Mixing Consoles: Focusrite ISA 110 2 x 2, Soundcraft TS-12 74 x 14+. Audio Recorders: Otari MTR-9011 24-track, Sony PCM-701ES 2-track digital/Beta 2005, Revox A-77 2-track. Cassette Recorders/Duplicators: Awa 990 Noise Reduction Equipment: Dolby SR and Type A available. Synchronization Systems: All types available. Echo, Reverb, & Delay Systems: Lexicon PCM70, Roland SRV-2000, Roland DEP-5, Yamaha REV7, Lexicon Prime Time, Roland Dimension D, Master-Room XL-305. Other Outboard Equipment: Teletronix LA-2A comp/limiter, UREI 1176 comp/limiter, UREI LA-4 comp/limiter, (2) UREI 545 parametric EQ, Audioarts parametric EQ, Sony CD player, B&O 8000 turntable w/MMC I cartridge, Loftech TS-1 RMX audio test set, (3) Valley International HH2XB bump box. Microphones: Neumann U87, (2) AKG 414, AKG 451, E-V RE20 (3) Shure SM57, (4) Sennheiser 421, (2) Sennheiser 441, (2) E-V RE15 vintage tube mics available. Monitor Amplifiers: Bryston 4B. Yamaha 2050. Monitor Speakers: Yamaha NS-1000, Yamaha NS-10, Fostex 780, Visonik David 9000, (2) Auratone 5C. Musical Instruments: LinnDrum w/alternate chips. Yamaha DX7, Roland MSQ-700 sequencer, Yamaha DX100, Kurzweil K-1000 available, Roland D-50 available. Other MIDI Equipment: All types available. Video Equipment: All types available. Other: Control room total ASC design (tube traps). Rates: Available on request.

[24+] **REELTIME**; also *REMOTE RECORDING*; 702 Mall Blvd., Ste. A, Savannah, GA 31406; (912) 352-9057. Owner: Phil L. Hadaway III. Studio Manager: Phil L. Hadaway III.

[24+] **REFLECTION STUDIOS**; 1018 Central Ave., Charlotte, NC 28204; (704) 377-4596. Owner: Wayne Jernigan. Studio Manager: Kelly Jernigan. Engineers: Mark Williams, Jamie Hoover. Dimensions: Studio A: 44 x 32 w/18' ceiling, Studio B tape duplicating, Studio C: 28 x 24 w/12' ceiling, control room A: 19 x 24 plus 8 x 10 isolation room, Control room C: 18 x 14 plus alcove for recorders. Mixing Consoles: Sony MX-3036 36-input hard-disk automated, Sony MXP-3036 32-input. Audio Recorders: (2) Sony APR-5002 2-track, Sony APR-5002 2-track 1/2", Sony PCM-3202 digital (DASH format), (2) Sony/MCI JH-24 24-track, Otari 5050 1/4-track, MCI JH-C8 8-track,

MCI JH-24 8-track. Echo, Reverb, & Delay Systems: Lexicon 224XL, EMT, Lexicon PCM70, Lexicon 200, DeltaLab delays. Effectron, Super Time Line, TC sampler. Other Outboard Equipment: UREI comp (2) dbx 900 series w/de-esser, gate, limiter. (2) Valley People 440. Orban comp. Drawmer gates. Microphones: Neumann, AKG Shure, E-V, Sennheiser, RCA, Sony, Countryman, Philips. Monitor Amplifiers: AB Systems, BGW, Halfer, White passive EQ. Monitor Speakers: TAD custom components, double woofer system, JBL 4401, ROR. Musical Instruments: Yamaha grand, Kawai grand, Fender Rhodes stereo, Wurliizer electric piano, Farfisa, upright tack piano, Sonor drums and percussion, Musser vibes. Rates: Upon request. Block rates available.

[24+] **REVELATION RECORDING**; PO Box 1098; Corbin, KY 40701; (606) 528-1111; (800) 782-1771. Owner: Revelation Production Group Inc. Studio Manager: Michael McKenney. Engineers: Michael McKenney, Alan Coppack, Martin Woodlee. Dimensions: Studio 44 x 30, control room 23 x 20. Mixing Consoles: D&R 8000 Series 24-track. Audio Recorders: Sony JH-24 24-track w/AL III, Otari MkIII 2-track. Cassette Recorders/Duplicators: Yamaha 1200. Echo, Reverb, & Delay Systems: Lexicon PCM60 reverb unit, Alessis Microverb reverb unit, ADA digital delay system, Yamaha SPX9011, Yamaha REV5. Other Outboard Equipment: CDT multicom in poly-frame units (compressors, gates, etc.), BBE 802, (2) White 28-band EQ. Microphones: (4) AKG 414ULS, (3) Neumann 841, (10) Shure SM57, PZM system, AKG D-112. Monitor Amplifiers: (2) Halfer P500, (2) Halfer P230. Monitor Speakers: (2) UREI 809. (2) Yamaha NS-10M studio. Musical Instruments: Yamaha 6' pro grand piano, Pearl 7-piece pro drum kit, Yamaha DX7, ARP Omni II, Yamaha FX5 drum machine, Yamaha KX88, Yamaha TX802, Roland MKS-20.

[24+] **RKM SOUND STUDIOS**; 1200 Spring St. NW; Atlanta, GA 30309; (404) 874-3667; (800) 252-1221. Owner: Kinder Music Corporation. Studio Manager: Max Geiger.

[24+] **SATURN SOUND STUDIOS INC.**; also *REMOTE RECORDING*; 515 S. Olive Ave., West Palm Beach, FL 33401; (407) 832-2148. Owner: Clinton Smith, Allen Peerson. Studio Manager: Jim Crockett. Engineers: Clinton Smith, James Crockett. Dimensions: Studio 32 x 22, control room 15 x 12, iso booth 4 x 6. Mixing Consoles: MCI 636 with (28) I/O modules. Audio Recorders: MCI JH-24 24-track w/Autolocator III, (2) MCI JH-110B 2-track, Sony PCM-601 2-track digital encoder w/Sony HF-750 Beta. Cassette Recorders/Duplicators: (6) Tascam 122. Synchronization Systems: Cipher Digital Softouch with (2) Shadow synchronizer. Echo, Reverb, & Delay Systems: (2) Lexicon 200, Lexicon Prime Time, Eventide

H910, Eventide H949; Yamaha SPX9011. Other Outboard Equipment: (4) Gain Brain I, (7) Kepex I, Orban Parasound 622B parametric, (2) dbx 165 compressor. Microphones: AKG Beyer, Crown, Neumann, Sennheiser, Shure. Monitor Amplifiers: (2) Crown DC-300, Crown DC-150, Crown D-75. Monitor Speakers: Control room: JBL 4411. Yamaha NS-10M. Studio: Bozak Monitor "C". Musical Instruments: Kawai GS-30 6' grand piano, Fender Rhodes, Yamaha DX7, Ludwig 6-piece drum kit, Oberheim DMX drum machine. Video Equipment: (2) Canon VHS, Sony Beta, fast forward time-code generator/reader/insert. Rates: Rates upon request. Block rate bookings are available.

[24+] **SCRUGGS SOUND STUDIO, INC.**; 2828 Azalea Pl.; Nashville, TN 37204; (615) 383-7994. Owner: Randy Scruggs. Studio Manager: Sloan Edwards. Dimensions: Studio 32 x 26, control room 21 x 14. Mixing Consoles: MCI 636 32 x 32 automated console. Audio Recorders: Mitsubishi X-850 32-track digital recorder, MCI JH-24 24-track analog recorder, MCI JH-110 2-track 1/2" 2-track, MCI JH-10 2-track 1/4", Technics DAT. Cassette Recorders/Duplicators: (2) Awa 990 cassette machine. Noise Reduction Equipment: dbx 208 24-channel noise reduction. Echo, Reverb, & Delay Systems: EMT 250 digital reverb, AMS reverb, Lexicon 200 digital reverb, Lexicon Prime Time delay, Lexicon Super Prime Time delay, Yamaha REV7, Yamaha SPX90, TC Electronic sampler and delay unit. Other Outboard Equipment: Eventide Harmonizer, (4) dbx limiter/compressor, Vocal Stresser, UREI LA-3 limiter/compressor, (6) noise gate and other misc. gear. Microphones: Sanken, (4) Neumann U87, Neumann 249 tube, (3) AKG 414, AKG C-12, other assorted mics from AKG, Neumann, Studer, Shure, Beyer, Calrec, Sony, Sennheiser, RCA. Monitor Amplifiers: McIntosh 2300 amplifier, Yamaha B&W, Crown amps. Monitor Speakers: 604E Big Reds, Yamaha NS-10, E-V Sentry 100, Auratone. Musical Instruments: Yamaha 7.5' acoustic piano w/Forte MIDimod, Yamaha DX7 synth, Linn 9000 drum machine/sequencer, Hammond organ, Fender, Ampex, Polytone amps. Rates: Rates available upon request.

[24+] **SIXTEENTH AVENUE SOUND**; 1217 16th Ave. South; Nashville, TN 37212; (615) 327-8787. Owner: Services Management, Inc. Studio Manager: Barry Sanders. Engineers: Dave Parker, Brian Hardin, Barry Sanders, Scott Baggett, Mike Griffith. Dimensions: Room 1: studio 24 x 40, control room 28 x 24. Room 2: studio 29 x 15, control room 13 x 15. Room 3: control room only 16 x 13. Mixing Consoles: SSL 4056E 48 x 32. Soundcraft 1600 24 x 24 Producers series, Soundcraft 400B 20 x 16. Audio Recorders: Mitsubishi X-850 32-track digital w/ Apogee filters, Studer A820 24-track analog, Sound-

THE INS AND OUTS...

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Forum: Video Houses—Audio Needs and Capabilities
Equipment Spotlight: Consoles for Audio Post-Production
Bonus Distribution at NAB International Expo, Las Vegas, April 29-May 2
Ad Closing: February 8
Materials Due: February 15

MAY

NORTHEAST U.S. RECORDING ISSUE

Directories: Northeast U.S. Studios
Forum: Sound Contractors—Computers for Systems Installations
Equipment Spotlight: New Digital Signal Processors
Bonus Distribution at APRS '89, London, June 7-9
Ad Closing: March 8
Materials Due: March 15

MIX THE RECORDING INDUSTRY MAGAZINE

For complete advertising information and a 1989 *Mix* Editorial Calendar, call advertising director Ron Taff at (415) 653-3307.

24+ TRACK

STUDIOS



SIXTEENTH AVENUE SOUND
Nashville, TN

craft 760 MkII 24-track analog (modified electronics), Tascam 8516B 16-track analog (w/dbx noise reduction), Tascam 48 8-track analog (w/dbx noise reduction) Cassette Recorders/Duplicators: (2) Nakamichi VR-1 cassette deck, (3) Tascam 122 cassette deck, (2) TEAC AD5 cassette deck Synchronization Systems: Adams-Smith Zeta-3 (plus latest software revision) w/MIDI Echo, Reverb, & Delay Systems: AMS RMX-16 digital reverb, AMS DMX-15 digital delay w/stereo harmonizer, Lexicon 480L digital effects processor, Lexicon 224XL digital reverb, (2) Lexicon PCM70 digital effects processor, Lexicon PCM42 digital delay, (2) Lexicon FCM41 digital delay, (2)

Yamaha REV7, (2) Yamaha SPX90, (2) Alesis MIDiverb II, Effectron 1024 digital delay, ADA one-second digital delay Other Outboard Equipment: Drawmer 1960 tube compressor/limiter, (2) dbx 165 "over easy" compressor, (4) Kepex/Valley People gate (4 channels), (2) Valley People 440 dynamics processor, Valley Audio leveler, (2) dbx compressor/limiter, Organ 622B parametric EQ, Symetrix 544 Quad gate, (2) White 440 graphic EQ, Loft 440 analog delay/flanger Microphones: (2) Sanken S-41, (4) Sony C-48, Neumann TLM-170, Neumann U47 FET, Neumann KM84, AKG 414 AKG P-48, AKG C-460B, Sennheiser 421, Shure SM57, E-V RE20, E-V PL20 Monitor Amplifiers: (3) Perreux 5150B, Haller 550/220, Yamaha P2250C Monitor Speakers: Tannoy FSM-U (main monitors) dual concentric, Tannoy SRM-12B near-field, Yamaha NS-10, Yamaha NS-10M near-field, B&W DM100 E-V Sentry 100 Musical Instruments: Kawai 7.5' grand piano, LinnDrum drum computer, Yamaha U1 studio upright grand piano Other: Studer A820 2-track 1/2" and 1/4" analog, Nakamichi DMP100 digital processor, Barcus-Berry 402 Rates: Call for rates. Block and project rates are available. Specialization & Credits: Extra large control room with skylights Spacious studio featuring variable acoustics. Comfortable lounge with pool table and kitchen facilities. Sixteenth Avenue Sound offers the best in digital and analog recording in a relaxed environment that encourages creative expression. Our specialty is personalized attention and service. Recent clients include: Kenny Rogers, Crystal Gayle, Alabama, Whiteheart, Ziggy Marley Paradise Lost, The Wagoners, Roseanne Cash, Foster and Lloyd, Cynthia Clawson, Carman, The Dirt Band, Ricky Van Shelton, The Stand, Steve Winwood, Beth Chapman, Michael W. Smith, Heggie V, Girls Next Door, Forrester Sisters and Bill Monroe

[24+] **SOUND EMPORIUM STUDIOS**; 3102 Belmont Blvd., Nashville, TN 37212; (615) 383-1982. Owner: Roy Clark. Studio Manager: Gary Laney, Susan Howell. Engineers: Gary Laney, Todd Sholar, David Sinko. Dimensions: Room 1 studio 60 x 40, control room 18 x 23. Room 2 studio 23 x 20, control room 15 x 20. Mixing Consoles: Neve 8128 48 x 32, Harrison 3232 28 x 32. Audio Recorders: Otari MTR-90II 24-track, Sony/MCI JH-24 24-track. Cassette Recorders/Duplicators: (2) Denon SuperScope, Studer Revox Synchronization Systems: Adams-Smith 6200 Echo, Reverb, & Delay Systems: (2) EMT 140, (2) Lexicon PCM70, AMS RMX-16. Yamaha SPX90 (2) live chamber, Lexicon 224XL, Prime Time II. Other Outboard Equipment: Prime Time 90, (2) Harmonizer 910, Harmonizer 969, (2) Pultec EQ-1A equalizer, (3) LA-2A comp/limiter, (2) 1176LN comp/limiter, (2) Neve comp/limiter, (4) Trident comp/limiter, (2) LA-3A comp/limiter, (4) dbx 160 comp/limiter. Microphones: Neumann U67, (12) Neumann

U87, (6) AKG 414, (2) Neumann KM84, (2) Neumann KM86, (2) Sanken, (8) Sennheiser 421, (2) RCA (6) Schoeps-Studer, (8) Shure SM57, Sony C-37P, Shure SM7, 249, (2) AKG C-50, (2) PZM, (2) D-112, (3) C-22P, (3) Shure SM51, (2) Neumann U47 Monitor Amplifiers: Perreux, (2) Crown D-150, (2) Tannoy 840, Haller 500, (4) BGW 750, (4) BGW 500, (2) BGW 250 Monitor Speakers: Westlake, Westlake BSSB-5, Synergetic, Tannoy LGM-15, (2) Yamaha NS-10M, BGW, Auratone Musical Instruments: Steinway grand piano, Chickering grand piano (2) B-3 tack piano, electric harpsicord, clavinet, Mini-moog, celeste, orchestra bells, various percussion

[24+] **SOUND LAB RECORDING STUDIO, INC.**, also **REMOTE RECORDING**; 2319 Fernwood Dr., Greensboro, NC 27408; (919) 288-0185. Owner: Thomas Rowan. Studio Manager: Mary Schenck

[24+] **SOUNDS UNREEL STUDIOS**; also **REMOTE RECORDING**; 1902 Nelson Ave., Memphis, TN 38114; (901) 278-8346. Owner: Jon Hornyak, Don Smith. Studio Manager: Jon Hornyak. Engineers: Don Smith, Jack Holder, Andy Black. Dimensions: Studio 44 x 19 x 12, control room 19 x 15 1/2 x 11 1/4. Mixing Consoles: Soundcraft TS 24 32 x 24. Audio Recorders: Otari MTR-90II 24-track, Otari MTR-10 2-track, Otari MX-5050B 2-track, Tascam 122 MkII Echo, Reverb, & Delay Systems: Lexicon 224XL, Lexicon 200 AMS RMX-16, Ursa Major 8 x 32 digital reverb, AMS DMX 15-80S digital delay/harmonizer, Korg programmable digital delay, Yamaha SPX-90. Other Outboard Equipment: dbx 900 mainframe with limiter/compressor, noise gates and de-esser, Symetrix 501 limiter/compressor, LA-2A Fairchild Instruments 670 Roland Dimension D, EXR exciter, MARC MXI and MXE, Universal 1176, BBE 802. Microphones: AKG C-12, AKG Tube, AKG 414, AKG 451, AKG D-12E, AKG 224, Neumann U87, Neumann KM84, Shure SM7, Shure SM57, Shure SM58, Shure SM81, Sennheiser 421, E-V RE20, E-V RE16, Crown PZM, Beyer M500 Monitor Amplifiers: Yamaha, Crown, BGW McIntosh Monitor Speakers: Steven Durr custom monitors (JBL, TAD). Yamaha NS-10M Musical Instruments: Steinway grand piano, Hammond B-3, Yamaha DX7, PPG 2.3 w/Waveterm, Fairlight CMI Emulator II, Roland JX-8P, JX-3P, MSQ700, Juno-60, Fender Rhodes, Prophet-5, Minimoog, LinnDrum, Marshall amps, Carvin amps, strings and things, custom guitars and basses. Rates: Upon request

[24+] **SOUNDScape STUDIOS**; 677 Antone St., Atlanta, GA 30318; (404) 351-1003. Owner: Jon Marett. Engineers: Independent. Dimensions: Room 1 studio 50 x 60, control room 28 x 29. Room 2 studio 18 x 14, control room 15 x 16. Mixing Consoles: SSL 44E w/G Series, Neve 8068 32 x 24 w/Necam



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I. Audio Recorders: Studer A820 24-track w/Dolby SR, Studer A80 MkIV 24-track transformerless, Studer A820 1/2" analog recorder w/1/4" center-track time code conversion, Studer A80 2-track 1/2" transformerless, Studer A810 2-track 1/4", Studer B76 2-track, TEAC A3440 2-track. **Cassette Recorders/Duplicators:** Tascam T-122, Nakamichi MR-1 and MR-2 cassette recorders. **Noise Reduction Equipment:** Dolby SR 24 2-track, Dolby A 24/2-track. **Synchronization Systems:** Adams-Smith Zeta-3 Echo, Reverb, & Delay Systems: Quantec QRS 224XL, EMT 140S plate, PCM70 PCM42, PCM41, AKG BX-20E1, Super Prime Time, (2) Marshall TM (2) Eventide H910 Harmonizer, Eventide 1745 DDL, AMS 15-80S, AMS RX-16. **Other Outboard Equipment:** BBE 202, BBE 2002, (6) Drawmer 201 dual gate (4) Kexpex gate, (3) CLX C/L/E, (5) UREI 1176, (4) Neve 32264 comp/lim, RCA tube limiter, dbx 162, Pultec EQP-10S, Sontec stereo PEQ, Klark-Teknik ST 27-band graphic EQ, UREI 545 PEQ, LT Sound PEQ, API SS2 stereo equalizer. **UREI sys equalizer. Microphones:** Neumann, AKG, Crown, Beyer, Sennheiser, Schoeps, Shure, RCA. **E-V Sony Monitor Amplifiers:** FM Acoustics, Belles, Halfer, Crest, McIntosh Studer, Yamaha. **Monitor Speakers:** Yamaha NS-10, Minimus-7, Tannoy 10B Auratone, TAD custom 2-way monitors. **Musical Instruments:** Yamaha C7 piano, Prophet-5, Oberheim OB-8, Yamaha DX7, Gretsch drums, guitar amps. **Video Equipment:** Sony 5850 3/4", Panasonic AG6800 1/2". **Rates:** Call for rates. **Specialization & Credits:** Extensive lighting system includes 50 PARs (500-1,000 watts), (3) Far-cycs; Strand Century console with programmable dimmer assignment, assortment of 1.5-10 kW Mole-Richardson and McAllister lights, stage for band rehearsals and showcases upon request. Large drive-in door and comfortable lounge facilities with kitchen. Soundscape Studios is a state-of-the-art multimedia complex which combines a qualified, amiable staff to serve a client's full spectrum of needs. The flexible 3,000-sq ft Studio A allows for a simple transition from a recording studio to a soundstage for video or movie production. The built-in comfort of the control room and lounge facility provides the perfect complement to quality industrial, commercial or album production.

[24+] SOUNDSHOP RECORDING STUDIOS: 1307 Division St., Nashville, TN 37203; (615) 244-4149. **Owner:** Wm D Killen. **Studio Manager:** Patrick McMakin. **Engineers:** Mike Bradley, John Dickson, Mike Psanos, Pat McMakin, Bob Tassi. **Dimensions:** Room 1, studio 40 x 36. Room 2, studio 25 x 18. **Mixing Consoles:** (3) MCI JH-528 28 x 32. **Audio Recorders:** (2) Studer A800 24-track, Otari MTR-90 24-track, (2) Studer A810 2-track 1/4", (2) Studer A80 2-track 1/2", (2) Studer B67 2-track 1/4", Studer A80 2-track 1/4". **Noise Reduction Equipment:** (3) Dolby M-16 rack w/Dolby A, 24 channels each rack, dbx K-9 cards 24-channel, Dolby SR 2-channel. **Synchronization Systems:** Studer TLS2000 Echo, Reverb, & Delay Systems: AMS RMX-16 reverb, AMS DMX digital delay, PCM70 reverb, (6) EMT plate, Yamaha REV5 reverb, (2) Lexicon Super Prime Time digital delay, Yamaha SPX90 multi-effects, Yamaha REV7 reverb. **Other Outboard Equipment:** (4) Sontec pre-amp, (2) ADR ES900 sweep EQ, (8) UREI LA-3A, (6) dbx 160 limiter, dbx 165 limiter. **Microphones:** (2) Neumann U67 tube, Neumann U47 tube, Neumann 249 tube, Neumann U48 Nuvistor, (2) B&K 4006, (2) Studer SKM5, (6) AKG 414, (6) AKG 452, (6) Sennheiser 421, many others. **Monitor Amplifiers:** Halfer, (2) Yamaha 2200P, (6) BGW various. **Monitor Speakers:** Tannoy LGM, (3) Yamaha NS-10M, UREI 815 Time Aligned, 6048G custom, JBL custom. **Musical Instruments:** Pearl, Steinway 7" 1930s vintage, Steinway 9", Yamaha C7, (3) Fender/Rhodes 88. **Video Equipment:** JVC 8200 3/4" video for sync-to-multi-track. **Other:** Studio A wired exclusively with Mogami cable. **Rates:** Call.

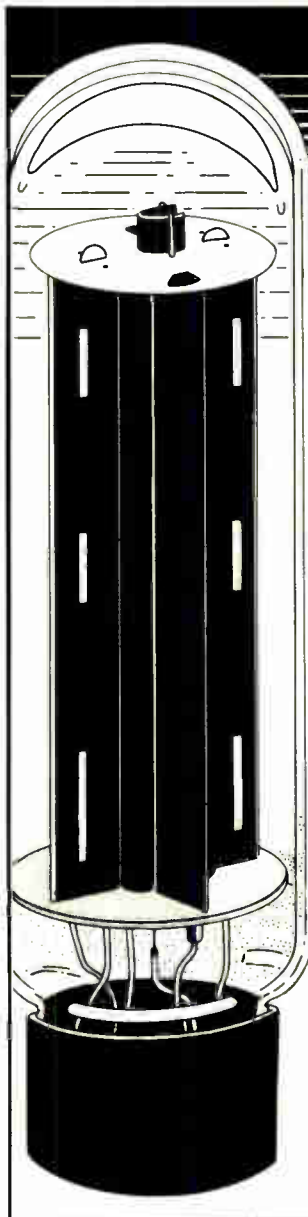
[24+] SOUTHERN TRACKS RECORDING, 3051 Clairmont Rd. NE, Studio Complex, Atlanta, GA 30329; (404) 329-0147. **Owner:** Bill Lowery. **Studio Manager:** Mike Clark. **Engineers:** Greg Archilla, Russ Fowler, Mike Clark. **Dimensions:** Studio 20 x 40, control room 22 x 26, iso room 15 x 18, iso room 16 x 20, iso room 8 x 10, dead alcove 12 x 12. **Mixing Consoles:**

SSL 4040E 32 x 32 with G Series EQ and computer Audio Recorders: (2) Sony JH-24 24/48-track, Studer 2-track 1/2", (2) Ampex 440 2-track. **Cassette Recorders/Duplicators:** Tascam 122 Noise Reduction Equipment: Dolby A. **Synchronization Systems:** Adams-Smith Zeta-3 Echo, Reverb, & Delay Systems: Lexicon 224 and 224XL, AMS, EMT, Prime Time, Eventide Harmonizer Super Prime Time, MIDVerb, Lexicon PCM70. **Other Outboard Equipment:** dbx 160 and 165 limiters, UREI 1176 limiters, Orban de-esser, Drawmer and Kexpex gates, Sphere and Audioarts EQ expert trigger, auto flanger, Eventide flanger, Audio/Tek exciter, Neve compressor, Massenburg EQ. **Microphones:** Neumann 87 and 47, AKG 414, AKG Tube, Sennheiser 441 and 421, Shure SM57, E-V RE20, Wright mics, AKG 452, Neumann KM881 and KM841, AKG D-12E. **Monitor Amplifiers:** Crest, Halfer, BGW, Crown, AB Systems. **Monitor Speakers:** Custom George Augspurger system, Yamaha NS-10. **Musical Instruments:** Yamaha SP-12 grand, Ludwig and Tama drums. **Rates:** Upon request, block rates available.

[24+] SOUTHLAKE RECORDING STUDIO, INC., 3229 8th St., New Orleans, LA 70002; (504) 833-7926. **Owner:** Paul DeCorte. **Studio Manager:** David Farrell. **Engineers:** David Farrell, Steve Himelfarb. **Dimensions:** Studio 35 x 25, control room 25 x 15. **Mixing Consoles:** MCI JH-600 32 x 24. **Audio Recorders:** Studer A80 MkIV 24-track, MCI JH-110 2-track, Fostex E2 2-track, Sony F1 digital. **Cassette Recorders/Duplicators:**

Yamaha, Sony Echo, Reverb, & Delay Systems: (3) Yamaha SPX90, Lexicon 200, PCM42, Roland DEP-5, Eventide 949, others available upon request. **Other Outboard Equipment:** (6) Valley People Kexpex II and (2) Gain Brain, Drawmer gates, (2) UREI 1178 limiter, Vocal Stresser, (4) Audioarts parametric EQ, Orban 424A compressor/de-esser, BBE 802. **Microphones:** (2) Neumann 89, Neumann M49, (2) AKG 414, (4) Shure 57, (2) AKG 451, (4) Beyer M201, (2) Beyer 88, (2) Sennheiser 421, E-V RE20, (2) Shure SM81, (3) E-V RE16. **Monitor Amplifiers:** Crown, Peavey BGW. **Monitor Speakers:** JBL, Yamaha, Fourier, Auratone, Peavey Musical Instruments: Yamaha 6" grand, Premier drum set, (2) snare drums to choose from, Roland S-50, Roland D-50, Yamaha DX7 plus other synthesizers upon request. If you need it, we'll find it. **Video Equipment:** Full Betacam system, 1/4" offline editing, VHS and Beta duplicating. **Rates:** Call for information.

[24+] STRAWBERRY SKYS RECORDING STUDIOS, 1706 Platt Springs Rd., West Columbia, SC 29169, (803) 794-9300. **Owner:** Gary Bolton. **Studio Manager:** Gary Bolton. **Engineers:** Ron Hollins, Gary Bolton, independents. **Dimensions:** Studio 28 x 36 w/two large iso rooms, control room 17 x 22 w/video and MIDI interface. **Facility completely wired w/Mogami and Monster cable. Mixing Consoles:** MCI automated w/plasma displays, JH-636 AF-LM 28 x 24 automated. **Audio Recorders:** MCI JH-24 24-track, MCI JH-110C 2-track with 1/2" heads 30 ips, TEAC 2300 w/dbx 150, Pioneer RT-707 1/4-track. **Cassette**



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STUDIOS



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Recorders/Duplicators: (2) Awa F770 Echo, Reverb, & Delay Systems: Lexicon 224, (2) Yamaha SPX90, (2) DeltaLab 2048, ART DR2, MXR flanger/doubler. Other Outboard Equipment: Aphex Aural Exciter, GateX 4-channel gates, dbx 162 limiter (stereo), (2) dbx 160X limiter/compressor, (3) UREI 1176 limiter, Symetrix 150 limiter, Magnavox CDB-650 CD player, Panasonic color video monitor. Microphones: Neumann U47, Neumann KM84, AKG C-414EB, AKG C-451, AKG C-452, Sennheiser 421, Sennheiser 441, Shure SM57, Shure SM58, Sony EC-9, E-V RE20 Monitor Amplifiers: Hafler, Crown, Phase Linear, SCS Monitor Speakers: JBL 4435 bi-amped bi-radials, Yamaha NS-10M, Auratone 5C, JBL 4406. Musical Instruments: LinnDrum w/MIDI interface, (2) Atari 1040ST, Oberheim Prommer, Fender bass and guitars, Takamine acoustic guitar, Yamaha bass and guitar amps, Korg M-1, Notator sequencing software, Sonus SMPTE reader/writer, Mesa/Boogie guitar amp, Ludwig 7-piece drum set, Yamaha 12-string acoustic guitar, Yamaha 6-string classic guitar, anything available by rental. Rates: Call for quote, our rates are surprisingly affordable!

[24+] **STUDIO ONE**; 3864 Oakcliff Industrial Ct.; Doraville, GA 30340; (404) 449-5147. Owner: Georgia State University Studio Manager: Thomas L. Cooper, Jr. Engineers: Tommy Cooper, Christine Carere-Lopes. Mixing Consoles: Harrison 3232C 32 x 32 Audio Recorders: Studer A80 VU 24-track 2", Studer A80 RC 2-track 1/2", Studer A80 VU 2/4-track 1/4" Cassette Recorders/Duplicators: Studer A710, Nakamichi LX-3 Echo, Reverb, & Delay Systems: Lexicon 224, EMT 140 plate, Lexicon PCM70, Yamaha REV7, Lexicon Super Prime Time, Eventide Harmonizer H910, Roland RE-101 space echo. Other Outboard Equipment: ADR Vocal Stresser, (2) dbx 165, (2) dbx 160, (2) Drawer DS-201 MX noise gate, Teletronix LA-2A, (2) UREI 1176 limiter, Roland stereo chorus/flanger, Orban 621B parametric, Yamaha stereographic EQ model Q2031, (2) ADR S25 de-esser, (2) ADR F300 gate, stereo custom aural exciter, (2) UREI 527 graphic EQ, UREI 545 parametric. Microphones: (2) Neumann U87, (2) Neumann KM84, Neumann U47 FET, (2) AKG 414, (2) AKG 451, (3) AKG 452, AKG D-12, AKG D-200E, (9) Sennheiser 421, (2) Sennheiser 441, Sennheiser 406, Beyr M500, Shure SM53, Shure SM56, (5) Shure SM57, Shure SM58, Shure SM7, (2) Electro-Voice RE16, Electro-Voice RE20, Sony ECM-22P, (2) Crown PZM Monitor Amplifiers: BGW 250B, 500D, 750A power amps. Crown D-150A power amp. Monitor Speakers: JBL 4350, UREI 809, Yamaha NS-10, Little David's, Auratone Musical Instruments: Hammond B-3 organ w/Leslie cabinet, Musser orchestra chimes, Simmons E electronic drums w/ SDS 5 pads, Yamaha 6 5' grand piano, Jenco vibes. Other MIDI Equipment: Roland SBX-90. Rates: Please call for rates

[24+] **STUDIO SOLO**; also REMOTE RECORDING; PO Box 230; Slidell, LA 70459; (504) 863-6161. Owner: Chris and Sharon M. Schneider. Studio Manager: David L. Farrell

[24+] **STUDIO SOUTH**; 2510 Peach Orchard Rd.; Augusta, GA 30906; (404) 793-7800. Owner: Howard Lovett. Studio Manager: Howard Lovett

[24+] **STUDIO 200**; also REMOTE RECORDING; 7651 S.W. State Rd. 200; Ocala, FL 32676; (904) 854-8282. Owner: Skip Havener. Studio Manager: Greg Bunce

[24+] **STUDIOEAST**; 5457 Monroe Rd.; Charlotte, NC 28212; (704) 536-0424. Owner: D.C. Lawrence. Studio Manager: Don Lawrence, Tim Eaton. Engineers: H. David Henson (chief), Mark Stallings. Dimensions: Studio 45 x 42 x 25(H), control room 20 x 24. Room 2: studio 20 x 20, control room 20 x 20. Mixing Consoles: Anek Angela 36 x 24 w/AK MasterMix, Anek Scorpion 16 x 8 Audio Recorders: Studer A80 24-track, MCI 2-track 1/2", Sony 2-track 1/2" and 1/4" Cassette Recorders/Duplicators: TEAC 4-track cassette, Sony duplicator. Synchronization Systems: Sony 2-track center-track. Echo, Reverb, & Delay Systems: Lexicon 224XL, EMT 140S, Yamaha REV7, Yamaha SPX90, Eventide Harmonizer/flanger, Lexicon PCM60, Alesis MIDiverb II. Other Outboard Equipment: dbx comp/limiter/gate, Aphex Type B Aural Exciter, Simmons TMI MIDI trigger. Microphones: Neumann, Shure, E-V, Sennheiser, AKG, Beyr, RCA. Monitor Amplifiers: McIntosh, Crown, BGW. Monitor Speakers: Tannoy FSM and NFM, Yamaha NS-10, JBL 4411. Auratone Musical Instruments: Yamaha 7 4" grand, Hammond C-3 w/Leslie, Yamaha TX816, Roland S-220 sampler, E-mu Emax HD-SE, Yamaha TR802, Oberheim Matrix-6R, Roland D-550, Yamaha TX812, Roland MKS-20, Korg M-1, Atari 1040ST w/Steinberg Pro-24 REV3, Yamaha RX5. Other MIDI Equipment: Steinberg SMPTE time-lock, Macintosh 512. Rates: Available upon request

[24+] **TELSTAR**; also REMOTE RECORDING; 2074 17th St.; Sarasota, FL 33580; (813) 365-0337. Owner: Rick Moulton. Studio Manager: Lynn Nieder. Engineers: Rick Moulton, Bud Snyder. Dimensions: Studio 25 x 30, control room 20 x 16. Mixing Consoles: Sony/MCI JH-636 30 x 24 Audio Recorders: Sony/MCI JH-24 24/16-track, Sony/MCI JH-110 2-track 1/4", Sony/MCI JH-110 2-track 1/2", Sony PCM-F1 2-track. Cassette Recorders/Duplicators: Otari-Tascam real-time duplication. Echo, Reverb, & Delay Systems: Lexicon 224XL, Lexicon PCM60, Lexicon PCM42, Prime Time, Eventide Harmonizer. Other Outboard Equipment: UREI 1176, LA-3, dbx 160, Allison Research Gain Brain, Kepex, Valley People Dyna-Mite, Dyna-Mic 610, Orban 516EC, Audioarts parametric, AXE direct box. Microphones: Neumann U87, AKG 414, PZM, Shure SM85, Shure SM81, Shure SM57, Shure SM56, Beyr 160, etc. Monitor Amplifiers: BGW, JBL, SAE, Yamaha Monitor Speakers: JBL 4430, Yamaha NS-10, Auratone Musical Instruments: Kawai 6' grand piano, Hammond B-3 w/Leslie, LinnDrum computer. Rates: Upon request

[24+] **TURTLE POINT RECORDING**; PO Box 7472; St. Thomas, 00801 U.S. Virgin Islands; (809) 776-2104. Owner: John and Rose-Marie Johnston. Studio Manager: John L. Johnston. Engineers: John Johnston. Dimensions: Studio 30 x 35, control room 12 x 14. Mixing Consoles: Trident Series 65 36 x 24 Audio Recorders: Otari MX-80 24-track, Otari MTR-10 2-track, Tascam 38 8-track. Cassette Recorders/Duplicators: Nakamichi MR-2 Echo, Reverb, & Delay Systems: Lexicon PCM70, Lexicon PCM42, Lexicon Prime Time, Alesis MIDiverb II, Yamaha R1000, Roland SUR-2000, Korg DRV-3000, DeltaLab Super TimeLine. Other Outboard Equipment: dbx 160, dbx 166, Valley People Dyna-Mite, Valley People GateX, Aphex Type B Aural Exciter, Rane PE-15 parametric EQ. Microphones: AKG, Sennheiser, Shure, Electro-Voice, Milab, Neumann. Monitor Amplifiers: Crown DC-300, Crown DC-150 Monitor Speakers: JBL 4311, Yamaha NS-10M, Auratone Musical Instruments: Yamaha DX7, Emax Emulator, Yamaha TX816, Emulator SP-1200, Roland 727, Yamaha RX11, Oberheim DX, Fender Precision bass, Steinberger bass, Fender Telecaster, Martin D-28, Ludwig drums, Mesa/Boogie Studio 20, Mesa/Boogie D-180 bass amp, Hammond Leslie #147, Roland Octapad 8

[24+] **TWELVE OAKS RECORDING STUDIOS**; 3830 S. Cobb Dr.; Smyrna (Atlanta), GA 30080; (404) 435-2220. Owner: Sonny Lallerstedt, Randy Bugg. Studio Manager: Randy Bugg

[24+] **2560 RECORDING STUDIO/TWENTY-FIVE SIXTY, INC.**; also REMOTE RECORDING; 2560 Niskey Lake Rd. S.W.; Atlanta, GA 30331; (404) 349-7511. Owner: Ted Bland. Studio Manager: Eddie Irons

[24+] **TWIN OAKS STUDIO**; also REMOTE RECORDING; PO Box 187; Rocky Point, NC 28457; (919) 675-9226. Owner: Tempo I Inc. Studio Manager: J. Joseph Teachout

[24+] **ULTRASONIC STUDIOS INC.**; also REMOTE RECORDING; 7210 Washington Ave.; New Orleans, LA 70125; (504) 486-4873. Owner: Jay Gallagher. Studio Manager: Scott Goudau. Engineers: Jay Gallagher, Scott Goudau, Desmond Bell. Dimensions: Studio 50 x 50, control room 25 x 16. (2) isolation booth, drum room. Mixing Consoles: MCI 652 52 x 48 w/automation. Audio Recorders: MCI JH-24 24-track, Sony 5003 2-track w/center-track time code, MCI JH-110 2-track, Otari 5050 2-track, Sony PCM-F1 2-track. Synchronization Systems: Audio Kinetics Pacer synchronization. Echo, Reverb, & Delay Systems: (2) Yamaha REV7, live chamber, (2) Yamaha SPX90, Lexicon Prime Time, Lexicon PCM42. Other Outboard Equipment: (4) UREI 1176, Alesis Kepex/Gain Brain, EXP exciter, Gemini compressor/limiter, UREI 565 filter set, outboard EQ. Microphones: Neumann, Sennheiser, RCA, AKG, Shure, Beyr. Monitor Amplifiers: BGW, Crown. Monitor Speakers: JBL 4331-A, Yamaha NS-10, Auratone. Musical Instruments: Kawai grand, Ludwig drums, Mesa/Boogie, Yamaha, Fender guitar amps, keyboards, drum machines, etc.



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[24+] WESTPARK SOUND, 3212 West End Ave., Ste. 201; Nashville, TN 37203; (615) 292-5838. Owner: Dunkin Nelson Studio Manager: Tom Reeves Engineers: Ted Wilson, Dan Wujcik Dimensions: Room 1: studio 10 x 12, control room 13 x 30 Room 2: studio 9 x 7 Mixing Consoles: MCI 636 28 x 24, Soundcraft 8 x 4 submixer Audio Recorders: MCI JH-24 24-track, Revox PR99 2-track, Sony 701-ES 2-track digital processor (Beta format), TEAC 42 2-track Cassette Recorders/Duplicators: Nakamichi MR-1, Yamaha TC800 6L, JVC dubbing deck Synchronization Systems: Roland SBX80 sync box Echo, Reverb, & Delay Systems: Lexicon 224XL, (2) Yamaha SPX90II, Yamaha REV7, Korg DRV-1000, Ibanez SDR-1000+, Lexicon PCM42 Other Outboard Equipment: (2) dbx 160 compressor/limiter, (2) dbx 163, Aphex B Exciter, Galax, BBE 200-2R, (5) Kepelex, Audioarts 4200A EQ 2 channels, Roland SDD-320 Dimension D, Iota Systems MIDI fader, Audioarts 4100 EQ, Mike PreEminence Microphones: Sanken CU-41, Neumann U89, Neumann TLM-170, (4) AKG 414, (5) Sennheiser 421, (3) Shure SM57, Sennheiser 441, (2) PZM Monitor Amplifiers: Yamaha P2200, Yamaha P2100, Crown D-150A Monitor Speakers: Yamaha NS-10, Fostex RM865, Auratone, EAW MS30B Musical Instruments: Kurzweil 250 QLS Version 4, Emulator II+, Yamaha DX7, Yamaha DX7IIFD, Roland Juno-106, Roland D-50, Young Chang 6'1" acoustic grand piano, Yamaha KX88, (2) E-mu SP-12 turbo, Roland Super Jupiter w/programmer, Oberheim Xpander, Roland Octapad II, Pearl drum set w/RIMS and drum bug triggers Other MIDI Equipment: (2) Macintosh computer, Mac Plus w/4-meg internal and 80-meg external (20-meg dataframe), (2) Opcode Studio Plus interface full software facilities incl Performer/Pro Composer/Midi Paint/Sound Designer/Drumfile/Sequencer 2.53/Patch Librarian Opcode/Southworth/Digidesign Video Equipment: Available upon request—monitor, 3/4" machine Other: Casio CZ-101, 360 Systems Midi Bass, (2) Altec 436C compressor amp (tube), huge keyboard and SP-12 libraries available on Macintosh Rates: \$65/hr with staff engineer or \$50/hr without staff engineer, \$650/day (12 hours) with engineer Specialization & Credits: Westpark Sound is a studio looking toward the '90s We offer the full spectrum of cutting-edge music technology... at an affordable price Our staff is committed to service, creativity and expertise Hear your demos, jingles, albums, film scoring and video post-productions come to life as never before at Westpark Sound Nashville's most complete MIDI facility.

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MIX THE RECORDING INDUSTRY MAGAZINE

S O U T H E A S T

12 & 16 TRACK

STUDIOS

[16] AUDIO ARTS RECORDING STUDIOS; also REMOTE RECORDING; Rt. 1, Box 59, Hwy 43 N.; Greenville, NC 27834; (919) 758-2240. Owner: Audio Arts, Inc. Studio Manager: Sonny Johnson

[16] AUDIO WORKSHOP; 409 N. Columbia; Muscle Shoals, AL 35660; (205) 381-5111; (205) 381-9623. Owner: Lee Daley Studio Manager: Lee Daley

[16] BOB BARNES CREATIVE SERVICES, INC.; 2994 Edgewater Dr.; Orlando, FL 32804; (407) 422-2035. Owner: Bob Barnes. Engineers: Bob Barnes, Jon Rowell. Dimensions: Room 1: studio 10 x 17, control room 12 x 17. Room 2: studio 10 x 17, control room 12 x 17. Mixing Consoles: Tascam M50 12 x 8, Tascam Model 35 8 x 4. Audio Recorders: Tascam 85-16B 16-track, (2) TEAC A-3300 2-track, (2) Tascam 80-8 8-track, Tascam 52 2-track, Tascam 44 2-track, Otari MX-5050 2-track, (2) Tascam 44 4-track Cassette Recorders/Duplicators: Nakamichi BX-100, Harman Kardon HK400XM, Realistic SCT-90 high-speed dub deck. Noise Reduction Equipment: (2) LT Sound NR-4, Tascam DR-16B, (2) Tascam DX-8 Echo, Reverb, & Delay Systems: Master-Room XL-305 reverb, Alesis MIDiverb, Alesis MIDiflex, Fostex 3180 reverb, Roland guitar flanger, Furman RV-1 reverb. Other Outboard Equipment: (2) dbx 163 compressor/limiter, Biamp quad limiter, Furman LC-2 compressor/limiter, Metrotec graphic EQ, (2) JVC compact disc player, (2) Empire turntable. Microphones: (2) Neumann U87, Shure SM58, Sony ECM-22P, Neumann UK47 Monitor Amplifiers: (2) Hafler DH220 Monitor Speakers: JBL 4310, JBL 4311, Auratone 5C. Rates: \$75 per hour.

[16] BIRDLAND RECORDING STUDIOS, INC.; Rt. 2, Box 193-B; Town Creek, AL 35672; (205) 685-3812. Owner: Owen Brown, James Murphree, Jeff Simpson Studio Manager: Owen Brown

[16] CHARISMA SOUND PRODUCTIONS, INC.; 17394 118th Terr.; Jupiter, FL 33478; (407) 747-3432. Owner: Douglas G. Knauff Studio Manager: Douglas G. Knauff

[16] CHERRY GROVE STUDIOS; 404 7th Ave. N.; Myrtle Beach, SC 29577; (803) 448-6730. Owner: Ron Thompson. Studio Manager: Tim Bode. Engineers: Tim Bode, Steve Senn (asst. engineer). Mixing Consoles: Studiomaster Series II 40 x 8, Roland submixer keyboards 16 x 2, Kawai submixer drum machines 8 x 2. Audio Recorders: Fostex B-160 16-track, Fostex A-80 8-track, Technics 1500 2-track, Sony 501-ES 2-track digital system. Cassette Recorders/Duplicators: Hitachi, Akai. Sharp Noise Reduction Equipment: Rocktron Hush IICX stereo, Rocktron Hush II mono. Synchronization Systems: Fostex 4030, Fostex 4035, J.L. Cooper PPS-1 sync box, MSB+ 8 Echo, Reverb, & Delay Systems: (8) Alesis MIDiverb II, (3) Alesis Microverb II, (2) Alesis Quadraverb, ADA 2 5, ART Pro-Verb 200, TC Electronic. Other Outboard Equipment: (6) Alesis micro limiter, (4) Alesis micro gate, (2) Alesis micro enhancer, BBE 802, BBE 401, (2) dbx 163 compressor, (2) Symetrix 501 compressor, (2) dbx 263 de-esser, Atari 520ST computer and Master Tracks Pro 64-track sequencing software, Commodore SX-64 and Passport software, Alesis MMT-8 sequencer. Microphones: Electro-Voice RE20, AKG 414, (5) Shure SM57, (2) Shure SM58, (2) AKG 1000, Audio-Technica 31R, 90R, SM11, ATM41, SM21, Neumann U89 Monitor Amplifiers: AMP, Symetrix headphone amp. Monitor Speakers: Custom 3-way a.d. speakers, Auratone 5". Musical Instruments: Roland S-10 sampler, Roland MKS-50 synthesizer, Roland MT-32 synthesizer, Casio CZ-1, Casio CZ-101, RZ-1 drum machine, (2) 360 Systems Midi Bass, Kawai K-5, Kawai K-1, 50e drum machine, Oberheim Matrix-1000, Oberheim DPX-1 sampler player, Yamaha TXB12, Alesis HR-16 drum machine, one set MIDI drum pad triggers (8 pc.), Casio DZ-1 translator, Rockman Sustainer, Lab Series L-5 amp, Crate 640C, Fender Deluxe, Roland SIP-300 preamp, Rockman Echo, Gibson Les Paul Deluxe, Gibson Les Paul Standard, Fender Strat, Gibson classical, Gibson S-35, Gibson Victory bass. Other MIDI Equipment: J.L. Cooper MIDI patch bay MSB+ 16-20. Casio TB-1 thru-box, Rockman thru-box. Video Equipment: Ikegami—upon request, Sony mastering system—upon request. Other: You name it, we'll try to get it! AKG headphones, Fostex headphones, Sundholm stereo 10-band EQ. Rates: \$20/hr.

MIDI studio direct-to-2-track, \$30/hr. MIDI studio and 8-track, \$40/hr. MIDI studio and 16-track. Block rates available, call for quote.

[16] CLASSIC RECORDING STUDIO; also REMOTE RECORDING; 13 Moore St.; Bristol, VA 24201; (703) 466-8675. Owner: Classic Records, Inc. Studio Manager: Bandy Brownlee

[16] WALLY CLEAVER'S RECORDING; also REMOTE RECORDING; 1518 Princess Anne St.; Fredericksburg, VA 22401; (703) 373-6511. Owner: Peter L. Bonta. Studio Manager: Lorie Stannard. Engineers: Peter Bonta, Pete Fields, Lin Arroyo. Dimensions: Studios: main room 20 x 22, dead room 9 x 13.5, isolation booth 6 x 7. Control rooms: main room 12 x 14, post-production room 10 x 10. Mixing Consoles: Sound Workshop Series 30 24 x 24 x 2 w/ARMS VCA's. Audio Recorders: Tascam 85-16B 16-track, Revox A77 2-track, 3M M79 4/2-track 1/2", Otari 5050 2-track, Scully 280 2-track. Cassette Recorders/Duplicators: (3) TEAC Echo, Reverb, & Delay Systems: Yamaha REV7 digital reverb, AKG BX-1011, Lexicon PCM60, Lexicon PCM41, DeltaLab DL-2, DeltaLab Effectron 1024, Master-Room MCMIX. Other Outboard Equipment: (2) UREI 1176LN, Eventide 910 Harmonizer, (2) UREI LA-4, Symetrix 522, (2) Valley People Dyna-Mite, (3) dbx 160, (2) dbx 163, Aphex Aural Exciter, dbx n/r on all channels, SMPTE sync on 16-track, DDD 15 x 2 EQ, Accessit noise gate, Roland digital delay/comp, MXR flanger, Ibanez stereo chorus, Rat box, Audioarts stereo parametric EQ. Microphones: AKG D-12E, Neumann U87, Neumann U47 FET, (4) Neumann KM84, (2) AKG C-414, (4) AKG C-451EB, (2) E-V RE20, (3) Shure SM57, Shure SM54, Shure SM55, (3) Sennheiser MD-441, Sennheiser MD-421, Sennheiser MD-409, RCA 44a, RCA 77-DX, RCA BK-5B, (2) PZM, Audio-Technica ATM-11, (2) Adams transducer, msc. Dis. Monitor Amplifiers: Crown DC-300A power amp, Crown D-150A, (2) Dyna 60 (mono), Dyna ST-70, Uher CV-140 Monitor Speakers: Altec 9842-8A, Minimus-7, UREI 809 Musical Instruments: Ersoniq Mirage, Oberheim DX drum machine, Yamaha 6' grand piano, Yamaha DX7 synthesizer, Roland TR-707 drum computer, Rogers 6-piece drum set, Vox AC-30 amp, Vox AC-15 amp, Marshall 50-watt amp, Roland Playbus amp, Fender Telecaster, Fender Stratocaster, Fender Precision 1957 bass, Gibson 1952 acoustic guitar, misc. percussion instruments, Fender 1966 12-string guitar, Yamaha FB-01, Korg SG1 sampling grand piano. Other MIDI Equipment: Commodore 64 computer w/Sonus Super 64 8-track sequencer, (2) Mirage visual editing system, FB-01 and DX7 voice library. Video Equipment: Call for rates and info. Rates: \$38 50/hr. Call for block rates.

[16] CRS RECORDING STUDIO; 113 N. Chestnut St., PO Box 85; Marion, VA 24354; (703) 783-6828. Owner: James K. Cornick Studio Manager: James K. Cornick

[16] FLIGHT ONE RECORDING STUDIO; Rt. 2, Box 104; Ridgeley, WV 26753; (304) 738-8870. Owner: Greg Johnson. Studio Manager: Greg Johnson.

[16] HOLLYWOOD SYNC; 3130 SW 19th St., #448; Hollywood, FL 33009; (305) 962-1586. Owner: Wayne Ricker. Engineers: Wayne Ricker, Jamie Swartz. Dimensions: Room 1: studio 25 x 19, control room 15 x 17. Room 2: studio 4 x 6. Mixing Consoles: Sound Workshop Series 30 16 x 16. Audio Recorders: Tascam 85-16 16-track, Tascam 35-2B 2-track, Ampex 2-track Cassette Recorders/Duplicators: (5) Tascam 25000, JVC KDA3. Noise Reduction Equipment: dbx 150 on 16-track Synchronization Systems: KMS 30 sync box, SMPTE time code generator Echo, Reverb, & Delay Systems: Yamaha REV7 digital reverb, ART 01A digital reverb, Eventide H949 Harmonizer, Lexicon Prime Time, DeltaLab DL-4 digital delay. Other Outboard Equipment: dbx 165 compressor, Valley People Dyna-Mite, Aphex Aural Exciter, Moog MPKE parametric equalizer. Microphones: Neumann U87, Neumann U47 FET, (6) Sennheiser 421, Sennheiser 441, (2) AKG 451, Shure SM81, (3) Shure SM57. Monitor Amplifiers: SAE, Carver. Monitor Speakers: JBL 4311, Yamaha NS-10. Musical Instruments: Roland D-50 linear synth, Yamaha DX7, Yamaha CP80 electric grand piano, E-mu SP-12, LinnDrum. Other MIDI Equipment: Linn sequencer.



HOLLYWOOD SYNC
Hollywood, FL

[16] IMPORTANT RECORDING SERVICES; also REMOTE RECORDING; PO Box 352; Estero, FL 33928; (813) 947-0103. Owner: Danker, Bemet, John McLane. Studio Manager: Danker, Bemet

[16] JY RECORDING; also REMOTE RECORDING; PO Box 2602, 201 Trenton St.; Monroe, LA 71291. (318) 325-4413. Owner: James E. Young. Studio Manager: Greg Young.

[16] L.A. EAST, INC.; PO Box 1205, Ozark, AL 36361-1205; (205) 774-0225. Owner: J.H. Brown. Studio Manager: J.H. Brown. Engineers: J.H. Brown. Dimensions: Studio 20 x 24, control room 21 x 24. Mixing Consoles: NEOTEK Elite 24 x 24. Audio Recorders: Tascam M'6 16-track, Tascam M58 8-track Cassette Recorders/Duplicators: Nakamichi, Denon, Technics Noise Reduction Equipment: dbx Synchronization Systems: Kurzweil RM250, Compuser, Performer Echo, Reverb, & Delay Systems: Lexicon, Eventide, Yamaha. Microphones: Neumann, AKG, Sennheiser, Audio-Technica, Beyer, Milab, Shure. Monitor Amplifiers: Yamaha 2200, caller Monitor Speakers: Tannoy, Toa, Yamaha NS-10M Musical Instruments: Roland RD-1000, Korg DSS-1, Yamaha DX7, Korg Poly-8000, E-mu S-12, Kurzweil RM250, Paul Reed Smith lead guitar, Paul Reed Smith bass guitar, Mesa/Boogie Series III amp. Rates: \$35/hr. Weekly rates available.

[16] LIVE NOTE STUDIO; PO Box 16; Hampton, VA 23669; (804) 838-6930. Owner: Tom & Fonda Breeden. Studio Manager: Fonda M. Breeder.

[16] MILEDDGE RECORDING STUDIO; 5281 Lochinvar; Memphis, TN 38116; (901) 346-8818. Owner: Michael Elledge. Studio Manager: Michael Elledge. Engineers: Michael Elledge, Michael Clayton. Dimensions: Studio 21 x 11, control room 8 x 14. Mixing Consoles: Tascam M520 20 inputs. Audio Recorders: Fostex B-16D 16-track, Otari 5050B 2-track. Noise Reduction Equipment: dbx stereo noise reduction, Echo, Reverb, & Delay Systems: Yamaha REV7, Yamaha SPX90, Yamaha REV50, DeltaLab ADM 1024 digital delay. Other Outboard Equipment: (2) Yamaha GC2H20 stereo comp/limiter, Scholz Rockman, Aphex Type C Aural Exciter, BBE 4C2, Rocktron Hush IIC, (2) dbx 161 compressor/limiter, Audio Logic quad noise gate. Microphones: Shure, Audio-Technica, Beyer, E-V, Neumann U87. Monitor Amplifiers: Crown D-15CA Series II, Tascam MH-40 Monitor Speakers: JBL 4311-B, Yamaha NS-10M Musical Instruments: Korg DSS-1 sampling synthesizer, (2) Seymour Duncan Convertible guitar amp various percussion instruments, Story & Clark console piano, Ludwig 9-piece drum set, Alesis HR-16 drum machine. Rates: \$35/hr. Block discounts available.

[16] MR. O AUDIO; also REMOTE RECORDING; 2035 S. Lumpkin Rd.; Columbus, GA 31903; (404) 687-6221. Owner: Maurice R. Owens. Studio Manager: Maurice R. Owens. Engineers: Maurice Owens, David Norman, Mike Osborn. Dimensions: Studio 30 x 50, control room 20 x 14. Mixing Consoles: Soundcraft 500 32 x 8, Canary 32 x 8, Studiomatic 20 x 8 monitor, Yamaha 12 x 4 Yamaha 2404 Audio Recorders: Tascam 38 8-track, Tascam 234 4-track TEAC A3300 SX 2-track, Tascam MS-6 16-track, Tascam 42-2-track Cassette Recorders/Duplicators: (5) Nikko ND-350 Noise Reduction Equipment: (2) Tascam DX4D, dbx Type K Echo, Reverb, & Delay Systems: Lexicon Prime Time II 96, Yamaha REV7, Yamaha SPX90, Yamaha SPX90II, (2) Eventide H910 Harmonizer, Ibanez HD-1500 Effectron III. Other Outboard Equipment: (2) Valley People Dyna-Mite, (2) UREI 539 1/2-octave EQ, (8) Yamaha 2031 dual 1/2-octave EQ, (2) dbx 160 comp/limiter, (2) UREI 525 crossover, Brooker-Siren FDS360, Klark-Teknik DN360 dual 1/2-octave EQ, (4) dbx 164 comp/limiter. Microphones: (8) Shure SM58, (8) Shure SM57, (8) Shure PE56P, (4) Sennheiser 421, AKG 414. Monitor Amplifiers: (6) Crown DC-300A, (6) BGW 750, (6) Yamaha 2200 (4) Crown PSA-2 Monitor Speakers: (2) JBL 4312, (2) JBL L-36, (2) Auratone

5C Musical Instruments: Oberheim DX drum machine, Roland 505 drum machine, Korg Poly-61M, Minimoog, Akai AX13 synth, Akai S612 sampler, disk and delay, Rickenbacker bass, (10) assorted guitars, Rockman sustainer and chorus, Rane HC-6 headphone amp, Simmons 1000, E-mu Drumulator drum machine. Other: (16) OAP DP-118 full-range speakers, all JBL loaded (one 18", two 12", one 2441 on bi-radial), (12) OAP SM-115 monitors (one JBL 15", one 1" JBL 2425 in each), (8) HME/Beyer headset comm., (96) PAR 64 w/trusses and dimming. Rates: Call for rates.

[16] **ORACLE RECORDING STUDIO**, also **REMOTE RECORDING**; PO Box 464188; Lawrenceville, GA 30246; (404) 921-7941. Owner: Gene Smith. Studio Manager: Gene Smith. Engineers: Gene Smith, Janny Smith. Dimensions: Studio 12 x 12, control room 21 x 12. Mixing Consoles: Soundcraft 200 16 x 4. Audio Recorders: Tascam MS-16 16-track 30 ips, Sony PCM-2500 Pro R-DAT Cassette Recorders/Duplicators: Tascam 122 MkII Synchronization Systems: J.L. Cooper PPS-1. Echo, Reverb, & Delay Systems: Lexicon LXP-1, Alesis MIDIVERB. Other Outboard Equipment: UREI LA-4. Microphones: AKG Tube, (2) AKG 460B, AKG 460ULS/61, Sennheiser MD-409 U3, Sony ECM-23, Beyer M500, Shure SM59. Monitor Amplifiers: Hafler XL-280, Hafler P-125, Tascam PA-20B. Monitor Speakers: (2) Tannoy LGM 12B, (2) E-V Sentry 100, (2) Tannoy 6.5. Musical Instruments: DX7IIDF, Oberheim OB-8, Alesis HR-16 drum machine, Martin D-28 acoustic guitar, Fender Strat, Fender pre-CBS custom Telecaster, Epiphone 12-string acoustic guitar, Guild G-37 acoustic guitar, 360 Systems Midi Bass. Other MIDI Equipment: Macintosh Plus w/Performer 2.31 software, Opcode Systems Studio Plus, Alesis MMT-8 sequencer. Other: Tascam AQ-65 autolocator, Technics SH-CDB7 compact disc player, Ampeg V-7 guitar amp. Rates: Call for rates.

[16] **PINE GROVE STUDIO**; 10985 S.W. 172 Terrace; Miami, FL 33157; (305) 255-1495. Owner: Newton Simmons. Studio Manager: Newton Simmons.

[16] **RON ROSE PRODUCTIONS, INC.**, also **REMOTE RECORDING**; 3409 W. Lemon St.; Tampa, FL 33609; (813) 873-7700. Owner: Ron Rose Productions, Ltd. Studio Manager: Mike Stram, chief technical eng. Engineers: Production engineers: Gary Rivera, Tim Spero. Duplication engineer: Kevin Crowley. Production coordinator: Deanna Everett. Dimensions: Room 1: studio 11 x 12, control room 16 x 18. Room 2: studio 11 x 12, control room 15 x 18. Room 3: studio 9 x 11 (middle booth) Room 4: control room 12 x 26 (duplication) Mixing Consoles: (2) Soundcraft 600 16 x 8 x 2, TEAC Model 5 8 x 4 x 2. Audio Recorders: Tascam MS-16 16-track 1", (2) Tascam Model 58 8-track 1/2", (6) Tascam Model 52 2-track 1/4", (2) MCI JH-110C full-track mono 1/4", Tascam 44 4-track 1/4", Technics RS-1520 2-track 1/4", Tascam 70-4 4-track 1/2" Cassette Recorders/Duplicators: (2) Tascam 122B 2-track, Tascam 122 MkII 2-track, Marantz PMD221 portable, Telex 6120 4-track mono/stereo cass dup 11-slave, Magnetek 652-1 mono/stereo reel-to-reel duplicator 5-slave Synchronization Systems: BTX 4700 w/Shadowpad and two event starts, modified to sync, 16-track or 8-track audio to Sony BVH-2000 1" VTR or Sony VO-5850 3/4" VTR Echo, Reverb, & Delay Systems: (2) Lexicon PCM60, Yamaha SPX90 digital audio processor, Eventide H910. Other Outboard Equipment: Orban 621 B/R parametric EQ, (2) Orban 536A de-esser, (2) Aphex Compellor compressor/limiter, (3) Symetrix TI-101 telephone/interface, Bryant Eng variable pulser. Microphones: (5) AKG C-414EB condenser, (3) Sennheiser MD-421, Shure SM7, Shure SM57, others available. Monitor Amplifiers: Hafler P-225. Monitor Speakers: JBL 4411, Tannoy NFM-8. Musical Instruments: Keyboards/samplers/drum machines available. Video Equipment: Sony BVH-2000 1" VTR, Sony VO-6500 3/4" VTR, ESE lime code generator, Sony VO-5850 3/4" VTR, Kenwood KV917 1/2" hi-fi, VAC sync generator, NEC CT1901 monitor, NEC CT1420 monitor, Hedco VDA, Hedco video switcher, video duplication system—3/4" dubs, 1/2" VHS Hi-fi dubs, 8 slaves. Other: CD sound effects, 50 music libraries (70,000 cuts), computer shipping and expediting. Rates: 8-track \$75/hr., 16-track \$95/hr., audio post-production starting at \$105/hr. Please call for quotes.

[16] **SOUNDTRAX RECORDING, INC.**; Rt. 2, Box 435; Johnson City, TN 37601; (615) 926-3986. Owner: Richard Hinchman III. Engineers: Rick Monday, Curtis Cecil, Richard Hinchman. Dimensions: Room 1: studio 35 x 16, control room 16 x 30. Room 2: studio 9 x 11. Room 3: studio 12 x 12, control room 16 x 12. Room 4: studio 12 x 13. Mixing Consoles: NEOTEK Series II 24 x 24, Hill 16 x 4 multitrack for keyboards, drums. Audio Recorders: Sony 3324 24-track, Sony 3402 2-track digital, Fostex E-16 16-track, Series 70 8-track, 80-8 8-track, Tascam 32 2B 1/2-track. Cassette Recorders/Duplicators: Yamaha K1020, Nakamichi BX-300, Sony 601 1/2-SVHS, Mitsubishi 4230R SVHS deck. Noise Reduction Equipment: dbx DX2B, dbx DX8DS Type I, (2) dbx 155, Rocktron IIB, Dolby C for 16- and 24-track machines. Synchronization Systems: Remote for Sony 24-track SMPTE, Fostex 4050-SU1000 locator SMPTE, Fostex 4030 sync unit SMPTE. Echo, Reverb, & Delay Systems: (3) Alesis XTC, Alesis MIDIVERB, Yamaha SPX90, Ibanez DM2000, Lexicon PCM70, Digi-Tech 3.6 delay, DOD EXR SPIIR860 projector, (2) Toa 910 EQ, Toa 912 amp for headphones. Other Outboard Equipment: 5'4" piano console studio Wurflitzer, MasterMix automation 24-tracks, SU100, J.L. Cooper MSB MIDI patcher, (2) Dr. T's software for keyboards. Microphones: Neumann U89,

phones: Neumann U89, Neumann U87, (2) E-V RE20, (2) Sennheiser 421 and 441, (2) Shure SM58, (2) Shure SM77, (2) Shure 588, (2) Shure 588SB, (2) Shure SM81, (2) Shure SM85, Sony ECM-22P Monitor Amplifiers: Crown PS-200, Akai AA301, Toa 912. Monitor Speakers: Tannoy FSM, (2) Yamaha NS-10 monitor, JBL 4430, (2) Scott monitor, (2) KLH 140 monitor. Musical Instruments: Roland Jupiter-8 (not MIDI), Roland JX-8P, Korg DW-6000, Kawai SX240, Yamaha DX7II, Yamaha TX812, Roland Juno-6, Roland MSQ70, Yamaha RX5 drum machine, Roland TR-626 drum machine, Ensoniq Mirage sampler, Roland MKS-30 module. Other MIDI Equipment: Ibanez MIU8 MIDI box 1-in, 8-out, Commodore 64 computer w/Dr. T's software for keyboards and other MIDI use. Video Equipment: JVC CR850, Sony VP-3800, Sony VP-2011, Sony 1600 3/4", Mitsubishi SVHS H423 UR, various monitors, (2) NEC monitor, Panasonic monitor. Other: (2) Bally Miralot monitor, various effects, etc. for video and MIDI equipment. A country setting, very relaxing, lodging available. Rates: From \$45 to \$65 per hour. If "digital," \$80 per hour.

[16] **SOUTHEASTERN SOUND STUDIO, INC.**, also **REMOTE RECORDING**; 419 East First Ave.; Easley, SC 29640; (803) 859-8613. Owner: Paul G. Waring. Studio Manager: Buddy Strong.

[16] **STARLIGHT RECORDING STUDIO**, also **REMOTE RECORDING**; 2859 West Hillsboro St.; Lake City, FL 32055; (904) 752-9459. Owner: Donald K. Johns, Dawn L. Johns. Studio Manager: Donald K. Johns.

[16] **THE STUDIO**, also **REMOTE RECORDING**; Rt. 8, Box 484-B; Chapel Hill, NC 27514; (919) 967-8470. Owner: John Santa. Studio Manager: Mac Monroe. Specialization & Credits: The Studio provides location sound services for film and video and specializes in sound design and scoring in our SMPTE-based facility. We are proud to have received national and regional awards recognizing our participation in Public Television and Corporation for Public Broadcasting projects. Our staff includes synthesizer/computer programmer Allen Burden, chief engineer Ray St. Clair and assistant engineer Jerry Levine, as well as Rich Robinson for (very) remote field recording (in Philadelphia please call [215] 482-4992). We also provide location scouting and can assemble crews for film and video projects for out-of-state clients wishing to shoot in beautiful North Carolina. Please call if we can assist you.

[16] **THRESHOLD RECORDING**; 410 Elm Ave. SW; Roanoke, VA 24016; (703) 345-2539. Owner: Howard Beasley, Harold Thompson. Studio Manager: Harold Thompson.

[16] **UNDERGROUND SOUND RECORDING**; PO Box 6871; Athens, GA 30604; (404) 549-3117. Owner: Robbie Collins. Studio Manager: Robbie Collins.

[16] **UNDERGROUND SOUND RECORDING STUDIO**; 3010 Skyland Blvd. E.; Tuscaloosa, AL 35405; (205) 556-0030. Owner: Andy Chappell. Studio Manager: Joey Laycock.

[16] **WOODHOUSE RECORDING**; 2900 Brittany Way; Chesapeake, VA 23321; (804) 483-6212. Owner: Larry K. Carr. Studio Manager: Larry K. Carr. Engineers: Larry K. Carr. Dimensions: Studio 22 x 24 x 0, control room 10 x 8. Mixing Consoles: Tascam M520 20 x 8 x 16. Audio Recorders: Tascam MS-16 16-track with remote and AL, Tascam 38 8-track, Tascam 32 2-track. Cassette Recorders/Duplicators: Technics RST80R, Tascam 122, Tascam Portastudio Noise Reduction Equipment: dbx on all recorder channels, Rocktron Hush IIC, Echo, Reverb, & Delay Systems: (2) SDR-1000, (2) Yamaha SPX90, DM-500, DMD2000. Other Outboard Equipment: (2) Yamaha OC2020B gate/compressor, Biamp quad gate/limiter, BBE Maxie 402. Microphones: AKG D-12, AKG D-112, Tascam 250, (2) ATM 33, (5) ATM 63, (5) Beyer M69, (2) Shure SM57, (2) Shure SM58, (2) AKG D-190, others. Monitor Amplifiers: Carver 175, AMR PMA 200, Rane HC-6. Monitor Speakers: AMR 312, AMR 308, Auratones.

A2

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4 & 8 TRACK

STUDIOS

[2] **AIRSHOW, INC.**; only *REMOTE RECORDING*; 7021 Woodland Dr.; Springfield, VA 22151; (703) 642-9035. Owner: David Glasser. Studio Manager: Ann Blonston.

[4] **CHARISMA STUDIOS**; also *REMOTE RECORDING*; PO Box 29061; Greensboro, NC 27429; (919) 643-9517. Owner: Steve & Deirdre Monroe. Studio Manager: Deirdre Monroe.

[8] **GRANT BLAIR PRODUCTIONS**; also *REMOTE RECORDING*; 2748 Woodlore Trail; Winston-Salem, NC 27103; (919) 765-4188. Owner: Grant Blair. Studio Manager: Grant Blair.

[8] **THE GROOVE CAVE**; also *REMOTE RECORDING*; Rt. 1, Box 200-C; Arnoldsville, GA 30619; (404) 742-7446. Owner: Cam Mullally. Studio Manager: Cam Mullally.

[8] **HIGH ST. STUDIO**; 1504 High St.; Bowling Green, KY 42101; (502) 781-3068. Owner: Marc Owens, Billy Smith. Studio Manager: Marc Owens.

[8] **GERALD LEWIS RECORDING**; only *REMOTE RECORDING*; 216 S. Pershing Dr.; Arlington, VA 22204; (703) 521-1871. Owner: Gerald Lewis. Studio Manager: Gerald Lewis.

[8] **MAYWOOD RECORDING**; 4647 Keltton Dr.; Jackson, MS 39211; (601) 354-5617. Owner: James W. Thompson. Studio Manager: Kevin Cornell.

[8] **MILLER RECORDING STUDIO**; also *REMOTE RECORDING*; 2513 S. Scales St.; Reidsville, NC 27320; (919) 349-8911; (919) 342-1892. Owner: Robbin Miller. Studio Manager: Robbin Miller.

[8] **JOSH NOLAND MUSIC STUDIO**; 760 W. Sample Rd.; Pompano Beach, FL 33064; (305) 943-9865. Owner: Josh Noland. Studio Manager: Josh Noland.

[8] **OUT BACK RECORDING STUDIOS**; 2917 Peach Orchard Rd.; Augusta, GA 30906; (404) 793-4811. Owner: Charles L. Henry. Studio Manager: Jessie D. Holmes, Jr.

[8] **PROSOUND LABS, INC.**; 5625 S.W. 108 Pl.; Miami, FL 33173; (305) 595-7071. Owner: Manny Salas. Studio Manager: Manny Salas.

[8] **PROTOLOG INC.**; also *REMOTE RECORDING*; 4470 57th Ave. N.; St. Petersburg, FL 33714; (813) 526-1452. Owner: Protolog Inc. Studio Manager: Michael Petrucci. Engineers: Michael Petrucci, Ken Heidenreich. Dimensions: Studio 15 x 17, control room 10 X 8, iso booth 6 x 8. Mixing Consoles: Trident Series 65 24 x 16. Soundcraft Series 200 24 x 4, Yamaha PM1000 16 x 4, Roland 16 x 2. Audio Recorders: Tascam 580B 8-track, Fostex A20 2-track with ctc, TEAC 3340-S 4-track, Sony PCM-F1 2-track digital. Cassette Recorders/Duplicators: Nakamichi MR-1. Noise Reduction Equipment: (8) dbx 180 Type I w/Jensen transformers, (2) dbx 150 Type I. Synchronization Systems: SMPL lock (MIDI/FSK/SMPT). Echo, Reverb, & Delay Systems: (2) Yamaha SPX90II, Lexicon PCM60, Lexicon PCM41, Yamaha D1500, Yamaha REV5. Other Outboard Equipment: (3) dbx 160X compressor, (2) dbx 904 gate, (2) dbx 903 compressor, (2) dbx 905 parametric, (2) Kark-Teknik DN300 EQ, Carver holographic pre-amp, Crown OC-150A meter bridge, Rane HC-6 headphone amp, Technics SL-P770 CD player, Eventide RT60 and RTA analyzer. Microphones: (12) Sennheiser 421, (4) Sennheiser 431, (4) Sennheiser 441, (2) AKG 460 preamp w/CK-1 capsule, AKG 414 Buls, (2) E-V RE20, E-V D35, (4) Shure SM57, (4) Shure SM58, Shure SM60, (2) Shure SM81. Monitor Amplifiers: Crown DC-300A Series II, Carver PM175. Monitor Speakers: Auratone 5C, Yamaha NS-10M. Musical Instruments: Fender 1965 Jazz bass, Yamaha DX7 with E!, Yamaha TX812, Emulator II+ with upgrade, Oberheim Matrix-6R, Oberheim DPX-1, Roland JX-3P, Kurzweil PX1000, Kurzweil MIDI-board, Yamaha RX11 drum machine, E-mu SP-12 turbo drum machine, Prophet-5, most other equipment on request (Synclavier, Fairlight). Other MIDI Equipment: (2) Akai ME20 seq., (2) Akai ME10 MIDI delay, (2) Digital Music MX-8 MIDI patcher, (2) Opcode Studio Plus II MIDI interface. Video Equipment: Sony/JVC equipment on request, SMPT/TBC, VTM loft and IQS test equipment. Other: (2) Macintosh 512K w/10MB HD computer, Macintosh SE 9MB w/20MB HD computer, Apple IIe 258K, IBM PC Jr., Commodore 64. Rates: \$25/hr., programming and production extra.

[8] **RADIOACTIVE PRODUCTIONS RECORDING STUDIO**; PO Box 2523; Marathon Shores, FL 33052; (305) 743-7808. Owner: John Bartus. Studio Manager: John Bartus, Roy McAdams. Specialization & Credits: RadioActive Productions specializes in album, jingle and demo production as well as custom music and sound effects for a variety of projects. Our jingle service encompasses the Florida Keys and is currently unsurpassed in both production quality and cost-effectiveness. Our in-house creative staff will come up with what you need at a price that's right, and we'll coordinate your entire campaign and marketing strategy if desired. We have produced albums and singles by a number of local Keys entertainers and we'll continue to work with songwriters to achieve top-quality demo productions. We have eight audio tracks, a fully synchronized MIDI production system and the most reasonable rates around. And we're in Paradise. Call or write for details and current rates.

[4] **RIDGE RECORDING STUDIOS**; 407 South St.; Greenville, AL 36037; (205) 382-7800. Owner: Cleveland Poole. Studio Manager: Cleveland Poole.

[8] **R.W. RECORDING STUDIO**; also *REMOTE RECORDING*; 1509 Hoy Taylor Dr.; Norcross, GA 30093; (404) 381-5658. Owner: Rick Ware. Studio Manager: Rick Ware.

[8] **SOUNDS, REASONABLE!**; also *REMOTE RECORDING*; 10203 Bent Tree Ln.; Manassas, VA 22111; (703) 631-6376. Owner: Fred Wygal. Studio Manager: Ellen Wygal.

[8] **STONEBRIDGE RECORDING**; Rt. 15, Box 54; Maryville, TN 37801-8304; (615) 983-7448. Owner: Michael Ishibashi. Studio Manager: Michael Ishibashi.

[8] **VMR STUDIOS**; 173 W. Putnam Ferry Rd.; Woodstock, GA 30188; (404) 926-3268. Owner: Deryl Voutila. Studio Manager: Deryl Voutila.

—FROM PAGE 94

specific directories of files—for example, all-sampled Minimoog sounds, or all-factory piano sounds.

Another problem is hard disk fragmentation. When doing multiple saves and loads, space is sometimes freed up in odd places in various sectors, and saving a new file will write the data to these noncontiguous memory locations. This means that as the hard disk head searches for data, it has to travel from sector to sector to pick up all the pieces, thus slowing access times and even leading to the possibility of crashes in the case of serious fragmentation.

Unfortunately, the EPS provides no equivalent of the software utilities for existing computers whose purpose is to rearrange data into contiguous blocks. I've found the best way to avoid fragmentation is to copy "permanent" sounds (i.e., ones that don't need to be modified) onto hard disk first, then copy sounds under development. Once the development sounds become permanent, I save them on the floppy, erase the development sounds on the hard disk and save them again from floppy to the hard disk as "permanent" sounds. In extreme cases, you can eliminate fragmentation altogether by backing up all your sounds to floppies, reformatting the hard disk and copying the sounds back onto the hard disk.

But my SCSI system didn't come into its own until I acquired the SCSI-compatible version of Blank Software's *Alchemy*, and hooked the EPS into a "SCSI network" consisting of the EPS, EPS hard disk, Macintosh and Mac hard disk. Since the EPS formats its hard disk differently from the Mac hard disk, you can't save Mac files on the EPS disk or EPS files on the Mac disk. However, you can use *Alchemy* to *translate* EPS files into a Mac hard disk-compatible format. Although there are some quirks to the network—I need to boot up the EPS and Mac separately from the network, then when booted, physically connect them together—the ability to transfer samples at a high rate of speed has taken the tedium out of visual editing.

As one example, it takes over three minutes (yawn) to transfer a four-second sample (sampled at a moderately high sampling rate of 28.4 kHz) from the EPS to *Alchemy* via MIDI. Trans-

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ferring that same sample over SCSI takes *eight seconds*. When developing samples, this is a real boon. It's easy to load a bank of sounds into the EPS, transfer them to Alchemy, tweak them and send them back into the EPS in a matter of minutes. Doing a complete edit on a sound sometimes takes less time than it would simply to transfer the sound via MIDI!

The implications for digital audio editing systems are clear. Samplers such as the E-III have enough sampling time to store entire vocal and instrumental passages. Can you imagine how long it would take to transfer a one-minute sample into a sound editing program via MIDI? Again, SCSI is the answer.

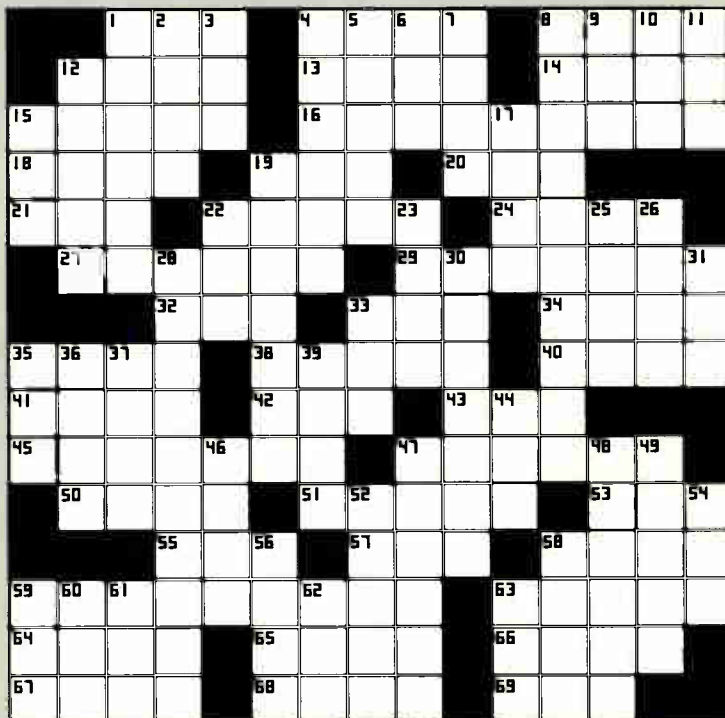
SCSI is not the only answer, however. E-mu offers optional internal hard disks for the Emax and E-II (an internal hard disk is standard on the E-III) for fast saving and loading of sounds, although this doesn't help with regard to outboard-editing software. Roland cleverly sidesteps the sample transfer speed limit altogether by producing a sampler (the S-50) with visual-editing software built into the machine, thus eliminating the need to transfer samples to an external computer for editing. WaveFrame takes another approach with their Soundstore feature, which is a very high-speed way to transfer sounds from hard disk to internal memory for either playback or editing; and again, it has the advantage of working within a defined system, and doesn't need to communicate with external devices except on an as-needed basis.

Still, for low- and mid-priced sampling systems, SCSI brings speed and convenience to the process of sample editing and storage. The price you pay is a bit more for the SCSI hardware (the SCSI port, bundled with a 2x memory expander, adds about \$400 list to the EPS), and you'll also have to cope with the noise generated by the hard disks you'll want to add to your system. But in a competitive world where speed is often the name of the game, these are small prices to pay for what you'll receive. Thanks to SCSI, editing samples is now almost as easy as editing synth sounds back in the days when instruments had knobs and switches. ■

Craig Anderton writes books, produces and plays music, and edits Electronic Musician, our sister magazine.

MIX WORDS

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On the Deck

ACROSS

1. Morris or Doris
4. CBS label
8. Yemen capital
12. Sonic "edge"
13. Zhiyago's girl
14. Informed
15. Beginners
16. Mover on the deck
18. Unit of news
19. Bed substitute
20. Big or gun
21. Inside trader catchers
22. Pastor's home
24. Dressed
27. Binders
29. Don't move
32. Certain records
33. French season
34. Ms. Barrett of gossip
35. Type of noun in some lang.s
38. Money substitute
40. A British P.M.
41. Down under noun ending
42. Film editor org.
43. Papat
45. Sloe berry
47. Hamburger Helper, e.g.
50. Angry parents' group
51. Snobby
53. Hold up
55. Oinker
57. Prince Valliant's son
58. Cod or theater
59. Groove pin or roller on the deck
63. Attack
64. Zone
65. Fr. holy women
66. Wallet liners
67. ___ one's way
68. Try
69. Guitarist Montgomery

3. Affirmative supergroup
4. Singer John's namesakes
5. Says ta-ta
6. 7D lyricist
7. "They ___ take that away..."
8. Big wheel on the deck
9. Military address
10. Neither partner
11. Rocker Adam
12. Blocks of digital data
15. "___ the season..."
17. Caribbean sound
19. Upright spindle on the deck
22. Plot
23. Noted Italian family
25. No-footer
26. Sci-fi story with sand worms
28. Signal converter on the deck

30. Applied to the tape after it leaves the 19D
31. Ipanema girl's color
33. ___ out
35. Popular PC
36. Mandrake
37. Rail
39. Up or down 8 notes
44. Woodsy sprite
46. Wouldn't feed it to ___
47. Large group of trees
48. 28D does this too
49. 15As don't know them
52. Serves the soup
54. Wager
56. Wind unit
58. Recent suffix
59. Marble
60. Exist
61. Be the author
62. Follower's suffix

Solution to January Mix Words



DOWN

1. ___-to-disk
2. Smallest amount

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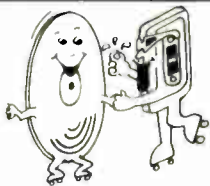
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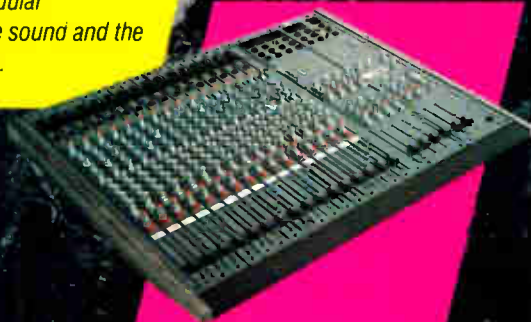
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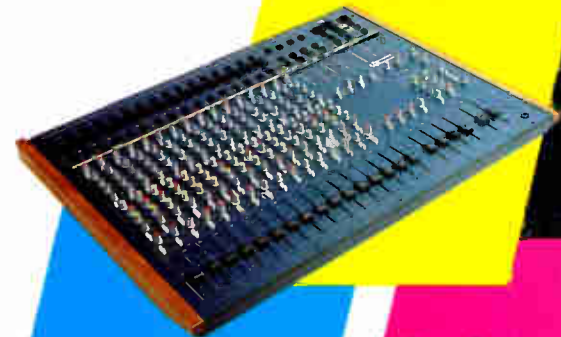
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